

Fort Point Bridge over CPKC Railway

Bridge Rehabilitation

4 Avenue over CPKC Railway
Invermere, BC

REQUEST FOR PROPOSAL

Issued:	September 8, 2026
Closing Time:	2.00 pm PST, October 6, 2026
Closing Location:	District of Invermere 914 8 th Avenue Invermere, BC V0A 1K0
Contact Person:	Justin Patterson 250-342-9281 engtech@invermere.net

TERMS OF USE

Technical Specifications are presented as accurate and complete as of the date indicated below. Use of these Technical Specifications shall not absolve any user from the obligation to exercise their professional judgment and follow good practice. Should any user have question as to the intent or accuracy of any Specification or Drawings herein, or concern that conflict may exist between the manufacturers' or suppliers' recommended installation procedures and these Technical Specifications, the user is advised to seek clarification from the undersigned.

Technical Specifications are made for use on the District of Invermere "Fort Point Bridge over CPKC Railway – Rehabilitation" project, effective as of the date below.

September 3, 2026



Mark Bowen, P.Eng (AB).
Principal
RJC Engineers.



Robbe Drugmand, P.Eng.
Review Engineer
RJC Engineers

Engineers and Geoscientists of BC Permit Number: 1002503

TABLE OF CONTENTS

0.1	Terms of Use
0.2	Table of Contents
1.0	Request for Proposal
	Attachment A – Evaluation Criteria
	Attachment B – Reference Information
2.0	Form of Proposal
	Schedule 1 – RFP Submission Requirements
	Schedule 2 – Schedule of Quantities and Prices
	Schedule 3 – Proponents References
	Schedule 4 – Subcontractors
	Schedule 5 – Proposed Amendments to Commercial Terms
	Schedule 6 – Alternatives
	Schedule 7 – Baseline Construction Schedule
	Schedule 8 – Relationship Disclosure Statement
3.0	CCDC 2 Stipulated Price Contract
	Agreement between the Owner and the Contractor
	Attachment 1 – List of Specifications
	Attachment 2 – List of Contract Drawings
	Definitions
	General Conditions of the Stipulated Price Contract
	CCDC 41 – CCDC Insurance Requirements
4.0	Supplementary General Conditions
5.0	Special Provisions
6.0	Section 01 10 01 - General Requirements
7.0	Contract Drawings
8.0	Reference Material

CCDC 2 STIPULATED PRICE CONTRACT

REQUEST FOR PROPOSALS

TABLE OF CONTENTS

1.0	Introduction	3
1.1	Background and Purpose	3
1.2	Enquiries – Contract Person	3
1.3	Submission of Proposals: Closing Time	3
1.4	Eligible Parties	3
1.5	Definitions	4
1.6	Interpretation	5
2.0	Submission Instructions	5
2.1	Delivery of Proposals	5
2.2	Number of Copies If Delivery by Hand	5
2.3	Date and Time of Delivery	6
2.4	Enquiries and Responses	6
2.5	Electronic Transmission.....	6
2.6	Addenda.....	7
2.7	Reference Information Including Q&As	7
2.8	Revisions Prior to Closing Time.....	7
2.9	Language	7
3.0	RFP Documents	8
3.1	RFP Documents	8
3.2	Availability of RFP Documents	8
3.3	Completeness of RFP Documents	8
4.0	Form of Proposal	8
4.1	Form of Proposal	8
4.2	Proposed Amendments to Commercial Terms.....	9
4.3	Proposed Amendment of Schedule Dates	9
4.4	Proposed Alternatives to Designs and Specifications	9
4.5	Signature.....	9
4.6	Numbers and Figures	10
5.0	Site Conditions, Informational Meetings and Site Visits	10
5.1	Site Conditions.....	10
5.2	Informational Meetings and Site Visits	10
6.0	Proposal Price	10
6.1	Proposal Price	10

7.0	Proposal Evaluation	11
7.1	Evaluation Committee	11
7.2	Evaluation Criteria	11
7.3	Evaluation Process	11
7.4	Detailed Evaluations	11
7.5	Reservation of Rights	12
7.6	Recommendation of Preferred Proponent	12
7.7	All Proposals Over Budget	12
8.0	Selection and Debriefing	13
8.1	Notice to Preferred Proponent	13
8.2	Negotiations of Contract and Award	13
8.3	Notification to Unsuccessful Proponents	13
8.4	Debriefing	13
9.0	Miscellaneous Conditions	13
9.1	Ownership and Use of Proposals	13
9.2	No Obligation to Proceed	14
9.3	Cost of Preparing a Proposal	14
9.4	No Claims	14
9.5	Restricted Parties	14
9.6	Use or Inclusion of Restricted Parties	15
9.7	Relationship Disclosure	15
9.8	Conflict of Interest and Unfair Advantage	15
9.9	Advanced Ruling	16
9.10	No Representation or Warranty	16
9.11	Use of RFP Documents	16
9.12	FOIPPA (Freedom of Information and Protection of Privacy Act)	17
9.13	Proprietary or Confidential Documents	17
9.14	No Collusion or Solicitation	17
	Attachment A Evaluation Criteria	18
	Attachment B Reference Information	25

Request for Proposals

District of Invermere (the District)
(NAME OF OWNER)

Contract: Fort Point Bridge over CPKC Railway – Rehabilitation
(TITLE OF CONTRACT)

Reference No. _____
(OWNER'S CONTRACT REFERENCE NO.)

1.0 Introduction

1.1 Background and Purpose

This RFP applies to and governs the preparation of Proposals for the Contract listed above. The Contract is generally for the following work:

Rehabilitation of the existing bridge carrying 4 Avenue over Canadian Pacific Kansas City (CPKC) Railway in Invermere, BC.

Work includes the removal and replacement of the existing precast concrete superstructure, deck and barriers as well as repair or replacement of select timber substructure elements.

The replacement superstructure and select timber substructure elements are to be designed, fabricated and installed by the Contractor.
(BRIEF DESCRIPTION OF THE WORK)

1.2 Enquiries – Contract Person

The following person is the “Contact Person” for this RFP:

Name: Justin Patterson
Title: Technologist
Email: engtech@invermere.net

1.3 Submission of Proposals: Closing Time

Proposals must be received at the Delivery Address (either electronically or by hand as applicable) no later than:

2:00pm PST, October 6, 2026 (the “**Closing Time**”).

Late Proposals will not be accepted or considered and will be returned unopened.

1.4 Eligible Parties

☒ Any interested party (each, a “**Proponent**”) may submit a proposal (a “**Proposal**”) in response to this RFP.

- ☐ The Owner previously conducted a Request for Qualification (RFQ) process relating to work, and under the RFQ the following entities were shortlisted. Only these three entities are invited to respond to this RFP. No other entity is invited to participate as a Proponent under this RFP.

1.5 Definitions

In this RFP, unless the context requires otherwise:

“**Addendum**” has the meaning set out in Section 2.6;

“**Claim**” has the meaning set out in Section 9.4(a);

“**Closing Time**” has the meaning set out in Section 1.3;

“**Contact Person**” has the meaning set out in Section 1.2;

“**Contract**” means the contract to be awarded pursuant to this RFP;

“**Contract Documents**” means the Agreement as included with this RFP plus the documents listed in Section 2.2 of the Agreement;

“**Delivery Address**” has the meaning set out in Section 2.1;

“**Evaluation Committee**” has the meaning set out in Section 7.1;

“**FOIPPA**” means the *Freedom of Information and Protection of Privacy Act* of British Columbia; “**Form of Proposal**” has the meaning set out in Section 4.1;

“**On-Line Information Address**” has the meaning set out in Section 3.2;

“**Preferred Proponent**” means the Proponent recommended by the Evaluation Committee under Section 7.6;

“**Proponent**” has the meaning set out in Section 1.4;

“**Proposal**” has the meaning set out in Section 1.4;

“**Proposal Price**” has the meaning set out in Section 6.1;

“**Q&As**” has the meaning set out in Section 2.4(b)(i);

“**Reference Information**” has the meaning set out in Section 2.7;

“**RFP**” means this Request for Proposals;

“**RFP Documents**” has the meaning set out in Section 3.1. and

“**Restricted Party**” has the meaning set out in Section 9.5.

Any words or phrases defined elsewhere in this RFP will have the particular meaning assigned to such words or phrases.

1.6 Interpretation

In this RFP:

- (a) words importing the singular include the plural, and vice versa;
- (b) the word “including” is deemed to be followed by “without limitation”;
- (c) capitalized terms used but not defined in this RFP, but are defined in other RFP Documents, have the meanings assigned to such terms in the applicable RFP Document, unless the context requires otherwise: and
- (d) notwithstanding any other provision in the RFP Documents, no term or condition will be implied into this RFP based on any practice or custom, including any practice or custom in the construction industry.

2.0 Submission Instructions

2.1 Delivery of Proposals

Proposals must be delivered to one of the following addresses (the “**Delivery Address**”):

- (a) if delivered electronically, to:
PDF Format via email to engtech@invermere.net; or
- (b) if delivered by hand, to
District of Invermere, 914 8 Avenue, Invermere BC V0A 1K0

Proposals delivered to any other address, or by any other method (such as fax), will not be considered or accepted.

2.2 Number of Copies If Delivery by Hand

If the Proponent elects to deliver its Proposal by hand then a Proponent should submit either:

- (a) one hard copy;
- (b) one electronic copy (“pdf” on a USB flash drive); or
- (c) both,

at the Proponent’s election, of its Proposal in a sealed envelope clearly marked on the outside with the RFP Title and RFP Number (as shown in Section 1.1).

If a Proponent submits both a hard and an electronic copy of its Proposal, then the Owner may refer to either or both of the electronic and hard copy for the purposes of evaluation, except if for any reason, the electronic copy is in whole or in part unreadable, or if for any reason there is a conflict between the electronic and hard copies, then the hard copy will be deemed to be the correct copy.

2.3 Date and Time of Delivery

The Owner will date and time record all Proposals, amendments or withdrawals delivered under this RFP and the clock used by the Owner for that purpose will be deemed conclusively to be correct as to the date and time of receipt.

2.4 Enquiries and Responses

All enquiries regarding this RFP must be directed to the Contact Person at the address as specified in this RFP, and the following will apply to any enquiry:

- (a) The Owner reserves the right to decline to provide a response to an enquiry, considering fairness to all Proponents and the integrity of this competitive procurement process. (If the Owner elects not to give an answer it will, without compromising fairness to all Proponents and the integrity of this competitive procurement process, use reasonable efforts to provide the reason for not answering);
- (b) subject to Section 2.4(c), any reply from the Contact Person to an enquiry will be posted to the On-Line Information Address as either:
 - (i) a question and answer as part of a question and answer series for this RFP ("**Q&As**"); or
 - (ii) an Addendum;
- (c) a Proponent may request that an enquiry and the response be kept confidential if the Proponent considers the enquiry is commercially confidential to the Proponent, and the following will apply:
 - (i) if the Owner determines that, considering fairness to all Proponents and the integrity of this competitive procurement process, the enquiry and response does not need to be distributed to all Proponents, then the Owner will keep the enquiry and response confidential;
 - (ii) if the Owner determines that, considering fairness to all Proponents and the integrity of this competitive procurement process, any response given must be distributed to all Proponents, then, subject to Section 2.4(d), the Contact Person will permit the enquirer to withdraw the enquiry rather than receive a response; and
- (d) subject to Section 2.4(a) and notwithstanding Section 2.4(c), considering fairness to all Proponents and the integrity of this competitive procurement process, any enquiry and its response may, in the Owner's sole and absolute discretion, be distributed to all Proponents.

Information obtained from any source other than the Contact Person will not form part of this RFP and may not be used or relied on by a Proponent for the purpose of preparing its Proposal.

In preparing a response to any enquiry, the Contact Person may consult with other persons, including other Owner employees or the Owner's consultants and advisors.

2.5 Electronic Transmission

The Owner does not assume any risk, responsibility or liability whatsoever, including in contract or tort (including negligence), to any person that an electronic transmission or communication is received by the Owner in its entirety or within any time limit specified by this RFP.

2.6 Addenda

The Owner may, in its sole and absolute discretion, through the Contact Person;

- (a) amend this RFP at any time by issuing a written addendum (an “**Addendum**”). Written Addenda are the only means of amending or clarifying this RFP, and no other form of communication whether written or oral, including written responses to enquiries or Q&As as provided by Section 2.4, will be included in or in any way amend this RFP. Only the Contact Person is authorized to amend or clarify this RFP by issuing an Addendum. No other employee or agent of the Owner is authorized to amend or clarify this RFP. It is the responsibility of each Proponent to ensure that it has received all issued Addenda; and
- (b) include information that is in the form of a response to an enquiry or a Q&A as part of an Addendum, in which event such information will be considered as part of the Addendum and not Reference Information.

2.7 Reference Information Including Q&As

Any:

- (a) information included in Q&As issued by the Contact Person under Section 2.4(b) which has not been expressly included in an Addendum as provided by Section 2.6(b); and
- (b) additional information made available to Proponents prior to the Closing Time by the Owner or representatives of the Owner (such as, for illustration purposes only, Site information, geotechnical or subsurface reports or record drawings), including the information, if any, included or described in Attachment B to this RFP, which is not expressly included in the Contract Documents

(collectively, “**Reference Information**”) is provided and made available only for the reference and assistance of Proponents who must make their own judgment about its reliability, accuracy, completeness and relevance to the Contract, and nothing will be interpreted as meaning that the Owner or any representative of the Owner gives any guarantee or representation that the Reference Information is reliable, accurate, complete or relevant.

2.8 Revisions Prior to Closing Time

A Proponent may amend or withdraw a delivered Proposal, provided the amendment or withdrawal is received by the Owner at the Delivery Address prior to, but not after, the Closing Time.

2.9 Language

All Proposals shall be in English.

3.0 RFP Documents

3.1 RFP Documents

The “**RFP Documents**” are as follows:

- (a) this Request for Proposals;
- (b) the Form of Proposal, including the schedules listed in Section 2 of the Form of Proposal;
- (c) the Contract Documents;
- (d) issued Addenda, if any;
- (e) issued Reference Information (including Q&As), if any

3.2 Availability of RFP Documents

Subject to Section 9.13, all RFP Documents, including issued Addenda and Reference Information, if any, relating to this RFP will be available at:

BC Bid

(the “**On-Line Information Address**”). It is the sole responsibility of a Proponent to ensure it has received all RFP Documents before submitting a Proposal.

3.3 Completeness of RFP Documents

Proponents are responsible to review the RFP Documents to verify they are complete and should immediately notify the Contact Person, in writing, if the RFP Documents appear to be incomplete or contain any discrepancies, inconsistencies, ambiguities, errors or omissions, or if conditions at the Site differ from those described in the RFP Documents.

4.0 Form of Proposal

4.1 Form of Proposal

Proposals should be submitted on the Form of Proposal as included with this RFP (the “**Form of Proposal**”), which should be completed to provide all the information as requested on the Form of Proposal or as otherwise required by this RFP. The Owner invites Proposals that are responsive to requests for information in the Form of Proposal, and is not inviting lengthy generalized submissions with respect to any issue referred to in the Form of Proposal.

4.2 Proposed Amendments to Commercial Terms

The Contract Documents describe the proposed commercial terms for the final Contract. If any such terms are unacceptable to a Proponent, then the Proponent may include proposed amendments to the commercial terms with its Proposal. If a Proponent elects to include a proposed amendment, then for each proposed amendment the Proponent should also include in its Proposal the rationale and the benefit to the Owner (such as the amount of cost-savings), if any, for the proposed amendment. By submitting a Proposal a Proponent will be deemed to fully accept and agree to all the commercial terms for the final Contract as described by the Contract Documents, except as may be expressly described otherwise in a proposed amendment(s) that is included in the Proponent's Proposal.

4.3 Proposed Amendment of Schedule Dates

The Contract Documents may describe the date for Substantial Performance of the work, and other milestone dates. Except if this RFP expressly provides that the Owner will not accept any variation in the dates, Proponents may provide Proposals that, in addition to, or in substitution for, such specified dates describe other dates, including the rationale and the benefit to the Owner (such as the amount of cost-savings or superior performance), if any, for each date variation.

4.4 Proposed Alternatives to Designs and Specifications

The Contract Documents may include specifications for the performance of the work and may include drawings for the design of the work. Proponents may provide Proposals based on such specifications and drawings or may, in addition to, or in substitution for any element of the specifications or design or both as described in the Contract Documents, propose specification or design alterations, modifications or amendments. A Proponent should clearly identify in its Proposal any proposed specification or design alteration, modification or amendment, including the rationale and the benefit to the Owner (such as the amount of cost-savings or superior performance), if any, for each alteration, modification or amendment. By submitting a Proposal a Proponent will be deemed to fully accept and to agree to fully comply with the specifications and design as described in the Contract Documents, except as may be expressly described otherwise in a proposed amendment(s) that is included in the Proponent's Proposal.

4.5 Signature

A Proponent's Form of Proposal should be signed by a person authorized to sign on behalf of the Proponent and bind the Proponent to statements made in the Proposal and the following will apply:

- (a) if the Proponent is a corporation then the full name of the corporation should be included, together with the name, title and signature of an authorized signatory;
- (b) if the Proponent is a partnership or a joint venture, then the name of the partnership or joint venture and the name of each partner or joint venturer should be included and an authorized signatory of each partner or joint venturer should sign; or
- (c) if a partner or joint venturer is a corporation then such corporation should sign as indicated in Section 4.5(a).

Unsigned Proposals, in the Owner's sole and absolute discretion, may be rejected.

4.6 Numbers and Figures

If the Form of Proposal calls for numbers in both words and figures, then, in the event of a discrepancy, the words will govern.

5.0 Site Conditions, Informational Meetings and Site Visits

5.1 Site Conditions

Proponents, either personally or through a representative, have the responsibility to be knowledgeable of the Site. In submitting a Proposal a Proponent will be deemed to have made allowance for all factors relating to the Site that might affect the performance of the work, that would be apparent to a knowledgeable and experienced contractor from a visual inspection of the Site and a review of available materials and information, including the location of the Site, local conditions related to the work, geotechnical and subsurface conditions, Site drainage, Site access, local weather, availability of labour, equipment and materials and any other relevant matters. (For clarity, except as may be expressly permitted in the Contract Documents, such required inspection will not include subsurface geotechnical investigations.) By submitting a Proposal, a Proponent will be deemed to have undertaken any required inspection and to have taken account of all such factors in the preparation of its Proposal. No additional payments or time extensions shall be claimable or due because of difficulties relating to conditions at the Site or factors as described in this Section 5.1 which were reasonably foreseeable by a contractor qualified to undertake the work that was knowledgeable of, and had inspected, the Site and considered the factors listed in this Section 5.1.

5.2 Informational Meetings and Site Visits

The Owner may, at its election, hold informational meetings or Site visits or both. If the Owner decides to hold an informational meeting or a Site visit, then the Contact Person will post a notice on the On-Line Information Address with details regarding such meeting or visit. Attendance at a meeting or visit will be at the discretion of the Proponents, but Proponents who do not attend will be deemed to have received all of the information made available to attendees.

If the Owner holds a Site visit, then as a condition of entering the Site the Proponent must agree to comply with, and cause all of its representatives, including its directors, officers, employees and agents, and its team members to comply with all Site rules and regulations, as may be established by the Owner.

6.0 Proposal Price

6.1 Proposal Price

The price(s) set out in the completed Schedule of Quantities and Prices (attached to the Form of Proposal) will, applied in accordance with the terms of the Contract Documents, represent the entire cost to the Owner for the complete performance of the work, exclusive only of GST. The aggregate of such prices (based on applicable unit prices, lump sum prices and other forms of pricing as indicated on the Form of Proposal, and including options or alternates, if any, as may be included in the Schedule of Quantities and Prices) (collectively, the “**Proposal Price**”) will be the Proponent’s total price for the complete performance of all the work. The Proposal Price will be deemed to include:

- (a) all costs for labour, equipment and materials included in or required for the completion of the work, including all items which, while not specifically listed, are included in the work specifically or by necessary inference from the Contract Documents; and
- (b) all overhead costs, including head office and on-site overhead costs, and all amounts for the Contractor’s profit.

7.0 Proposal Evaluation

7.1 Evaluation Committee

The evaluation of Proposals to identify a Preferred Proponent will be carried out by a committee of one or more persons appointed by the Owner (the “**Evaluation Committee**”). The Evaluation Committee may be assisted by other persons as the Evaluation Committee in its sole discretion may decide it requires, including technical, financial, legal and other advisors or employees of the Owner.

7.2 Evaluation Criteria

The Evaluation Committee will compare and evaluate the Proposals to identify the Proposal which the Evaluation Committee, in its sole and absolute discretion, judges to be the most advantageous to the Owner by applying the evaluation criteria set out in Attachment A to this RFP.

7.3 Evaluation Process

To assist in evaluation of Proposals, the Evaluation Committee may, in its sole and absolute discretion, but is not required to:

- (a) conduct reference checks and background investigations of the Proponent, and any subcontractors proposed in the Proposal, with internal and/or external sources, and consider and rely on any relevant information received from the references and from any background investigations in the evaluation of Proposals;
- (b) seek clarification or additional information from any, some, or all Proponents with respect to their Proposal, and consider and rely on such supplementary information in the evaluation of a Proposal;
- (c) request interviews/presentations with any, some, or all Proponents to clarify any questions or considerations based on the information included in Proposals, and consider and rely on any supplementary information received from interviews/presentations in the evaluation of Proposals; and
- (d) seek confirmation that the inclusion of any Personal Information about an individual in a Proposal has been consented to by that individual.

7.4 Detailed Evaluations

In conducting an evaluation the Evaluation Committee will not be required to complete a detailed evaluation of all Proposals and may, after completing a preliminary review of all Proposals, identify and drop from any detailed evaluation any Proposal which the Evaluation Committee judges to not be in contention to be selected as the Proposal of the Preferred Proponent when compared to the other Proposals;

7.5 Reservation of Rights

The Owner reserves the right, in its sole and absolute discretion, to:

- (a) at any time, for any reason, reject any or all Proposals and terminate the process under this RFP, and proceed with the work in some other manner, including reissue a request for proposals or undertake another procurement process for the same or similar scope of work;
- (b) evaluate a Proposal that includes one or more alteration, modification or amendment as permitted by Sections 4.2, 4.3 and 4.4 by applying the evaluation criteria as set out in Section 7.2 to identify the alteration, modification or amendment that the Owner determines is most advantageous to itself, and for the purposes of comparison to other Proponent's Proposals, incorporate the identified advantageous alteration(s), modification(s) or amendment(s) into the Proposal together with the corresponding adjustment, if any, to the Proposal Price; and
- (c) accept the Proposal (including a Proposal modified as described in Section 7.5(b)) which, applying the evaluation criteria as set out in Section 7.2, the Owner determines is most advantageous to itself, and, without limitation, select a Proposal which does not have the lowest Proposal Price;
- (d) award separate Contracts for portions of the work, including with respect to one or more payment items; and
- (e) if only one Proposal is received, reject that Proposal and terminate the process under this RFP, and proceed with the work in some other manner, including entering into negotiations with that Proponent with respect to any matter, including price.

7.6 Recommendation of Preferred Proponent

After completion of the evaluation as set out in Section 7.0, the Evaluation Committee will recommend a Proponent to be selected by the Owner as the Preferred Proponent.

7.7 All Proposals Over Budget

Subject to any express provision of this RFP, if the Proposal Prices for all Proposals exceed the amount that the Owner has budgeted for the work, then the Owner may, at its election and in its sole and absolute discretion:

- (a) seek approval for an increase in the budget; or
- (b) terminate the process under this RFP and;
 - (i) enter into negotiations with the Proponent that but for its over-budget Proposal Price would have been recommended as the Preferred Proponent under Section 7.6 for the purpose of identifying scope or other amendments to the Contract Documents to achieve the budget, and if agreement is reached award a Contract to that Proponent; and
 - (ii) if for any reason agreement is not reached on the terms of the Contract with the Proponent identified under Section 7.7(b)(i), then enter into negotiations with the next most highly evaluated Proponent on the same basis as described in Section 7.7(b)(i), and continue in that manner until an agreement is reached with a Proponent on scope or other amendments to the Contract Documents required to achieve the budget.

8.0 Selection and Debriefing

8.1 Notice to Preferred Proponent

If the Owner accepts the recommendation of the Evaluation Committee under Section 7.6 for the Preferred Proponent the Owner will issue a written notice to such Proponent stating that it is the Preferred Proponent. The Owner will not select a Proponent as Preferred Proponent that is not recommended by the Evaluation Committee under Section 7.6.

8.2 Negotiations of Contract and Award

The Owner may enter into negotiations with the Preferred Proponent after completion of the evaluation as set out in Section 7.0 and the selection of the Preferred Proponent under Section 8.1. The Preferred Proponent will use good faith commercial efforts to negotiate and enter into a Contract with the Owner.

During negotiations the Owner may:

- (a) negotiate any aspect of a Preferred Proponent's Proposal, including reductions in the prices as set out in the Preferred Proponent's Proposal;
- (b) negotiate the incorporation of the Preferred Proponent's suggested amendments to the Contract as may be included in its Proposal;
- (c) negotiate terms and conditions different than those contained in the RFP Documents, the Proposal or both; and
- (d) if at any time the Owner reasonably forms the opinion that a mutually acceptable Contract is not likely to be reached within a reasonable time, give the Preferred Proponent written notice to terminate discussions, in which event the Owner may then either open discussions with another Proponent or terminate this RFP in whole or in part and obtain the work in some other manner, or not at all.

8.3 Notification to Unsuccessful Proponents

After entering into the Contract with the Preferred Proponent, the Owner will notify unsuccessful Proponents that the Contract has been concluded by sending a written notice to the representatives of the unsuccessful Proponents.

8.4 Debriefing

After entering into the Contract with the Preferred Proponent, the Owner will conduct a debriefing, upon request, of an unsuccessful Proponent to discuss the relative strengths and weaknesses of that Proponent's Proposal, but the Owner will not disclose or discuss any confidential information of any other Proponent.

9.0 Miscellaneous Conditions

9.1 Ownership and Use of Proposals

Upon delivery to the Owner, a Proposal will become the property of the Owner and will not be returned to the Proponents except as the Owner, in its sole and absolute discretion, may determine. The Owner may make use of the contents of a Proposal submitted by an unsuccessful Proponent with the written approval of the unsuccessful Proponent, including payment of reasonable compensation as agreed to by the Owner and the unsuccessful Proponent.

9.2 No Obligation to Proceed

Nothing in this RFP will be interpreted as committing the Owner in any way to award a Contract.

9.3 Cost of Preparing a Proposal

Each Proponent is solely responsible for its own costs and expenses incurred in preparing and submitting its Proposal and for participating in this competitive procurement process, including for any meetings, due diligence, negotiations or discussions with the Owner or the Owner's representatives and consultants, relating to or arising from this RFP.

9.4 No Claims

Each Proponent, by submitting a Proposal, irrevocably:

- (a) agrees that it will not bring any claim, demand, action, cause of action, suit or proceeding, whether arising in contract, tort (including negligence) or otherwise (a "**Claim**") against the Owner or any of its employees, directors, officers, advisors or representatives, or any one of them, for any costs, damages or other compensation in excess of an amount equivalent to the actual and reasonable costs directly and demonstrably incurred by the Proponent in preparing its Proposal for any matter relating directly or indirectly to this RFP (including in the event that the Owner rejects or disqualifies or for any other reason fails to accept a Proposal, accepts a non-compliant Proposal or otherwise breaches, or fundamentally breaches, the terms of this RFP or any duties arising from this RFP), except that this Section 9.4(a) will not apply if the Owner or its representatives administers this RFP maliciously with deliberate disregard for the legal rights of a Proponent as provided by this RFP; and
- (b) waives any Claim against the Owner and its employees, directors, officers, advisors or representatives for any compensation of whatsoever nature or kind, including for loss of anticipated profits, loss of opportunity, indirect, incidental or consequential damages or losses if no contract is entered into for the work between the Proponent and the Owner for any reason whatsoever, including in the event that the Owner rejects or disqualifies or for any other reason fails to accept a Proposal, accepts a non-compliant Proposal or otherwise breaches, or fundamentally breaches, the terms of this RFP or any duties arising from this RFP.

9.5 Restricted Parties

A "**Restricted Party**" is a person, entity, firm or organization who the Owner has identified as being restricted from participating as a member of a Proponent team because such person, entity, firm or organization:

- (a) is participating or is involved in the RFP process or in the design, planning or implementation of the work or who has so participated or has been so involved; and
- (b) may provide a material unfair advantage or material confidential information to a Proponent team that it joined that is not, or would not reasonably be expected to be, available to other Proponents.

As of the date of this RFP, the Owner has identified the following persons, entities, firms or organizations as Restricted Parties:

RJC Engineers

The Restricted Parties are restricted from participating as a member of a Proponent's team. The above may not be an exhaustive list of Restricted Parties. Additional persons, entities, firms or organizations may be added to the list at any stage of this RFP process by issuance by the Owner of an Addendum, as the Owner becomes aware of additional persons, entities, firms or organizations who should be restricted.

9.6 Use or Inclusion of Restricted Parties

No Proponent nor any member of the Proponent's team may use, consult or seek advice from any Restricted Party or include any Restricted Party in the Proponent's team. The Owner may, in its sole and absolute discretion, disqualify a Proponent or impose such conditions on the Proponent's continued participation in this RFP process as the Owner may consider to be appropriate, if the Proponent uses or includes a Restricted Party in the Proponent's team:

- (a) to advise or otherwise assist the Proponent in connection with the Proponent's participation in this RFP process, including in connection with the Proponent's preparation of its Proposal; or
- (b) as an employee, advisor or consultant to the Proponent or a member of the Proponent's team.

9.7 Relationship Disclosure

A Proponent should complete and submit a "Relationship Disclosure Statement: Conflict of Interest and Unfair Advantage" (attached to the Form of Proposal) that fully discloses the following relationships:

- (a) all members of the Proponent's team who were employees of the Owner at any time during the two year period preceding the date of the disclosure; and
- (b) all known relationships the Proponent and each member of the Proponent's team has, or has had, with the Owner, a Restricted Party (if any are listed in this RFP), or any other person providing advice or services to the Owner with respect to this RFP or the design, planning or implementation of the Contract or any other matter that gives rise, or might give rise, to:
 - (i) a conflict of interest; or
 - (ii) an unfair advantage,

with the knowledge and intention that the Owner may rely on any such disclosure.

At the time of such disclosure, the Proponent should include sufficient information and documentation to demonstrate that appropriate measures have been, or will be, implemented to mitigate, minimize or eliminate the actual, perceived or potential conflict of interest or unfair advantage, as applicable. The Proponent will provide such additional information and documentation and implement such additional measures as the Owner may require in its discretion in connection with the Owner's consideration of the disclosed relationship and proposed measures.

If, at any time before award of the Contract, the Proponent becomes aware of any such relationship that was not disclosed in its Proposal, then the Proponent will, by written notice addressed to the Contact Person, promptly disclose such relationship.

9.8 Conflict of Interest and Unfair Advantage

The Owner reserves the right in its absolute and sole discretion to:

- (a) disqualify any Proponent that in the Owner's opinion has a conflict of interest or an unfair advantage (including access to any confidential information not available to all Proponents), whether actual, perceived, or likely to arise in the future; and
- (b) may permit a Proponent to continue in this competitive procurement process and impose such conditions as the Owner may consider to be in the public interest or otherwise required by the Owner with respect to an actual, potential or perceived conflict of interest.

9.9 Advanced Ruling

A Proponent that has any concerns regarding:

- (a) whether a current or prospective employee, advisor or member of the Proponent's team is or may be a Restricted Party (if such concept is included in this RFP); or
- (b) whether the Proponent or any member of the Proponent's team has a relationship that may give rise to a conflict of interest or unfair advantage,

is encouraged to request an advance ruling on the matter, by submitting to the Contact Person, not less than ten days prior to the Closing Time:

- (c) a description of the relevant relationship; and
- (d) the measures that have been, or will be, implemented to mitigate, minimize or eliminate any actual, perceived or potential conflict of interest or unfair advantage.

Subject to the terms of this RFP, all requests for advance rulings will be treated in confidence.

9.10 No Representation or Warranty

Each Proponent will investigate and satisfy itself of every condition that affects the preparation of its Proposal. Each Proponent acknowledges and represents that its investigations have been based on its own examination, knowledge, information and judgment, and not upon any statement, representation or information made or given by the Owner, the Contact Person or any advisor to the Owner, other than the information contained in this RFP. Submission of a Proposal is deemed to be conclusive evidence that the Proponent accepts the terms of this Section 9.10. The Owner accepts no responsibility for any Proponent lacking any information.

9.11 Use of RFP Documents

No person may, without the express prior written consent of the Owner, use, copy or disclose any information contained in the RFP Documents for any purpose other than for the purpose of preparing a Proposal.

9.12 FOIPPA (Freedom of Information and Protection of Privacy Act)

Proponents should be aware that the Owner is a “public body” defined by and subject to FOIPPA. Subject to FOIPPA and this RFP, the Owner will endeavour to keep all Proposals (and their contents) confidential.

Each Proponent is responsible for compliance with laws applicable to the collection, use and disclosure of Personal Information, including FOIPPA. If a Proponent includes Personal Information (including resumes) in a Proposal, then by submitting a Proposal a Proponent will be deemed to represent to the Owner that the Proponent has obtained written consent from the applicable individual(s), including the consent to the indirect collection of Personal Information by the Owner, and that the Personal Information may be forwarded to the Owner for the purposes of responding to this RFP and may be used by the Owner for the purposes set out in this RFP. The Owner reserves the right to require proof of such consent and to reject a Proposal if such consent is not provided as required by applicable law.

9.13 Proprietary or Confidential Documents

The Owner may elect to restrict access to RFP Documents which are proprietary or confidential to the Owner by not posting such RFP Documents to the On-Line Information Address and making such RFP Documents available in some other manner. As a condition of access the Owner may require a Proponent to sign a non-disclosure agreement in a form provided by the Owner.

9.14 No Collusion or Solicitation

By submitting a Proposal, the Proponent, for and on behalf of the Proponent and the Proponent's team, represents and confirms to the Owner that the Proponent has prepared its Proposal without any connection, knowledge, comparison of figures, arrangement or collusion with any other person or persons submitting or participating in the preparation of a Proposal.

Each Proponent may not make any representations, solicitations or other communications to any elected or appointed official, director, officer or employee of the Owner or to a member of the Evaluation Committee with respect to its Proposal, either before or after submission of its Proposal, except as expressly provided in this RFP. If any representative of a Proponent communicates improperly contrary to this paragraph, then the Owner may, in its sole and absolute discretion, regardless of the nature of the communication, reject the Proposal submitted by the Proponent.

ATTACHMENT A EVALUATION CRITERIA

The District will conduct the evaluation of Proposals and selection of a Top Ranked Proponent in accordance with the process detailed in this Section. Evaluation of Proposals will be by an evaluation committee which may include the District's employees, the Purchasing Department, and Engineering Consultant. The District's intent is to enter into a Contract with the Top Ranked Proponent who has met all mandatory criteria and minimum scores (if any) from this evaluation process.

.1 Mandatory Criteria

Proposals not clearly demonstrating that they meet the following mandatory criteria will be excluded from further consideration in the evaluation process.

Mandatory Criteria	
1	The Proposal must be received by the Closing Date, in accordance with this RFP
2	The submission must include the following documentation: • Bid Security • Pre-qualification letter from Surety

.2 Scored Criteria

Proposals that meet all the Mandatory Criteria will be further assessed against the following scored criteria. The Contract bid price will not be known by the evaluators while conducting the non price criteria evaluation portion of this process.

	Scored Criteria	Weighting (Points)	Minimum Points
1.	Total "Contract Price"	40	N/A
2.	Suitability of Schedule and Methodology	20	8
3.	Suitability of Proponents Corporate Comparable Work Experience, Key Personnel and Subcontractors	20	8
4.	Suitability of submitted Bridge Structure	20	8
	Total	100	N/A

Proposals that do not meet the minimum score within a scored criterion will not be evaluated further.

It is anticipated that the Proponent that is evaluated to have the highest aggregate score will be selected as the Preferred Proponent, but the Owner reserves the right for the Evaluation Committee to decline to recommend any Proponent which the Evaluation Committee, acting reasonably and fairly, determines would, if selected, result in greater overall cost or greater material risk to the Owner as compared to another Proponent, considering any relevant factors, including a Proponent's financial resources, safety record, claims and litigation history, work history and environmental record.

.3 Scoring Method

The following method will be used to score the scored criteria:

.3.1 Total Contract Price

Total Contract Price will be scored relative to other Proponents' Total Contract Prices using the following formula:

$$\text{Score} = \{1 - 2 \times [(\text{Proponent's Total 'Contract Price'} - \text{Lowest Total 'Contract Price'}) / \text{Lowest Total 'Contract Price'}]\} \times \text{Weighting}$$

Note: Total Contract Price will be the sum of both Base Work and any Optional Work, as shown in the Form of Proposal – Schedule 2 – Schedule of Quantities & Prices submission.

Note: For example, if the Proponent's Total is 10% higher than the Lowest Total, then the Proponent would receive $100\% - 2(10\%) = 80\%$ of the available score for Contract Price. If the Proponent's Total is more than 50% higher than the Lowest, the Proponent would receive 0 points.

.3.2 Non-Price Criteria:

All other criterion will be assessed points by each evaluator according to the scoring rationale provided for each criterion and will be out of 10, see the legend inserted below. Those points will then be multiplied by the Weighting factor to provide a weighted Score.

Scoring Legend	Points awarded out of 10 Maximum
Low Score – e.g. does not meet expectations, incomplete, poor detail	0 to 3
Medium Score – e.g. partially meets expectations, mostly complete, adequate detail	4 to 7
High Score – e.g. exceeds expectations, strongly fits desired attributes, high level of detail	8 to 10

.3.2.1 Suitability of Schedule and Methodology

The details requested in this section should be submitted in your Proposal and labelled as “Schedule & Methodology”.

As detailed in Section 2 - Scored Criteria, these details will form part of the evaluation.

Evaluation Factors:

Factors to be considered during the evaluation in assessing suitability of the schedule and methodology will include:

- Proposals which closely align with the Milestone dates listed in this RFP shall score higher. Proposals may also score higher based on the completeness of the listing of required events; the effectiveness of the proposed event sequencing; and the impact the proposed schedule may have on minimizing disruption / inconvenience to the community.
- Proponents that demonstrate that their methodologies and approaches in meeting the needs of their clients are robust and achieve high customer satisfaction will score higher.

Provide:

a. Project Schedule

Provide your proposed schedule for the Work, on a separate sheet in a Gantt chart format, which details key work phases, sequencing and dates from commencement of the design work, review and approval process, fabrication, construction, Substantial Performance and Total Performance.

The proposed schedule should meet the District's schedule requirements as detailed in the Form of Proposal and Schedule 7.

b. Proposed Methodology

Provide, on a separate sheet in a format of your choice, full details of your methodology for the work, which fully addresses the following:

- Provide a brief description of the Contractor Quality Plan that the Proponent will follow in performing the work
- Provide a brief description of the Safety Management Plan that the Proponent will follow in performing the work
- Design management
- Review and approvals
- Construction methodology including off-site fabrication, on-site construction, coordination with CPKC
- Site access, access management and traffic control
- Mitigation of impacts on community, local-residents and businesses
- Workplace safety
- Environmental protection

.3.2.2 Suitability of Proponents Corporate Comparable Work Experience, Key Personnel and Subcontractors

The details requested in this Section should be submitted in your Proposal and labelled as “Corporate Comparable Work Experience, Key Personnel and Subcontractors”.

As detailed in Section 2 - Scored Criteria, these details will form part of the evaluation.

Evaluation Factors:

Factors to be considered during the evaluation in assessing Proponent’s experience will include:

- Proponents can score higher by providing examples of corporate past experience on projects of similar scope and size; a Proponent with more years of relevant experience can score higher.
- Proponents can score higher by proposing a Superintendent with experience on projects of similar scope and size; a Superintendent with more years of relevant experience can score higher.
- Feedback from Client references, if the District chooses to contact references. The District may also contact Client references known to the District, including District staff, but not provided by the Proponent. Proponents which have more positive feedback from references can score higher in this section.
- Applicability of proposed Subcontractors to the proposed parts of the Work / project; number of years of experience of the Subcontractors; how frequently the subcontractor has worked with the Proponent and the District’s experience with named Subcontractors

Provide:

Three (3) to five (5) completed projects that are similar in scope and size to the scope of work listed in this RFP. Additionally, list all subcontractors that will be utilized during the project.

Provide a project information sheet for each project. Suggested maximum length of 2 pages per project. Include the following particulars:

- Project Title
- Location
- Brief description of project scope
- Construction Cost
- List of subcontractors
- Relevant photos or drawings

Provide a resume for each of the Project Manager and Superintendent. Maximum length of 2 pages per person. Include the following particulars:

- Complete employment history in the industry
- Training and certifications
- List of most recent previous projects of similar scope and/or size, specific role in those projects and client reference information (or reference to projects listed in corporate experience).

.3.2.3 Suitability of Submitted Bridge Structure

The details requested in this section should be submitted in your Proposal and labelled as “Proposed Bridge Structure”.

As detailed in Section 2 - Scored Criteria, these details will form part of the evaluation.

Evaluation Factors:

Factors to be considered during the evaluation in assessing the proposed bridge structure will include:

- Preference will be given to proposals that provide a bridge type in full compliance with the Contract Documents.
- Proponents may propose steel or timber bridge superstructure. Concrete and aluminum superstructures will not be accepted. Any proposed structure is to meet the requirements of the sections of the Contract Documents that are applicable to the proposed structure type.
- All proposed structures must meet the geometry criteria shown in the Contract Drawings, including (but not limited to)
 - The bridge is to provide a minimum clear width of 8.5m between inside face of barriers.
 - The minimum clearance to the surveyed top of rail must be as shown in the contract drawings. This clearance is a requirement for CPKC approval of the crossing. Any proposed bridge that does not meet this clearance criteria may be disqualified.
 - The location of the bridge abutments and piers are fixed existing conditions and may not be moved. Any proposed bridge that incorporates different pier locations other than that shown on the contract drawings will be disqualified.
 - The bridge must meet the criteria of the BC MoTI BSPM Vol 1 Supplement to CHBDC S6:19.
 - All approach roadworks and approach barriers must be as shown in the Contract Documents.
- The suitability of the proposed structure will be reviewed by the Owner and Consultant. The proposal will be reviewed and assigned an overall score out of 20, based on the following criteria
 - Durability, maintenance and projected life cycle expenditure
 - Compatibility with existing structure to remain
 - Constructability and disruption
 - Geometry and accessibility
 - Fabrication and construction quality assurance
 - User experience

Provide:

Each proponent shall provide a 3-5 page document that presents the proposed structure configuration. This document is to be in pdf format and include the following:

- A general arrangement drawing illustrating the proposed bridge structure. The general arrangement drawing must include a plan, elevation and section view and show the following:
 - Span arrangement and articulation
 - Deck width
 - Primary structural members
 - Deck, pavement and barrier
 - Materials and coating systems
 - Watermain support location
 - Vertical clearance from the top of rail to the soffit
 - Design loads.
- A list of applicable design codes and standards
- Design life and maintenance recommendations

.4 Mandatory Criteria

.4.1 Bid Security

The Bidder should submit with its bid a bid bond in a form acceptable to the Owner, or in lieu of a bid bond, a Bidder may submit a certified cheque or an irrevocable letter of credit in favor of the Owner equal to 10% of the Bid Price as a guarantee that, if awarded the Contract for the Work, the Bidder will execute a Contract and submit the Performance Bond and the Labour and Materials Payment Bond.

The Bidder should submit with its bid an electronic bid bond, complete with digital signatures and digital seals, and a Consent of Surety in a form acceptable to the Owner through the Online Bidding System, equal to 10% of the Bid Price as a guarantee that, if awarded the Contract for the Work, the Bidder will execute a Contract and submit the Performance Bond and the Labour and Materials Payment Bond.

The Bid Deposit of the unsuccessful Bidders will be returned as soon as possible after the Contract has been duly executed by the Successful Bidder.

The Owner will not pay any interest on money furnished as security.

The bid bond shall be issued by a Surety Company licensed in the Province of British Columbia and satisfactory to the Owner.

.4.2 Pre-qualification letter from Surety

The details requested in this section should be submitted in your Proposal and labelled as "Pre-qualification Letter from Surety".

Proponents to this RFP shall have submitted a Pre-qualification Letter issued by a surety licensed to carry on the business of suretyship in the Province of British Columbia, and in a form acceptable to the District.

Upon execution of the Contract, the Contractor shall deliver to the District a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the "Contract Price", covering the performance of the Work, including the Contractor's obligations during the Maintenance Period, issued by a surety licensed to carry on the business of suretyship in the Province of British Columbia, and in a form acceptable to the District.

Evaluation Factors:

This criterion shall only be rated as Pass/ Fail.

Provide:

Each proponent shall submit a Bid bond in a form acceptable to the Owner.

Each proponent shall provide a file upload of a Pre-qualification Letter issued by a Surety licensed to carry on the business of suretyship in the Province of British Columbia.

**ATTACHMENT B
REFERENCE INFORMATION**

Drawings:

Dwg. No.	Title	Status
	None	

Reports:

Report Title	Author	Date
Fort Point Bridge over CPKC Railway Line – Condition State Assessment – Level 2 Inspection Report.	Wood Research and Development	May 11, 2026
Invermere 4 th Avenue Bridge over CPR 2022 Condition Assessment	RJC Engineers	November 9, 2022
Invermere 4 th Avenue Bridge over CPR 2025 Condition Assessment	RJC Engineers	May 12, 2025
CPR Minimum Safety Requirements for Contractors Working on CP Property in Canada	Canadian Pacific Kansas City Railway	January 20, 2023
CPR Operational Constraint for Work On, Above or Below Railway Right of Way	Canadian Pacific Kansas City Railway	May 1, 2009
Hazardous Material Inspection Report	First Phase Consulting	August 26, 2026
Hazardous Material Risk Assessment	First Phase Consulting	August 26, 2026
Geotechnical Site Investigation	Groundtech Engineering	January 8, 2024

CCDC 2 STIPULATED PRICE CONTRACT

FORM OF PROPOSAL

Fort Point Bridge over CPKC Railway – Rehabilitation

RFP #
(RFP Title and RFP Number)

To: District of Invermere, 914 8 Avenue, Invermere BC V0A 1K0
[Owner's name and address]

Capitalized terms used but not defined in this Form of Proposal have the meanings assigned to such terms in the Request for Proposals applicable to this Form of Proposal (the “RFP”), unless the context requires otherwise.

1.0 PROPONENT INFORMATION

This Proposal is submitted by:

Legal Name of Proponent (the “Proponent”):	
Legal Structure of Proponent (if not incorporated):	
Date and Place of Formation (or incorporation):	
Address:	
Name of Representative:	
Representative's Telephone Number:	
Representative's Email Address:	
GST Registration Number (if no GST registration number is provided, the Proponent will be considered as not registered for GST):	
WorksafeBC Registration Number (if coverage for the Proponent's workers is provided by an insurance policy rather than under the <i>Workers Compensation Act</i> (British Columbia), attach particulars of such policy to this Form of Proposal):	

2.0 RFP DOCUMENTS

The RFP Documents include the following documents attached to this Form of Proposal:

<u>Schedule Title</u>	<u>Schedule Number</u>
RFP Submission Requirements	1
Schedule of Quantities and Prices	2
Proponent's References	3
Subcontractors	4
Proposed Amendments to Commercial Terms	5
Alternatives	6
Baseline Construction Schedule	7
Relationship Disclosure Statement: Conflict of Interest and Unfair Advantage	8

3.0 PROPONENT'S DECLARATIONS

The Proponent declares and confirms it:

- (a) received, has examined and understands the RFP Documents, including any issued Addenda;
- (b) agrees to all terms and conditions of the RFP;
- (c) has full knowledge of the Place of the Work the Work required to be performed by it in accordance with the Contract Documents;
- (d) complied with the RFP;
- (e) based its Proposal Price on the lump sum items and quantities set out in the Schedule of Quantities and Prices, if any, and understands that actual quantities may vary; and
- (f) completed and includes with this Proposal all documents listed in Section 2 of this Form of Proposal.

4.0 Submittals

We enclose the following with our Bid:

- (a) Our Bid Security in the amount of ten percent (10%) of the Total Contract Price and Consent of Surety to provide Bonds.
- (b) A complete list of Subcontractors we propose to use for this Contract, and the sections of the Work to be done by each of them.
- (c) Resume of personnel we propose to use in the capacity of Superintendent and Project Manager.
- (d) Project schedule in conformance with Schedule 9. We understand that Contract time is of the essence.

5.0 Subcontractors

- (a) We reserve the right to substitute another subcontractor in the event that a subcontractor should withdraw its bid or become bankrupt. All subcontractor substitutions are subject to the Owner's approval.
- (b) Any such substitution, in order to be considered for approval, is contingent on the submission of conclusive evidence of withdrawal, bankruptcy, or unsatisfactory performance.
- (c) We are responsible for all costs incurred as a result of substituting one subcontractor for another.

6.0 Acceptance

- (a) This Bid is open to acceptance for a period of 45 days from the date of bid closing and is promised in consideration of the attached Bid Security. Failure to enter into a contract after contract award shall result in forfeiture up to the amount of the Bid Security.
- (b) We agree to execute a contract on the Standard Construction Document CCDC 2 - 2020, as amended by Supplementary General Conditions, the Specifications, and the Drawings, within seven days of written notification of contract award.
- (c) Submission of this Bid implies acceptance of the existing conditions at the site.

- (d) We understand that the lowest or any Bid will not necessarily be accepted, and that selected items may be deleted from the Project as represented in the Bid Form. The Owner may also elect not to proceed with the Project.
- (e) The Owner reserves the right to waive minor defects or irregularities in the bid.

4.0 PROPONENT'S OFFER

The Proponent offers to perform and complete all of the work and provide all the labour, equipment and material all as set out in the Contract Documents, in strict compliance with the Contract Documents and for the Proposal Price, subject to the provisions of the Proponent's Proposal. This Proposal is executed by the undersigned as of the date noted below.

_____*
Authorized Signatory

Name and Title of Authorized Signatory

_____*
Authorized Signatory

Name and Title of Authorized Signatory

Date

Corporate Seal

SCHEDULE 1 – RFP SUBMISSION REQUIREMENTS

Refer to Mandatory Criteria and Scored Criteria in the Request for Proposal.

SCHEDULE 2 – SCHEDULE OF QUANTITIES AND PRICES

1. All prices unless expressly stated otherwise:
 - (a) will be deemed to be in Canadian dollars (and if any price is expressed in any other currency, then for the purposes of evaluation the Owner will convert such price to the Canadian dollar equivalent, calculated as of the Closing Time); and
 - (b) will be deemed to include all applicable duties and all costs of performing the work and all applicable taxes, except only GST.
2. The abbreviations in the Schedule of Quantities and Prices are defined as follows:

LS	lump sum
PS	provisional sum
m	linear metre
—	—
—	—
3. The Owner reserves the right to delete the requirement for bonds under the Contract. In such case, the Proposal Price will be reduced by the price for such bonds as entered in the Schedule of Quantities and Prices. If no price is entered for such bonds, then, pursuant to Section 7.3(b) of the RFP, and notwithstanding paragraph 4 of this Schedule 2, the Owner may request the Proponent to clarify the price for such bonds that was included in the Proposal Price.
4. Where the Proponent does not enter a price for a payment item in the Schedule of Quantities and Prices, then that payment item shall be deemed to have been included in the other prices the Proponent entered in the Schedule of Quantities and Prices and no separate payment will be owing for that payment item.
5. If there are any discrepancies in the Schedule of Quantities and Prices between the unit prices (if any) and the extended totals, then the unit prices will be deemed to be correct, and corresponding corrections will be made to the extended totals and the Proposal Price as may be required. If an extended total is given but the unit price has been omitted, then the corresponding unit price will be calculated from the extended total and the estimated quantity, and inserted. If there is a discrepancy between the aggregate of prices in the Schedule of Quantities and Prices and the Proposal Price, then the aggregate of prices will be deemed to be correct and the Proposal Price adjusted accordingly.
6. Terms of Payment are provided in Part 5 – General Conditions (CCDC 2).
7. Proponents should not submit unbalanced Proposal prices.
8. Lump Sum Prices include the Contractor's labour, material, equipment, material costs, overhead and profit, and all taxes and duties, and shall represent the cost to the Owner for such charges (does not include GST).
9. Unit price item estimated total prices are included in the Contract Price.
10. Unit quantities are estimated. Contract Price to be reconciled using actual quantities measured and agreed upon by the Contractor and the Consultant and unit rates for Unit Price items.

Summary Sheet

Contractor: _____

<i>Division</i>	<i>Title</i>	<i>Amount</i>
Div 01	General Requirements	\$
Div 03	Concrete	\$
Div 06	Wood	\$
Div 32	Roads and Site Improvement	\$
Div 33	Utilities	\$
	Sub-Total	\$
BONDING (provide separate price for bonding (Schedule 2 Para 3))		
	Performance Bond	\$
	Labour and Materials Bond	\$
	Contract Price (Sub Total plus Bonding)	\$
	GST	\$
	Aggregate Total	\$

Schedule of Quantities and Prices

Contractor: _____

Item	Item Description	Unit	Quantity	Unit Price	Extended Amount
Division 1 - General Requirements					
1.1	Mobilization and Demobilization	Lump Sum	1		
1.2	Environmental Protection	Lump Sum	1		
1.3	Delegated Design and Approvals	Lump Sum	1		
1.4	Construction of Delegated Design items	Lump Sum	1		
1.5	Project Record Documents	Lump Sum	1		
1.6	Coordination with CPKC	Lump Sum	1		
1.7	Demolition and Disposal of Existing Bridge	Lump Sum	1		
Division 01 Subtotal					
Division 3 - Concrete					
3.1	Concrete Reinforcement	Lump Sum	1		
3.2	Cast-In-Place Concrete	Lump Sum	1		
3.3	Silane Sealer	Lump Sum	1		
Division 03 Subtotal					
Division 6 - Wood					
6.1	Rehabilitation of Wood Substructure - Sills	Each	4		
6.2	Rehabilitation of Wood Substructure - Pier Shaft	Each	4		
6.3	Rehabilitation of Wood Substructure - Brace	Each	10		
Division 06 Subtotal					
Division 32 - Roads and Site Improvement					
32.1	Approach Road Paving and Tie Ins	Lump Sum	1		
32.2	Approach Rails	Lump Sum	1		
Division 32 Subtotal					
Division 33 - Utilities					
33.1	Watermain – Disconnection and Disposal	Lump Sum	1		
33.2	Watermain – New	Lump Sum	1		
Division 33 Subtotal					

Schedule of Prices – Optional Work (per GC 6.7)

Contractor: _____

The District is requesting pricing for Optional Work items that may be included in the Agreement in accordance with Clause 6.7 of the General Conditions, at the sole discretion of the District. The Proponent shall provide the adjustment to the Contract Price for the work items described below:

Optional Work Item	Description
OW1	Complete removal and replacement of all wood substructure and bracing elements as shown in Detail 6/S103. Contractor is responsible for delegated design of replacement substructure. Delete rehabilitation of wood substructure for Items 6.1, 6.2, 6.3 in the Schedule of Quantities.

Adjustment to Contract Price

Item	Item Description	Unit	Quantity	Unit Price	Extended Amount
OW1.1	Complete removal and replacement of all timber substructure and bracing elements. Delegated design of replacement substructure.	Lump Sum	1		
OW1.2	Delete Item 6.1	Lump Sum	1		
OW1.3	Delete Item 6.2	Lump Sum	1		
OW1.4	Delete Item 6.3	Lump Sum	1		
Optional Work - Subtotal					

The Contractor shall identify the impact to their schedule that would apply if Optional Work Items are incorporated into the Agreement:

Optional Work Item	Schedule Impact
OW1	

Note:

Proponents are advised that Price of Optional Work Items will not be included in scoring for Total Contract Price described in Section 3.1 of Attachment A to the RFP.

SCHEDULE 3 – PROPONENT’S REFERENCES

The Proponent should list at least three recent customer references where the Proponent has provided similar work to the work required by the District as described in the RFP. Include the name of the customer, a key contact person, a telephone number for that key contact person, and a brief description of the work provided to each of these customers. The Proponent agrees that the Owner may contact any reference. The Proponent should complete and provide a separate table (using the table below as a guide) for each of its references.

REFERENCE 1	Client Name	
	Address (City and Country)	
	Contact Name	
	Title of Contact	
	Telephone No.	
	Email Address	
	Length of Relationship	
	Type of work Provided to this Client	
	Original Contract Value	
	Final Contract Value	
	REFERENCE 2	Client Name
Address (City and Country)		
Contact Name		
Title of Contact		
Telephone No.		
Email Address		
Length of Relationship		
Type of work Provided to this Client		
Original Contract Value		
Final Contract Value		
REFERENCE 3		Client Name
	Address (City and Country)	
	Contact Name	
	Title of Contact	
	Telephone No.	
	Email Address	
	Length of Relationship	
	Type of work Provided to this Client	
	Original Contract Value	
	Final Contract Value	

SCHEDULE 4 – SUBCONTRACTORS

The Proponent should identify any scope of work that will be subcontracted and complete and provide a separate table (using the table below as a guide) for each of its subcontractors.

The Proponent agrees that the Owner may contact any proposed subcontractor and agrees, for and on behalf of any proposed subcontractor, that the Owner may contact any reference.

Subcontracted Scope		
Subcontractor		
Contact (name, title, email, telephone no.)		
Approximate Percent of the work to be Subcontracted		
The Subcontractor's Relevant Experience (identify at least three similar projects within the last five years, including the client)	1. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	2. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	
	3. Project Name:	
	Client:	
	Nature of work:	
	Value:	
	Client Contact:	

SCHEDULE 5 – PROPOSED AMENDMENTS TO COMMERCIAL TERMS

The Proponent should list below any proposed amendments to the commercial terms for the final Contract as invited under Section 4.2 of the RFP (include the applicable section or GC reference and the rationale and the benefit to the Owner such as the amount of cost-savings), if any, for each proposed amendment). **Except as may be specifically listed below, the Proponent will be deemed to fully accept all the commercial terms for the final Contract as described by the Contract Documents.**

SECTION/GC	PROPOSED AMENDMENT	RATIONALE AND BENEFIT

SCHEDULE 6 – ALTERNATIVES

The Proponent should list below any proposed alternatives to the specifications or design or both as invited under Section 4.4 of the RFP (include the applicable specification or drawing reference and the rationale and the benefit to the Owner (such as the amount of cost-savings or superior performance), if any, for each proposed alternative). **Except as specifically listed below, the Proponent will be deemed to fully accept and to agree to fully comply with the specifications and design as described in the Contract Documents.**

SECTION/SP	PROPOSED ALTERNATIVE	RATIONALE AND BENEFIT

SCHEDULE 7 – BASELINE CONSTRUCTION SCHEDULE

The Proponent should provide below a Baseline Construction Schedule having regard to GC 3.4 of CCDC 2.

The Work shall be performed to meet the following dates :

Based on Contract Execution Date no later than	14 days after closing
On site construction to commence no sooner than	November 1, 2026
Substantial Performance achieved no later than	September 30, 2027
Total Performance achieved no later than	October 20, 2027

Baseline Construction Schedule

Contractor: _____

- .1 Available Start Date: _____, 20____.
- .2 Submission of Detailed Design Package Date: _____, 20____.
- .3 On-Site Construction Start Date: _____, 20____.
- .4 Substantial Performance Date: _____, 20____.
- .5 Total Performance Date: _____, 20____.

SCHEDULE 8 – RELATIONSHIP DISCLOSURE STATEMENT

CONFLICT OF INTEREST AND UNFAIR ADVANTAGE

In accordance with Section 9.5 of the RFP, the Proponent declares on its own behalf and on behalf of each member of the Proponent's team that:

- (a) this declaration is made to the best of the knowledge of the Proponent and, with respect to relationships of each member of the Proponent's team, to the best of the knowledge of that member;
- (b) the Proponent and the members of the Proponent's team have reviewed the definition of Restricted Parties (if included in the RFP) and the non-exhaustive list of Restricted Parties (if any are specifically referenced in the RFP); and
- (c) the following is:
 - (1) a full disclosure of all members of the Proponent's team who were employees of the Owner at any time during the previous two-year period from the date of this disclosure;
 - (2) a full disclosure of all known relationships the Proponent and each member of the Proponent's team has, or has had, with:
 - (i) the Owner;
 - (ii) any listed Restricted Party;
 - (iii) any current employees, shareholders, directors or officers, as applicable, of the Owner or any listed Restricted Party;
 - (iv) any former shareholders, directors or officers, as applicable, of any listed Restricted Party, who ceased to hold such position within two years from the date of this disclosure; and
 - (v) any other person who, on behalf of the Owner or a listed Restricted Party, has participated or been involved in this competitive procurement process or the design, planning or implementation of the Contract or has confidential information about the Contract or this competitive procurement process; and
 - (3) a full description of the actions that the Proponent has undertaken or offers to undertake to address any actual, perceived or potential conflict of interest or unfair advantage arising from the relationships disclosed pursuant to subsections (c)(1) and (c)(2) above; and
- (d) if no such relationships are disclosed by the Proponent, the Proponent is not aware of any former employees as described in subsection (c)(1) above nor any relationships between the Proponent or any member of the Proponent's team, and any of the persons described in subsection (c)(2) above, and the Proposal has not been prepared with any involvement from any of those persons.

Name of Member of Proponent's Team	Name of Party with Relationship (e.g., list the Owner or a Restricted Party	Details of the Nature of the Relationship with the Owner or the listed Restricted Party

For the purposes of this Schedule 8 – Relationship Disclosure Statement: Conflict of Interest and Unfair Advantage:

“Proponent’s team” means:

- (a) all persons who have been involved in the preparation of the Proponent’s Proposal; and
- (b) all persons who the Proponent proposes to perform work or services under any resulting Contract.

The Proponent has undertaken or offers to undertake the following actions to address any actual, perceived or potential conflict of interest or unfair advantage arising from the relationships disclosed pursuant to subsections (c)(1) and (c)(2) above:

CCDC 2

Stipulated Price Contract

2 0 2 0

Fort Point Bridge over CPKC Railway Rehabilitation

Apply a CCDC 2 copyright seal here. The application of the seal demonstrates the intention of the party proposing the use of this document that it be an accurate and unamended form of CCDC 2 – 2020 except to the extent that any alterations, additions or modifications are set forth in supplementary conditions.

CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE
CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE
CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE

CCDC 2 STIPULATED PRICE CONTRACT

TABLE OF CONTENTS

AGREEMENT BETWEEN OWNER AND CONTRACTOR

- A-1 The Work
- A-2 Agreements and Amendments
- A-3 Contract Documents
- A-4 Contract Price
- A-5 Payment
- A-6 Receipt of and Addresses for Notices in Writing
- A-7 Language of the Contract
- A-8 Succession

DEFINITIONS

- Change Directive
- Change Order
- Construction Equipment
- Consultant
- Contract
- Contract Documents
- Contract Price
- Contract Time
- Contractor
- Drawings
- Notice in Writing
- Owner
- Other Contractor
- Payment Legislation
- Place of the Work
- Product
- Project
- Ready-for-Takeover
- Shop Drawings
- Specifications
- Subcontractor
- Substantial Performance of the Work
- Supplemental Instruction
- Supplier
- Temporary Work
- Value Added Taxes
- Work
- Working Day

GENERAL CONDITIONS

PART 1 GENERAL PROVISIONS

- GC 1.1 Contract Documents
- GC 1.2 Law of the Contract
- GC 1.3 Rights and Remedies
- GC 1.4 Assignment

PART 2 ADMINISTRATION OF THE CONTRACT

- GC 2.1 Authority of the Consultant
- GC 2.2 Role of the Consultant
- GC 2.3 Review and Inspection of the Work
- GC 2.4 Defective Work

PART 3 EXECUTION OF THE WORK

- GC 3.1 Control of the Work
- GC 3.2 Construction by the Owner or Other Contractors
- GC 3.3 Temporary Work
- GC 3.4 Construction Schedule
- GC 3.5 Supervision
- GC 3.6 Subcontractors and Suppliers
- GC 3.7 Labour and Products
- GC 3.8 Shop Drawings

PART 4 ALLOWANCES

- GC 4.1 Cash Allowances
- GC 4.2 Contingency Allowance

PART 5 PAYMENT

- GC 5.1 Financing Information Required of the Owner
- GC 5.2 Applications for Payment
- GC 5.3 Payment
- GC 5.4 Substantial Performance of the Work and Payment of Holdback
- GC 5.5 Final Payment
- GC 5.6 Deferred Work
- GC 5.7 Non-conforming Work

PART 6 CHANGES IN THE WORK

- GC 6.1 Owner's Right to Make Changes
- GC 6.2 Change Order
- GC 6.3 Change Directive
- GC 6.4 Concealed or Unknown Conditions
- GC 6.5 Delays
- GC 6.6 Claims for a Change in Contract Price

PART 7 DEFAULT NOTICE

- GC 7.1 Owner's Right to Perform the Work, Terminate the Contractor's Right to Continue with the Work or Terminate the Contract
- GC 7.2 Contractor's Right to Suspend the Work or Terminate the Contract

PART 8 DISPUTE RESOLUTION

- GC 8.1 Authority of the Consultant
- GC 8.2 Adjudication
- GC 8.3 Negotiation, Mediation and Arbitration
- GC 8.4 Retention of Rights

PART 9 PROTECTION OF PERSONS AND PROPERTY

- GC 9.1 Protection of Work and Property
- GC 9.2 Toxic and Hazardous Substances
- GC 9.3 Artifacts and Fossils
- GC 9.4 Construction Safety
- GC 9.5 Mould

PART 10 GOVERNING REGULATIONS

- GC 10.1 Taxes and Duties
- GC 10.2 Laws, Notices, Permits, and Fees
- GC 10.3 Patent Fees
- GC 10.4 Workers' Compensation

PART 11 INSURANCE

- GC 11.1 Insurance

PART 12 OWNER TAKEOVER

- GC 12.1 Ready-for-Takeover
- GC 12.2 Early Occupancy by the Owner
- GC 12.3 Warranty

PART 13 INDEMNIFICATION AND WAIVER

- GC 13.1 Indemnification
- GC 13.2 Waiver of Claims

CCDC 2 is the product of a consensus-building process aimed at balancing the interests of all parties on the construction project. It reflects recommended industry practices. The CCDC and its constituent member organizations do not accept any responsibility or liability for loss or damage which may be suffered as a result of the use or interpretation of CCDC 2.

CCDC Copyright 2020

Must not be copied in whole or in part without the written permission of the CCDC.

AGREEMENT BETWEEN OWNER AND CONTRACTOR

For use when a stipulated price is the basis of payment.

This Agreement made on _____ day of _____ in the year 2026 .
by and between the parties
District of Invermere

hereinafter called the "Owner"

and

hereinafter called the "Contractor"

The Owner and the Contractor agree as follows:

ARTICLE A-1 THE WORK

The Contractor shall:

- 1.1 perform the *Work* required by the *Contract Documents* for (insert below the description or title of the Work)

Rehabilitation of Fort Point Bridge over CPKC Railway

located at (insert below the Place of the Work)

4 Avenue, Invermere BC

for which the Agreement has been signed by the parties, and for which (insert below the name of the Consultant)

Read Jones Christoffersen Ltd.

is acting as and is hereinafter called the "*Consultant*" and

- 1.2 do and fulfill everything indicated by the *Contract Documents*, and

- 1.3 commence the *Work* by the 1 day of November in the year 2026 and, subject to adjustment in *Contract Time* as provided for in the *Contract Documents*, attain *Ready-for-Takeover*, by the 30 day of September in the year 2027 .

ARTICLE A-2 AGREEMENTS AND AMENDMENTS

- 2.1 The *Contract* supersedes all prior negotiations, representations or agreements, either written or oral, relating in any manner to the *Work*, including the bid documents that are not expressly listed in Article A-3 of the Agreement – CONTRACT DOCUMENTS.
- 2.2 The *Contract* may be amended only as provided in the *Contract Documents*.

ARTICLE A-3 CONTRACT DOCUMENTS

3.1 The following are the *Contract Documents* referred to in Article A-1 of the Agreement – THE WORK:

- Agreement between *Owner* and *Contractor*
- Definitions
- General Conditions

*

CCDC Insurance Requirements
Supplementary General Conditions
Request for Proposal
Form of Proposal
Special Provisions
General Requirements
Specifications (Refer to Attachment 1)
Drawings (Refer to Attachment 2)
Addenda

* (Insert here, attaching additional pages if required, a list identifying all other Contract Documents e.g. supplementary conditions; Division 01 of the Specifications – GENERAL REQUIREMENTS; Project information that the Contractor may rely upon; technical Specifications, giving a list of contents with section numbers and titles, number of pages and date; material finishing schedules; Drawings, giving drawing number, title, date, revision date or mark; addenda, giving title, number, date; time schedule)

ARTICLE A-4 CONTRACT PRICE

4.1 The *Contract Price*, which excludes *Value Added Taxes*, is:

/100 dollars \$

4.2 *Value Added Taxes* (of _____ %) payable by the *Owner* to the *Contractor* are:

/100 dollars \$

4.3 Total amount payable by the *Owner* to the *Contractor* for the *Work* is:

/100 dollars \$

4.4 These amounts shall be subject to adjustments as provided in the *Contract Documents*.

4.5 All amounts are in Canadian funds.

ARTICLE A-5 PAYMENT

5.1 Subject to the provisions of the *Contract Documents* and *Payment Legislation*, and in accordance with legislation and statutory regulations respecting holdback percentages, the *Owner* shall:

- .1 make progress payments to the *Contractor* on account of the *Contract Price* when due in the amount certified by the *Consultant* unless otherwise prescribed by *Payment Legislation* together with such *Value Added Taxes* as may be applicable to such payments,
- .2 upon *Substantial Performance of the Work*, pay to the *Contractor* the unpaid balance of the holdback amount when due together with such *Value Added Taxes* as may be applicable to such payment, and
- .3 upon the issuance of the final certificate for payment, pay to the *Contractor* the unpaid balance of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payment.

5.2 Interest

- .1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by adjudication, arbitration or court, interest at the following rates on such unpaid amounts shall also become due and payable until payment:
 - (1) 2% per annum above the prime rate for the first 60 days.
 - (2) 4% per annum above the prime rate after the first 60 days.

Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by
(Insert name of chartered lending institution whose prime rate is to be used)

The Bank of Nova Scotia
for prime business loans as it may change from time to time.

- .2 Interest shall apply at the rate and in the manner prescribed by paragraph 5.2.1 of this Article on the settlement amount of any claim in dispute that is resolved either pursuant to Part 8 of the General Conditions – DISPUTE RESOLUTION or otherwise, from the date the amount would have been due and payable under the *Contract*, had it not been in dispute, until the date it is paid.

ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

6.1 *Notices in Writing* will be addressed to the recipient at the address set out below.

6.2 The delivery of a *Notice in Writing* will be by hand, by courier, by prepaid first class mail, or by other form of electronic communication during the transmission of which no indication of failure of receipt is communicated to the sender.

6.3 A *Notice in Writing* delivered by one party in accordance with this *Contract* will be deemed to have been received by the other party on the date of delivery if delivered by hand or courier, or if sent by mail it will be deemed to have been received five calendar days after the date on which it was mailed, provided that if either such day is not a *Working Day*, then the *Notice in Writing* will be deemed to have been received on the *Working Day* next following such day.

6.4 A *Notice in Writing* sent by any form of electronic communication will be deemed to have been received on the date of its transmission provided that if such day is not a *Working Day* or if it is received after the end of normal business hours on the date of its transmission at the place of receipt, then it will be deemed to have been received at the opening of business at the place of receipt on the first *Working Day* next following the transmission thereof.

6.5 An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this Article.

Owner

District of Invermere

*name of Owner**

914 8 Avenue, Invermere BC V0A 1K0

address

engtech@invermere.com

email address

Contractor

*name of Contractor**

address

email address

Consultant

Read Jones Christoffersen Ltd.

*name of Consultant**

200, 1816 Crowchild Trail NW
Calgary, AB T2M 3Y7

address

mbowen@rjc.ca

email address

** If it is intended that a specific individual must receive the notice, that individual's name shall be indicated.*

ARTICLE A-7 LANGUAGE OF THE CONTRACT

- 7.1 When the *Contract Documents* are prepared in both the English and French languages, it is agreed that in the event of any apparent discrepancy between the English and French versions, the English / ~~French~~ # language shall prevail.
Complete this statement by striking out inapplicable term.
- 7.2 This Agreement is drawn in English at the request of the parties hereto. La présente convention est rédigée en anglais à la demande des parties.

ARTICLE A-8 SUCCESSION

- 8.1 The *Contract* shall enure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors, and assigns.

In witness whereof the parties hereto have executed this Agreement by the hands of their duly authorized representatives.

SIGNED AND DELIVERED
in the presence of:

WITNESS

OWNER

District of Invermere

name of Owner

signature

signature

name of person signing

name and title of person signing

WITNESS

CONTRACTOR

name of Contractor

signature

signature

name of person signing

name and title of person signing

- N.B. Where legal jurisdiction, local practice or Owner or Contractor requirement calls for:*
- (a) proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership; or*
 - (b) the affixing of a corporate seal, this Agreement should be properly sealed.*

DEFINITIONS

The following Definitions shall apply to all *Contract Documents*.

Change Directive

A *Change Directive* is a written instruction prepared by the *Consultant* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents* prior to the *Owner* and the *Contractor* agreeing upon adjustments in the *Contract Price* and the *Contract Time*.

Change Order

A *Change Order* is a written amendment to the *Contract* prepared by the *Consultant* and signed by the *Owner* and the *Contractor* stating their agreement upon:

- a change in the *Work*;
- the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and
- the extent of the adjustment in the *Contract Time*, if any.

Construction Equipment

Construction Equipment means all machinery and equipment, either operated or not operated, that is required for preparing, fabricating, conveying, erecting, or otherwise performing the *Work* but is not incorporated into the *Work*.

Consultant

The *Consultant* is the person or entity engaged by the *Owner* and identified as such in the Agreement. The *Consultant* is the Architect, the Engineer or entity licensed to practise in the province or territory of the *Place of the Work*.

Contract

The *Contract* is the undertaking by the parties to perform their respective duties, responsibilities and obligations as prescribed in the *Contract Documents* and represents the entire agreement between the parties.

Contract Documents

The *Contract Documents* consist of those documents listed in Article A-3 of the Agreement – CONTRACT DOCUMENTS and amendments agreed upon between the parties.

Contract Price

The *Contract Price* is the amount stipulated in Article A-4 of the Agreement – CONTRACT PRICE.

Contract Time

The *Contract Time* is the time from commencement of the *Work* to the date of *Ready-for-Takeover* as stipulated in paragraph 1.3 of Article A-1 of the Agreement – THE WORK.

Contractor

The *Contractor* is the person or entity identified as such in the Agreement.

Drawings

The *Drawings* are the graphic and pictorial portions of the *Contract Documents*, wherever located and whenever issued, showing the design, location and dimensions of the *Work*, generally including plans, elevations, sections, details, and diagrams.

Notice in Writing

A *Notice in Writing*, where identified in the *Contract Documents*, is a written communication between the parties or between them and the *Consultant* that is transmitted in accordance with the provisions of Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

Owner

The *Owner* is the person or entity identified as such in the Agreement.

Other Contractor

Other Contractor means a contractor, other than the *Contractor* or a *Subcontractor*, engaged by the *Owner* for the *Project*.

Payment Legislation

Payment Legislation means such legislation in effect at the *Place of the Work* which governs payment under construction contracts.

Place of the Work

The *Place of the Work* is the designated site or location of the *Work* identified in the *Contract Documents*.

Product

Product or Products means material, machinery, equipment, and fixtures forming part of the *Work*, but does not include *Construction Equipment*.

Project

The *Project* means the total construction contemplated of which the *Work* may be the whole or a part.

Ready-for-Takeover

Ready-for-Takeover shall have been attained when the conditions set out in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER have been met, as verified by the *Consultant* pursuant to paragraph 12.1.4.2 of GC 12.1 – READY-FOR-TAKEOVER.

Shop Drawings

Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, *Product* data, and other data which the *Contractor* provides to illustrate details of portions of the *Work*.

Specifications

The *Specifications* are that portion of the *Contract Documents*, wherever located and whenever issued, consisting of the written requirements and standards for *Products*, systems, workmanship, quality, and the services necessary for the performance of the *Work*.

Subcontractor

A *Subcontractor* is a person or entity having a direct contract with the *Contractor* to perform a part or parts of the *Work* at the *Place of the Work*.

Substantial Performance of the Work

Substantial Performance of the Work is as defined in the lien legislation applicable to the *Place of the Work*.

Supplemental Instruction

A *Supplemental Instruction* is an instruction, not involving adjustment in the *Contract Price* or *Contract Time*, in the form of *Specifications*, *Drawings*, schedules, samples, models, or written instructions, consistent with the intent of the *Contract Documents*. It is to be issued by the *Consultant* to supplement the *Contract Documents* as required for the performance of the *Work*.

Supplier

A *Supplier* is a person or entity having a direct contract with the *Contractor* to supply *Products*.

Temporary Work

Temporary Work means temporary supports, structures, facilities, services, and other temporary items, excluding *Construction Equipment*, required for the execution of the *Work* but not incorporated into the *Work*.

Value Added Taxes

Value Added Taxes means such sum as shall be levied upon the *Contract Price* by the Federal or any Provincial or Territorial Government and is computed as a percentage of the *Contract Price* and includes the Goods and Services Tax, the Quebec Sales Tax, the Harmonized Sales Tax, and any similar tax, the collection and payment of which have been imposed on the *Contractor* by tax legislation.

Work

The *Work* means the total construction and related services required by the *Contract Documents*.

Working Day

Working Day means a day other than a Saturday, Sunday, statutory holiday, or statutory vacation day that is observed by the construction industry in the area of the *Place of the Work*.

GENERAL CONDITIONS

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

- 1.1.1 The intent of the *Contract Documents* is to include the labour, *Products* and services necessary for the performance of the *Work* by the *Contractor* in accordance with these documents. It is not intended, however, that the *Contractor* shall supply products or perform work not consistent with, not covered by, or not properly inferable from the *Contract Documents*.
- 1.1.2 The *Contract Documents* are complementary, and what is required by one shall be as binding as if required by all. Performance by the *Contractor* shall be required only to the extent consistent with the *Contract Documents*.
- 1.1.3 The *Contractor* shall review the *Contract Documents* for the purpose of facilitating co-ordination and execution of the *Work* by the *Contractor*.
- 1.1.4 The *Contractor* is not responsible for errors, omissions or inconsistencies in the *Contract Documents*. If there are perceived errors, omissions or inconsistencies discovered by or made known to the *Contractor*, the *Contractor* shall promptly report to the *Consultant* and shall not proceed with the work affected until the *Contractor* has received corrected or additional information from the *Consultant*.
- 1.1.5 If there is a conflict within the *Contract Documents*:
- .1 the order of priority of documents, from highest to lowest, shall be
 - the Agreement between *Owner* and *Contractor*,
 - the Definitions,
 - Supplementary Conditions,
 - the General Conditions,
 - Division 01 of the *Specifications*,
 - technical *Specifications*,
 - material and finishing schedules,
 - the *Drawings*.
 - .2 *Drawings* of larger scale shall govern over those of smaller scale of the same date.
 - .3 dimensions shown on *Drawings* shall govern over dimensions scaled from *Drawings*.
 - .4 amended or later dated documents shall govern over earlier documents of the same type.
 - .5 noted materials and annotations shall govern over graphic indications.
- 1.1.6 Nothing contained in the *Contract Documents* shall create any contractual relationship between:
- .1 the *Owner* and a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
 - .2 the *Consultant* and the *Contractor*, a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
- 1.1.7 Words and abbreviations which have well known technical or trade meanings are used in the *Contract Documents* in accordance with such recognized meanings.
- 1.1.8 References in the *Contract Documents* to the singular shall be considered to include the plural as the context requires.
- 1.1.9 Neither the organization of the *Specifications* nor the arrangement of *Drawings* shall control the *Contractor* in dividing the work among *Subcontractors* and *Suppliers*.
- 1.1.10 *Specifications*, *Drawings*, models, and copies thereof furnished by the *Consultant* are and shall remain the *Consultant's* property, with the exception of the signed *Contract* sets, which shall belong to each party to the *Contract*. All *Specifications*, *Drawings* and models furnished by the *Consultant* are to be used only with respect to the *Work* and are not to be used on other work. These *Specifications*, *Drawings* and models are not to be copied or altered in any manner without the written authorization of the *Consultant*.
- 1.1.11 Physical models furnished by the *Contractor* at the *Owner's* expense are the property of the *Owner*.

GC 1.2 LAW OF THE CONTRACT

- 1.2.1 The law of the *Place of the Work* shall govern the interpretation of the *Contract*.

GC 1.3 RIGHTS AND REMEDIES

- 1.3.1 Except as expressly provided in the *Contract Documents*, the duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

- 1.3.2 No action or failure to act by the *Owner*, the *Consultant* or the *Contractor* shall constitute a waiver of any right or duty afforded any of them under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

GC 1.4 ASSIGNMENT

- 1.4.1 Neither party to the *Contract* shall assign the *Contract* or a portion thereof without the written consent of the other, which consent shall not be unreasonably withheld.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.1 AUTHORITY OF THE CONSULTANT

- 2.1.1 The *Consultant* will have authority to act on behalf of the *Owner* only to the extent provided in the *Contract Documents*, unless otherwise modified by written agreement as provided in paragraph 2.1.2.
- 2.1.2 The duties, responsibilities and limitations of authority of the *Consultant* as set forth in the *Contract Documents* shall be modified or extended only with the written consent of the *Owner*, the *Consultant* and the *Contractor*.

GC 2.2 ROLE OF THE CONSULTANT

- 2.2.1 The *Consultant* will provide administration of the *Contract* as described in the *Contract Documents*.
- 2.2.2 The *Consultant* will visit the *Place of the Work* at intervals appropriate to the progress of construction to become familiar with the progress and quality of the work and to determine if the *Work* is proceeding in general conformity with the *Contract Documents*.
- 2.2.3 If the *Owner* and the *Consultant* agree, the *Consultant* will provide at the *Place of the Work*, one or more project representatives to assist in carrying out the *Consultant's* responsibilities. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in writing to the *Contractor*.
- 2.2.4 Based on the *Consultant's* observations and evaluation of the *Contractor's* applications for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 of the Agreement – PAYMENT, GC 5.3 – PAYMENT and GC 5.5 – FINAL PAYMENT.
- 2.2.5 The *Consultant* will not be responsible for and will not have control, charge or supervision of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs required in connection with the *Work* in accordance with the applicable construction safety legislation, other regulations or general construction practice. The *Consultant* will not be responsible for the *Contractor's* failure to perform the *Work* in accordance with the *Contract Documents*.
- 2.2.6 Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER, the *Consultant* will be, in the first instance, the interpreter of the requirements of the *Contract Documents*.
- 2.2.7 Matters in question relating to the performance of the *Work* or the interpretation of the *Contract Documents* shall be initially referred in writing to the *Consultant* by the party raising the question for interpretations and findings and copied to the other party.
- 2.2.8 Interpretations and findings of the *Consultant* shall be consistent with the intent of the *Contract Documents*. In making such interpretations and findings the *Consultant* will not show partiality to either the *Owner* or the *Contractor*.
- 2.2.9 The *Consultant's* interpretations and findings will be given in writing to the parties within a reasonable time.
- 2.2.10 With respect to claims for a change in *Contract Price*, the *Consultant* will make findings as set out in GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.
- 2.2.11 The *Consultant* will have authority to reject work which in the *Consultant's* opinion does not conform to the requirements of the *Contract Documents*. Whenever the *Consultant* considers it necessary or advisable, the *Consultant* will have authority to require inspection or testing of work, whether or not such work is fabricated, installed or completed. However, neither the authority of the *Consultant* to act nor any decision either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the *Consultant* to the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees, or other persons performing any of the *Work*.
- 2.2.12 During the progress of the *Work* the *Consultant* will furnish *Supplemental Instructions* to the *Contractor* with reasonable promptness or in accordance with a schedule for such instructions agreed to by the *Consultant* and the *Contractor*.
- 2.2.13 The *Consultant* will review and take appropriate action upon *Shop Drawings*, samples and other submittals by the *Contractor*, in accordance with the *Contract Documents*.

- 2.2.14 The *Consultant* will prepare *Change Orders* and *Change Directives* as provided in GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 2.2.15 The *Consultant* will conduct reviews of the *Work* to determine the date of *Substantial Performance of the Work* and verify that *Ready-for-Takeover* has been attained.
- 2.2.16 All certificates issued by the *Consultant* will be to the best of the *Consultant*'s knowledge, information and belief. By issuing any certificate, the *Consultant* does not guarantee the *Work* is correct or complete.
- 2.2.17 The *Consultant* will receive and review written warranties and related documents required by the *Contract* and provided by the *Contractor* and will forward such warranties and documents to the *Owner* for the *Owner*'s acceptance.
- 2.2.18 If the *Consultant*'s engagement is terminated, the *Owner* shall immediately engage a *Consultant* against whom the *Contractor* makes no reasonable objection and whose duties and responsibilities under the *Contract Documents* will be that of the former *Consultant*.

GC 2.3 REVIEW AND INSPECTION OF THE WORK

- 2.3.1 The *Owner* and the *Consultant* shall have access to the *Work* at all times. The *Contractor* shall provide sufficient, safe and proper facilities at all times for the review of the *Work* by the *Consultant* and the inspection of the *Work* by authorized agencies. If parts of the *Work* are in preparation at locations other than the *Place of the Work*, the *Owner* and the *Consultant* shall be given access to such work whenever it is in progress.
- 2.3.2 If work is designated for tests, inspections or approvals in the *Contract Documents*, by the *Consultant*'s instructions, or by the laws or ordinances of the *Place of the Work*, the *Contractor* shall give the *Consultant* reasonable notification of when the work will be ready for review and inspection. The *Contractor* shall arrange for and shall give the *Consultant* reasonable notification of the date and time of inspections by other authorities.
- 2.3.3 The *Contractor* shall furnish promptly to the *Consultant* two copies of certificates and inspection reports relating to the *Work*.
- 2.3.4 If the *Contractor* covers, or permits to be covered, work that has been designated for special tests, inspections or approvals before such special tests, inspections or approvals are made, given or completed, the *Contractor* shall, if so directed, uncover such work, have the inspections or tests satisfactorily completed, and make good covering work at the *Contractor*'s expense.
- 2.3.5 The *Consultant* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction. If the work is in accordance with the requirements of the *Contract Documents*, the *Owner* shall pay the cost of examination and restoration.
- 2.3.6 The *Contractor* shall pay the cost of making any test or inspection, including the cost of samples required for such test or inspection, if such test or inspection is designated in the *Contract Documents* to be performed by the *Contractor* or is required by the laws or ordinances applicable to the *Place of the Work*.
- 2.3.7 The *Contractor* shall pay the cost of samples required for any test or inspection to be performed by others if such test or inspection is designated in the *Contract Documents*.

GC 2.4 DEFECTIVE WORK

- 2.4.1 The *Contractor* shall promptly correct defective work that has been rejected by the *Consultant* as failing to conform to the *Contract Documents* whether or not the defective work was incorporated in the *Work* or the defect is the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the *Contractor*.
- 2.4.2 The *Contractor* shall make good promptly *Other Contractors*' work destroyed or damaged by such corrections at the *Contractor*'s expense.
- 2.4.3 If in the opinion of the *Consultant* it is not expedient to correct defective work or work not performed as provided in the *Contract Documents*, the *Owner* may deduct from the amount otherwise due to the *Contractor* the difference in value between the work as performed and that called for by the *Contract Documents*. If the *Owner* and the *Contractor* do not agree on the difference in value, they shall refer the matter to the *Consultant* for a finding.

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

- 3.1.1 The *Contractor* shall have total control of the *Work* and shall effectively direct and supervise the *Work* so as to ensure conformity with the *Contract Documents*.

- 3.1.2 The *Contractor* shall be solely responsible for construction means, methods, techniques, sequences, and procedures and for co-ordinating the various parts of the *Work* under the *Contract*.

GC 3.2 CONSTRUCTION BY THE OWNER OR OTHER CONTRACTORS

- 3.2.1 The *Owner* reserves the right to award separate contracts in connection with other parts of the *Project* to *Other Contractors* and to perform work with own forces.
- 3.2.2 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Owner* shall:
- .1 provide for the co-ordination of the activities and work of *Other Contractors* and the *Owner*'s own forces with the *Work* of the *Contract*;
 - .2 enter into separate contracts with *Other Contractors* under conditions of contract which are compatible with the conditions of the *Contract*;
 - .3 ensure that insurance coverage is provided to the same requirements as are called for in GC 11.1 – INSURANCE and co-ordinate such insurance with the insurance coverage of the *Contractor* as it affects the *Work*; and
 - .4 take all reasonable precautions to avoid labour disputes or other disputes on the *Project* arising from the work of *Other Contractors* or the *Owner*'s own forces.
- 3.2.3 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Contractor* shall:
- .1 afford the *Owner* and *Other Contractors* reasonable opportunity to store their products and execute their work;
 - .2 co-ordinate and schedule the *Work* with the work of *Other Contractors* or the *Owner*'s own forces that are identified in the *Contract Documents*;
 - .3 participate with *Other Contractors* and the *Owner* in reviewing their construction schedules when directed to do so; and
 - .4 report promptly to the *Consultant* in writing any apparent deficiencies in the work of *Other Contractors* or of the *Owner*'s own forces, where such work affects the proper execution of any portion of the *Work*, prior to proceeding with that portion of the *Work*.
- 3.2.4 Where a change in the *Work* is required as a result of the co-ordination and integration of the work of *Other Contractors* or *Owner*'s own forces with the *Work*, the changes shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 3.2.5 Disputes and other matters in question between the *Contractor* and *Other Contractors* shall be dealt with as provided in Part 8 of the General Conditions – DISPUTE RESOLUTION provided the *Other Contractors* have reciprocal obligations. The *Contractor* shall be deemed to have consented to arbitration of any dispute with any *Other Contractor* whose contract with the *Owner* contains a similar agreement to arbitrate. In the absence of *Other Contractors* having reciprocal obligations, disputes and other matters in question initiated by the *Contractor* against *Other Contractors* will be considered disputes and other matters in question between the *Contractor* and the *Owner*.
- 3.2.6 Should the *Owner*, the *Consultant*, *Other Contractors*, or anyone employed by them directly or indirectly be responsible for ill-timed work necessitating cutting or remedial work to be performed, the cost of such cutting or remedial work shall be valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

GC 3.3 TEMPORARY WORK

- 3.3.1 The *Contractor* shall have the sole responsibility for the design, erection, operation, maintenance, and removal of *Temporary Work* unless otherwise specified in the *Contract Documents*.
- 3.3.2 The *Contractor* shall engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform those functions referred to in paragraph 3.3.1 where required by law or by the *Contract Documents* and in all cases where such *Temporary Work* is of such a nature that professional engineering skill is required to produce safe and satisfactory results.
- 3.3.3 Notwithstanding the provisions of GC 3.1 – CONTROL OF THE WORK, paragraphs 3.3.1 and 3.3.2 or provisions to the contrary elsewhere in the *Contract Documents* where such *Contract Documents* include designs for *Temporary Work* or specify a method of construction in whole or in part, such designs or methods of construction shall be considered to be part of the design of the *Work* and the *Contractor* shall not be held responsible for that part of the design or the specified method of construction. The *Contractor* shall, however, be responsible for the execution of such design or specified method of construction in the same manner as for the execution of the *Work*.

GC 3.4 CONSTRUCTION SCHEDULE

3.4.1 The *Contractor* shall:

- .1 prepare and submit to the *Owner* and the *Consultant* prior to the first application for payment, a construction schedule that indicates the timing of the major activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time*;
- .2 monitor the progress of the *Work* relative to the construction schedule and update the schedule on a monthly basis or as stipulated by the *Contract Documents*; and
- .3 advise the *Consultant* of any revisions required to the schedule as the result of extensions of the *Contract Time* as provided in Part 6 of the General Conditions – CHANGES IN THE WORK.

GC 3.5 SUPERVISION

3.5.1 The *Contractor* shall provide all necessary supervision and appoint a competent representative who shall be in attendance at the *Place of the Work* while the *Work* is being performed. The appointed representative shall not be changed except for valid reason.

3.5.2 The appointed representative shall represent the *Contractor* at the *Place of the Work*. Information and instructions provided by the *Consultant* to the *Contractor's* appointed representative shall be deemed to have been received by the *Contractor*, except with respect to Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

GC 3.6 SUBCONTRACTORS AND SUPPLIERS

3.6.1 The *Contractor* shall preserve and protect the rights of the parties under the *Contract* with respect to work to be performed under subcontract, and shall:

- .1 enter into contracts or written agreements with *Subcontractors* and *Suppliers* to require them to perform their work as provided in the *Contract Documents*;
- .2 incorporate the applicable terms and conditions of the *Contract Documents* into all contracts or written agreements with *Subcontractors* and *Suppliers*; and
- .3 be as fully responsible to the *Owner* for acts and omissions of *Subcontractors*, *Suppliers* and any persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the *Contractor*.

3.6.2 The *Contractor* shall indicate in writing, if requested by the *Owner*, those *Subcontractors* or *Suppliers* whose bids have been received by the *Contractor* which the *Contractor* would be prepared to accept for the performance of a portion of the *Work*. Should the *Owner* not object before signing the *Contract*, the *Contractor* shall employ those *Subcontractors* or *Suppliers* so identified by the *Contractor* in writing for the performance of that portion of the *Work* to which their bid applies.

3.6.3 The *Owner* may, for reasonable cause, at any time before the *Owner* has signed the *Contract*, object to the use of a proposed *Subcontractor* or *Supplier* and require the *Contractor* to employ one of the other subcontract bidders.

3.6.4 If the *Owner* requires the *Contractor* to change a proposed *Subcontractor* or *Supplier*, the *Contract Price* and *Contract Time* shall be adjusted by the difference occasioned by such required change.

3.6.5 The *Contractor* shall not be required to employ as a *Subcontractor* or *Supplier*, a person or firm to which the *Contractor* may reasonably object.

3.6.6 The *Owner*, through the *Consultant*, may provide to a *Subcontractor* or *Supplier* information as to the percentage of the *Subcontractor's* or *Supplier's* work which has been certified for payment.

GC 3.7 LABOUR AND PRODUCTS

3.7.1 The *Contractor* shall maintain good order and discipline among the *Contractor's* employees engaged on the *Work* and employ only workers that are skilled in the tasks assigned.

3.7.2 The *Contractor* shall provide and pay for labour, *Products*, tools, *Construction Equipment*, water, heat, light, power, transportation, and other facilities and services necessary for the performance of the *Work* in accordance with the *Contract*.

3.7.3 Unless otherwise specified in the *Contract Documents*, *Products* provided shall be new. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*.

GC 3.8 SHOP DRAWINGS

3.8.1 The *Contractor* shall provide *Shop Drawings* as required in the *Contract Documents*.

3.8.2 The *Contractor* shall provide *Shop Drawings* to the *Consultant* to review in accordance with an agreed schedule, or in the absence of an agreed schedule, in orderly sequence and sufficiently in advance so as to cause no delay in the *Work* or in the work of *Other Contractors* or the *Owner's* own forces.

- 3.8.3 The *Contractor* shall review all *Shop Drawings* before providing them to the *Consultant*. The *Contractor* represents by this review that:
- .1 the *Contractor* has determined and verified all applicable field measurements, field construction conditions, *Product* requirements, catalogue numbers and similar data, or will do so, and
 - .2 the *Contractor* has checked and co-ordinated each *Shop Drawing* with the requirements of the *Work* and of the *Contract Documents*.
- 3.8.4 The *Consultant's* review is for conformity to the design concept and for general arrangement only.
- 3.8.5 At the time of providing *Shop Drawings*, the *Contractor* shall expressly advise the *Consultant* in writing of any deviations in a *Shop Drawing* from the requirements of the *Contract Documents*. The *Consultant* shall indicate the acceptance or rejection of such deviation expressly in writing.
- 3.8.6 The *Consultant's* review shall not relieve the *Contractor* of responsibility for errors or omissions in the *Shop Drawings* or for meeting all requirements of the *Contract Documents*.
- 3.8.7 The *Consultant* will review and return *Shop Drawings* in accordance with the schedule agreed upon, or, in the absence of such schedule, with reasonable promptness so as to cause no delay in the performance of the *Work*.

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

- 4.1.1 The *Contract Price* includes the cash allowances, if any, stated in the *Contract Documents*. The scope of the *Work* or costs included in such cash allowances shall be as described in the *Contract Documents*.
- 4.1.2 The *Contract Price*, and not the cash allowances, includes the *Contractor's* overhead and profit in connection with such cash allowances.
- 4.1.3 Expenditures under cash allowances shall be authorized by the *Owner* through the *Consultant*.
- 4.1.4 Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, at the *Consultant's* direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the *Contract Price* for overhead and profit. Only where the actual cost of the *Work* under all cash allowances exceeds the total amount of all cash allowances shall the *Contractor* be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the *Contract Documents*.
- 4.1.5 The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order* without any adjustment for the *Contractor's* overhead and profit on such amount.
- 4.1.6 The value of the *Work* performed under a cash allowance is eligible to be included in progress payments.
- 4.1.7 The *Contractor* and the *Consultant* shall jointly prepare a schedule that shows when the items called for under cash allowances must be ordered to avoid delaying the progress of the *Work*.

GC 4.2 CONTINGENCY ALLOWANCE

- 4.2.1 The *Contract Price* includes the contingency allowance, if any, stated in the *Contract Documents*.
- 4.2.2 The contingency allowance includes the *Contractor's* overhead and profit in connection with such contingency allowance.
- 4.2.3 Expenditures under the contingency allowance shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 4.2.4 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the expenditures authorized under paragraph 4.2.3 and the contingency allowance.

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

- 5.1.1 The *Owner* shall, at the request of the *Contractor*, before signing the *Contract*, and promptly from time to time thereafter, furnish to the *Contractor* reasonable evidence that financial arrangements have been made to fulfill the *Owner's* obligations under the *Contract*.
- 5.1.2 The *Owner* shall give the *Contractor Notice in Writing* of any material change in the *Owner's* financial arrangements to fulfil the *Owner's* obligations under the *Contract* during the performance of the *Contract*.

GC 5.2 APPLICATIONS FOR PAYMENT

- 5.2.1 Applications for payment on account as provided in Article A-5 of the Agreement – PAYMENT shall be submitted monthly to the *Owner* and the *Consultant* simultaneously as the *Work* progresses.
- 5.2.2 Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties.
- 5.2.3 The amount claimed shall be for the value, proportionate to the amount of the *Contract*, of *Work* performed and *Products* delivered to the *Place of the Work* as of the last day of the payment period.
- 5.2.4 The *Contractor* shall submit to the *Consultant*, at least 15 calendar days before the first application for payment, a schedule of values for the parts of the *Work*, aggregating the total amount of the *Contract Price*, so as to facilitate evaluation of applications for payment.
- 5.2.5 The schedule of values shall be made out in such form as specified in the *Contract* and supported by such evidence as the *Consultant* may reasonably require.
- 5.2.6 Applications for payment shall be based on the schedule of values accepted by the *Consultant* and shall comply with the provisions of *Payment Legislation*.
- 5.2.7 Each application for payment shall include evidence of compliance with workers' compensation legislation at the *Place of the Work* and after the first payment, a declaration by the *Contractor* as to the distribution made of the amounts previously received using document CCDC 9A 'Statutory Declaration'.
- 5.2.8 Applications for payment for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall be supported by such evidence as the *Consultant* may reasonably require to establish the value and delivery of the *Products*.

GC 5.3 PAYMENT

- 5.3.1 After receipt by the *Consultant* and the *Owner* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 – APPLICATIONS FOR PAYMENT:
 - .1 The *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 10 calendar days after the receipt of the application for payment, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due. If the *Consultant* certifies a different amount, or rejects the application or part thereof, the *Owner* shall promptly issue a written notice to the *Contractor* giving reasons for the revision or rejection, such written notice to be in compliance with *Payment Legislation*.
 - .2 The *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement – PAYMENT on or before 28 calendar days after the receipt by the *Owner* and the *Consultant* of the application for payment, and in any event, in compliance with *Payment Legislation*.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

- 5.4.1 The *Consultant* will review the *Work* to certify or verify the validity of the application for *Substantial Performance of the Work* and will promptly, and in any event, no later than 20 calendar days after receipt of the *Contractors* application:
 - .1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or
 - .2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.
- 5.4.2 Where the holdback amount required by the applicable lien legislation has not been placed in a separate lien holdback account, the *Owner* shall, no later than 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.
- 5.4.3 Subject to the requirements of any *Payment Legislation*, all holdback amount prescribed by the applicable lien legislation for the *Work* shall become due and payable to the *Contractor* no later than 10 *Working Days* following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*.
- 5.4.4 The *Contractor* shall submit an application for payment of the lien holdback amount in accordance with GC 5.3 – PAYMENT.
- 5.4.5 Where legislation permits progressive release of the holdback for a portion of the *Work* and the *Consultant* has certified or verified that the part of the *Work* has been performed prior to *Substantial Performance of the Work*, the *Owner* hereby agrees to release, and shall release, such portion to the *Contractor* in accordance with such legislation.

- 5.4.6 Notwithstanding any progressive release of the holdback, the *Contractor* shall ensure that such parts of the *Work* are protected pending the issuance of a final certificate for payment and be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when the holdback was released.

GC 5.5 FINAL PAYMENT

- 5.5.1 When the *Contractor* considers that the *Work* is completed, the *Contractor* shall submit an application for final payment.
- 5.5.2 The *Consultant* will, no later than 10 calendar days after the receipt of an application from the *Contractor* for final payment, review the *Work* to verify the validity of the application and when the *Consultant* finds the *Contractor's* application for final payment valid, the *Consultant* will promptly issue a final certificate for payment to the *Owner*, with a copy to the *Contractor*.
- 5.5.3 If the *Consultant* rejects the application or part thereof, the *Owner* will promptly issue a written notice to the *Contractor* giving reasons for the revision or rejection, such written notice to be in compliance with *Payment Legislation*.
- 5.5.4 Subject to the provision of paragraph 10.4.1 of GC 10.4 – WORKERS' COMPENSATION, and any legislation applicable to the *Place of the Work*, the *Owner* shall, no later than 5 calendar days after the issuance of a final certificate for payment, pay the *Contractor* as provided in Article A-5 of the Agreement – PAYMENT and in any event, in compliance with *Payment Legislation*.

GC 5.6 DEFERRED WORK

- 5.6.1 If because of climatic or other conditions reasonably beyond the control of the *Contractor*, or if the *Owner* and the *Contractor* agree that, there are items of work that must be deferred, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such deferred *Work*.

GC 5.7 NON-CONFORMING WORK

- 5.7.1 No payment by the *Owner* under the *Contract* nor partial or entire use or occupancy of the *Work* by the *Owner* shall constitute an acceptance of any portion of the *Work* or *Products* which are not in accordance with the requirements of the *Contract Documents*.

PART 6 CHANGES IN THE WORK

GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

- 6.1.1 The *Owner*, through the *Consultant*, without invalidating the *Contract*, may make:
- .1 changes in the *Work* consisting of additions, deletions or other revisions to the *Work* by *Change Order* or *Change Directive*, and
 - .2 changes to the *Contract Time* for the *Work*, or any part thereof, by *Change Order*.
- 6.1.2 The *Contractor* shall not perform a change in the *Work* without a *Change Order* or a *Change Directive*.

GC 6.2 CHANGE ORDER

- 6.2.1 When a change in the *Work* is proposed or required, the *Consultant* will provide the *Contractor* with a written description of the proposed change in the *Work*. The *Contractor* shall promptly present to the *Consultant*, in a form that can be reasonably evaluated, a method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, if any, for the proposed change in the *Work*.
- 6.2.2 When the *Owner* and the *Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a *Change Order*. The value of the work performed as the result of a *Change Order* shall be included in the applications for progress payment.

GC 6.3 CHANGE DIRECTIVE

- 6.3.1 If the *Owner* requires the *Contractor* to proceed with a change in the *Work* prior to the *Owner* and the *Contractor* agreeing upon the corresponding adjustment in *Contract Price* and *Contract Time*, the *Owner*, through the *Consultant*, shall issue a *Change Directive*.
- 6.3.2 A *Change Directive* shall only be used to direct a change in the *Work* which is within the general scope of the *Contract Documents*.
- 6.3.3 A *Change Directive* shall not be used to direct a change in the *Contract Time* only.

- 6.3.4 Upon receipt of a *Change Directive*, the *Contractor* shall proceed promptly with the change in the *Work*.
- 6.3.5 For the purpose of valuing *Change Directives*, changes in the *Work* that are not substitutions or otherwise related to each other shall not be grouped together in the same *Change Directive*.
- 6.3.6 The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined on the basis of the cost of the *Contractor*'s actual expenditures and savings attributable to the *Change Directive*, valued in accordance with paragraph 6.3.7 and as follows:
- 1 If the change results in a net increase in the *Contractor*'s cost, the *Contract Price* shall be increased by the amount of the net increase in the *Contractor*'s cost, plus the *Contractor*'s percentage fee on such net increase.
 - 2 If the change results in a net decrease in the *Contractor*'s cost, the *Contract Price* shall be decreased by the amount of the net decrease in the *Contractor*'s cost, without adjustment for the *Contractor*'s percentage fee.
 - 3 The *Contractor*'s fee shall be as specified in the *Contract Documents* or as otherwise agreed by the parties.
- 6.3.7 The cost of performing the work attributable to the *Change Directive* shall be limited to the actual cost of the following in as much as it contributes directly to the implementation of the *Change Directive*:

Labour

- 1 rates that are listed in the schedule or as agreed by the *Owner* and the *Contractor* including wages, benefits, compensation, contributions, assessments, or taxes incurred for such items as employment insurance, provincial or territorial health insurance, workers' compensation, and Canada or Quebec Pension Plan for:
 - (1) trade labour in the direct employ of the *Contractor*;
 - (2) the *Contractor*'s personnel when stationed at the field office;
 - (3) the *Contractor*'s personnel engaged at shops or on the road, in expediting the production or transportation of materials or equipment; and
 - (4) the *Contractor*'s office personnel engaged in a technical capacity, or other personnel identified in Article A-3 of the Agreement – CONTRACT DOCUMENTS for the time spent in the performance of the *Work*;

Products, Construction Equipment and Temporary Work

- 2 cost of all *Products* including cost of transportation thereof;
- 3 in the absence of agreed rates, cost less salvage value of *Construction Equipment*, *Temporary Work* and tools, exclusive of hand tools under \$1,000 owned by the *Contractor*;
- 4 rental cost of *Construction Equipment*, *Temporary Work* and tools, exclusive of hand tools under \$1,000;
- 5 cost of all equipment and services required for the *Contractor*'s field office;

Subcontract

- 6 subcontract amounts of Subcontractor with pricing mechanism approved by the *Owner*;

Others

- 7 travel and subsistence expenses of the *Contractor*'s personnel described in paragraph 6.3.7.1;
- 8 deposits lost provided that they are not caused by negligent acts or omissions of the *Contractor*;
- 9 cost of quality assurance such as independent inspection and testing services;
- 10 charges levied by authorities having jurisdiction at the *Place of the Work*;
- 11 royalties, patent license fees, and damages for infringement of patents and cost of defending suits therefor subject always to the *Contractor*'s obligations to indemnify the *Owner* as provided in paragraph 10.3.1 of GC 10.3 – PATENT FEES;
- 12 premium for all contract securities and insurance for which the *Contractor* is required, by the *Contract Documents*, to provide, maintain and pay in relation to the performance of the *Work*;
- 13 losses and expenses sustained by the *Contractor* for matters which are the subject of insurance under the policies prescribed in GC 11.1 – INSURANCE when such losses and expenses are not recoverable because the amounts are in excess of collectible amounts or within the deductible amounts;
- 14 taxes and duties, other than *Value Added Taxes*, income, capital, or property taxes, relating to the *Work* for which the *Contractor* is liable;
- 15 charges for voice and data communications, courier services, expressage, transmittal and reproduction of documents, and petty cash items;
- 16 cost for removal and disposal of waste products and debris;
- 17 legal costs, incurred by the *Contractor*, in relation to the performance of the *Work* provided that they are not:
 - (1) relating to a dispute between the *Owner* and the *Contractor* unless such costs are part of a settlement or awarded by arbitration or court,
 - (2) the result of the negligent acts or omissions of the *Contractor*, or
 - (3) the result of a breach of this *Contract* by the *Contractor*;
- 18 cost of auditing when requested by the *Owner*; and
- 19 cost of *Project* specific information technology in accordance with the method determined by the parties.

- 6.3.8 Notwithstanding any other provisions contained in the General Conditions of the *Contract*, it is the intention of the parties that the cost of any item under any cost element referred to in paragraph 6.3.7 shall cover and include any and all costs or liabilities attributable to the *Change Directive* other than those which are the result of or occasioned by any failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor's* attention to the *Work*. Any cost due to failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor's* performance of the *Work* attributable to the *Change Directive* shall be borne by the *Contractor*.
- 6.3.9 The *Contractor* shall keep full and detailed accounts and records necessary for the documentation of the cost of performing the *Work* attributable to the *Change Directive* and shall provide the *Consultant* with copies thereof.
- 6.3.10 For the purpose of valuing *Change Directives*, the *Owner* shall be afforded reasonable access to all of the *Contractor's* pertinent documents related to the cost of performing the *Work* attributable to the *Change Directive*.
- 6.3.11 Pending determination of the final amount of a *Change Directive*, the undisputed value of the *Work* performed as the result of a *Change Directive* is eligible to be included in progress payments.
- 6.3.12 If the *Owner* and the *Contractor* do not agree on the proposed adjustment in the *Contract Time* attributable to the change in the *Work*, or the method of determining it, the adjustment shall be referred to the *Consultant* for a finding.
- 6.3.13 When the *Owner* and the *Contractor* reach agreement on the adjustment to the *Contract Price* and to the *Contract Time*, this agreement shall be recorded in a *Change Order*.

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- 6.4.1 If the *Owner* or the *Contractor* discover conditions at the *Place of the Work* which are:
- .1 subsurface or otherwise concealed physical conditions which existed before the commencement of the *Work* and differ materially from those indicated in the *Contract Documents*; or
 - .2 physical conditions, other than conditions due to weather, that are of a nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the *Contract Documents*,
- then the observing party shall give *Notice in Writing* to the other party of such conditions before they are disturbed and in no event later than 5 *Working Days* after first observance of the conditions.
- 6.4.2 The *Consultant* will promptly investigate such conditions and make a finding. If the finding is that the conditions differ materially and this would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Owner*, through the *Consultant*, shall issue appropriate instructions for a change in the *Work* as provided in GC 6.2 – CHANGE ORDER or GC 6.3 – CHANGE DIRECTIVE.
- 6.4.3 If the *Consultant* finds that the conditions at the *Place of the Work* are not materially different or that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* will promptly inform the *Owner* and the *Contractor* in writing.
- 6.4.4 If such concealed or unknown conditions relate to toxic and hazardous substances and materials, artifacts and fossils, or mould, the parties will be governed by the provisions of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, GC 9.3 – ARTIFACTS AND FOSSILS and GC 9.5 – MOULD.

GC 6.5 DELAYS

- 6.5.1 If the *Contractor* is delayed in the performance of the *Work* by the *Owner*, the *Consultant*, or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.
- 6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or any person employed or engaged by the *Contractor* directly or indirectly, resulting in the failure of the *Contractor* to attain *Ready-for-Takeover* by the date stipulated in Article A-1 of the Agreement – THE WORK, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.
- 6.5.3 If the *Contractor* is delayed in the performance of the *Work* by:
- .1 labour disputes, strikes, lock-outs (including lock-outs decreed or recommended for its members by a recognized contractors' association, of which the *Contractor* is a member or to which the *Contractor* is otherwise bound),
 - .2 fire, unusual delay by common carriers or unavoidable casualties,
 - .3 abnormally adverse weather conditions, or

- .4 any cause beyond the *Contractor's* control other than one resulting from a default or breach of *Contract* by the *Contractor*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as the result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from actions by the *Owner*, the *Consultant* or anyone employed or engaged by them directly or indirectly.
- 6.5.4 No extension shall be made for delay unless *Notice in Writing* of the cause of delay is given to the *Consultant* not later than 10 *Working Days* after the commencement of the delay. In the case of a continuing cause of delay only one *Notice in Writing* shall be necessary.
- 6.5.5 If no schedule is made under paragraph 2.2.12 of GC 2.2 – ROLE OF THE CONSULTANT, then no request for extension shall be made because of failure of the *Consultant* to furnish instructions until 10 *Working Days* after demand for such instructions has been made.

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

- 6.6.1 If the *Contractor* intends to make a claim for an increase to the *Contract Price*, or if the *Owner* intends to make a claim against the *Contractor* for a credit to the *Contract Price*, the party that intends to make the claim shall give timely *Notice in Writing* of intent to claim to the other party and to the *Consultant*.
- 6.6.2 Upon commencement of the event or series of events giving rise to a claim, the party intending to make the claim shall:
- .1 take all reasonable measures to mitigate any loss or expense which may be incurred as a result of such event or series of events, and
 - .2 keep such records as may be necessary to support the claim.
- 6.6.3 The party making the claim shall submit within a reasonable time to the *Consultant* a detailed account of the amount claimed and the grounds upon which the claim is based and the *Consultant* will make a finding upon such claim.
- 6.6.4 Where the event or series of events giving rise to the claim has a continuing effect, the detailed account submitted under paragraph 6.6.3 shall be considered to be an interim account and the party making the claim shall, at such intervals as the *Consultant* may reasonably require, submit further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.
- 6.6.5 The *Consultant's* findings, with respect to a claim made by either party, will be given by *Notice in Writing* to both parties within 30 *Working Days* after receipt of the claim by the *Consultant*, or within such other time period as may be agreed by the parties.
- 6.6.6 If such finding is not acceptable to either party, the claim shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION.

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

- 7.1.1 If the *Contractor* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Contractor's* insolvency, or if a receiver is appointed because of the *Contractor's* insolvency, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, terminate the *Contractor's* right to continue with the *Work*, by giving the *Contractor* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.
- 7.1.2 If the *Contractor* neglects to perform the *Work* properly or otherwise fails to comply with the requirements of the *Contract* to a substantial degree and if the *Consultant* has given a written statement to the *Owner* and *Contractor* which provides the detail of such neglect to perform the *Work* properly or such failure to comply with the requirements of the *Contract* to a substantial degree, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, give the *Contractor Notice in Writing*, containing particulars of the default including references to applicable provisions of the *Contract*, that the *Contractor* is in default of the *Contractor's* contractual obligations and instruct the *Contractor* to correct the default in the 5 *Working Days* immediately following the receipt of such *Notice in Writing*.
- 7.1.3 If the default cannot be corrected in the 5 *Working Days* specified or in such other time period as may be subsequently agreed in writing by the parties, the *Contractor* shall be in compliance with the *Owner's* instructions if the *Contractor*:
- .1 commences the correction of the default within the specified time,
 - .2 provides the *Owner* with an acceptable schedule for such correction, and
 - .3 corrects the default in accordance with the *Contract* terms and with such schedule.

- 7.1.4 If the *Contractor* fails to correct the default in the time specified or in such other time period as may be subsequently agreed in writing by the parties, without prejudice to any other right or remedy the *Owner* may have, the *Owner* may by giving *Notice in Writing*:
- .1 correct such default and deduct the cost thereof from any payment then or thereafter due the *Contractor* for the *Work* provided the *Consultant* has certified such cost to the *Owner* and the *Contractor*, or
 - .2 terminate the *Contractor*'s right to continue with the *Work* in whole or in part or terminate the *Contract*.
- 7.1.5 If the *Owner* terminates the *Contractor*'s right to continue with the *Work* as provided in paragraphs 7.1.1 and 7.1.4, the *Owner* shall be entitled to:
- .1 take possession of the *Work* and *Products* at the *Place of the Work*; subject to the rights of third parties, utilize the *Construction Equipment* at the *Place of the Work*; finish the *Work* by whatever method the *Owner* may consider expedient, but without undue delay or expense,
 - .2 withhold further payment to the *Contractor* until a final certificate for payment is issued,
 - .3 charge the *Contractor* the amount by which the full cost of finishing the *Work* as certified by the *Consultant*, including compensation to the *Consultant* for the *Consultant*'s additional services and a reasonable allowance as determined by the *Consultant* to cover the cost of corrections to work performed by the *Contractor* that may be required under GC 12.3 – WARRANTY, exceeds the unpaid balance of the *Contract Price*; however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference, and
 - .4 on expiry of the warranty period, charge the *Contractor* the amount by which the cost of corrections to the *Contractor*'s work under GC 12.3 – WARRANTY exceeds the allowance provided for such corrections, or if the cost of such corrections is less than the allowance, pay the *Contractor* the difference.
- 7.1.6 The *Contractor*'s obligation under the *Contract* as to quality, correction and warranty of the work performed by the *Contractor* up to the time of termination shall continue in force after such termination of the *Contract*.

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

- 7.2.1 If the *Owner* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Owner*'s insolvency, or if a receiver is appointed because of the *Owner*'s insolvency, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.
- 7.2.2 If the *Work* is suspended or otherwise delayed for a period of 20 *Working Days* or more under an order of a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or of anyone directly or indirectly employed or engaged by the *Contractor*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* *Notice in Writing* to that effect.
- 7.2.3 The *Contractor* may give *Notice in Writing* to the *Owner*, with a copy to the *Consultant*, that the *Owner* is in default of the *Owner*'s contractual obligations if:
- .1 the *Owner* fails to furnish, when so requested by the *Contractor*, reasonable evidence that financial arrangements have been made to fulfill the *Owner*'s obligations under the *Contract*,
 - .2 the *Consultant* fails to issue a certificate as provided in Part 5 of the General Conditions – PAYMENT,
 - .3 the *Owner* fails to pay the *Contractor* when due the amounts certified by the *Consultant* or awarded by adjudication, arbitration or court, or
 - .4 the *Owner* fails to comply with the requirements of the *Contract* to a substantial degree and the *Consultant*, except for GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER, gives a written statement to the *Owner* and the *Contractor* that provides detail of such failure to comply with the requirements of the *Contract* to a substantial degree.
- 7.2.4 The *Contractor*'s *Notice in Writing* to the *Owner* provided under paragraph 7.2.3 shall advise that if the default is not corrected within 5 *Working Days* following the receipt of the *Notice in Writing*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, suspend the *Work* or terminate the *Contract*.
- 7.2.5 If the *Contractor* terminates the *Contract* by giving a *Notice in Writing* to the *Owner* under the conditions set out above, the *Contractor* shall be entitled to be paid for all work performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*.

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

- 8.1.1 Differences between the parties to the *Contract* as to the interpretation, application or administration of the *Contract* or any failure to agree where agreement between the parties is called for, herein collectively called disputes, which are not resolved

in the first instance by findings of the *Consultant* as provided in GC 2.2 – ROLE OF THE CONSULTANT, shall be settled in accordance with the requirements of Part 8 of the General Conditions – DISPUTE RESOLUTION.

- 8.1.2 If a dispute arises under the *Contract* in respect of a matter in which the *Consultant* has no authority under the *Contract* to make a finding, the procedures set out in paragraph 8.1.3 and paragraphs 8.3.3 to 8.3.8 of GC 8.3 – NEGOTIATION, MEDIATION AND ARBITRATION, and in GC 8.4 – RETENTION OF RIGHTS apply to that dispute with the necessary changes to detail as may be required.
- 8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instructions as in the *Consultant's* opinion are necessary for the proper performance of the *Work* and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim the party may have. If it is subsequently determined that such instructions were in error or at variance with the *Contract Documents*, the *Owner* shall pay the *Contractor* costs incurred by the *Contractor* in carrying out such instructions which the *Contractor* was required to do beyond what the *Contract Documents* correctly understood and interpreted would have required, including costs resulting from interruption of the *Work*.

GC 8.2 ADJUDICATION

- 8.2.1 Nothing in this *Contract* shall be deemed to affect the rights of the parties to resolve any dispute by adjudication as may be prescribed by applicable legislation.

GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

- 8.3.1 In accordance with the rules for mediation as provided in CCDC 40 ‘Rules for Mediation and Arbitration of Construction Industry Disputes’ in effect at the time of bid closing, the parties shall appoint a Project Mediator
- .1 within 20 *Working Days* after the *Contract* was awarded, or
 - .2 if the parties neglected to make an appointment within the 20 *Working Days*, within 10 *Working Days* after either party by *Notice in Writing* requests that the Project Mediator be appointed.
- 8.3.2 A party shall be conclusively deemed to have accepted a finding of the *Consultant* under GC 2.2 – ROLE OF THE CONSULTANT and to have expressly waived and released the other party from any claims in respect of the particular matter dealt with in that finding unless, within 15 *Working Days* after receipt of that finding, the party sends a *Notice in Writing* of dispute to the other party and to the *Consultant*, which contains the particulars of the matter in dispute and the relevant provisions of the *Contract Documents*. The responding party shall send a *Notice in Writing* of reply to the dispute within 10 *Working Days* after receipt of such *Notice in Writing* setting out particulars of this response and any relevant provisions of the *Contract Documents*.
- 8.3.3 The parties shall make all reasonable efforts to resolve their dispute by amicable negotiations and agree to provide, without prejudice, frank, candid, and timely disclosure of relevant facts, information and documents to facilitate these negotiations.
- 8.3.4 After a period of 10 *Working Days* following receipt of a responding party’s *Notice in Writing* of reply under paragraph 8.3.2, the parties shall request the Project Mediator to assist the parties to reach agreement on any unresolved dispute. The mediated negotiations shall be conducted in accordance with the rules for mediation as provided in CCDC 40 in effect at the time of bid closing.
- 8.3.5 If the dispute has not been resolved at the mediation or within such further period as is agreed by the parties, the Project Mediator will terminate the mediated negotiations by giving *Notice in Writing* to the *Owner*, the *Contractor* and the *Consultant*.
- 8.3.6 By giving a *Notice in Writing* to the other party and the *Consultant*, not later than 10 *Working Days* after the date of termination of the mediated negotiations under paragraph 8.3.5, either party may refer the dispute to be finally resolved by arbitration under the rules of arbitration as provided in CCDC 40 in effect at the time of bid closing. The arbitration shall be conducted in the jurisdiction of the *Place of the Work*.
- 8.3.7 On expiration of the 10 *Working Days*, the arbitration agreement under paragraph 8.3.6 is not binding on the parties and, if a *Notice in Writing* is not given under paragraph 8.3.6 within the required time, the parties may refer the unresolved dispute to the courts or to any other form of dispute resolution, including arbitration, which they have agreed to use.
- 8.3.8 If neither party, by *Notice in Writing*, given within 10 *Working Days* of the date of *Notice in Writing* requesting arbitration in paragraph 8.3.6, requires that a dispute be arbitrated immediately, all disputes referred to arbitration as provided in paragraph 8.3.6 shall be:
- .1 held in abeyance until:
 - (1) *Ready-for-Takeover*,
 - (2) the *Contract* has been terminated, or
 - (3) the *Contractor* has abandoned the *Work*,whichever is earlier; and

- .2 consolidated into a single arbitration under the rules governing the arbitration under paragraph 8.3.6.

GC 8.4 RETENTION OF RIGHTS

- 8.4.1 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses, provided the party has given the *Notice in Writing* required under Part 8 of the General Conditions – DISPUTE RESOLUTION and has carried out the instructions as provided in paragraph 8.1.3 of GC 8.1 – AUTHORITY OF THE CONSULTANT.
- 8.4.2 Nothing in Part 8 of the General Conditions – DISPUTE RESOLUTION shall be construed in any way to limit a party from asserting any statutory right to a lien under applicable lien legislation of the jurisdiction of the *Place of the Work* and the assertion of such right by initiating judicial proceedings is not to be construed as a waiver of any right that party may have under paragraph 8.3.6 of GC 8.3 – NEGOTIATION, MEDIATION AND ARBITRATION to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

- 9.1.1 The *Contractor* shall protect the *Work*, the *Owner's* property and property adjacent to the *Place of the Work* from damage which may arise as the result of the *Contractor's* operations under the *Contract*, and shall be responsible for such damage, except damage which occurs as the result of:
- .1 errors or omissions in the *Contract Documents*; or
 - .2 acts or omissions by the *Owner*, the *Consultant*, *Other Contractors*, or their agents and employees.
- 9.1.2 Before commencing any work, the *Contractor* shall determine the location of all underground utilities and structures indicated in the *Contract Documents* or that are reasonably apparent in an inspection of the *Place of the Work*.
- 9.1.3 Should the *Contractor* in the performance of the *Contract* damage the *Work*, the *Owner's* property or property adjacent to the *Place of the Work*, the *Contractor* shall be responsible for making good such damage at the *Contractor's* expense.
- 9.1.4 Should damage occur to the *Work* or the *Owner's* property for which the *Contractor* is not responsible, as provided in paragraph 9.1.1, the *Contractor* shall make good such damage to the *Work* and, if the *Owner* so directs, to the *Owner's* property. The *Contract Price* and *Contract Time* shall be adjusted as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

- 9.2.1 For the purposes of applicable legislation related to toxic and hazardous substances, the *Owner* shall be deemed to have control and management of the *Place of the Work* with respect to existing conditions.
- 9.2.2 Prior to the *Contractor* commencing the *Work*, the *Owner* shall,
- .1 take all reasonable steps to determine whether any toxic or hazardous substances are present at the *Place of the Work*, and
 - .2 provide the *Consultant* and the *Contractor* with a written list of any such substances that are known to exist and their locations.
- 9.2.3 The *Owner* shall take all reasonable steps to ensure that no person's exposure to any toxic or hazardous substance exceeds the time weighted levels prescribed by applicable legislation at the *Place of the Work* and that no property is damaged or destroyed as a result of exposure to, or the presence of, toxic or hazardous substances which were at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.2.4 Unless the *Contract* expressly provides otherwise, the *Owner* shall be responsible for taking all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to dispose of, store or otherwise render harmless any toxic or hazardous substance which was present at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.2.5 If the *Contractor*
- .1 encounters toxic or hazardous substances at the *Place of the Work*, or
 - .2 has reasonable grounds to believe that toxic or hazardous substances are present at the *Place of the Work*, which were not brought to the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible and which were not disclosed by the *Owner* or which were disclosed but have not been dealt with as required under paragraph 9.2.4, the *Contractor* shall
 - .3 take all reasonable steps, including stopping the *Work*, to ensure that no person's exposure to any toxic or hazardous substance exceeds any applicable time weighted levels prescribed by applicable legislation at the *Place of the Work*, and
 - .4 immediately report the circumstances to the *Consultant* and the *Owner* in writing.

- 9.2.6 If the *Owner* and the *Contractor* do not agree on the existence, significance of, or whether the toxic or hazardous substances were brought onto the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.
- 9.2.7 If the *Owner* and the *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were not brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall promptly at the *Owner's* own expense:
- .1 take all steps as required under paragraph 9.2.4;
 - .2 reimburse the *Contractor* for the costs of all steps taken pursuant to paragraph 9.2.5;
 - .3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in 9.2.6 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay; and
 - .4 indemnify the *Contractor* as required by GC 13.1 – INDEMNIFICATION.
- 9.2.8 If the *Owner* and the *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Contractor* shall promptly at the *Contractor's* own expense:
- .1 take all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to safely remove and dispose the toxic or hazardous substances;
 - .2 make good any damage to the *Work*, the *Owner's* property or property adjacent to the place of the *Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY;
 - .3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.2.6; and
 - .4 indemnify the *Owner* as required by GC 13.1 – INDEMNIFICATION.
- 9.2.9 If either party does not accept the expert's findings under paragraph 9.2.6, the disagreement shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraph 9.2.7 or 9.2.8 it being understood that by so doing, neither party will jeopardize any claim that party may have to be reimbursed as provided by GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.

GC 9.3 ARTIFACTS AND FOSSILS

- 9.3.1 Fossils, coins, articles of value or antiquity, structures and other remains or things of scientific or historic interest discovered at the *Place or Work* shall, as between the *Owner* and the *Contractor*, be deemed to be the absolute property of the *Owner*.
- 9.3.2 The *Contractor* shall take all reasonable precautions to prevent removal or damage to discoveries as identified in paragraph 9.3.1, and shall advise the *Consultant* upon discovery of such items.
- 9.3.3 The *Consultant* will investigate the impact on the *Work* of the discoveries identified in paragraph 9.3.1. If conditions are found that would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Owner*, through the *Consultant*, shall issue appropriate instructions for a change in the *Work* as provided in GC 6.2 – CHANGE ORDER or GC 6.3 – CHANGE DIRECTIVE.

GC 9.4 CONSTRUCTION SAFETY

- 9.4.1 The *Contractor* shall be responsible for establishing, initiating, maintaining, and supervising all health and safety precautions and programs in connection with the performance of the *Work* in accordance with the applicable health and safety legislation.
- 9.4.2 The *Owner* and the *Contractor* shall comply with all health and safety precautions and programs established at the *Place of the Work*.
- 9.4.3 The *Owner* and the *Contractor* shall comply with the rules, regulations and practices required by the applicable health and safety legislation.
- 9.4.4 The *Owner* shall cause the *Consultant*, *Other Contractors* and the *Owner's* own forces to comply with all health and safety precautions and programs established by the *Contractor* at the *Place of the Work*.
- 9.4.5 Nothing in this *Contract* shall affect the determination of liability under the applicable health and safety legislation.

GC 9.5 MOULD

- 9.5.1 If the *Contractor* or the *Owner* observes or reasonably suspects the presence of mould at the *Place of the Work*, the remediation of which is not expressly part of the *Work*,
- .1 the observing party shall promptly report the circumstances to the other party in writing,
 - .2 the *Contractor* shall promptly take all reasonable steps, including stopping the *Work* if necessary, to ensure that no person suffers injury, sickness or death and that no property is damaged as a result of exposure to or the presence of the mould, and

- .3 if the *Owner* and the *Contractor* do not agree on the existence, significance or cause of the mould or as to what steps need be taken to deal with it, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.
- 9.5.2 If the *Owner* and the *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was caused by the *Contractor*'s operations under the *Contract*, the *Contractor* shall promptly, at the *Contractor*'s own expense:
- .1 take all reasonable and necessary steps to safely remediate or dispose of the mould,
 - .2 make good any damage to the *Work*, the *Owner*'s property or property adjacent to the *Place of the Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY,
 - .3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.5.1.3, and
 - .4 indemnify the *Owner* as required by GC 13.1 – INDEMNIFICATION.
- 9.5.3 If the *Owner* and the *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was not caused by the *Contractor*'s operations under the *Contract*, the *Owner* shall promptly, at the *Owner*'s own expense:
- .1 take all reasonable and necessary steps to safely remediate or dispose of the mould,
 - .2 reimburse the *Contractor* for the cost of taking the steps under paragraph 9.5.1.2 and making good any damage to the *Work* as provided in paragraph 9.1.4 of GC 9.1 – PROTECTION OF WORK AND PROPERTY,
 - .3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in paragraph 9.5.1.3 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay, and
 - .4 indemnify the *Contractor* as required by GC 13.1 – INDEMNIFICATION.
- 9.5.4 If either party does not accept the expert's finding under paragraph 9.5.1.3, the disagreement shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraphs 9.5.2 or 9.5.3, it being understood that by so doing neither party will jeopardize any claim the party may have to be reimbursed as provided by GC 9.5 – MOULD.

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

- 10.1.1 The *Contract Price* shall include all taxes and customs duties in effect at the time of the bid closing except for *Value Added Taxes* payable by the *Owner* to the *Contractor* as stipulated in Article A-4 of the Agreement – CONTRACT PRICE.
- 10.1.2 Any increase or decrease in costs to the *Contractor* due to changes in taxes and duties after the time of the bid closing shall increase or decrease the *Contract Price* accordingly.

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

- 10.2.1 The laws of the *Place of the Work* shall govern the *Work*.
- 10.2.2 The *Owner* shall obtain and pay for development approvals, building permit, permanent easements, rights of servitude, and all other necessary approvals and permits, except for the permits and fees referred to in paragraph 10.2.3 or for which the *Contract Documents* specify as the responsibility of the *Contractor*.
- 10.2.3 The *Contractor* shall be responsible for the procurement of permits, licences, inspections, and certificates, which are necessary for the performance of the *Work* and customarily obtained by contractors in the jurisdiction of the *Place of the Work* after the issuance of the building permit. The *Contract Price* includes the cost of these permits, licences, inspections, and certificates, and their procurement.
- 10.2.4 The *Contractor* shall give the required notices and comply with the laws, ordinances, rules, regulations, or codes which are or become in force during the performance of the *Work* and which relate to the *Work*, to the preservation of the public health, and to construction safety.
- 10.2.5 The *Contractor* shall not be responsible for verifying that the *Contract Documents* are in compliance with the applicable laws, ordinances, rules, regulations, or codes relating to the *Work*. If the *Contract Documents* are at variance therewith, or if, subsequent to the time of bid closing, changes are made to the applicable laws, ordinances, rules, regulations, or codes which require modification to the *Contract Documents*, the *Contractor* shall advise the *Consultant* in writing requesting direction immediately upon such variance or change becoming known. The *Consultant* will issue the changes required to the *Contract Documents* as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

- 10.2.6 If the *Contractor* fails to advise the *Consultant* in writing; fails to obtain direction as required in paragraph 10.2.5; and performs work knowing it to be contrary to any laws, ordinances, rules, regulations, or codes; the *Contractor* shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations, or codes.
- 10.2.7 If, subsequent to the time of bid closing, changes are made to applicable laws, ordinances, rules, regulations, or codes of authorities having jurisdiction which affect the cost of the *Work*, either party may submit a claim in accordance with the requirements of GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.

GC 10.3 PATENT FEES

- 10.3.1 The *Contractor* shall pay the royalties and patent licence fees required for the performance of the *Contract*. The *Contractor* shall hold the *Owner* harmless from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention by the *Contractor* or anyone for whose acts the *Contractor* may be liable.
- 10.3.2 The *Owner* shall hold the *Contractor* harmless against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention in executing anything for the purpose of the *Contract*, the physical model, plan or design of which was supplied to the *Contractor* as part of the *Contract*.

GC 10.4 WORKERS' COMPENSATION

- 10.4.1 Prior to commencing the *Work*, and again with the *Contractor*'s applications for payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation at the *Place of the Work*.

PART 11 INSURANCE

GC 11.1 INSURANCE

- 11.1.1 Without restricting the generality of GC 13.1 – INDEMNIFICATION, the *Contractor* shall provide, maintain and pay for the following insurance coverages, the requirements of which are specified in CCDC 41 'CCDC Insurance Requirements' in effect at the time of bid closing except as hereinafter provided:
- .1 General liability insurance in the name of the *Contractor* and include, or in the case of a single, blanket policy, be endorsed to name, the *Owner* and the *Consultant* as insureds but only with respect to liability, other than legal liability arising out of their sole negligence, arising out of the operations of the *Contractor* with regard to the *Work*. General liability insurance shall be maintained from the date of commencement of the *Work* until one year from the date of *Ready-for-Takeover*. Liability coverage shall be provided for completed operations hazards from the date of *Ready-for-Takeover* on an ongoing basis for a period of 6 years following *Ready-for-Takeover*.
 - .2 Automobile Liability Insurance from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.
 - .3 Unmanned aerial vehicle aircraft, manned aircraft or watercraft Liability Insurance when owned or non-owned manned or unmanned aircraft or watercraft are used directly or indirectly in the performance of the *Work*.
 - .4 "Broad form" property insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The "Broad form" property insurance shall be provided from the date of commencement of the *Work* until the earliest of:
 - (1) 10 calendar days after the date of *Ready-for-Takeover*;
 - (2) on the commencement of use or occupancy of any part or section of the *Work* unless such use or occupancy is for construction purposes, habitational, office, banking, convenience store under 465 square metres in area, or parking purposes, or for the installation, testing and commissioning of equipment forming part of the *Work*; and
 - (3) when left unattended for more than 30 consecutive calendar days or when construction activity has ceased for more than 30 consecutive calendar days.
 - .5 Boiler and machinery insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The coverage shall be maintained continuously from commencement of use or operation of the boiler and machinery objects insured by the policy and until 10 calendar days after the date of *Ready-for-Takeover*.
 - .6 The "Broad form" property and boiler and machinery policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. In the event of loss or damage:
 - (1) the *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except

that the *Contractor* shall be entitled to such reasonable extension of *Contract Time* relative to the extent of the loss or damage as the *Consultant* may recommend in consultation with the *Contractor*;

- (2) the *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount which the *Owner's* interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds in accordance with the progress payment provisions. In addition the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor's* interest in the restoration of the *Work*; and
- (3) to the *Work* arising from the work of the *Owner*, the *Owner's* own forces or *Other Contractors*, the *Owner* shall, in accordance with the *Owner's* obligations under the provisions relating to construction by the *Owner* or *Other Contractors*, pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as in accordance with the progress payment provisions.

- .7 *Contractors' Equipment Insurance* from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.
- .8 *Contractors' Pollution Liability Insurance* from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.

11.1.2 Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements applicable to the *Work*.

11.1.3 The parties shall pay their share of the deductible amounts in direct proportion to their responsibility in regards to any loss for which the above policies are required to pay, except where such amounts may be excluded by the terms of the *Contract*.

11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right to provide and maintain such insurance and give evidence to the *Contractor* and the *Consultant*. The *Contractor* shall pay the cost thereof to the *Owner* on demand or the *Owner* may deduct the cost from the amount which is due or may become due to the *Contractor*.

11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*.

11.1.6 If a revised version of CCDC 41 is published, which specifies reduced insurance requirements, the parties shall address such reduction, prior to the *Contractor's* insurance policy becoming due for renewal, and record any agreement in a *Change Order*.

11.1.7 If a revised version of CCDC 41 is published, which specifies increased insurance requirements, the *Owner* may request the increased coverage from the *Contractor* by way of a *Change Order*.

11.1.8 A *Change Directive* shall not be used to direct a change in the insurance requirements in response to the revision of CCDC 41.

PART 12 OWNER TAKEOVER

GC 12.1 READY-FOR-TAKEOVER

12.1.1 The prerequisites to attaining *Ready-for-Takeover* of the *Work* are limited to the following:

- .1 The *Consultant* has certified or verified the *Substantial Performance of the Work*.
- .2 Evidence of compliance with the requirements for occupancy or occupancy permit as prescribed by the authorities having jurisdiction.
- .3 Final cleaning and waste removal at the time of applying for *Ready-for-Takeover*, as required by the *Contract Documents*.
- .4 The delivery to the *Owner* of such operations and maintenance documents reasonably necessary for immediate operation and maintenance, as required by the *Contract Documents*.
- .5 Make available a copy of the as-built drawings completed to date on site.
- .6 Startup, testing required for immediate occupancy, as required by the *Contract Documents*.
- .7 Ability to secure access to the *Work* has been provided to the *Owner*, if required by the *Contract Documents*.
- .8 Demonstration and training, as required by the *Contract Documents*, is scheduled by the *Contractor* acting reasonably.

12.1.2 If any prerequisites set forth in paragraphs 12.1.1.3 to 12.1.1.6 must be deferred because of conditions reasonably beyond the control of the *Contractor*, or by agreement between the *Owner* and the *Contractor* to do so, *Ready-for-Takeover* shall not be delayed.

12.1.3 When the *Contractor* considers that the *Work* is *Ready-for-Takeover*, the *Contractor* shall deliver to the *Consultant* and to the *Owner* a comprehensive list of items to be completed or corrected, together with a written application for *Ready-for-Takeover* for review. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.

12.1.4 The *Consultant* will review the *Work* to verify the validity of the application and will promptly, and in any event, no later than 10 calendar days after receipt of the *Contractor's* list and application:

- .1 advise the *Contractor* in writing that the *Work* is not *Ready-for-Takeover* and give reasons why, or
- .2 confirm the date of *Ready-for-Takeover* in writing to each of the *Owner* and the *Contractor*.

12.1.5 Immediately following the confirmation of the date of *Ready-for-Takeover*, the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for finishing the *Work*.

12.1.6 The provision of GC 12.1 – READY-FOR-TAKEOVER shall be subject to GC 12.2 – EARLY OCCUPANCY BY THE OWNER.

GC 12.2 EARLY OCCUPANCY BY THE OWNER

12.2.1 The *Owner* may take occupancy of a part or the entirety of the *Work* before *Ready-for-Takeover* has been attained only as agreed by the *Contractor* which agreement shall not be unreasonably withheld.

12.2.2 The *Owner* shall not occupy a part or the entirety of the *Work* without prior approval by authorities having jurisdiction.

12.2.3 If the *Owner* takes occupancy of a part of the *Work* before *Ready-for-Takeover* has been attained:

- .1 The part of the *Work* which is occupied shall be deemed to have been taken over by the *Owner* as from the date on which it is occupied.
- .2 The *Contractor* shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the *Owner*.
- .3 The warranty period specified in paragraph 12.3.1 of GC 12.3 – WARRANTY for that part of the *Work* shall start from the date on which it is occupied.

12.2.4 If the *Owner* takes occupancy of the entirety of the *Work* before all the prerequisites are met as described in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER, the *Work* shall, subject to the requirements of the applicable lien legislation, be deemed to achieve *Ready-for-Takeover*. This shall not relieve the *Contractor*'s responsibility to complete the *Work* in a timely manner.

GC 12.3 WARRANTY

12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is one year from the date when *Ready-for-Takeover* has been attained.

12.3.2 The *Contractor* shall be responsible for the proper performance of the *Work* to the extent that the design and *Contract Documents* permit such performance.

12.3.3 The *Owner*, through the *Consultant*, shall promptly give the *Contractor Notice in Writing* of observed defects and deficiencies which occur during the one year warranty period.

12.3.4 Subject to paragraph 12.3.2, the *Contractor* shall correct promptly, at the *Contractor*'s expense, defects or deficiencies in the *Work* which appear prior to and during the one year warranty period.

12.3.5 The *Contractor* shall correct or pay for damage resulting from corrections made under the requirements of paragraph 12.3.4.

12.3.6 Any extended warranties required beyond the one year warranty period as described in paragraph 12.3.1, shall be as specified in the *Contract Documents*. Extended warranties shall be issued by the warrantor to the benefit of the *Owner*. The *Contractor*'s responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibilities of the warrantor.

PART 13 INDEMNIFICATION AND WAIVER

GC 13.1 INDEMNIFICATION

13.1.1 Without restricting the parties' obligation to indemnify respecting toxic and hazardous substances, patent fees and defect in title claims all as described in paragraphs 13.1.4 and 13.1.5, the *Owner* and the *Contractor* shall each indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by them or in respect to claims by third parties that arise out of, or are attributable in any respect to their involvement as parties to this *Contract*, provided such claims are:

- .1 caused by:
 - (1) the negligent acts or omissions of the party from whom indemnification is sought or anyone for whose negligent acts or omissions that party is liable, or
 - (2) a failure of the party to the *Contract* from whom indemnification is sought to fulfill its terms or conditions; and
- .2 made by *Notice in Writing* within a period of 6 years from the *Ready-for-Takeover* date or within such shorter period as may be prescribed by any limitation statute of the Province or Territory of the *Place of the Work*.

The parties expressly waive the right to indemnity for claims other than those provided for in this *Contract*.

- 13.1.2 The obligation of either party to indemnify as set forth in paragraph 13.1.1 shall be limited as follows:
- .1 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is to be provided by either party pursuant to GC 11.1 – INSURANCE, the minimum liability insurance limit for one occurrence, of the applicable insurance policy, as referred to in CCDC 41 in effect at the time of bid closing.
 - .2 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is not required to be provided by either party in accordance with GC 11.1 – INSURANCE, the greater of the *Contract Price* as recorded in Article A-4 – CONTRACT PRICE or \$2,000,000, but in no event shall the sum be greater than \$20,000,000.
 - .3 In respect to indemnification by a party against the other with respect to losses suffered by them, such obligation shall be restricted to direct loss and damage, and neither party shall have any liability to the other for indirect, consequential, punitive or exemplary damages.
 - .4 In respect to indemnification respecting claims by third parties, the obligation to indemnify is without limit.
- 13.1.3 The obligation of either party to indemnify the other as set forth in paragraphs 13.1.1 and 13.1.2 shall be inclusive of interest and all legal costs.
- 13.1.4 The *Owner* and the *Contractor* shall indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of their obligations described in GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.
- 13.1.5 The *Owner* shall indemnify and hold harmless the *Contractor* from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings:
- .1 as described in paragraph 10.3.2 of GC 10.3 – PATENT FEES, and
 - .2 arising out of the *Contractor*'s performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work*.
- 13.1.6 In respect to any claim for indemnity or to be held harmless by the *Owner* or the *Contractor*:
- .1 *Notice in Writing* of such claim shall be given within a reasonable time after the facts upon which such claim is based become known; and
 - .2 should any party be required as a result of its obligation to indemnify another to pay or satisfy a final order, judgment or award made against the party entitled by this contract to be indemnified, then the indemnifying party upon assuming all liability for any costs that might result shall have the right to appeal in the name of the party against whom such final order or judgment has been made until such rights of appeal have been exhausted.

GC 13.2 WAIVER OF CLAIMS

- 13.2.1 Subject to any lien legislation applicable to the *Place of the Work*, the *Contractor* waives and releases the *Owner* from all claims which the *Contractor* has or reasonably ought to have knowledge of that could be advanced by the *Contractor* against the *Owner* under the *Contract*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the *Ready-for-Takeover* date, except as follows:
- .1 claims arising prior to or on the *Ready-for-Takeover* date for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* no later than 5 calendar days before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work* or 20 calendar days following the *Ready-for-Takeover* date, whichever is later;
 - .2 indemnification for claims advanced against the *Contractor* by third parties for which a right of indemnification may be asserted by the *Contractor* against the *Owner* pursuant to the provisions of this *Contract*;
 - .3 claims respecting toxic and hazardous substances, patent fees and defect in title matters for which a right of indemnity could be asserted by the *Contractor* pursuant to the provisions of paragraphs 13.1.4 or 13.1.5 of GC 13.1 – INDEMNIFICATION; and
 - .4 claims resulting from acts or omissions which occur after the *Ready-for-Takeover* date.
- 13.2.2 The *Contractor* waives and releases the *Owner* from all claims resulting from acts or omissions which occurred after the *Ready-for-Takeover* date except for:
- .1 indemnification respecting third party claims, and claims respecting toxic and hazardous substances, patent fees and defect in title matters, all as referred in paragraphs 13.2.1.2 and 13.2.1.3; and
 - .2 claims for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* within 395 calendar days following the *Ready-for-Takeover* date.
- 13.2.3 Subject to any lien legislation applicable to the *Place of the Work*, the *Owner* waives and releases the *Contractor* from all claims which the *Owner* has or reasonably ought to have knowledge of that could be advanced by the *Owner* against the *Contractor* under the *Contract*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the *Ready-for-Takeover* date, except as follows:
- .1 claims arising prior to or on the *Ready-for-Takeover* date for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* no later than 20 calendar days following the *Ready-for-Takeover* date;

- .2 indemnification for claims advanced against the *Owner* by third parties for which a right of indemnification may be asserted by the *Owner* against the *Contractor* pursuant to the provisions of this *Contract*;
 - .3 claims respecting toxic and hazardous substances for which a right of indemnity could be asserted by the *Owner* against the *Contractor* pursuant to the provisions of paragraph 13.1.4 of GC 13.1 – INDEMNIFICATION;
 - .4 damages arising from the *Contractor*'s actions which result in substantial defects or deficiencies in the *Work*. "Substantial defects or deficiencies" mean those defects or deficiencies in the *Work* which affect the *Work* to such an extent or in such a manner that a significant part or the whole of the *Work* is unfit for the purpose intended by the *Contract Documents*;
 - .5 claims arising pursuant to GC 12.3 – WARRANTY; and
 - .6 claims arising from acts or omissions which occur after the *Ready-for-Takeover* date.
- 13.2.4 Respecting claims arising upon substantial defects and deficiencies in the *Work*, as referenced in paragraph 13.2.3.4, and notwithstanding paragraph 13.2.3.5, the *Owner* waives and releases the *Contractor* from all claims except claims for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* within a period of six years from the *Ready-for-Takeover* date, provided that any limitation statute of the Province or Territory of the *Place of the Work* permit such agreement. If the applicable limitation statute does not permit such agreement, the time within which any such claim may be brought shall be such shorter period as may be prescribed by any limitation statute of the Province or Territory of the *Place of the Work*.
- 13.2.5 The *Owner* waives and releases the *Contractor* from all claims arising from acts or omissions which occur after the *Ready-for-Takeover* date, except for:
- .1 indemnification for claims advanced against the *Owner* by third parties, as referenced in paragraph 13.2.3.2;
 - .2 claims respecting toxic and hazardous substances for which a right of indemnity could be asserted by the *Owner* against the *Contractor*, as referenced in paragraph 13.2.3.3;
 - .3 claims arising under GC 12.3 – WARRANTY; and
 - .4 claims for which *Notice in Writing* has been received by the *Contractor* from the *Owner* within 395 calendar days following the *Ready-for-Takeover* date.
- 13.2.6 "Notice in Writing of claim" as provided for in GC 13.2 – WAIVER OF CLAIMS to preserve a claim or right of action which would otherwise, by the provisions of GC 13.2 – WAIVER OF CLAIMS, be deemed to be waived, must include the following:
- .1 a clear and unequivocal statement of an intention to claim;
 - .2 a statement as to the nature of the claim and the grounds upon which the claim is based; and
 - .3 a statement of the estimated quantum of the claim.
- 13.2.7 A claim for lien asserted under the lien legislation prevailing at the *Place of the Work* shall qualify as notice of claim for the purposes of this *Contract*.
- 13.2.8 The party giving the *Notice in Writing* of claim as provided for in GC 13.2 – WAIVER OF CLAIMS shall submit within a reasonable time a detailed account of the amount claimed.
- 13.2.9 Where the event or series of events giving rise to a claim made under paragraphs 13.2.1 or 13.2.3 has a continuing effect, the detailed account submitted under paragraph 13.2.8 shall be considered to be an interim account and the party making the claim shall submit further interim accounts, at reasonable intervals, giving the accumulated amount of the claim and any further grounds upon which such claim is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.
- 13.2.10 Nothing in GC 13.2 – WAIVER OF CLAIMS shall be deemed to affect the rights of the parties under any lien legislation or limitations legislation prevailing at the *Place of the Work*.

CCDC 41
CCDC INSURANCE REQUIREMENTS

PUBLICATION DATE: December 14, 2020

1. General liability insurance shall be with limits of not less than \$10,000,000 per occurrence, an aggregate limit of not less than \$10,000,000 within any policy year with respect to completed operations, and a deductible not exceeding \$10,000. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 (including an extension for a standard provincial and territorial form of non-owned automobile liability policy) and IBC Form 2320. To achieve the desired limit, umbrella or excess liability insurance may be used. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.
2. Automobile liability insurance in respect of vehicles that are required by law to be insured under a contract by a Motor Vehicle Liability Policy, shall have limits of not less than \$10,000,000 inclusive per occurrence for bodily injury, death and damage to property, covering all vehicles owned or leased by the *Contractor*. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor*.
3. Manned Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft (if used directly or indirectly in the performance of the *Work*), including use of additional premises, shall have limits of not less than \$10,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than \$10,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*.
4. Unmanned aerial vehicle liability insurance with respect to owned or non-owned aircraft (if used directly or indirectly in the performance of the *Work*), shall have limits of not less than \$5,000,000 per occurrence or accident for bodily injury, death and damage to property or such amounts as required by any applicable law or regulation.
5. "Broad form" property insurance shall have limits of not less than the sum of 1.1 times *Contract Price* and the full value, as stated in the *Contract*, of *Products* and design services that are specified to be provided by the *Owner* for incorporation into the *Work*, with a deductible not exceeding \$10,000. The insurance coverage shall not be less than the insurance provided by IBC Forms 4042 and 4047 or their equivalent replacement. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.
6. Boiler and machinery insurance shall have limits of not less than the replacement value of the permanent or temporary boilers and pressure vessels, and other insurable objects forming part of the *Work*. The insurance coverage shall not be less than the insurance provided by a comprehensive boiler and machinery policy including hot testing and commissioning.
7. Contractors' equipment insurance coverage written on an "all risks" basis covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* may agree to waive the equipment insurance requirement.
8. Contractors' Pollution liability insurance shall have limits of not less than \$5,000,000 per occurrence for bodily injury, death and damage to property.

Association of
Canadian
Engineering
Companies

Canadian
Construction
Association

Construction
Specifications Canada

The Royal Architectural
Institute of Canada

Attachment 1

List of Specifications

The specifications listed below will be included in the General Contractor/Owner agreement and will become part of the contract.

Section 01 10 01 General Requirements

The Contract incorporates certain sections of the BC MOTI 2025 Standard Specifications for Bridge Construction Volume 1 and 2. (SSBC).

The SSBC Standard Specifications incorporated in this Contract are listed below:

- Section 145 General Requirements for Highway, Bridge and Marine Construction
- Section 213 Timber Bridges – Construction
- Section 216 Coating of Steelwork
- Section 312 Steel Traffic Barriers
- Section 412 Concrete Reinforcement
- Section 418 Silane Treatment of New Concrete Bridge Surfaces
- Section 420 Hot Applied Waterproofing Membrane and Asphalt Overlay
- Section 421 Structural Steelwork
- Section 422 Miscellaneous Steelwork
- Section 502 Asphalt Pavement Construction
- Section 904 Timber (Treated and Untreated)
- Section 905 Timber – Glued Laminated
- Section 908 Preservative Treatment – Wood Products
- Section 909 Treated Wood Products

END OF SECTION

Attachment 2

List of Drawings

The drawings listed below will be included in the General Contractor/Owner agreement and will become part of the contract.

Drawing No.	Drawing Title	Date
S-001	General Notes – Sheet 1	4 September, 2026
S-002	General Notes – Sheet 2	4 September, 2026
S-100	Site Plan	4 September, 2026
S-101	General Arrangement	4 September, 2026
S-102	Bridge Deck	4 September, 2026
S-103	Details	4 September, 2026
S-104	Optional Work Item OW1	4 September, 2026

END OF SECTION

1.0 AGREEMENT SUPPLEMENT

The Agreement for the Standard Construction Document CCDC 2 – 2020, Stipulated Price Contract is amended as follows:

1.1 Article A-7 Language of the Contract

- .1 Paragraph 7.1: Strike out “French” to select “English” as the prevailing language.

2.0 SUPPLEMENTARY DEFINITIONS

Definitions used in the Standard Construction Document CCDC 2 - 2020, Stipulated Price Contract, are hereby amended as follows and wherever the Definitions are referred to in the *Contract Documents*, it shall be understood that such reference means as amended by these Supplementary Definitions.

- .1 Consultant: Add the following sentence to the end of the definition:

“The term *Consultant* means the *Consultant* or the *Consultant's* authorized representative.”
- .2 Contract Time: Delete the following words:

“the time from commencement of the *Work* to the date of *Ready-for-Takeover*”
- .3 Contractor: Add the following sentence to the end of the definition:

“The term *Contractor* shall be defined as the *Contractor* or the *Contractor's* authorized representative, but does not include the *Consultant*.”
- .4 Dictionary: Add the following new definition:

“In case of dispute, The Concise Oxford English Dictionary (current edition) shall prevail, except for those definitions given in CCDC 2 - 2020 and in various other places in the *Contract Documents*.”
- .5 Owner: Add the following sentence to the end of the definition:

“The term *Owner* shall be defined as the *Owner* or the *Owner's* authorized representative, but does not include the *Consultant*.”
- .6 Provide: Add the following new definition:

“*Provide* means to supply and install.”

- .7 Substantial Performance of the Work: Add the following sentence to the end of the definition:
- “If such legislation is not in force or does not contain such definition at the *Place of the Work*, *Substantial Performance of the Work* shall have been reached when the *Work* is ready for use or is being used for the purpose intended and is so verified by the *Consultant*.”
- .8 Total Performance: Add the following new definition:
- “With the exception of warranty obligations, *Total Performance* of the *Work* shall be achieved when the *Contractor* has fulfilled the requirements of the *Contract* in their entirety, including issuance of the Occupancy / Closeout Permit by the Authority having Jurisdiction if applicable; and is so verified by the *Consultant* through issuance of the final Certificate for Payment in accordance with GC 5.5.”
- .9 Specialty Engineer: Add the following new definition:
- “The term *Specialty Engineer* means the Professional Engineer retained by the *Contractor* responsible for the delegated design items required for the *Work*.”

3.0 SUPPLEMENTARY CONDITIONS

The General Conditions of Standard Construction Document CCDC 2 - 2020, Stipulated Price Contract, are hereby amended as follows and wherever the General Conditions are referred to in the *Contract Documents*, it shall be understood that such reference means as amended by these Supplementary Conditions.

3.1 GC 1.1 Contract Documents

- .1 Paragraph 1.1.4: Delete the words:
- “shall not proceed with the work affected”,
- and replace with the words:
- “shall take all reasonable measures so as not to delay the work affected”.
- .2 Paragraph 1.1.12: Add the following new paragraph:
- "The *Owner* will provide the *Contractor*, without charge, one PDF copy of the *Contract Documents* to perform the *Work*. Hard copies of the *Contract Documents* or parts thereof required by the *Contractor* shall be provided at the *Contractor's* expense."

3.2 GC 2.2 Role of the Consultant

- .1 Paragraph 2.2.1: Delete entirely and replace with the following:

"The *Consultant* will provide administration of the *Contract* as described in the *Contract Documents* during construction until issuance of Final Certificate for Payment, and subject to GC 2.1 - Authority of the Consultant."

- .2 Paragraph 2.2.3: Delete entirely.

3.3 GC 2.3 Review and Inspection of the Work

- .1 Paragraph 2.3.8: Add the following new paragraph:

"Where standards of performance are specified and the *Work* is not compliant, such deficiency shall be corrected as directed by the *Consultant*. Any subsequent testing (including re-testing by the *Owner*) to verify performance shall be done at the *Contractor's* expense."

3.4 GC 3.4 Construction Schedule

- .1 Paragraph 3.4.1.1: Delete the words: "prior to the first application for payment", and replace with the words: "within one week of *Contract* award".

3.5 GC 3.6 Subcontractors and Suppliers

- .1 Paragraph 3.6.7: Add the following new paragraph:

"*Specifications* are arranged in Divisions and Sections for convenience. They shall be read as a whole. This arrangement places no responsibility upon the *Owner* or *Consultant* to settle disputes between *Subcontractors* and *Suppliers* or between the *Contractor* and *Subcontractors* and *Suppliers*."

3.6 GC 3.7 Labour and Products

- .1 Paragraph 3.7.2: Delete the words: "The *Contractor*", and replace with the words: "Unless otherwise specified, the *Contractor*".

3.7 GC 3.8 Shop Drawings

- .1 Paragraph 3.8.7: Delete the words:

"in accordance with the schedule agreed upon, or in the absence of such schedule, with reasonable promptness so as to cause no delay in the performance of the *Work*",

and replace with the words:

"to *Contractor* within 10 working days of receipt".

3.8 GC 3.9 Documents at the Site

- .1 Add the following section:

"GC 3.9 DOCUMENTS AT THE SITE

3.9.1 The *Contractor* shall keep one copy of current *Contract Documents*, submittals, reports, and records of meetings at the *Place of the Work*, in good order and available to the *Owner* and the *Consultant*."

3.9 GC 4.1 Cash Allowances

- .1 Paragraph 4.1.7: Delete the words: "and the *Consultant* shall jointly"

and replace with the words: ", in consultation with the *Consultant*, shall".

3.10 GC 5.2 Applications for Payment

- .1 Paragraph 5.2.3: Delete the words:

"and *Products* delivered to the *Place of the Work*",

and insert the following sentence to the end of the paragraph:

"Payment will not be made for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work*."

- .2 Paragraph 5.2.5: Delete entirely and replace with the following:

"The schedule of values shall be made out in such form as specified in the *Contract* and supported by such evidence and possible modification as the *Consultant* may reasonably require until accepted by the *Consultant*."

- .3 Paragraph 5.2.9: Add the following new paragraph:

“Upon establishing that the *Work*, or a portion of the *Work*, has been Completed (per the governing Builder’s Lien Legislation), the *Contractor’s* applications for payment for those portions of the *Work* deemed Complete, shall reflect the balance of the *Contract* price less:

- .1 the aggregate amount, if any, determined in accordance with GC 5.4.1 multiplied by two, and
- .2 the amount, if any, determined in accordance with GC 5.6 - Deferred Work.

Until all deficient and incomplete work for which amounts are withheld pursuant to subparagraphs .1 and .2 of this Paragraph 5.2.9 are rectified and completed to the satisfaction of the *Consultant*, the *Owner* may withhold the full amounts set out in Subparagraphs .1 and .2 of this Paragraph 5.2.9 respectively.”

- .4 Paragraph 5.2.10: Add the following new paragraph:

“The *Contractor* shall complete the deficient and incomplete work in a timely manner in accordance with the *Contract*. Acceptance of the *Work* or occupancy of the *Project* or any portion thereof shall not relieve the *Contractor* from the obligation of correcting deficiencies which are not identified at the time of establishing the list of deficient and incomplete items of work.”

- .5 Paragraph 5.2.11: Add the following new paragraph:

“Unless all independent material testing results of *Products* supplied to the site have been received, or if the deficiency review process has not yet commenced, the maximum percent of work completed that can be claimed by the Contractor and certified by the *Consultant* for any item of work is 90%.”

3.11 GC 5.3 Payment

- .1 Paragraph 5.3.1: Delete the words “and the Owner”.

- .2 Paragraph 5.3.1.1:

- .1 Add the following words after “receipt of the application for payment”:

“that is complete and in conformance with the *Contract*”.

- .2 Add the following words after “or part thereof,”:

“the *Consultant* in consultation with”.

- .3 Add the following sentences to the end of the paragraph:

"In addition to statutory lien holdback, Certificates for Payment may provide for retention of amounts, as determined by the *Consultant*, to account for deficient or incomplete work, until the items in question are addressed and determined to be in general conformance with the *Contract*."

- .3 Paragraph 5.3.1.2: Delete the words: "by the *Owner* and the *Consultant* of the application for payment",

and replace with the words: "of the Certificate for Payment by the *Consultant*".

- .4 Paragraph 5.3.2: Add the following new paragraph:

"The *Owner*, in consultation with the *Consultant* and as verified through a Certificate for Payment, may withhold total or partial payments at any point after *Contract* award to cover third party liability claims related to the *Contractor's* operations or actions. The withheld payment amounts shall be used by the *Owner* to cover third party liability claims when there is a dispute between the *Owner* and the *Contractor* regarding responsibility for the claim. These funds are intended to ensure that third parties receive compensation promptly.

- .1 Payments to the third parties are to be released immediately and unresolved disputes between the *Owner* and the *Contractor* shall be addressed in accordance with the *Contract*.
- .2 Receipts for payments to cover third party liability claims for damages shall be provided to the *Contractor* as requested or required in accordance with the *Contract*."

3.12 GC 5.4 Substantial Performance of the Work and Payment of Holdback

- .1 Paragraph 5.4.1: Delete entirely and replace with the following:

"When the *Contractor* considers the *Work* to be substantially performed and in accordance with applicable lien legislation requirements, the *Contractor* shall submit to the *Consultant* and the *Owner* a written application for *Substantial Performance of the Work*, including a declaration stating that the *Contractor* has attained *Substantial Performance of the Work*, a comprehensive list of items to be completed or corrected, and a request for the *Consultant* to review the claim. The *Consultant* will review the *Work* to certify or verify the application's validity and, in accordance with applicable lien legislation, or in the absence of such legislation, no later than 10 calendar days after receipt of the *Contractor's* application:

- .1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or

.2 Issue or request the required documents for *Substantial Performance of the Work* in accordance with applicable lien legislation, or in the absence of such legislation, issue the Certificate of Completion.”

.2 Paragraph 5.4.7: Add the following new paragraph:

“No later than five calendar days following the issuance of the Certificate of Completion, the *Contractor*, in consultation with the *Consultant*, shall verify the date for *Ready-for-Takeover*.”

3.13 GC 5.5 Final Payment

.1 Paragraphs 5.5.2, 5.5.3, and 5.5.4: Delete entirely.

.2 Paragraphs 5.5.2 and 5.5.3: Add the following new paragraphs:

“5.5.2 All parties are to process in accordance with Part 5 – PAYMENT.

5.5.3 The *Consultant* will not consider the application for final payment valid until all applicable materials installed are tested and the *Contractor* has fulfilled the project closeout requirements that include, but are not limited to, GC 5.4 and Part 12 – Owner Takeover.”

3.14 GC 6.1 Owner’s Right to Make Changes

.1 Paragraph 6.1.2: Add the following to the paragraph:

"The valuation for the change shall include the following maximum adjustments for overhead and profit based on the actual costs:

.1 For Subcontractors - 10% for overhead and 5% for profit on the cost of their work.

.2 For Contractor - 2.5% for overhead and 2.5% for profit on the cost of the Subcontractors’ work.

.3 For Contractor - 10% for overhead and 5% for profit on the cost of their work.

Profit to be based on the value of work including overhead.”

3.15 GC 6.2 Change Order

- .1 Paragraph 6.2.1: Delete entirely and replace with the following:

“When a change in the *Work* is proposed or required, the *Consultant* will provide the *Contractor* with a written description of the proposed change in the *Work*. The *Contractor* shall prepare and submit to the *Consultant*, in a form required by the *Consultant* to permit evaluation, the adjustment in *Contract Price*, if any, and adjustment in *Contract Time*, if any, for the proposed change in the *Work*. Time is of the essence with respect to changes and the *Contractor* shall submit requested *Change Order* documents within a reasonable timeframe commensurate with the requirements of the *Change Order*, and as required to not cause a delay in the *Contract* schedule.”

- .2 Paragraph 6.2.2: Delete the words: “be effective immediately and shall be recorded in a *Change Order*”,

and replace with the words: “be recorded in a *Change Order* and shall take effect when the *Change Order* is fully signed by the required parties”.

- .3 Paragraph 6.2.3: Add the following new paragraph:

“The *Contractor* shall ensure that all adjustments in *Contract Price* and *Contract Time* associated with bonding are included in all *Change Orders* and *Change Directives*. The *Contractor* remains responsible to ensure bonding of the work is not jeopardized. Upon request by either the *Owner* or the *Consultant*, the *Contractor* shall provide proof that the Surety Company is being notified and kept apprised of the status of the *Contract* and any changes. The *Contractor* shall also provide, upon request by the *Owner* or *Consultant*, written confirmation from the Surety Company of any increases to bonding costs.”

3.16 GC 6.3 Change Directive

- .1 Paragraph 6.3.6.2: Delete entirely and replace with the following:

“If an *Owner* requested change results in a net decrease in the *Contractor's* cost, the *Contract Price* shall be decreased by the amount of the net decrease on the *Contractor's* costs, excluding the typical adjustment for the *Contractor's* percentage fee. If a *Contractor* requested change results in a net decrease in the *Contractor's* cost and is not required to maintain the primary design performance or intent of the *Project* as interpreted by the *Consultant*, the *Contract Price* shall be decreased by the amount of the net decrease in the *Contractor's* cost, including the adjustment for the *Contractor's* percentage fee.”

3.17 GC 6.5 Delays

- .1 Paragraph 6.5.2: Delete the words:

"attain *Ready-for-Takeover* by the date stipulated in Article A-1 of the Agreement – THE WORK",

and replace with the words:

"maintain the schedule in accordance with the *Contract*".

- .2 Paragraph 6.5.3: Revise as follows:

.1 In Sentence .4, insert the phrase, ", except lack of funds or breakdown of Construction Equipment, or" after the word "control".

.2 In Sentence .4, replace "one" with "ones".

.3 Starting at "then the *Contract Time* shall be extended...", reduce indent so the clause applies to Items 6.5.3.1 through 6.5.3.4.

- .3 Paragraph 6.5.6: Add the following new paragraph:

"If the area of the *Work* outlined in these *Specifications* is not available to the *Owner* for its intended use after the *Ready-for-Takeover* or *Total Performance* dates, and the *Owner* claims the *Contractor* has caused the delay, the *Contractor* may be responsible for damages resulting from the delay in the work schedule. (For example, an *Owner's* cost and reduced revenues associated with an extended work schedule). This potential impact to the *Contractor* shall be subject to the provisions of the *Contract*, including but not limited to, SC 2.2.8, Part 8 Dispute Resolution, etc."

3.18 GC 6.6 Claims for a Change in Contract Price

- .1 Paragraph 6.6.1: Delete entirely and replace with:

"If the *Contractor* intends to make a claim for an increase to the *Contract Price*, or if the *Owner* intends to make a claim against the *Contractor* for a credit to the *Contract Price*, the party intending to make the claim shall provide *Notice in Writing* of intent to claim to the other party and the *Consultant* no later than 10 working days after discovery of the condition or event giving rise to the claim. Should either party fail to submit proper notice within the required time frame, the responding party, in conjunction with the *Consultant*, reserves the right to reject the claim."

3.19 GC 6.7 Optional Work

- .1 Add new General Condition:

GC 6.7 Optional Work

6.7.1 Optional Work will only be included in the Work if the Consultant so directs by Change Order.

6.7.2 The Contract Time must include an allowance for completing all Optional Work.

3.20 GC 7.1 Owner's Right to Perform the Work, Terminate the Contractor's Right to Continue with the Work or Terminate the Contract

- .1 Paragraph 7.1.2: After the words "with the requirements of the *Contract*", add the words ", including the *Contract* schedule,".

3.21 GC 7.2 Contractor's Right to Suspend the Work or Terminate the Contract

- .1 Paragraph 7.2.3.1: Delete entirely.
- .2 Paragraph 7.2.4: Replace the words "5 *Working Days*" with "10 *Working Days*".

- .3 Paragraph 7.2.6: Add the following new paragraph:

"Withholding of payments to the *Contractor* shall remain in effect and may be implemented despite the requirements of GC 7.2. As deemed required by the *Consultant*, amounts may be retained for the *Contractor's* failure to pay all just claims and invoices in accordance with the *Contract*. Furthermore, at the discretion of the *Consultant*, registration or notice of a project-related lien against the *Owner's* property may also result in funds being retained pursuant to provincial lien legislation at the *Place of the Work*."

3.22 GC 8.3 Negotiation, Mediation, and Arbitration

- .1 Paragraph 8.3.8.1(1): Delete entirely and replace with the following:
- "*Total Performance*,"

3.23 GC 10.4 Workers' Compensation

- .1 Paragraph 10.4.2: Add the following new paragraph:

"The *Contractor* shall indemnify and hold harmless the *Owner* from and against all claims, demands, actions, suits, or proceedings by any employee of the *Contractor* or *Subcontractors* with respect to workers' compensation insurance. This indemnity shall survive completion of the *Work* or termination of the *Contract* for any reason."

3.24 GC 11.1 Insurance

- .1 Paragraph 11.1.1: Add the following new paragraph:

“11.1.1.9 In addition to the insurance requirements specified in CCDC 41 – CCDC INSURANCE REQUIREMENTS, the *Contractor's Specialty Engineer* responsible for delegated design shall carry professional liability insurance with limits of not less than \$2,000,000 per claim and with an aggregate limit of not less than \$2,000,000 within any policy year, unless specified otherwise in the *Contract Documents*. The policy shall be maintained continuously from the commencement of the *Contract* until 2 years after *Substantial Performance* of the *Work*.”

3.25 GC 12.1 Ready-for-Takeover

- .1 Paragraph 12.1.5: Delete entirely and replace with the following:

“No later than five calendar days following confirmation that *Ready-for-Takeover* has been attained, the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable *Total Performance* date, which may be the same date as *Ready-for-Takeover*.”

3.26 GC 12.4 Liquidated Damages for Late Completion

- .1 Add the following new paragraph:

“12.4 Liquidated Damages for Late Completion

12.4.1 If the *Contractor* fails to meet the milestone date for *Substantial Performance* as set out in its *Proposal* as may be adjusted pursuant to the provisions of the *Contract Documents*, then the *Owner* may deduct from any monies owing to the *Contractor* for the *Work*:

- 1) as a genuine pre-estimate of the *Owner's* increased costs for the *Consultant* and *Owner's* own staff caused by such delay an amount of \$1,000.00 per day or pro rata portion for each day that actual *Substantial Performance* is achieved after the *Substantial Performance Milestone Date*; plus
- 2) all direct out-of-pocket costs, such as costs for safety, security, or equipment rental, reasonably incurred by the *Owner* as a direct result of such delay.

12.4.2 If the monies owing to the *Contractor* are less than the total amount owing by the *Contractor* to the *Owner* per the terms of the *Agreement* then any shortfall shall immediately, upon written notice from the *Owner*, and upon *Substantial Performance* be due and payable by the *Contractor* to the *Owner*.”

3.27 GC 12.2 Early Occupancy by the Owner

- .1 Paragraph 12.2.4: Delete the words “complete the *Work* in a timely manner”, and replace with the words “achieve *Total Performance* in accordance with the *Contract*.”

3.28 GC 12.3 Warranty

- .1 Paragraph 12.3.1: Replace the words “one year” with the words “as specified, or where not specified elsewhere, one year”.
- .2 Paragraph 12.3.3: Delete the words “through the Consultant,”.
- .3 Paragraphs 12.3.3, 12.3.4, and 12.3.6: Replace the words “one year” with the word “specified”.
- .4 Paragraph 12.3.6: Delete the following sentences:

“The *Contractor*’s responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibilities of the warrantor.”

3.29 GC 13.1 Indemnification

- .1 Paragraph 13.1.1: Delete entirely and replace with the following:

“Without restricting the parties’ obligation to indemnify respecting toxic and hazardous substances, patent fees and defect in title claims as described in paragraphs 13.1.4 and 13.1.5, the *Owner* and the *Contractor* agree to the following:

 - .1 The *Contractor* and the *Owner* shall each indemnify and hold harmless the other, and their respective agents and employees, from and against all claims, demands, losses, costs, or damages of third parties, arising or alleged to arise directly, indirectly, or incidentally by reason of the operations and activities of the party from whom indemnification is sought in the execution of the *Contract*.
 - .2 Claims must be made by *Notice in Writing* within 6 years from the *Ready-for-Takeover* date or within a shorter period in accordance with any limitation statute in effect for the *Place of the Work*.
 - .3 The parties expressly waive the right to indemnity for claims other than those provided for in this *Contract*.”
- .2 Paragraph 13.1.2.2: Replace the value “\$2,000,000” with the value “\$5,000,000”.

- .3 Paragraph 13.1.7: Add the following new paragraph:

“The *Contractor* shall indemnify and hold harmless the *Consultant* and their respective agents and employees from and against all claims, demands, losses, costs, or damages of third parties, arising or alleged to arise directly, indirectly, or incidentally by reason of the operations and activities of the party from whom indemnification is sought in the execution of the *Contract*. This indemnification shall survive completion of the *Work* or termination of this *Contract* for any reason.”

3.30 GC 13.2 Waiver of Claims

- .1 Paragraph 13.2.5.4: Replace the words “*Notice is Writing*” with the words “*Notice in Writing*”.

END OF SECTION

FORT POINT BRIDGE OVER CPKC RAILWAY - REHABILITATION

SPECIAL PROVISIONS

TABLE OF CONTENTS

SECTION 5	GENERAL	2
5.01	Technical Specifications	2
5.02	General	2
5.03	Canadian Pacific Kansas City Railway (CPKC).....	3
5.04	Access	7
5.05	Detour	7
5.06	Existing Conditions	8
5.07	Demolition of Existing Bridge	8
5.08	Construction of Replacement Superstructure	9
5.09	Repair or Replacement of Timber Substructure Elements	10
5.10	Formwork and Falsework	12
5.11	Reinforcing Steel	12
5.12	Demolition of Concrete.....	12
5.13	Cast-in-Place Concrete.....	12
5.14	Supply and Fabrication of Timber	14
5.15	Supply and Fabrication of Structural Steelwork.....	14
5.16	Supply and Fabrication of Miscellaneous Steelwork	15
5.17	Deck Joints.....	15
5.18	Bearing Assemblies.....	15
5.19	Bridge Barrier.....	16
5.20	Drilling Dowel Holes, Supply and Placement of Grout.....	16
5.21	Silane Surface Treatment	17
5.22	Waterproofing Membrane and Asphalt Pavement Overlay	17
5.23	Approach Road Paving.....	17
5.24	Approach Road Guardrails.....	18
5.25	Delegated Design and Approvals	18
5.26	Water Main.....	21
5.27	Pre-Construction Survey	21
5.28	Temporary Stability.....	21

BRIDGE CONSTRUCTION

SECTION 5 GENERAL

5.01 Technical Specifications

- a) The Contract incorporates certain sections of the BC MOTI 2025 Standard Specifications for Bridge Construction Volume 1 and 2. (SSBC).

The SSBC shall be modified as listed below:

- .1 The term "Ministry" shall refer to the Owner (District of Invermere – the "District").

The SSBC Standard Specifications incorporated in this Contract are listed below:

Section 145	-	General Requirements for Highway, Bridge and Marine Construction
Section 213	-	Timber Bridges – Construction
Section 216	-	Coating of Steelwork
Section 312	-	Steel Traffic Barriers
Section 412	-	Concrete Reinforcement
Section 418	-	Silane Treatment of New Concrete Bridge Surfaces
Section 420	-	Hot Applied Waterproofing Membrane and Asphalt Overlay
Section 421	-	Structural Steelwork
Section 422	-	Miscellaneous Steelwork
Section 502	-	Asphalt Pavement Construction
Section 904	-	Timber (Treated and Untreated)
Section 905	-	Timber – Glued Laminated
Section 908	-	Preservative Treatment – Wood Products
Section 909	-	Treated Wood Products

SSBC Standard Specifications are identified by the prefix SSBC e.g. SSBC 213.

5.02 General

Payment for work will be made at the prices bid for the Items appearing in the Schedule 2 – Schedule of Quantities and Prices.

Any work called for which is not listed as an Item in the Schedule of Quantities and Unit Prices will not be paid for separately. The cost of such work shall be included in the prices bid for the Items in the Schedule of Quantities and Unit Prices.

The District may require an acceptable declaration from the Contractor transferring ownership of materials to the District.

5.03 Canadian Pacific Kansas City Railway (CPKC)

a) General

The Contractor is advised that one (1) railway track is operated within the project limits by Canadian Pacific Kansas City Railway (CPKC). Work is anticipated within the CPKC right-of-way for demolition, construction and rehabilitation activity. The Contractor shall liaise with CPKC to determine all necessary measures and requirements for the protection of CPKC personnel and facilities.

At the time of Tender, the District has submitted preliminary rehabilitation drawings to CPKC for their review. CPKC has not provided approval of design or construction activities pending submission of detailed design information.

CPKC has indicated that two (2) agreements will be required:

- Grade Separation Rehabilitation Agreement, to be signed by the District based on the detailed design submission provided by the Contractor and accepted by CPKC; and
- Temporary Workspace Agreement for construction activity along the CPKC right-of-way, to be signed by the Contractor.

The contractor is responsible for the preparation and submittal of detailed design drawings and documents for review and approval by CPKC. The Contractor shall account for the review and approval process in their schedule.

CPKC has indicated that an eight (8) week review period should be expected between receipt of detailed design drawings by CPKC and issuance of executed Agreements.

The Contractor is responsible to obtain and pay for all permits and agreements required by CPKC prior to construction.

The District and Consultant is to be included on all correspondence between the Contractor and CPKC.

The Contractor shall adhere to all requirements of the agreements once finalized. The requirements as expected at the time of tender are detailed in this section. If the final requirements differ significantly from the information provided herein, the District will work reasonably with the Contractor to address the change.

When any Work is undertaken within the limits of the railway right-of-way including, but not limited to the demolition, construction or rehabilitation of the crossing, or haul of material or equipment across the railway tracks, the Contractor is required to coordinate its operations with CPKC and to ensure that the following precautionary measures are observed.

- 1) Prior to commencing Work within the railway right-of-way, the Contractor must provide at least 8-weeks notice to CPKC.

The Contractor will liaise with CPKC to determine additional measures and insurance required for the protection of CPKC's personnel and facilities. The insurance coverage may be beyond that stipulated in the General Conditions. The cost of this insurance coverage will not be paid for separately but is considered incidental to the Work.

- 2) At the discretion of CPKC, flagperson(s) may be required to protect the trains and operating equipment. If CPKC chooses to provide the flagperson(s), the Contractor will pay the cost of the flagperson(s) directly to CPKC.

The Contractor is required to schedule and coordinate flagging requirements with CPKC daily or as required by CPKC.

- 3) If authorized by CPKC, the crossing must only be used by rubber-tired equipment unless a temporary mat or other approved measure is placed over the rails to facilitate the movement of tracked equipment.
- 4) The railway must be maintained free of dirt, debris and obstructions at all times.
- 5) The crossing must not be used for other than the purpose as agreed to by CPKC.
- 6) The Contractor must determine the exact location and depth of any underground railway signal or telecommunication cables prior to commencing the Work. These cables must be located by means of hand digging by the Contractor's forces under direct supervision of a representative of CPKC.

No extra payment will be made or charges allowed for Work done in connection with locating the cables. Additionally, the Contractor will be held wholly and solely responsible for any damages to these cables that may be attributed to its Work.

- 7) The Contractor will be fully responsible for its Work adjacent to or across the rail line and when working within the railway right-of-way and indemnify and hold harmless the District.

The cost of coordinating with CPKC is incidental to the Work.

b) CPKC Technical Requirements

Work within the CPKC right-of-way shall be completed in accordance with the following CPKC specifications, which are provided as reference documents incorporated into the agreement:

- Minimum Safety Requirements for Contractors Working on CP Property in Canada, January 20, 2022
- Operational Constraints for Work On, Above or Below Railway Right of Way

The Contractor shall be responsible to satisfy all requirements contained within the noted specifications.

Additional requirements are as follows:

- The Contractor shall install temporary fencing as required to isolate the Contractor's work areas from CPKC facilities. Geogrid snow fencing or similar is considered acceptable for this purpose.
- Power to any CPKC equipment within the limits of the project will need to be maintained for the duration of construction. The Contractor shall coordinate with CPKC accordingly.

Prior to commencing construction operations, the Contractor shall provide notice to CPKC by contacting:

Canadian Pacific Railway
Pete Bayerle
(403) 319-7488
Pete_Bayerle@cpr.ca

c) CPKC Flagging

Flagging is required for any work within 50 feet of an active CPKC track and may also be required by CPKC in other circumstances. Contrary to the information provided in the document entitled

“Operational Constraints for Work On, Above or Below Railway Right of Way,” the Contractor shall be responsible for coordinating flagging requirements in accordance with CPKC requirements. Neither the District nor the Consultant shall have any responsibility for flagging coordination, and no additional payment shall be made for delays or other impacts arising from CPKC scheduling of flagging services.

The Contractor shall provide the District and CPKC with a schedule within two (2) weeks of Award identifying the expected dates, work activities and total number of days when flagging would be required.

CPKC require a minimum of 14 days notice for deployment of flagperson(s).

The Contractor and all subcontractors shall attend daily pre-job briefings with the designated Flagperson. Anyone arriving at the site after the pre-job briefing must report to the Flagperson prior to accessing the site to receive the daily orientation.

The cost of flagging will be considered incidental to the Work, and no separate or additional payment will be made.

d) Railway Protection

The Contractor shall develop specific work procedures for the existing bridge demolition and for the bridge rehabilitation meeting CPKC track protection and safety requirements. The procedures shall include complete details of the work procedures and equipment for each work activity within and/or above the ROW. The Contractor shall prepare detailed work plans, schedules, and means and methods of all proposed construction operations, including, but not limited to, the following:

Work schedules/duration of each work activity.

- Superstructure/girders demolition and removal procedures.
- Existing pier caps and columns rehabilitation procedures.
- New superstructure/girder erection procedures.
- Headslope backfill and restoration.
- Standby/backup cranes/hoisting equipment and emergency response/cleanup plan.
- Details of work activities and equipment or other components that may encroach within the railway clearance box, including equipment positioned outside the railway ROW.
- Track protection procedures to prevent falling debris, physical damage and/or environmental contamination.

Excavation and lifting/hoisting operations within or above the railway ROW shall be carried out in accordance with the plans and procedures reviewed and approved by CPKC for work within and above the CPKC ROW. The Contractor shall adequately detail all associated means, methods and precautions.

All lifting & hoisting procedures shall be properly engineered and shall include backup equipment and contingency procedures to ensure that lifts can be safely completed without interfering with train operations.

All work procedures including but not limited to, hoisting procedures, excavation and backfill sequence and equipment, pile driving and equipment procedures, falsework and temporary installation details shall be authenticated by a Professional Engineer licensed to practice in the Province of British Columbia in accordance with EGBC requirements.

The Contractor shall coordinate all construction activities with CPKC to ensure railway activity is unobstructed and that the approved work permit conditions are strictly adhered to.

Unauthorized crossing of the tracks is absolutely prohibited.

e) CPKC Insurance Requirements

Further to the General Conditions, the Contractor's insurance policies shall include the following endorsements and requirements related to CPKC. The Contractor is expected to confirm these insurance requirements with CPKC as additional coverages may be added by CPKC.

With respect to the below requirements, the "CPKC Indemnified Group" means collectively CPKC, its Affiliates, and the officers, directors, employees, invitees, agents, successors, and assigns of CPKC or its Affiliates.

At any time requested by the District, evidence of insurance required under this section must be provided to Canadian Pacific Railway Company in the form of a detailed certificate of insurance.

"Wrap-Up" Commercial General Liability insurance covering the owner(s) and their agents, contractors and sub-contractors who perform work at the Project Site and including architects and engineers (but not for professional liability) with a limit of not less than twenty million dollars (\$20,000,000) for any one loss or occurrence for personal injury, bodily injury, or damage to property including loss of use thereof arising out of the Project. This insurance policy shall by its wording or by endorsement include but not be limited to the following:

1. The CPKC Indemnified Group as additional insured;
2. "Cross liability" or "severability of interest" clause which shall have the effect of insuring each entity named in the policy as an insured in the same manner and to the same extent as if a separate policy had been issued to each;
3. Blanket contractual liability;
4. Broad form products and completed operations, with the completed operations coverage remaining in effect for not less than twenty-four (24) months after Substantial Performance;
5. Shall not exclude operations on or in the vicinity of the railway right-of-way, if applicable;
6. Non-owned auto liability;
7. Employer's liability;
8. Broad form property damage;
9. Owner's and contractor's protective liability;
10. Employees as additional insured;
11. Property damage due to explosion, collapse and underground property damage; and
12. Sudden and accidental pollution liability.

Automobile Liability insurance covering bodily injury and property damage in an amount not less than five million dollars (\$5,000,000) per accident, covering the ownership, use and operation of any motor vehicles and trailers which are owned, leased or controlled by the Road Authority and used in regards to this Agreement. The Contractor and its subcontractors shall independently maintain automobile liability insurance covering bodily injury and property damage in an amount not less than five million dollars (\$5,000,000) per accident, covering the ownership, use and

operation of any motor vehicles and trailers which are owned, leased or controlled by the Contractor and/or its subcontractors and used in connection with the Project.

f) Restricted Access

The Contractor is responsible for securing the work site within the CPKC Right of Way on a continuous basis to prevent unauthorized access to construction equipment, materials, vehicles, and other temporary equipment/devices that could be used to obstruct railway operations.

The cost of site security will be considered incidental to the Work and no separate or additional payment will be made.

g) Measurement and Payment

Payment will be made at the lump sum price bid for "Coordination with CPKC", and will be full compensation for all coordination and meeting all the requirements of CPKC, including; correspondence and communication, preparation of detailed plans and procedures, revision/updating of plans and procedures, the development of all safety measures and work procedures, work site safety and security; and all labour, materials, equipment, tools, and all incidentals necessary to complete the Work to the satisfaction of the Consultant.

5.04 Access

Access for bridge construction consists of the necessary work and operations to allow for the movement and placement of personnel, equipment and materials to and on the Site to facilitate construction of the Work. Access includes, but is not limited to, the construction of temporary works including roads and associated cuts and fills, access ramps, retaining walls and railway crossings.

The Contractor shall be responsible for obtaining all permits and approvals required for access.

The Contractor shall forward access drawings to the Consultant for review no later than four (4) weeks prior to the start of its construction. The drawings shall clearly show all details and locations of all required access works. Where required, design and drawings of access works shall be prepared and sealed by a professional engineer licensed by the Association of Professional Engineers and Geoscientists of the Province of British Columbia experienced in the design of works similar to those required for this project. No access work shall commence until the District completes its review process and accepts the submission.

The Consultant's review of access drawings will not relieve the Contractor of any responsibility for dimensions, detail design, concept review or for carrying out the work in accordance with the drawings and specifications for the access works.

Unless otherwise accepted by the Consultant, all access roads and associated structures shall be removed upon completion of the Work and the Site restored to the satisfaction of the Consultant.

Access is considered incidental to the Contract and no separate payment will be made.

5.05 Detour

The contractor is not required to provide a traffic detour. The Contractor is permitted to close 4 Avenue for the duration of on-site construction up to a maximum duration of 30 weeks.

The contractor is responsible to design, supply, install, maintain and remove all barricades and signage required to prevent vehicle or pedestrian access to the project site.

The District is responsible to supply, install and maintain detour signage to direct public around the project site.

Detour is considered incidental to the Contract and no separate payment will be made.

5.06 Existing Conditions

The contractor is responsible to visit the site to identify any condition that may affect their Bid price.

Existing timber components are expected to contain creosote.

Other hazards or contaminated materials may be present.

5.07 Demolition of Existing Bridge

a) General

The Contractor shall provide all labour, materials and equipment for the demolition and removal of the existing bridge.

Record drawings of the existing bridge are not available.

b) Submittals

The Contractor shall submit three (3) sets of complete plans and details of the proposed demolition procedure to the Consultant for review at least four (4) weeks prior to the commencement of any demolition work.

The demolition procedure shall be prepared and sealed by a Professional Engineer licensed to practice in the Province of British Columbia in accordance with EGBC requirements, and shall clearly define procedures, equipment and the proposed schedule of work. Demolition work shall not commence until the Consultant has completed the review process and accepted the procedure.

Demolition work near or above the railway will require the approval of Canadian Pacific Kansas City (CPKC).

The District will forward a copy of the Contractor's demolition procedure to CPKC for its review and approval. The Contractor shall be responsible for revising and resubmitting the demolition procedure as required to obtain approval of CPKC. All work shall be carried out in strict compliance with the requirements of CPKC.

The Contractor shall demolish concrete decks and curbs by means approved by CPKC. Areas of the concrete deck over the Railway right of way shall be saw cut and removed taking measures to avoid dropping rubble, debris, construction materials or equipment into railway right-of-way.

The Contractor shall include sufficient time in their schedule to allow for review of the demolition procedure by the District, the Consultant and CPKC.

c) Execution

The Contractor shall remove, haul and dispose parts of the structure shown to be removed on the Drawings. The Contractor shall carry out demolition in accordance with these Special Provisions and the requirements of the Occupational Health and Safety Regulation.

At the completion of each day's Work, the Contractor shall leave all material and equipment at the Site in a secure, stable and safe condition.

The Contractor is advised that creosote may be present on the existing structure, and that the Contractor is responsible for ensuring that all Workers Compensation Act, Occupational Health and Safety Regulation, and environmental regulations are adhered to.

The Contractor shall arrange works and use protective devices, safety nets and other, precautionary measures as required, to prevent damage to railway property. The Contractor shall be responsible for and shall bear the cost of all protective devices. All CPKC costs and charges, including but not limited to, flagging, repair of damage to railway property caused during the demolition phase of the existing structure, associated costs of train delays, will be the responsibility of the Contractor. All repair of damages or revisions to the track infrastructure necessitated by the demolition will be carried out by CPKC and charged to the Contractor.

d) Disposal

All demolished materials shall become the property of the Contractor and shall be removed from the Site. Disposal of all demolished materials shall be in accordance with SSBC 145.27.02.

e) Restoration

Upon completion of the Work, the Contractor shall remove all temporary works and debris, and trim surfaces and slopes so as to leave the Site in a clean and stable condition. Slopes shall be graded to match existing conditions, or as determined by the District.

The Contractor shall reinstate all disturbed areas outside the area of removal of the structures to conditions which existed prior to commencement of the Work, or as directed by the Consultant.

f) Payment

Payment for the demolition and removal of the existing bridge will be made at the Lump Sum Price bid. Payment shall include the preparation and submission of demolition procedures, compliance with the requirements of CPKC, the supply of all labour, materials, equipment and services required for the complete demolition of the structure, off-site disposal of demolition debris, backfilling, trimming of slopes, site cleanup and all other costs associated with the demolition.

5.08 Construction of Replacement Superstructure

a) General

The Contractor shall provide all labour, materials and equipment for the construction of the replacement bridge superstructure.

b) Submittals

The Contractor shall submit three (3) sets of complete plans and details of the proposed installation procedure to the Consultant for review at least four (4) weeks prior to the commencement of any installation work.

The installation procedure shall be prepared and sealed by a Professional Engineer licensed to practice in the Province of British Columbia in accordance with EGBC requirements, and shall clearly define procedures, equipment and the proposed schedule of work. Installation work shall not commence until the Consultant has completed the review process and accepted the procedure.

Installation work near or above the railway will require the approval of Canadian Pacific Kansas City (CPKC).

The Contractor will forward a copy of the Contractor's installation procedure to CPKC and the District for their review and approval. The Contractor shall be responsible for revising and resubmitting the installation procedure as required to obtain approval of CPKC. All work shall be carried out in strict compliance with the requirements of CPKC.

The Contractor shall install deck superstructure components by means approved by CPKC.

The Contractor shall include sufficient time in their schedule to allow for review of the installation procedure by the District, the Consultant and CPKC.

c) Execution

The Contractor shall install bridge superstructure in accordance with the approved procedure.

At the completion of each day's Work, the Contractor shall leave all material and equipment at the Site in a secure, stable and safe condition.

The Contractor shall arrange works and use protective devices, safety nets and other, precautionary measures as required, to prevent damage to railway property. The Contractor shall be responsible for and shall bear the cost of all protective devices. All CPKC costs and charges, including but not limited to, flagging, repair of damage to railway property caused during the demolition phase of the existing structure, associated costs of train delays, will be the responsibility of the Contractor. All repair of damages or revisions to the track infrastructure necessitated by the demolition will be carried out by CPKC and charged to the Contractor.

d) Restoration

Upon completion of the Work, the Contractor shall remove all temporary works, and trim surfaces and slopes so as to leave the Site in a clean and stable condition. Slopes shall be graded so that no slope is steeper than 1.5H:1V, or as determined by the District.

The Contractor shall reinstate all disturbed areas outside the area of construction to conditions which existed prior to commencement of the Work, or as directed by the Consultant.

e) Payment

Payment for the New Bridge Superstructure will be made at the Lump Sum Price bid. Payment shall include the preparation and submission of installation procedures, compliance with the requirements of CPKC, the supply of all labour, materials, equipment and services required for the fabrication and installation of the structure, site cleanup and all other costs necessary to complete the Work to the satisfaction of the Consultant.

5.09 Repair or Replacement of Timber Substructure Elements

a) General

The Contractor shall provide all labour, materials and equipment for the repair or replacement of timber substructure components shown on the Drawings.

b) Submittals

The Contractor shall submit three (3) sets of complete plans and details of the proposed replacement procedure to the Consultant for review at least four (4) weeks prior to the commencement of any replacement work.

The replacement procedure shall be prepared and sealed by a Professional Engineer licensed to practice in the Province of British Columbia in accordance with EGBC requirements, and shall clearly define procedures, equipment and the proposed schedule of work. Replacement work

shall not commence until the Consultant has completed the review process and accepted the procedure.

Replacement work near or above the railway will require the approval of Canadian Pacific Kansas City (CPKC).

The District will forward a copy of the Contractor's replacement procedure to CPKC for its review and approval. The Contractor shall be responsible for revising and resubmitting the replacement procedure as required to obtain approval of CPKC. All work shall be carried out in strict compliance with the requirements of CPKC.

The Contractor shall include sufficient time in their schedule to allow for review of the replacement procedure by the District, the Consultant and CPKC.

c) Execution

The Contractor shall provide adequate shoring or bracing to maintain the stability and alignment of the timber substructure during repair or replacement of timber components.

The Contractor shall remove, haul and dispose parts of the structure shown to be removed on the Drawings.

At the completion of each day's Work, the Contractor shall leave all material and equipment at the Site in a secure, stable and safe condition.

The Contractor is advised that creosote may be present on the existing structure, and that the Contractor is responsible for ensuring that all Workers Compensation Act, Occupational Health and Safety Regulation, and environmental regulations are adhered to.

The Contractor shall arrange works and use protective devices, safety nets and other, precautionary measures as required, to prevent damage to railway property. The Contractor shall be responsible for and shall bear the cost of all protective devices. All CPKC costs and charges, including but not limited to, flagging, repair of damage to railway property caused during the demolition phase of the existing structure, associated costs of train delays, will be the responsibility of the Contractor. All repair of damages or revisions to the track infrastructure necessitated by the demolition will be carried out by CPKC and charged to the Contractor.

d) Disposal

All materials shown to be replaced shall become the property of the Contractor and shall be removed from the Site. Disposal of all demolished materials shall be in accordance with SSBC 145.27.02.

e) Restoration

Upon completion of the Work, the Contractor shall remove all temporary works and debris, and trim surfaces and slopes so as to leave the Site in a clean and stable condition. Slopes shall be graded so that no slope is steeper than 1.5H:1V, or as determined by the District.

The Contractor shall reinstate all disturbed areas outside the area of removal of the structures to conditions which existed prior to commencement of the Work, or as directed by the Consultant.

f) Payment

Payment for the Repair or Replacement of Timber Substructure Elements will be made at the Lump Sum Price bid. Payment shall include the preparation and submission of replacement procedures, compliance with the requirements of CPKC, the supply of all labour, materials,

equipment and services required for the completion of the Work to the satisfaction of the Consultant.

5.10 Formwork and Falsework

The Contractor shall provide formwork and falsework in accordance with SSBC 211.

Formwork and falsework is considered incidental to Cast-in-Place Concrete work and no separate payment will be made.

5.11 Reinforcing Steel

The Contractor shall supply and install reinforcing steel in accordance with SSBC 412 unless otherwise specified on the Drawings.

Payment for reinforcing steel will be made at the Lump Sum Price bid. Payment shall include shop drawings and supply, fabrication, and installation of reinforcing steel, including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

5.12 Demolition of Concrete

The Contractor shall demolish concrete as shown on the Drawings.

Care shall be taken to avoid damage to the remaining concrete and reinforcing bars which are to be incorporated into the final work. Adhering concrete shall be removed from the projecting reinforcing bars

All demolished concrete and reinforcing steel shall be removed from the site and disposed of in accordance with SSBC 145.27.02.

No debris shall be permitted to fall into the railway right-of-way.

Demolition of concrete is considered incidental to the Work and no separate payment will be made.

5.13 Cast-in-Place Concrete

a) General

The Contractor shall complete all concrete work in accordance with SSBC 211 unless otherwise modified by this clause.

The Contractor shall be responsible for the design and quality control for all concrete used on this project.

All concrete materials and admixtures for concrete shall conform to the requirements of SSBC 211.04, unless otherwise specified in these Special Provisions.

Entrained air content for all concrete mixes shall be in accordance with CSA A23.1, Table 4, Air content category 1, except that the air content shall be measured at the point of placement.

Cement type shall be HS. All concrete shall be designed for exposure class S-2.

The Contractor shall be responsible for and shall provide the Consultant with current certified results for all the applicable tests as outlined in Table 211-B of the SSBC 211 "Required Aggregate Testing for Normal Density Coarse and Fine Aggregate (Per Individual Product and Aggregate Source)".

Concrete mixes shall meet the requirements given in the following table:

Exposure⁽¹⁾⁽²⁾⁽³⁾	Minimum Compressive Strength at 28 days (MPa)	Nominal Maximum Size of Coarse Aggregate (mm)	Slump⁽³⁾ (mm)	Maximum W/C_m Ratio by Mass
Substructure Concrete: Abutments ⁽⁴⁾ , Footings ⁽⁴⁾ ,				
• All chloride and sulphate exposures except Class S-1 ⁽⁵⁾⁽⁶⁾	30	20 ⁽¹⁰⁾	120 ± 30	0.40

Notes:

- (1) Early chloride exposure applies to concrete that is not allowed to air-dry for a period of at least one month after the end of the curing period, before exposure to de-icing chemicals. Late chloride exposure applies to concrete that is allowed to air-dry for a period of at least one month after the end of the curing period, before exposure to de-icing chemicals.
- (2) Sulphate exposure classes as per CSA A23.1, Table 3.
- (3) Slump as measured at the final discharge end of the placement system, after addition of admixtures.
- (4) Resistance to chloride ion penetration test results shall be less than 1,500 coulombs at 91 days using test method A23.2-23C or ASTM C1202.
- (5) The concrete mix shall satisfy the additional requirements regarding sulphate attack in accordance with CSA A23.1-24 Table 3. Cementitious materials testing is required per CSA A3004-C8; maximum expansion at 6 months shall be less than 0.05% or less than 0.10% at 1 year for S-2 exposure, and at 6 months shall be less than 0.10% for S-3 exposure. Requirements for S-1 exposure shall be determined in consultation with the District. No additional requirements regarding sulphate attack are required for lower sulphate concentrations than those for S-3 class of exposure according to CSA A23.1 Table 3.
- (6) The use of supplementary cementitious materials shall be in accordance with one of the following:
 - a) 15-35% Type F fly ash by mass of cementitious materials, or
 - b) 25-40% Slag by mass of cementitious materials, or
 - c) a combination of Type F fly ash and slag with one of these components meeting its minimum percentage from a) or b) above, and with a combined maximum of 40% by mass of cementitious materials.

The gradation of the aggregates shall conform to Table 211-E “Coarse Aggregate Gradations” and Table 211-G “Fine Aggregate Gradation” of the SSBC 211 unless noted otherwise in this clause.

Concrete Surface Finishes shall meet the requirements given in the following table:

Surfaces submerged or buried	Class 1
Abutments, retaining walls and piers	Class 2
Bearing seats	Trowelled finish
Slope Pavement	Transverse Coarse Broom

b) Concrete Mix Design Submittals

In lieu of submitting the concrete proportions expressed in terms of quantity of each component (i.e. the concrete mix design proportions) as per SSBC 211.03.04 (c), the Contractor may use one of the following two alternative options:

- Option 1 - Submittal by the concrete supplier directly to the District

The Contractor's concrete supplier shall submit the concrete mix design proportions directly to the District.

The District will keep the concrete mix proportions strictly confidential in accordance with the Freedom of Information and Protection of Privacy Act (BC).

- Option 2 - Submittal of a letter of confirmation

The Contractor shall submit a letter of confirmation signed by a professional engineer registered with the Association of Professional Engineers and Geoscientists of the Province of British Columbia. The letter of confirmation shall be submitted as part of the mix design submittals.

The letter of confirmation shall state that the signing professional engineer has reviewed the concrete mix design proportions and that the concrete mix design proportions are compliant with the Contract specifications for the concrete mix design parameters, including, but not limited to: w/cm ratio, percentages of each supplementary cementitious material, admixture limits, gradation requirements for blended/non-blended aggregates, proportion of aggregates passing the 5 mm sieve, AAR preventative requirements, and total cementitious materials content.

The remainder of the mix design submittals shall be in accordance with SSBC 211.03.04 - Mix Design Submittals and shall also include the concrete mix design showing all the constituent components without the proportions included.

g) Payment

Payment for cast in concrete will be made at the Lump Sum Price bid. Payment shall include falsework and formwork, mix design, batch testing, delivery, placement, curing, concrete surface preparation and finishing, testing and inspection, including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

5.14 Supply and Fabrication of Timber

The Contractor shall supply and fabricate timber in accordance with the relevant sections of SSBC including 213, 904, 905, 908 and 909.

5.15 Supply and Fabrication of Structural Steelwork

The Contractor shall supply and fabricate structural steelwork in accordance with SSBC 421.

Where mill test reports originate from a mill outside Canada or the United States of America, the Contractor shall have mill test reports verified by a certified laboratory in Canada by testing the material to the specified material standards, including boron content. The testing laboratory shall be certified by a North American accreditation body to ISO/IEC 17025 for the tests required. The accreditation body shall be a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA). Samples for testing shall be collected by personnel employed by the certified laboratory. A verification letter shall be provided by the certified laboratory that includes at a minimum, the applicable mill test reports, testing standards, date of verification testing, and declaration of material compliance with Contract requirements. The verification letter shall be signed by an authorized officer of the certified laboratory.

All components fabricated outside of Canada or the United States of America shall be shipped to a shop located in Canada for re-inspection and testing and this shop shall be certified by CWB in accordance with CSA W47.1 to Division 1 and by the CISC in the category of steel bridges. The

components shall be in a condition that facilitates all re-inspection and testing requirements. The re-inspection and testing at the Canadian shop shall be completed in accordance with SSBC 421. The Contractor shall also arrange for inspection by a CSA 178.2 Level III certified welding inspector accredited with W47.1/W59 to inspect:

- All components to ensure that they were undamaged during transportation; and
- Shop assembly in accordance with SSBC 421.

All steel components shall be Type A or AT as required by CSA S6.

Work shall include quality control, all necessary materials, submission of shop drawings, test results and certificates of compliance, supply, fabrication, galvanizing and installation of deck joints including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Contractors Specialty Engineer and the Consultant.

Work of this item is considered incidental to the New Bridge Superstructure bid item. No separate payment will be made for work of this item.

5.16 Supply and Fabrication of Miscellaneous Steelwork

The Contractor shall supply and fabricate miscellaneous steelwork in accordance with SSBC 422.

All miscellaneous steelwork shall be Type W or WT with hot dipped galvanised coating.

Repair of galvanized coating shall be by metallizing.

Miscellaneous Steelwork forming part of the new bridge superstructure will be considered incidental to the New Bridge Superstructure bid item. No separate payment will be made.

Payment for Miscellaneous Steelwork shown on the Drawings will be made at the Lump Sum Price bid. Payment shall include quality control, all necessary materials, submission of shop drawings, test results and certificates of compliance, supply, fabrication, galvanizing and installation of miscellaneous steelwork including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

5.17 Deck Joints

Deck joints shall be designed, fabricated and installed by the Contractor.

Deck joints shall be designed as sealed joints to prevent the flow of water onto the concrete substructure or piers.

Steel components shall be hot dipped galvanized.

Work shall include quality control, all necessary materials, submission of shop drawings, test results and certificates of compliance, supply, fabrication, galvanizing and installation of deck joints including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Contractors Specialty Engineer and the Consultant.

Work of this item is considered incidental to the new bridge superstructure bid item. No separate payment will be made for work of this item.

5.18 Bearing Assemblies

The Contractor shall design, supply and install bearing assemblies.

Work shall include quality control, all necessary materials, submission of shop drawings, test results and certificates of compliance, supply, fabrication, galvanizing and installation of bearing

assemblies including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Contractors Specialty Engineer and the Consultant.

Work of this item is considered incidental to the New Bridge Superstructure bid item. No separate payment will be made for work of this item.

5.19 Bridge Barrier

The Contractor shall design, supply, fabricate and install the steel railing and steel components of the parapet railing system in accordance with SSBC 422. All steelwork shall be galvanized after fabrication.

Railing shall be adjusted to produce uniform height and smooth alignment.

Work shall include shop drawings; supply, fabrication, galvanizing and installation of anchor bolts and railing, and shims if required, including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Contractor's Specialty Engineer and the Consultant.

Work of this item is considered incidental to the New Bridge Superstructure bid item. No separate payment will be made for work of this item.

5.20 Drilling Dowel Holes, Supply and Placement of Grout

a) General

The Contractor shall drill dowel holes in the existing concrete at the locations and to the minimum depths indicated on the Drawings for the installation of reinforcing steel dowels which project into new concrete. Existing concrete reinforcing steel shall not be cut when drilling holes. It is the Contractor's responsibility to determine the location of the existing reinforcing steel prior to drilling as required. In cases where a specified dowel hole location interferes with existing embedded reinforcing steel, the hole locations may be displaced from those shown on the Drawings by up to 50 mm in any direction, provided that specified minimum clear cover is maintained in all cases. Where such adjustments are required, the Contractor shall inform the Consultant, who will determine the new dowel hole locations.

All abandoned holes shall be filled with a non-shrink grout acceptable to the Consultant. All dowels shall be installed with epoxy grout acceptable to the Consultant. Grout shall be placed according to the Manufacturer's specifications.

Dowels shall be installed to the full specified embedment length and in a manner that ensures complete bonding within the hole. Manufacturer's specifications and recommendations for application and installation shall be strictly adhered to.

After bonding, dowels shall be temporarily supported, as necessary, to prevent their movement during the entire curing period as specified by the manufacturer. The dowels shall remain undisturbed and no load shall be placed on the dowels until the curing is complete.

b) Acceptance Testing

The Contractor shall be responsible for carrying out all tests on the selected dowels. Testing shall be performed by an independent testing agency acceptable to the Consultant. All required repairs and retesting shall be at the Contractor's expense.

The Contractor shall carry out a minimum of three (3) tensile (pull-out) tests for each size of the drilled-in-dowels to verify the adequacy of the installation procedure. The tests shall be conducted at the commencement of the installation to verify the installation procedure. If any one (1) test

fails, the Contractor shall re-evaluate the installation procedure with the Consultant and carry out a minimum of three (3) additional tests. The testing procedure shall be repeated, if necessary, until all three dowels pass the pull-out test.

The tensile test shall conform to ASTM E488 "Test Methods for Strength of Anchors in Concrete and Masonry Elements". The dowels shall be tensioned to 100% of the minimum specified yield strength of the reinforcing steel dowels and shall hold the load for five (5) minutes.

Any Dowel that fails shall be re-installed and re-tested.

c) Payment

Work of this item is considered incidental to cast-in-place concrete bid item. No separate payment will be made for work of this item.

No additional payment will be made for additional holes or dowels required either as a result of Contractor error or failed tests.

5.21 Silane Surface Treatment

The Contractor shall treat all exposed faces of the concrete abutments and pier pile caps with a silane solution in accordance with SSBC 418.

Payment for silane surface treatment will be made at the Lump Sum Price bid. Payment shall include supply and application of silane sealer including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

5.22 Waterproofing Membrane and Asphalt Pavement Overlay

The Contractor shall supply and install a District approved integrated waterproof membrane and asphalt pavement overlay (the Overlay) as shown on the Drawings.

The Contractor shall supply and place the overlay accordance with SSBC 420. The Contractor shall carry out all quality control to verify that the asphalt pavement meets the specifications.

The asphalt pavement mix design and supporting documentation shall be submitted to the Consultant for review and acceptance 14 days prior to commencing the paving work.

The temperature of the asphalt at the time of installation shall be in accordance with the manufacturer's specifications for the membrane system being used.

Drum vibration shall not be used during compaction of the asphalt on the bridge deck.

Work shall include quality control, all necessary materials, submittals, test results and certificates of compliance, supply, and placement of the Overlay, including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Contractors Specialty Engineer and the Consultant.

Work of this item is considered incidental to the New Bridge Superstructure bid item. No separate payment will be made for work of this item.

5.23 Approach Road Paving

The Contractor shall supply, haul, water and compact suitable road gravels to build up the roadway to provide smooth vertical alignment and to provide sufficient roadway width to tie into existing conditions.

Where the new grade is less than 100mm higher than the old grade, asphalt pavement shall be placed over the old pavement. Edges shall be feathered.

Where the new grade is more than 100mm higher than the old grade, or where it is lower, the old pavement shall be removed. The roadway shall be built up with select granular sub-base, 200mm of well-graded base course and asphalt pavement.

The Contractor shall supply and place an emulsified primer/tack coat meeting the requirements of SSBC 952.

All surfaces to be paved shall be primed or tack coated at the rate of approximately 1.5 to 2.0L/m² to base course and 0.15 L/m² to old pavement. Pavement shall be Class 1 Medium Mix, placed in accordance with SSBC 502 in maximum 50mm lifts.

The Contractor shall perform the asphalt pavement construction in accordance with SSBC 502. The asphalt pavement mix design and supporting documentation shall be submitted to the Consultant for review and acceptance 14 days prior to commencing the paving work.

Payment for approach road paving and tie-ins will be made at the Lump Sum Price bid for all work done and materials supplied to the satisfaction of the Consultant.

5.24 Approach Road Guardrails

The Contractor shall supply and install w-beam guardrail at each end of the bridge (4 locations).

The Contractor shall install guardrail approach flares per the requirements of SSBC 312.

Payment for approach road guardrails will be made at the Lump Sum Price bid for all work done and materials supplied to the satisfaction of the Consultant.

5.25 Delegated Design and Approvals

The Contractor shall be responsible for the detailed design, fabrication and construction of the following items:

- Bridge superstructure including: girders, deck, diaphragms, barrier, deck waterproofing and asphalt pavement.
- Bearings including connections to girders and pier caps.
- Expansion joints
- Pier caps including connection to existing pier shafts.
- Structural support frames for the watermain on the bridge structure.
- Timber substructure below pier caps if contractor elects to replace the complete timber substructure.

One possible bridge configuration shown on the Drawings is a timber superstructure with an integrated waterproof membrane and asphalt roadway surface, supported on the existing timber piers and concrete abutments. Alternative structural concepts may be considered if identified in the proposal submission. Acceptance of any structural configuration is at the sole discretion of the District.

The contractor shall retain or employ a Professional Engineer licensed to practice in the Province of British Columbia in accordance with EGBC requirements (the Contractors *Specialty Engineer*) who will be responsible for:

- Detailed design of the replacement bridge superstructure and substructure components in accordance with applicable codes and the requirements of these specifications.

- Preparation and submission of a design brief to the District prior to the start of detailed design to describe all aspects of the proposed replacement structure including but not limited to:
 - Geometry
 - Loading
 - Analysis method
 - Materials
 - Structure description including definition of new construction and existing elements to be retained
 - Articulation
 - Other items relevant to the design or construction.
- Production of detailed design drawings and specifications.
- Submission of drawings and specifications to the District for review at 60% and 90% completion.
- Response to review comments received from the District or the Consultant.
- Submission of authenticated drawings and specifications for construction.
- Review of fabrication drawings, material data sheets or other submittals prepared by the Contractor. Submittals are to be stamped by the Specialty Engineer as record of their review prior to submission to the District.
- On site construction review of construction progress and quality. Submission of field review reports to the Contractor, District and Consultant within 24 hours of each site visit.
- Review of contractors QC inspection and testing records prior to submission to the District.
- Preparation of a list of construction deficiencies at the Substantial Completion inspection.
- At Construction Completion provide an authenticated letter confirming that the completed construction is in general conformance with the design prepared by the Specialty Engineer with no outstanding deficiencies, and that the completed bridge is suitable for use as intended.

Design and construction shall meet the requirements of:

- BC MoTT BSPM Vol 1 – Supplement to CAN/CSA-S6-19 “Canadian Highway Bridge Design Code” (CHBDC).
- BC MoTT BSPM Vol 5 – Best Practices for Low Volume Road Structures

Submit fabrication drawings and design calculations stamped and signed by a Professional Engineer licensed to practice in the Province of British Columbia in accordance with EGBC requirements a minimum of 21 days prior to the start of fabrication.

In addition to dead loads and stress due to movement, design the bridge to support:

- Live load of CL-500 plus DLA on two (2) traffic lanes.
- Pedestrian load
- Snow, rain, and wind loading as specified in CHBDC.
- Seismic load as specified in CHBDC.

- Railing loads as per CHBDC.
- Load combinations defined by CHBDC.

Bridge superstructure shall achieve a Design Life of 75-years.

The bridge shall have a final road profile as indicated on the Drawings after the completion of the construction.

The bridge design shall include camber for dead load, as well as live load deflections at the Serviceability Limit State in accordance with CHBDC.

The bridge superstructure type shall be selected so that the total load on the bridge piers does not exceed a factored load at ULS of 240kN in each pier shaft.

The bridge shall be designed to accommodate 2 lanes of traffic plus sidewalk as indicated on the Drawings.

The minimum clear roadway width between bridge barriers shall be 8.5m.

The contractor is responsible to field verify all dimensions of existing structure prior to design and fabrication of any bridge components.

The bridge superstructure depth shall be selected so that vertical clearance over top of rail meets CPKC requirements.

Bridge railing shall be a vehicle/bicycle combination barrier with a minimum height of 1.4m above road surface. Barrier shall be designed to TL-2 in accordance with CHBDC.

The bridge shall be design and fabricated with accommodation for future jacking of the bridge for bearing replacement or installation of steel shims.

Fabricator is responsible for the design, supply, and fabrication of bearing assemblies including connections to superstructure and substructure. Design bearing assemblies in accordance with CHBDC.

All steel components shall be hot-dipped galvanized in accordance with ASTM A123 and ASTM A153. Minimum coating thickness shall be 600g/sqm. All damaged galvanized surfaces shall be repaired by metallizing.

All timber components shall be preservative treated in accordance with CHBDC.

Payment for Delegated Design and Approvals bid item will be made at the Lump Sum Price bid. Payment shall include all design, submittals and approvals necessary to complete the Work to the satisfaction of the Consultant. Payment will be made at the following progress milestones:

Progress Milestone	Payment
Acceptance of the Design Brief by the Consultant	20%
Acceptance of the Detailed Design Package by the Consultant	40%
Completion of fabrication including submittal of all QC inspection records to the satisfaction of the Consultant	20%
Substantial Completion	20%

5.26 Water Main

The Contractor shall supply and install the new insulated watermain including all pipes, valves, insulation, support, removals, replacement and reconnection to the District water system.

The District has identified that the existing insulated watermain assembly contains hazardous material including asbestos. Hazardous Materials Testing Report is provided in Attachment B to the RFP.

All watermain components and construction requirements are to meet the District standard requirements or otherwise to the approval of the District.

Watermain shall be 150mm diameter HDPE pipe by IPEX, Westlake or approved equivalent. Connections shall be restrained coupler type such as Romac Alpha Restrained Coupling or approved equivalent.

Insulated jacket for above grade watermain shall be Spiwrap jacket with galvanised steel outer jacket by Urecon or approved equivalent.

Payment for Watermain will be made at the Lump Sum Price bid. Payment shall include all excavation, trenching, temporary facilities, materials, connections, insulated encasement, support structure, attachment to bridge, testing and inspection, including all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the District.

5.27 Pre-Construction Survey

The Contractor shall complete a pre-construction survey to record superstructure and substructure layout and elevations prior to any demolition activity.

This survey shall be used as the reference geometry to be provided at the completion of construction.

5.28 Temporary Stability

The Contractor shall design, install and maintain adequate temporary bracing or supports to maintain the alignment and position of bridge components shown to remain.

Work of this item is considered incidental to the Project. No separate payment will be made for work of this item.

1 GENERAL

1.1 Description of Work

- .1 The Work includes, but is not necessarily limited to the following:
 - .1 Temporary site access requirements to complete the work, as acceptable to the District.
 - .2 Construction and maintenance of all barriers, signage, line painting necessary to prevent unauthorised access to the Project Site.
 - .3 Detailed design of replacement superstructure and substructure components as defined in the the Contract Documents.
 - .4 Temporary work platform and/or containment structure as required to protect CPKC right of way.
 - .5 Removal and disposal of bridge superstructure and substructure as defined in the Contact Documents.
 - .6 Construction of new bridge superstructure and substructure elements as defined in the Contract Documents.
 - .7 Select removals and rehabilitation of concrete and timber components shown to remain.

1.2 Schedule

- .1 Provide a schedule indicating the following parameters:
 - .1 Project start and Ready-for-Takeover Date.
 - .2 Proposed work periods along with start and completion times for mobilization and demobilization from site.
 - .3 Duration of required roadway closure.
 - .4 Provide an updated construction progress schedule at the regular construction meetings. The schedule in the form of a horizontal bar chart must separate each construction operation or trade, in chronological order of the start of each item of work. The schedule shall reflect progress to date with comparison to the contractor's initial schedule and a forecast to completion.
 - .5 If the Contractor desires to make a major change in the method of operations after commencing construction, or if the schedule fails to reflect the actual progress, the Contractor must submit to the Consultant and the District a revised construction schedule to reflect actual progress and outline all methods and procedures that will be used going forward to meet the Ready-for-Takover Date.
- .2 The Contractor shall provide an updated project schedule at the regular bi-weekly site meetings. The schedule shall reflect the progress to date, with comparison to the Contractor's initial schedule, and forecast to completion.

1.3 Submittals

- .1 Schedule, in accordance with the Standard General Conditions and clause 1.2.

STIPULATED PRICE CONTRACT	FORT POINT BRIDGE OVER CPKC RAILWAY - REHABILITATION	SECTION 01 10 01
		GENERAL REQUIREMENTS
		PAGE 2 OF 12 20260903

- .2 Permits
 - .1 Permits and licenses required for the Work and its various parts will be obtained and paid for by the Contractor.
 - .2 The Contractor must display such permits in a conspicuous location at the place of Work.
- .3 Record Drawings & Operation and Maintenance Manuals
 - .1 The Contractor shall provide a set of drawings for the purpose of maintaining record drawings to be maintained on site. Accurately and neatly record deviations from the Contract caused by site conditions, clarification details or drawings, location of concrete repairs not shown on drawings, changes ordered and other forms of written modification issued by the Consultant. Update on a daily basis.
 - .2 Record all changes in red marker using suitable notation. Indicate all changes made by Change Order or Supplemental Instruction.
 - .3 Identify drawings as "Project Record Copy". Maintain in new condition and make available at all times for review on site by the Consultant.
 - .4 On completion of the Work and prior to final review, submit record documents to the Consultant.
 - .5 Submit a copy of the Manufacturers printed operation and maintenance manuals for requirements required within the project Specifications.
 - .6 Provide Manufacturers parts list, illustrations, assembly drawings and diagrams as required for maintenance, as requested within the project Specifications.
- .5 Progress Photographs
 - .1 Employ a competent person to take digital progress photos. Photos to show progress on work components and be taken on a weekly basis.
 - .2 Upon commencement of Work, supply the Consultant with photographs to clearly indicate condition of all parts of the site prior to mobilization.
 - .3 Submit progress photos on a weekly basis to clearly indicate progress of all parts of the work.
- .6 Delegated Design
 - .1 Refer to Section 5.25 of the Special Provisions.
- .7 Shop Drawings
 - .1 Submit a digital PDF version of completed shop drawings for each requirement requested in the Specifications or as the Consultant may reasonably request.
 - .2 Coordination of shop drawings and on-site conditions is required. This includes verification of existing conditions and field measurements prior to fabrication and/or installation.
 - .3 Shop drawings are to clearly indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory

notes and other information necessary for completion of the work. Where articles or equipment attach or connect to other articles or equipment, clearly indicate that all such articles and equipment have been properly coordinated, regardless of the trade under which the adjacent articles or equipment will be supplied and installed. Shop drawings are to indicate cross references to design drawings and specifications.

- .4 Drawings of components and connections designed by the Contractor's engineer must be signed and sealed by this engineer. A letter must be submitted at Substantial Performance by this engineer indicating field review was completed and connections and components are constructed in accordance with their design.
- .5 Any adjustments made on shop drawings by the Consultant are not intended to change the Contract Price. If it is deemed that such adjustments affect the value of the work, clearly state such in writing and obtain written approval from the Consultant prior to proceeding with the work.
- .6 If upon review by the Consultant no errors or omissions in compliance with the Contract are discovered or if only minor corrections are made, the reviewed shop drawing will be returned and fabrication and installation of work may proceed. If, however, shop drawings are rejected for any reason, the drawings will be returned and are to be resubmitted. The corrected shop drawings are to be resubmitted through the same procedure indicated above before fabrication and installation of the work may proceed.
- .7 All shop drawings are to be in metric units, in accordance with CAN/CSA Z234.
- .8 Any work done by the Contractor before receiving reviewed shop drawings is done at their own risk.
- .9 Coordinate work sequence, requirements, and approvals with the District prior to preparation of shop drawings.
- .10 Submissions must contain the following information:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .6 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract.
 - .7 Stamp & seal of the contractor's engineer - if applicable.
- .10 Shop drawings not stamped, signed, and reviewed as required will be returned without being examined by the Consultant and will be considered rejected.

STIPULATED PRICE CONTRACT	FORT POINT BRIDGE OVER CPKC RAILWAY - REHABILITATION	SECTION 01 10 01 GENERAL REQUIREMENTS PAGE 4 OF 12 20260903
---------------------------------	---	--

- .11 Details of appropriate portions of Work as applicable:
 - .1 Materials.
 - .2 Fabrication.
 - .3 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .4 Setting or erection details.
 - .5 Capacities.
 - .6 Performance characteristics.
 - .7 Standards.
 - .8 Relationship to adjacent work.
- .8 Product Data
 - .1 Certain specification Sections specify that manufacturers' standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.
 - .2 The above will only be accepted if they conform to the following:
 - .1 Delete information which is not applicable to the project.
 - .2 Supplement standard information to provide additional information applicable to project.
 - .3 Show dimensions and clearances required.
 - .4 Show performance characteristics and capacities.
 - .3 Product data should be submitted for all paints, sealants, coatings and other finishes to be used.

1.4 Contractor's Use of Site

- .1 The Contractor is responsible for coordinating the layout of their Work Area in accordance with the Contract Documents.
- .2 The Contractor is responsible for arranging and coordinating temporary road detours and traffic management as required to complete the work, with the District, the prime contractor on adjacent construction sites, or private property owners (through the District). Any requirement for additional lane detours and traffic management on District roads and sidewalk property shall be coordinated through the District. Contractor is responsible for the supply, installation, maintenance and removal of temporary roadway barricades, including temporary jersey barriers. Include all costs in Contract Price.
- .3 Access to the work area is to be proposed by Contractor and agreed upon by the District in advance of the work proceeding.
- .4 The Contractor is to completely enclose the work area and lay down area to prevent public access. Erect and maintain temporary fencing around work areas.

- .5 The Contractor to comply with laws, ordinances, rules and regulations relating to Work.
- .6 Do not unreasonably encumber the Project Site with materials or equipment. Construction related debris must not be permitted to accumulate on site.
- .7 Do not overload the structure with materials and/or equipment. Obtain approval from the Consultant prior to mobilizing on site if materials and/or equipment will load the structure in excess of loads given on the drawings.
- .8 Do not close or obstruct or store materials in roadways, sidewalks, lanes or driveways without prior approval from the District. Do not interfere with safe passage to and from adjacent public property.
- .9 Take all precautions and provide all required protection to ensure the safety of the general public.
- .10 During transportation of materials or equipment to and from the work site care must be taken to ensure all vehicles, structures and property are protected from damage. All damage is to be reported to the District and the Consultant within 12 hours of the occurrence. All damage to be repaired at Contractor's expense.
- .11 It is the Contractor's responsibility to locate all utilities within the work area. Contractor to contact utility owner and confirm protection requirements, acceptable work procedures, access around, maximum working loads, and ability to relocate (at Contractor's cost) as required to facilitate the work.
- .12 The contractor is fully responsible for the protection and security of on-site work, stored products, and temporary buildings and equipment. Unauthorized dumping on the contractor's site is the contractor's responsibility for removal and disposal.

1.5 Temporary Lighting

- .1 Provide and maintain temporary lighting for safe working conditions, conforming to the Provincial OHS Legislation.

1.6 Temporary Heating and Ventilation

- .1 Provide and maintain supplementary heating and hoarding as required to maintain sufficient application and curing temperatures. Heating and hoarding is considered incidental to the work.
- .2 Provide and maintain supplementary ventilation as required. Ventilation requirements to conform to Provincial OHS Legislation.
- .3 Temporary heat and ventilation used during construction, including cost of installation, fuel, operation, maintenance and removal of equipment will be paid for by the Contractor. The use of direct-fired heaters discharging waste products into work areas will not be permitted.

1.7 Electrical Power / Communications

- .1 Contractor is responsible for the provision of power and communications to the project site.

1.8 Water Supply

- .1 Potable water supply is not available for the Contractors use.

- .2 Contractor to supply their own water as required.

1.9 Sanitary Facilities

- .1 Sanitary facilities are not available on site. Provide sufficient portable sanitary facilities for workers during construction period, in accordance with local health authorities. Provide at the time of initial mobilization.
- .2 Sanitary facilities must conform to the minimum requirements stated in Provincial OHS Legislation.
- .3 Maintain facilities in clean and sanitary condition at all times.

1.10 Protection of Work and Property

- .1 The Contractor shall take all reasonable precautions necessary to protect the Work and adjacent property from damage during performance of the Contract, and shall make good any damage to the Work or property caused by the Contractor or any of its Subcontractors.

1.11 Walk-Through Inspection of Site

- .1 The Contractor is to perform a thorough inspection of the site prior to the start of Work, and provide a written notice to the Consultant detailing all damaged property as well as all items that appear to be of poor working order or appearance (i.e. sign fixtures, concrete, road pavement, landscaping, etc.). Provide photographic record of conditions.
- .2 Upon receiving this notice, the Consultant and the District will verify the validity of the items listed.
- .3 If written notice is not given within five (5) days of commencement of Work, it will be assumed that the Contractor has reviewed the site and has accepted the condition of the property as being free of damage.
- .4 Any damages not listed as part of the written notice of the clauses above, found after the completion of the Work will be the sole responsibility of the Contractor to rectify. These must be rectified in a timely and satisfactory manner to the District.

1.12 Health and Safety

- .1 Schedule and administer Health and Safety meetings prior to commencement of work on-site.
- .2 Submit site-specific Health and Safety Plan within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include: (i) Results of site specific safety hazard assessment, and (ii) Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .4 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to the Consultant.

- .5 The Contractor is required to:
 - .1 Provide all necessary and required temporary guard rails, safety rails, barricades, and/or scaffolding (complete with safety devices) for execution of the Contract, to comply with the Provincial OHS Legislation. Maintain in a safe condition and remove upon completion of the Contract.
 - .2 Erect barricades, protective boards, hoarding, etc. to protect the public and adjacent property from flying debris and splashing during all operations and at all times.
 - .3 Ensure that no material, tools or equipment or other debris falls onto the railway below. The Contractor shall provide methods work statements on how this shall be achieved prior to any Work.
 - .4 Coordinate with the District for traffic control devices, flagmen, signage and/or barriers as required.
 - .5 Provide all necessary and required nets, harnesses, hard hats, safety boots, safety glasses, and other personal protective equipment to protect the workforce.
 - .6 Provide, maintain, and remove upon completion, fire protection equipment for the work of this Contract.
 - .7 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with the Consultant.
- .6 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise the Consultant verbally and in writing.
- .7 Immediately address health and safety non-compliance issues identified by the District or by the Consultant. Provide the Consultant with written report of action taken to correct non-compliance of health and safety issues identified. Consultant may stop Work if non-compliance of health and safety regulations is not corrected.
- .8 The Contractor is required to give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

1.13 Materials and Equipment

- .1 Unless otherwise specified, Contractor shall provide, maintain and pay for all materials, tools, machinery, equipment, temporary facilities, controls and conveniences necessary for execution of the Work. All materials must be new, of merchantable quality, and suitable for the intended purpose.
- .2 Unless otherwise specified, comply with Manufacturer's latest printed instructions for materials and installation methods. Notify the Consultant in writing of any conflict between the Contract and Manufacturer's instructions.
- .3 Deliver, store and maintain packaged materials with Manufacturer's seals and labels intact.
- .4 Immediately remove rejected materials from the place of work.

- .5 Storage and handling of materials must conform to Provincial OHS Legislation.
- .6 Toxic or hazardous materials must be secured in a locked storage area.
- .7 All containers to be labelled in accordance with WHMIS regulations.
- .8 All containers to be labelled with material expiration dates. Materials older than the expiry date must not be used on the Work and must be removed immediately from the job site.
- .9 Provide the Consultant with Material Safety Data Sheets (MSDS) for each product and material used on site, if requested.

1.14 Waste Removal and Cleaning

- .1 Use only cleaning materials and equipment approved by the Manufacturer of the surface to be cleaned, and only as recommended by the cleaning material Manufacturer.
- .2 The Contractor to continually perform all required cleaning during construction.
- .3 Maintain the Place of the Work and adjacent public properties free from accumulations of waste materials and rubbish.
- .4 Provide on-site containers for collection of waste materials and rubbish.
- .5 Store volatile wastes in covered metal containers. All wastes, which create hazardous conditions, must be removed from the premises daily.
- .6 Disposal of all waste products to be performed in strict accordance with the product Manufacturer's Material Safety Data Sheet, and in accordance with the provincial Waste Control Regulations.
- .7 Contractor is responsible to clean all areas affected by the Work.
- .8 Remove all grease, dust, dirt, stains, labels, fingerprints, over-spray and other foreign materials immediately prior to the District's final inspection. Clean to "as new" condition.
- .9 All vertical and horizontal surfaces including systems, fixtures and equipment, etc. shall be cleaned of all dust, grease or spray accumulations. Power wash is recommended. Ensure all moisture sensitive equipment is protected during cleaning.

1.15 Coordination

- .1 The Contractor is responsible for coordination of trades. Lines of demarcation between Contractor's work and trades' work are solely the responsibility of the Contractor. The Consultant assumes no responsibility for division of the Work or for any jurisdiction regarding such division.
- .2 The Contractor is to notify the Consultant at least 24 hours in advance for inspections. No work to be covered or concealed until the Consultant has inspected it, unless he has informed the Contractor that an inspection will not be performed. Such review does not absolve the Contractor from their responsibility to perform the Work in accordance with the Contract.

1.16 Quality Control

- .1 The Contractor is totally responsible for the quality of material and product that they provide and for the quality of the work.
- .2 The Contractor is to perform such inspections and tests as are necessary to ensure that the work conforms to the requirements of the Contract.
- .3 The Contractor must familiarize themselves with existing site conditions, which may vary slightly from Contract.
- .4 Discrepancies between drawings, specifications, and existing conditions etc. are to be forwarded to the Consultant in writing. Verbal direction on-site will not alleviate the Contractor from their responsibility of proper installation.
- .5 The District may undertake at their discretion, through an independent certified testing agency, random sampling, inspections and testing for the purpose of determining compliance with the Contract. The testing performed by the District's testing agency is for the benefit of the District and does not absolve the contractor of their responsibility to perform inspections as necessary to ensure all work conforms to the requirements of the Contract.
- .6 Inspection and Testing:
 - .1 Notify the District's testing agency and the Consultant 24 hours in advance of the requirements for inspection and testing in order that attendant arrangements can be made. Reimburse the District for any charges by their testing agency as a result of the District's testing agency being called out prematurely or as a result of having to wait for the Contractor for any reason.
 - .2 Submit samples and materials required for testing, as specifically requested in the specifications. Submit with reasonable promptness and in an orderly sequence so as to cause no delay in the work.
 - .3 Provide workers and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.
 - .4 If defects are revealed during inspection and testing, the Consultant or District's testing agency may request additional inspection and testing to ascertain full degree of defect at Contractor's cost. Correct defects and irregularities as advised by Consultant at no cost to the District. Pay all costs for retesting and re-inspection.
 - .5 District's inspection and testing agencies are to provide one copy of all inspection and testing reports promptly to each of the District, Consultant, and Contractor. The contractor is responsible to provide copies of inspection and test reports to subcontractors and trades of work being inspected and tested.

1.17 Project Meetings

- .1 Pre-Construction Meeting
 - .1 Within one week after award of the Contract, the Consultant will request a meeting to discuss and resolve administrative procedures and responsibilities.

STIPULATED PRICE CONTRACT	FORT POINT BRIDGE OVER CPKC RAILWAY - REHABILITATION	SECTION 01 10 01 GENERAL REQUIREMENTS PAGE 10 OF 12 20260903
---------------------------------	---	---

- .2 Representatives of the District, Consultant, Contractor and major subcontractors must be in attendance.
- .3 The Consultant will establish a time and location of meeting and notify all parties concerned to attend. Notify parties a minimum of 3 days before meeting.
 Agenda will be as follows:
 - .1 Appointment of official representatives of participants in the Work.
 - .2 Schedules of work, progress scheduling.
 - .3 Requirements of temporary facilities, offices, storage sheds, utilities, hoarding, temporary partitions, hoarding, sanitary facilities, emergency egress, etc.
 - .4 Safety.
 - .5 Environmental Controls.
 - .6 Delegated Design Submittals and Approvals.
 - .7 Requirements for work on roadways, including discussion of roadway closures and/or re-routing.
 - .8 Coordination with adjacent contractors, if applicable.
 - .9 Site security after working hours.
 - .10 Notices of Contemplated Changes, Change Orders, procedures, approvals required, time extension, overtime, administrative requirements.
 - .11 Submittal process including shop drawings, erection drawings, record drawings, etc.
 - .12 Take-over procedures, acceptance, commissioning, warranties, etc.
 - .13 Monthly progress claims, administrative procedures, photographs, hold-backs.
 - .14 Appointment of inspection and testing agencies or firms.
 - .15 Insurances, transcript of policies.
- .2 Progress Meetings
 - .1 During course of Work the Contractor shall schedule progress meetings every two weeks. Further progress meetings may be scheduled by the Consultant, Contractor, or District as required to expedite the Work.
 - .2 The District, Consultant, Contractor, and major Subcontractors involved in the Work, are to be in attendance.
 - .3 The Contractor shall preside and administer meetings, unless noted otherwise.
 - .1 The Contractor shall prepare the agenda for meetings

STIPULATED PRICE CONTRACT	FORT POINT BRIDGE OVER CPKC RAILWAY - REHABILITATION	SECTION 01 10 01
		GENERAL REQUIREMENTS
		PAGE 11 OF 12 20260903

- .2 The Contractor shall record the minutes, include significant proceedings and decisions, and identify "action by" parties.
- .3 The Contractor shall reproduce and distribute copies of minutes to participants, to parties not in attendance, and to the District and the Consultant.
- .4 The Contractor shall provide physical space and make arrangements for meetings on-site.
- .4 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of site safety and any incident reports.
 - .3 Review of Work progress since previous meeting.
 - .4 Field observations, problems which impede construction schedule, conflicts.
 - .5 Corrective measures and procedures to regain project schedule.
 - .6 Revisions to construction schedule.
 - .7 Review of off-site fabrication delivery schedules.
 - .8 Review submittal schedules; expedite as required.
 - .9 Maintenance of quality standards.
 - .10 Pending changes and substitutions, Notices of Proposed Change, Change Orders.
 - .11 Review proposed changes for effect on construction schedule and on Ready-for-Takover Date.
 - .12 Other business.
- .3 Warranty Meetings
 - .1 Warranty Meetings must be held between Substantial Performance of the Work and 3-months prior to the two year anniversary of Substantial Performance of the Work.
 - .2 Purpose: to bring the Contractor's attention to Contract Deficiencies identified during warranty period, determine action required for their correction, and monitor progress of the Contract Deficiency correction.
 - .3 Frequency: called by the Consultant on an as-needed basis.
 - .4 Location: as agreed to between the Consultant and Contractor.
 - .5 Attendees: same as construction progress meetings.
 - .6 Minutes: same as construction progress meetings.
 - .7 Agenda:
 - .1 Review and acceptance of minutes of previous meeting.
 - .2 Review of progress of Contract Deficiency correction.

STIPULATED PRICE CONTRACT	FORT POINT BRIDGE OVER CPKC RAILWAY - REHABILITATION	SECTION 01 10 01 GENERAL REQUIREMENTS PAGE 12 OF 12 20260903
---------------------------------	---	---

- .3 Identification of problems impeding Contract Deficiency correction.
- .4 Review of outstanding Contract Deficiencies.
- .5 Other Business.

1.18 Superintendence

- .1 The Contractor shall provide a full time on-site Superintendent, responsible for the quality, control, organization, and coordination of all phases of the Work. The Superintendent shall be in attendance at all site meetings.
- .2 Superintendence will be deemed unsatisfactory and changes or additions to superintendence can be demanded by the Consultant when control, organization, or coordination of the Work is not adequate, the quality of the Work does not meet the requirements of the Contract, directions given in accordance with the Contract are not followed, or progress is behind schedule.

END OF SECTION

WOOD	
1.	TIMBER ELEMENTS SHALL BE FULL SAWN COASTAL DOUGLAS FIR SELECT STRUCTURAL GRADE.
2.	TIMBER SHALL BE PRESERVATIVE TREATED PER THE SPECIFICATIONS.
3.	FASTENERS AND CONNECTION HARDWARE SHALL BE HOT DIPPED GALVANISED OR STAINLESS STEEL. ALL BOLTS SHALL COME WITH MIN 40 Ø x 4mm THK WASHERS.
4.	MOISTURE CONTENT OF TIMBER ELEMENTS SHALL NOT EXCEED 19% AT THE TIME OF FABRICATION.
5.	PROVIDE A MOISTURE BARRIER BETWEEN TIMBER AND CONCRETE SURFACES. ACCEPTABLE METHODS INCLUDE: • LIGHT GAUGE GALVANIZED STEEL • ASPHALT IMPREGNATED BUILDING PAPER (7.5kg/10m²) • CLOSED CELL FOAM
POLYETHYLENE SHEET IS NOT ACCEPTABLE	

REHABILITATION				
1.	THE CONTRACT DOCUMENTS ARE BASED ON ASSUMED AS-BUILT DIMENSIONS FOR THE EXISTING STRUCTURE AND ASSUMPTIONS IN ACCORDANCE WITH DETAILING AND PLACING PRACTICE. THESE ASSUMPTIONS MAY VARY FROM THE ACTUAL ON-SITE CONDITIONS. THE CONTRACTOR SHALL IMMEDIATELY INFORM RJC OF ANY ACTUAL VARIATIONS FROM THE ASSUMED CONDITIONS.			
2.	MINOR MODIFICATIONS WILL BE REQUIRED TO THE WORK INDICATED ON THESE DRAWINGS TO REFLECT ACTUAL SITE CONDITIONS. THE CONTRACTOR WILL COOPERATE WITH THE DISTRICT AND RJC IN THIS REGARD. MINOR MODIFICATIONS WILL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND WILL NOT RESULT IN A CHANGE IN THE CONTRACT PRICE.			
3.	ENSURE THAT ALL NECESSARY JOB DIMENSIONS ARE TAKEN AND ALL TRADES ARE COORDINATED FOR THE PROPER EXECUTION OF THE WORK. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS OF SUCH DIMENSIONS, AND FOR COORDINATION.			
4.	PRIOR TO FABRICATION OF ANY MEMBERS, THE CONTRACTOR SHALL COMPLETE THIS SITE REVIEW OF CRITICAL "TIE-IN" DIMENSIONS AND CONFIRM ALL DIMENSIONS TO ENSURE PROPER FIT OF NEW WORK TO EXISTING. REPORT ANY DISCREPANCIES TO RJC PRIOR TO STARTING WORK.			
5.	COMMENCEMENT OF CONSTRUCTION OR ANY PART THEREOF CONSTITUTES ACCEPTANCE OF EXISTING CONDITIONS AND MEANS DIMENSIONS AND ELEVATIONS HAVE BEEN CONSIDERED, VERIFIED AND ARE ACCEPTABLE.			
6.	UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, THE DRILLING OF HOLES FOR THE PURPOSE OF EPOXYING REINFORCEMENT ANCHORS SHALL NOT DAMAGE ANY EXISTING REINFORCEMENT BARS. THE CONTRACTOR SHALL REVIEW THE EXISTING DRAWINGS AND SHALL LOCATE THE POSITION OF EXISTING REINFORCEMENT BARS IN THE VICINITY OF THE HOLES BY HILTI FERROSCAN, HILTI PS 1000, GPR, X-RAY, OR OTHER MEANS BEFORE ANY HOLES ARE DRILLED.			
7.	NEW HOLES FOR THE PURPOSE OF EPOXYING REINFORCEMENT ANCHORS SHALL BE CLEARLY MARKED OUT BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY RJC ONCE THE MARKING OUT HAS BEEN COMPLETED SO THAT RJC CAN REVIEW THE PROPOSED LOCATIONS OF ALL NEW HOLES. DO NOT PROCEED WITH INSTALLING NEW HOLES WITHOUT THE APPROVAL OF RJC.			
8.	UNLESS NOTED OTHERWISE AT ALL LOCATIONS WHERE NEW CONCRETE WILL BE IN CONTACT WITH EXISTING CONCRETE SURFACES, THE EXISTING CONCRETE SURFACE IS TO BE COMPLETELY CLEANED AND ROUGHENED BY HYDRODEMOLITION, BUSH HAMMERING, (OR APPROVED EQUIVALENT) TO AN AMPLITUDE OF 6 mm (1/4"). THE CONTRACTOR SHALL NOTIFY RJC ONCE SURFACES HAVE BEEN PREPARED SO THAT RJC CAN REVIEW THE SURFACE. DO NOT PROCEED WITHOUT THE APPROVAL OF RJC.			
9.	IDENTIFY ALL REQUIRED CONNECTIONS TO SUBSTRUCTURE ELEMENTS SHOWN TO REMAIN. PROVIDE ENGINEERING REVIEW OF IMPACT OF CONNECTIONS (HOLES ETC...) ON CAPACITY OF SUBSTRUCTURE ELEMENTS. REINFORCE AS REQUIRED TO MAINTAIN CAPACITY.			

MISCELLANEOUS STEELWORK				
1.	MISCELLANEOUS STEELWORK TO CONFORM TO CSA G40.21M GRADE 350W UNLESS NOTED OTHERWISE. GRADE 300W FOR PLATES, BARS, AND ROLLED SECTIONS.			
2.	MISCELLANEOUS STEELWORK TO BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123, ASTM A153, ASTM A385, AND ASTM F2329 AFTER FABRICATION. MINIMUM 600 gm/m² COATING.			
3.	WELDING TO CONFORM TO CSA W59 & AWS D1.5M. WELDING ELECTRODES SHALL CONFORM TO CSA W48.			
4.	HIGH STRENGHT BOLTS SHALL CONFORM TO ASTM F3125M, C/W NUTS CONFORMING TO ASTM A563M HEAVY HEX AND WASHERS CONFORMING TO ASTM F436M.			
5.	ANCHOR RODS TO CONFORM TO ASTM F1554 GR55 UNLESS NOTED OTHERWISE.			
6.	ANY FIELD WELDS OR DAMAGED GALVANIZING SHALL BE REPAIRED (METALIZED) TO ASTM A780 METHOD A3 TO 180um THICKNESS.			

UTILITIES LEGEND				
EXISTING:				
	C	C		CABLE TV
	UE	UE		UNDERGROUND ELECTRICAL
	OHE			OVER HEAD ELECTRICAL
	G	G		GAS LINE
	T	T		TELEPHONE LINE
	W	W		WATER LINE
	D	D		DRAINAGE STORM PIPE
	S	S		SANITARY FORCE MAIN
	S	S		SANITARY PIPE
PROPOSED:				
	W			WATER PIPE

CONTRACTOR DESIGN

CONTRACTOR DESIGN

1. STRUCTURAL ELEMENTS REQUIRED BY THE CONTRACTOR TO COMPLETE THE WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
 - FORMWORK & FALSEWORK
 - SHORING
 - DEBRIS CATCHMENT
 - PROTECTION MEASURES
2. THE CONTRACTOR SHALL RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA FOR CONTRACTOR DESIGNS.

DELEGATED DESIGN

1. "DELEGATED DESIGN" IS THE TRANSFER OF DESIGN RESPONSIBILITY OF CERTAIN ASPECTS OF THE PROJECT FROM RJC TO THE GENERAL CONTRACTORS SPECIALITY ENGINEER(S).
2. THE SPECIALTY ENGINEER IS DEFINED AS A STRUCTURAL ENGINEER REGISTERED AND LICENSED TO PRACTICE BY THE PROFESSIONAL ENGINEERING ASSOCIATION HAVING JURISDICTION IN THE AREA WHERE THE STRUCTURE IS TO BE BUILT AND WHO IS RESPONSIBLE FOR THE DESIGN AND FIELD REVIEW OF DELEGATED AND CONTRACTOR DESIGNS.
3. THE FOLLOWING COMPONENTS REQUIRE DELEGATED DESIGN:

BRIDGE SUPERSTRUCTURE, INCLUDING:
 - GIRDERS
 - DECK
 - ASPHALT WEARING SURFACE AND WATERPROOF MEMBRANE
 - PIER CAPS / BENTS / CONNECTIONS
 - BEARINGS / SHIMS
 - BARRIERS / RAILINGS
 - EXPANSION JOINTS
 - WATERMAIN SUPPORTS AND CARRIER PIPE
4. THE CONTRACTOR'S SUPERSTRUCTURE SHALL BE DESIGNED SO THAT THE FACTORED MAXIMUM AXIAL LOAD IN TIMBER PIER SHAFTS SHALL NOT EXCEED 240 kN.

GENERAL				
1.	SECTION MARK SHOWN THUS MEANS SECTION #4 ON DRAWING S-3.			
2.	THE GENERAL CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF EXISTING STRUCTURES AND UTILITIES PRIOR TO CONSTRUCTION. REPORT DISCREPANCIES TO THE STRUCTURAL ENGINEER IN WRITING.			
3.	<u>CONCRETE WORK</u> SHALL CONFORM TO CAN/CSA-A23.1, CAN/CSA-A23.2, CAN/CSA-A23.3 AND REFERENCED DOCUMENTS.			
4.	<u>STRUCTURAL STEEL WORK</u> SHALL CONFORM TO CAN/CSA-S6 AND REFERENCED DOCUMENTS.			
5.	<u>TIMBER / WOOD / GLULAM</u> SHALL CONFORM TO CAN/CSA S6 AND REFERENCED DOCUMENTS			
6.	DO NOT CUT OR DRILL ANY OPENINGS IN STRUCTURAL MEMBERS WITHOUT WRITTEN PERMISSION OF RJC.			
7.	DATUM: • ALL STATIONS AND ELEVATIONS ARE IN METRES/MILLIMETRES • ALL OTHER DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE			
7.	GEOMETRY SHOWN ON DRAWINGS IS FOR REFERENCE TEMPERATURE OF 15° CELSIUS			
8.	<u>DEFINITIONS:</u> • GENERAL CONTRACTOR: FOR THE PURPOSES OF THESE DRAWINGS, THE USE OF THE TERM "CONTRACTOR" OR "GENERAL CONTRACTOR" SHALL REFER TO THE PRIME PERSON OR COMPANY RESPONSIBLE FOR CONSTRUCTION OF THE PROJECT AND THE COORDINATION OF TRADES AND SUBCONTRACTORS. THIS MAY BE THE GENERAL CONTRACTOR, OR A CONSTRUCTION MANAGER.			

STANDARD ABBREVIATIONS				
ALT. _____	ALTERNATE	INT. _____	INTERIOR	
B.L.L. _____	BOTTOM LOWER LAYER	JT. _____	JOINT	
BOT. _____	BOTTOM	L.G. _____	LONG	
B.U.L. _____	BOTTOM UPPER LAYER	L.L. _____	LIVE LOAD	
C.I.P. _____	CAST IN PLACE	MAX. _____	MAXIMUM	
CL. _____	CENTRE LINE	MIN. _____	MINIMUM	
CLR. _____	CLEAR	N.I.C. _____	NOT IN CONTRACT	
CONC. _____	CONCRETE	N.S. _____	NEAR SIDE	
CONT. _____	CONTINUOUS	N.T.S. _____	NOT TO SCALE	
C.P. _____	COMPLETE PENETRATION	O.C. _____	ON CENTRE	
CTRS. _____	CENTRES	O/C _____	ON CENTRE	
C/W _____	COMPLETE WITH	OPP. _____	OPPOSITE	
DET. _____	DETAIL	P.P. _____	PARTIAL PENETRATION	
D.L. _____	DEAD LOAD	R/W _____	REINFORCED WITH	
DP. _____	DEEP	S.D.L. _____	SUPERIMPOSED DEAD LOAD	
DWG. _____	DRAWING	SIM. _____	SIMILAR	
DWLS. _____	DOWELS	S.O.G. _____	SLAB ON GRADE	
E.E. _____	EACH END	SPEC. _____	SPECIFICATIONS	
E.F. _____	EACH FACE	STAG. _____	STAGGER	
EL. _____	ELEVATION	STIR. _____	STIRRUP	
ELEV. _____	ELEVATION	SYM. _____	SYMMETRICAL	
ELEC. _____	ELECTRICAL	THK. _____	THICK	
E.J. _____	EXPANSION JOINT	THRU _____	THROUGH	
E.S. _____	EACH SIDE	T.L.L. _____	TOP LOWER LAYER	
E.W. _____	EACH WAY	T.O. _____	TOP OF	
EXIST. _____	EXISTING	TYP. _____	TYPICAL	
EXT. _____	EXTERIOR	T & B _____	TOP AND BOTTOM	
F.S. _____	FAR SIDE	T.U.L. _____	TOP UPPER LAYER	
GALV. _____	GALVANIZED	U.N.O. _____	UNLESS NOTED OTHERWISE	
G.L. _____	GRID LINE	U/S _____	UNDERSIDE	
HORIZ. _____	HORIZONTAL	VERT. _____	VERTICAL	
H.2.E. _____	HOOK TWO ENDS	V.I.F. _____	VERTICAL INSIDE FACE	
± _____	APPROXIMATELY	V.O.F. _____	VERTICAL OUTSIDE FACE	
		W.P. _____	WORK POINT	

SHOP DRAWINGS				
1.	AS PART OF OUR CONSTRUCTION PHASE SERVICES, RJC WILL REVIEW SHOP DRAWINGS PERTAINING TO WORK SHOWN ON RJC'S DRAWINGS BY MEANS OF APPROPRIATE RATIONAL SAMPLING PROCEDURES AND COMMENT ON THE ACCURACY WITH WHICH THE CONTRACTOR PREPARED THE DRAWINGS.			
2.	REVIEW OF SHOP DRAWINGS IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT AND IS NOT AN APPROVAL OF THE DETAILED DESIGN INHERENT IN THE SHOP DRAWINGS. RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR SUBMITTING THEM. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THE SHOP DRAWINGS AND FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DRAWINGS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INFORMATION PERTAINING TO THE FABRICATION PROCESS, TECHNIQUES FOR CONSTRUCTION AND INSTALLATION, AND FOR CO-ORDINATION OF THE WORK OF ALL SUB-TRADES.			

DRAWING INDEX				
SHEET NO.	SHEET DESCRIPTION	SHEET ID.		
01	GENERAL NOTES - SHEET 1	S-001		
02	GENERAL NOTES - SHEET 2	S-002		
03	SITE PLAN	S-100		
04	GENERAL ARRANGEMENT	S-101		
05	BRIDGE DECK	S-102		
06	DETAILS	S-103		
07	OPTIONAL WORK ITEM OW1	S-104		

DESIGN CODE & STANDARDS				
THE STRUCTURE AS SHOWN HAS BEEN DESIGNED IN ACCORDANCE WITH:				
1.	BC MoTI BSPM VOL 5 - BEST PRACTICES FOR LOW VOLUME ROAD STRUCTURES			
2.	BC MoTI BSPM VOL 1 - SUPPLEMENT TO CHBDC S6:19			

DESIGN LOADS	
1.	LIVE LOADS:
A.	PEDESTRIAN
B.	LIVE LOAD
	4.0 kPa CL-500 PLUS DYN. LOAD ALLOWANCE
2.	DEAD LOADS:
	• STRUCTURE SELF WEIGHT • 50mm WEARING SURFACE • BARRIERS • WATERMAIN
3.	CONSTRUCTION LOADS:
	• DO NOT EXCEED NOTED DESIGN LIVE LOADS
4.	CLIMATE DATA (INVERMERE BC):
	• MAXIMUM DAILY MEAN TEMPERATURE 28°C • MINIMUM DAILY MEAN TEMPERATURE -35°C • WIND LOAD: 1/50 YEAR REFERENCE VELOCITY PRESSURE = 0.410 kPa
5.	SEISMIC DESIGN
	• SEISMIC DESIGN TO CAN/CSA-S6-19, SECTION 4. • BRIDGE CLASSIFIED AS 'OTHER BRIDGES'. • IMPORTANCE FACTOR(I) = 1 • SEISMIC SITE CLASSIFICATION - CLASS D • SEISMIC PERFORMANCE CATEGORY 1

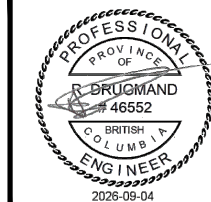
FIELD REVIEW BY READ JONES CHRISTOFFERSEN (RJC)				
1.	READ JONES CHRISTOFFERSEN PROVIDES FIELD REVIEW ONLY FOR THE WORK SHOWN ON THESE STRUCTURAL DRAWINGS. THIS REVIEW IS NOT A "FULL TIME" REVIEW BUT IS CONDUCTED WITH SUCH FREQUENCY AS RJC DEEMS APPROPRIATE TO OBSERVE VARIOUS STAGES OF THE WORK AND TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE PLANS AND SUPPORTING DOCUMENTS PREPARED BY READ JONES CHRISTOFFERSEN. FIELD REVIEW BY READ JONES CHRISTOFFERSEN IS NOT CARRIED OUT FOR THE CONTRACTOR'S BENEFIT, NOR DOES IT MAKE READ JONES CHRISTOFFERSEN GUARANTORS OF THE CONTRACTOR'S WORK. IT REMAINS THE CONTRACTOR'S RESPONSIBILITY TO BUILD THE WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. RJC SHALL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUB-CONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.			
	RJC WILL REVIEW SHOP DRAWINGS PERTAINING TO WORK SHOWN ON RJC'S DRAWINGS. THE EXTENT OF THIS REVIEW IS AT THE SOLE DISCRETION OF RJC'S ENGINEER AND IS FOR THE SOLE PURPOSE OF ASCERTAINING GENERAL CONFORMANCE WITH THE STRUCTURAL DESIGN CONCEPT. THE REVIEW IS NOT AN APPROVAL OF THE DESIGN, DETAILS, AND DIMENSIONS INHERENT IN THE SHOP DRAWINGS. RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR OR SUBCONTRACTOR SUBMITTING THEM. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OR SUBCONTRACTOR OF HIS RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THE SHOP DRAWINGS OR FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS.			
2.	PROVIDE A MINIMUM OF 24 HOURS ADVANCE NOTICE OF EACH REQUIRED FIELD REVIEW. FIELD REVIEWS SHALL BE SCHEDULED TO BE CARRIED OUT DURING NORMAL BUSINESS HOURS UNLESS SPECIAL ARRANGEMENTS ARE MADE WITH RJC.			
3.	THE WORK TO BE REVIEWED SHALL BE GENERALLY COMPLETE.			

DRAWINGS				
1.	THIS SET OF DRAWINGS SHOWS THE COMPLETED PROJECT. THE DRAWINGS DO NOT SHOW COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND ABOUT THE JOB SITE DURING CONSTRUCTION, AND THE DESIGN AND ERECTION OF ALL TEMPORARY STRUCTURES, FORMWORK, FALSE WORK, SHORING, ETC. REQUIRED TO COMPLETE THE WORK.			
2.	THE USE OF THESE DRAWINGS IS LIMITED TO THAT IDENTIFIED IN THE REVISIONS COLUMN. DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED "ISSUED FOR CONSTRUCTION" IN THE REVISIONS COLUMN. BY READ JONES CHRISTOFFERSEN LTD. THE DRAWINGS SHALL NOT BE USED FOR PRICING, COSTING, OR TENDER UNLESS SO INDICATED IN THE REVISION COLUMN. PRICING OR COSTING DRAWINGS ARE NOT COMPLETE AND ANY PRICES BASED ON PRICING OR COSTING DRAWINGS MUST INCLUDE ALLOWANCES FOR THIS.			
3.	THE INFORMATION ON THESE DRAWINGS SHALL NOT BE USED FOR ANY OTHER PROJECT OR WORKS. THE INFORMATION ON THESE DRAWINGS APPLIES SOLELY TO THIS PROJECT.			

REV NO					DESIGN					GENERAL NOTES - SHEET 1				
0	ISSUED FOR TENDER				DATE	2026-04-17				DWG. NO.	S-001			
					DRAWN BY	SJS				DESIGN BY	MCB			
					CHECKED BY	MCB				APPROVED BY	XXX			
													1 OF 7	REV. 0



FORT POINT BRIDGE OVER CPKC RAILWAY BRIDGE REHABILITATION



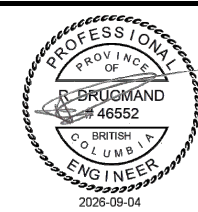
SCALE	AS NOTED	DATE	2026-04-17	DWG. NO.	S-001
DRAWN BY	SJS	DESIGN BY	MCB		
CHECKED BY	MCB	APPROVED BY	XXX		

REV NO	REVISIONS	DATE	DRAWN	APPR'D
0	ISSUED FOR TENDER	2026-09-04	SJS	MCB



Invermere
on the Lake

FORT POINT BRIDGE OVER CPKC RAILWAY
BRIDGE REHABILITATION



CAL.104245.0019



► **DESIGN**

SCALE	AS NOTED	DATE	2026-04-17	DWG. NO.
DRAWN BY	SJS	DESIGN BY	MCB	S-002
CHECKED BY	MCB	APPROVED BY	XXX	2 OF 7
				REV. 0

GENERAL NOTES - SHEET 2

1. GENERAL:
- A. CONCRETE MATERIALS, REINFORCING, MIXING, PLACING, CURING, FORMWORK, QUALITY AND OTHER CONSTRUCTION PRACTICES TO CONFORM THE PROJECT SPECIFICATIONS AND CSA-A23.1, CSA-A23.2, CSA-A23.3 AND REFERENCED DOCUMENTS.
- B. ANY GROUT SHALL BE SHRINKAGE COMPENSATING AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 35 MPa @ 28 DAYS.
2. MIX DESIGN:

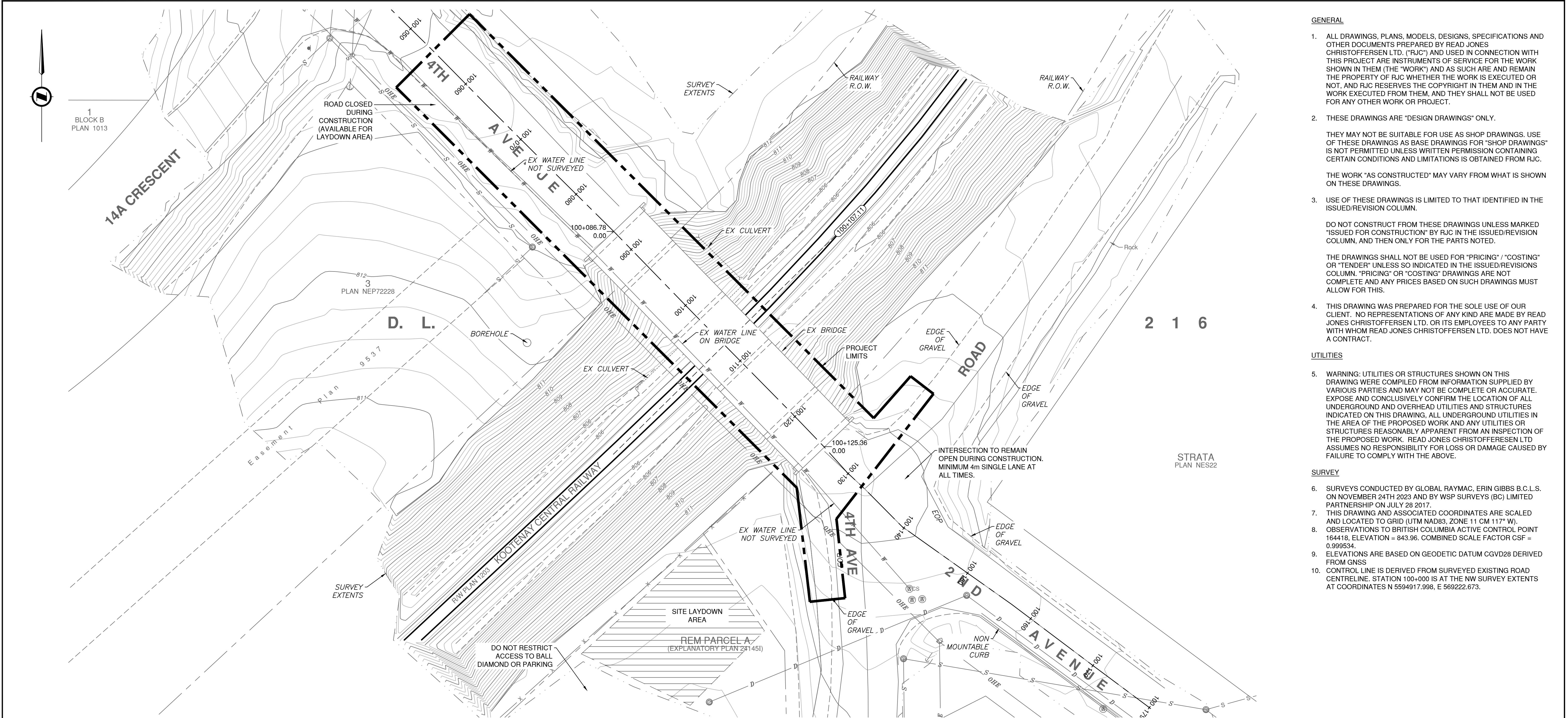
CONCRETE PROPERTIES		
ELEMENT	MIX CLASS	COMMENT
SUBSTRUCTURE	C-XL	

3. REINFORCING
- A. 10M AND LARGER (U.N.O.)-----CSA G30.18 GRADE 400W
- B. GALVANIZED REBAR-----CSA G30.18 GRADE 400W & (NOTED WITH 'G' AS 10MG) ASTM A767M CLASS II
- C. STAINLESS STEEL REBAR-----ASTM A955 AND ASTM A276 (NOTED WITH 'S' AS 10MS) GRADE 420 MPa DUPLEX STAINLESS STEEL ALLOY S31803
- D. 6-C15M4000 @ 300 MEANS 6-15M BARS 4000mm LONG (LENGTH INCLUDES HOOK LENGTH) HOOKED ONE END WITH 90° STANDARD HOOK AND SPACED AT 300mm O/C.
- E. 15M @ 300 H.2.E. MEANS 15M BARS HOOKED BOTH ENDS WITH 90° STANDARD HOOK AND SPACED AT 300mm O/C.
4. SUPPLY SUPPORT BARS TO SUPPORT MAIN REINFORCEMENT AS REQUIRED.
5. REFER TO SPECIFICATIONS FOR SHOP DRAWING AND SUBMITTAL REQUIREMENTS.
6. CONCRETE COVER TO REINFORCEMENTSHALL BE 60mm +10mm/-0mm
7. BLACK, GALVANIZED AND STAINLESS STEEL REBAR SHALL BE SEPARATED BY PLASTIC ISOLATOR CLIPS OR APPROVED ALTERNATIVE.
8. ALL TENSION LAP SPLICES TO BE AS NOTED BELOW, UNLESS INDICATED OTHERWISE ON THE DRAWINGS:

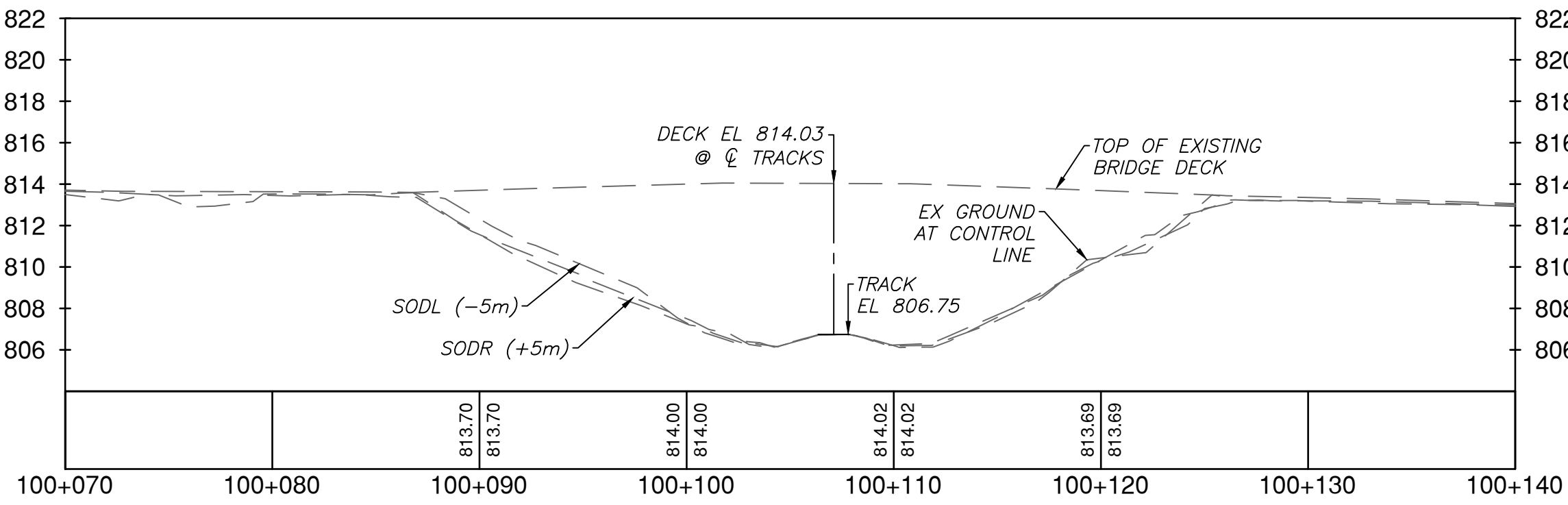
BAR SIZE	GENERAL BARS	TOP BARS*
	UNCOATED	UNCOATED
10M	400	450
15M	500	650
20M	650	850
25M	1000	1300
30M	1200	1600

* HORIZONTAL BARS WITH MORE THAN 300mm CONCRETE BELOW BARS.

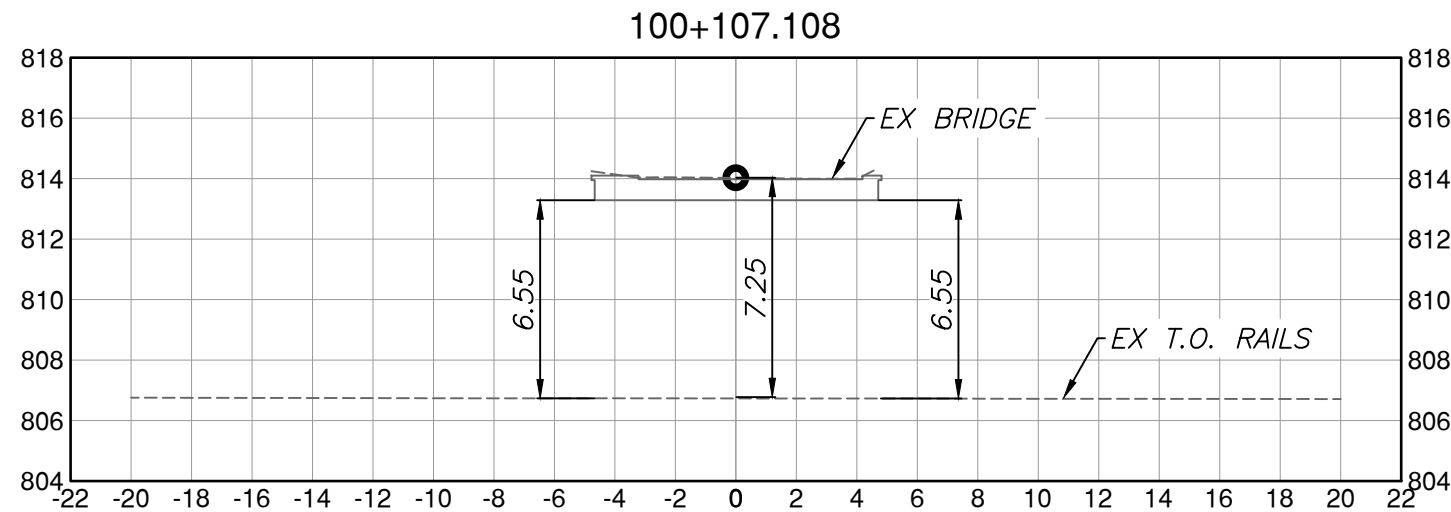
9. FORMWORK
- A. THE DESIGN, FABRICATION, ERECTION OF FORMWORK, SHORING IS THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO CONFORM TO CSA-S269.1, CSA-S269.2, AND CSA-S269.3.
- B. CONCRETE SHALL REACH 70% OF THE 28 DAY STRENGTH AND BE AT LEAST 3 DAYS OLD PRIOR TO STRIPPING.
- C. STRENGTH OF CONCRETE FOR STRIPPING TO BE DETERMINED BY FIELD CURED CYLINDERS AS DEFINED IN THE REFERENCE DOCUMENTS.
- D. ALL COMPONENTS REQUIRED FOR CONSTRUCTION AND REQUIRED TO REMAIN IN THE CONCRETE SHALL BE HOT DIP GALVANIZED TO CSA G164 OR TYPE 316 STAINLESS STEEL U.N.O. DISSIMILAR METALS SHALL BE SEPARATED BY APPROVED METHODS.
10. FINISHING
- A. ALL EDGES OF EXPOSED CONCRETE TO BE CHAMFERED 20mm x 20mm.
- B. REFER TO DETAILS FOR FINISHING AND SEALERS.



SITE PLAN
Scale: 1:250



PROFILE - EXISTING BRIDGE
Scale: 1:250



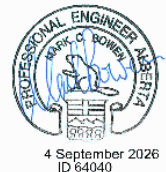
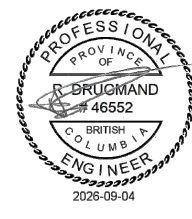
EXISTING VERTICAL CLEARANCE
Scale: 1:250

NOTE:SEE S-001 AND S-002 FOR GENERAL NOTES

REV NO	REVISIONS	DATE	DRAWN	APPRD
0	ISSUED FOR TENDER	2026-09-04	SJS	MCB



FORT POINT BRIDGE OVER CPKC RAILWAY
BRIDGE REHABILITATION



CAL.104245.0019



DESIGN

SCALE	AS NOTED
DRAWN BY	SJS
CHECKED BY	MCB

SITE PLAN		DWG. NO.
DATE	2026-04-17	S-100
DESIGN BY	MCB	
APPROVED BY	XXX	3 OF 7
REV.	0	

GENERAL

- ALL DRAWINGS, PLANS, MODELS, DESIGNS, SPECIFICATIONS AND OTHER DOCUMENTS PREPARED BY READ JONES CHRISTOFFERSEN LTD. ("RJC") AND USED IN CONNECTION WITH THIS PROJECT ARE INSTRUMENTS OF SERVICE FOR THE WORK SHOWN IN THEM (THE "WORK") AND AS SUCH ARE AND REMAIN THE PROPERTY OF RJC WHETHER THE WORK IS EXECUTED OR NOT, AND RJC RESERVES THE COPYRIGHT IN THEM AND IN THE WORK EXECUTED FROM THEM, AND THEY SHALL NOT BE USED FOR ANY OTHER WORK OR PROJECT.
- THESE DRAWINGS ARE "DESIGN DRAWINGS" ONLY.

THEY MAY NOT BE SUITABLE FOR USE AS SHOP DRAWINGS. USE OF THESE DRAWINGS AS BASE DRAWINGS FOR "SHOP DRAWINGS" IS NOT PERMITTED UNLESS WRITTEN PERMISSION CONTAINING CERTAIN CONDITIONS AND LIMITATIONS IS OBTAINED FROM RJC.

THE WORK "AS CONSTRUCTED" MAY VARY FROM WHAT IS SHOWN ON THESE DRAWINGS.
- USE OF THESE DRAWINGS IS LIMITED TO THAT IDENTIFIED IN THE ISSUED/REVISION COLUMN.

DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED "ISSUED FOR CONSTRUCTION" BY RJC IN THE ISSUED/REVISION COLUMN, AND THEN ONLY FOR THE PARTS NOTED.

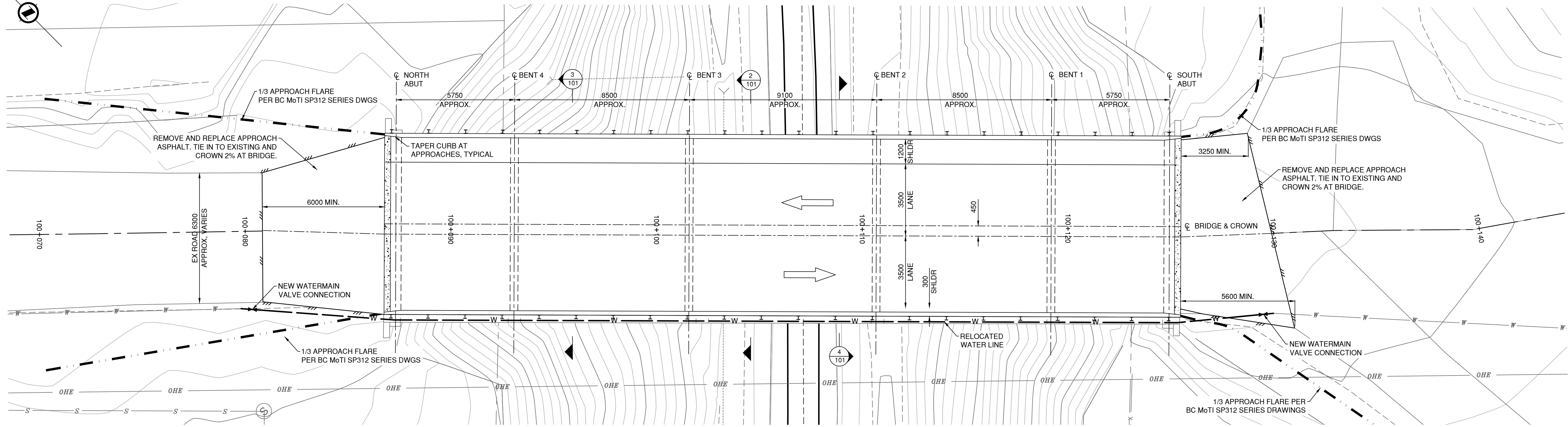
THE DRAWINGS SHALL NOT BE USED FOR "PRICING" / "COSTING" OR "TENDER" UNLESS SO INDICATED IN THE ISSUED/REVISIONS COLUMN. "PRICING" OR "COSTING" DRAWINGS ARE NOT COMPLETE AND ANY PRICES BASED ON SUCH DRAWINGS MUST ALLOW FOR THIS.
- THIS DRAWING WAS PREPARED FOR THE SOLE USE OF OUR CLIENT. NO REPRESENTATIONS OF ANY KIND ARE MADE BY READ JONES CHRISTOFFERSEN LTD. OR ITS EMPLOYEES TO ANY PARTY WITH WHOM READ JONES CHRISTOFFERSEN LTD. DOES NOT HAVE A CONTRACT.

UTILITIES

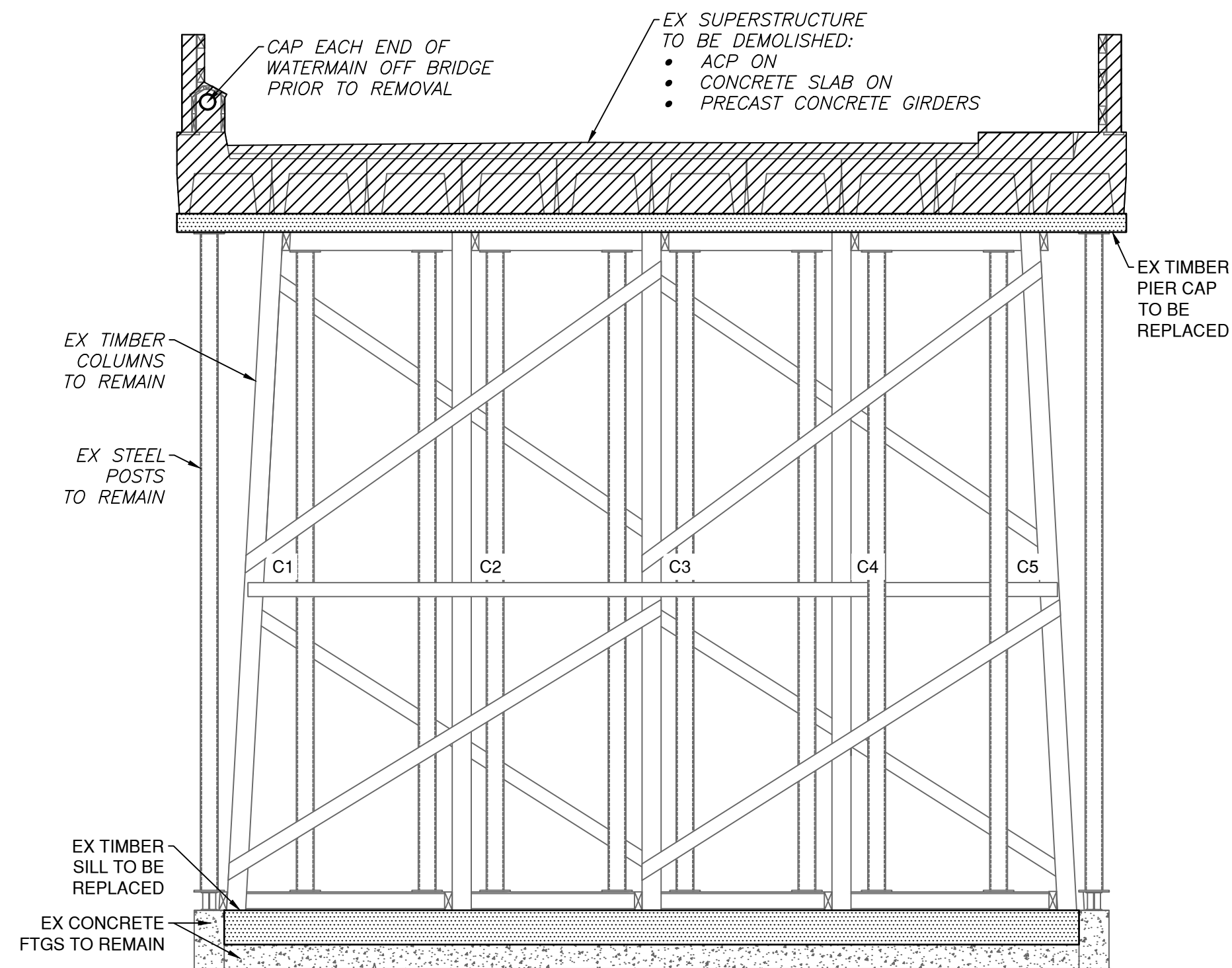
- WARNING: UTILITIES OR STRUCTURES SHOWN ON THIS DRAWING WERE COMPILED FROM INFORMATION SUPPLIED BY VARIOUS PARTIES AND MAY NOT BE COMPLETE OR ACCURATE. EXPOSE AND CONCLUSIVELY CONFIRM THE LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES INDICATED ON THIS DRAWING. ALL UNDERGROUND UTILITIES IN THE AREA OF THE PROPOSED WORK AND ANY UTILITIES OR STRUCTURES REASONABLY APPARENT FROM AN INSPECTION OF THE PROPOSED WORK. READ JONES CHRISTOFFERSEN LTD ASSUMES NO RESPONSIBILITY FOR LOSS OR DAMAGE CAUSED BY FAILURE TO COMPLY WITH THE ABOVE.

SURVEY

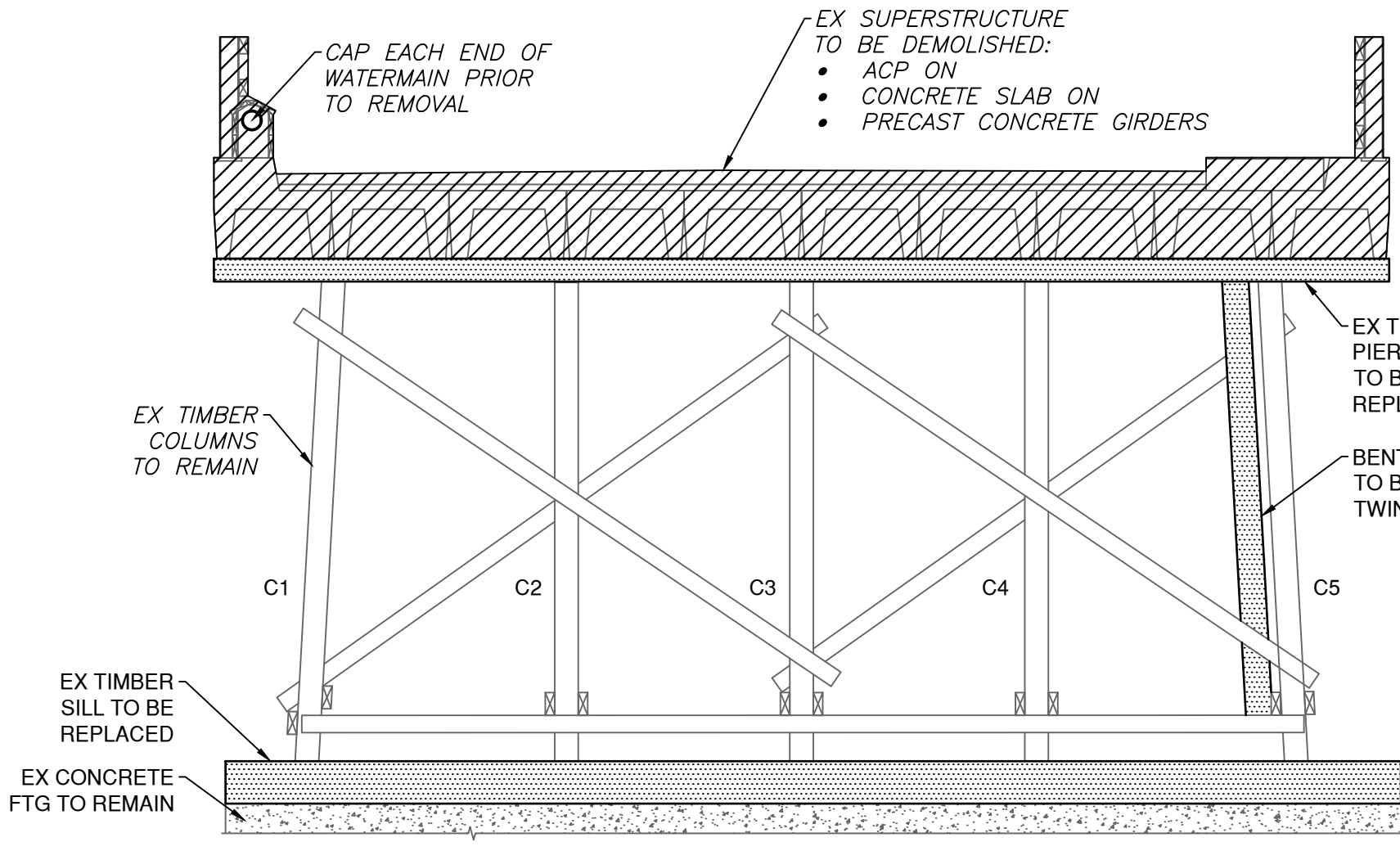
- SURVEYS CONDUCTED BY GLOBAL RAYMAC, ERIN GIBBS B.C.L.S. ON NOVEMBER 24TH 2023 AND BY WSP SURVEYS (BC) LIMITED PARTNERSHIP ON JULY 28 2017.
- THIS DRAWING AND ASSOCIATED COORDINATES ARE SCALED AND LOCATED TO GRID (UTM NAD83, ZONE 11 CM 117° W).
- OBSERVATIONS TO BRITISH COLUMBIA ACTIVE CONTROL POINT 164418, ELEVATION = 843.96. COMBINED SCALE FACTOR CSF = 0.999534.
- ELEVATIONS ARE BASED ON GEODETIC DATUM CGVD28 DERIVED FROM GNSS
- CONTROL LINE IS DERIVED FROM SURVEYED EXISTING ROAD CENTRELINE. STATION 100+000 IS AT THE NW SURVEY EXTENTS AT COORDINATES N 5594917.998, E 569222.673.



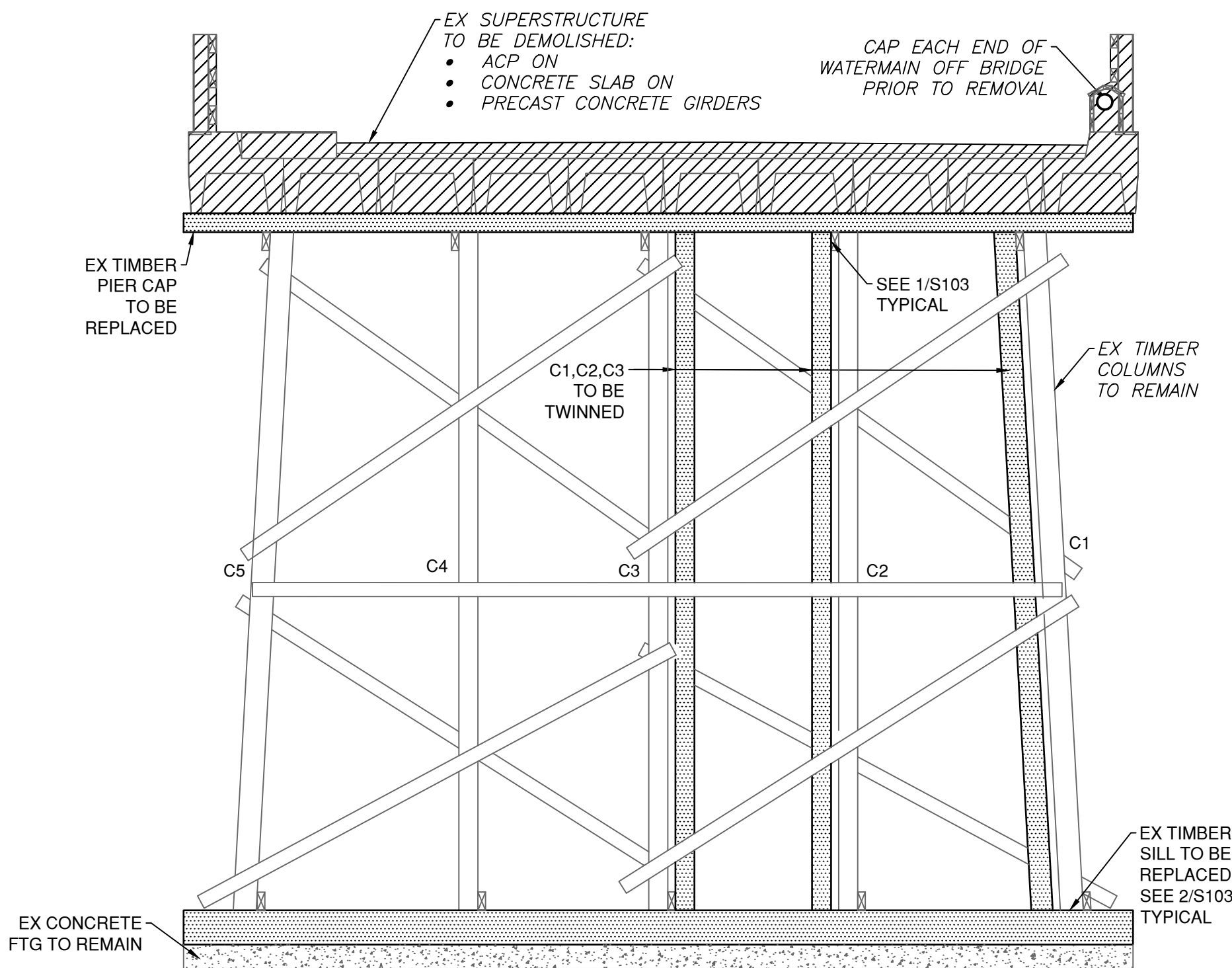
PLAN
Scale: 1:100



ELEVATION AT BENT 3
Scale: 1:50 (LOOKING NORTH)



ELEVATION AT BENTS 1 AND 4
Scale: 1:50 (LOOKING NORTH)



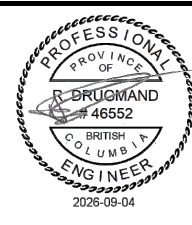
ELEVATION AT BENT 2
Scale: 1:50 (LOOKING SOUTH)

NOTE: SEE S-001 AND S-002 FOR GENERAL NOTES

REV NO	REVISIONS	DATE	DRAWN	APPR'D
0	ISSUED FOR TENDER	2026-09-04	SJS	MCB



FORT POINT BRIDGE OVER CPKC RAILWAY
BRIDGE REHABILITATION



CAL.104245.0019



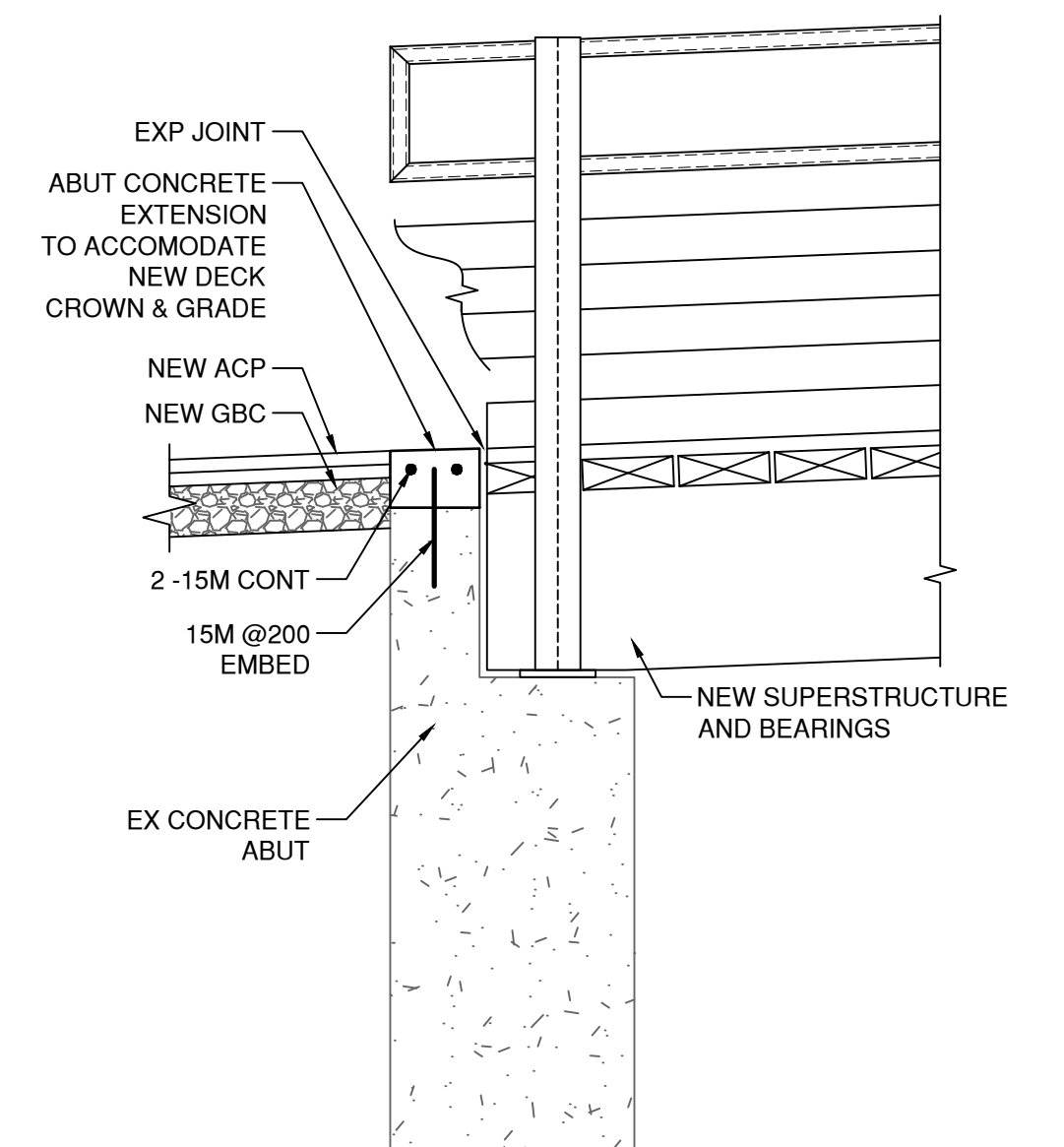
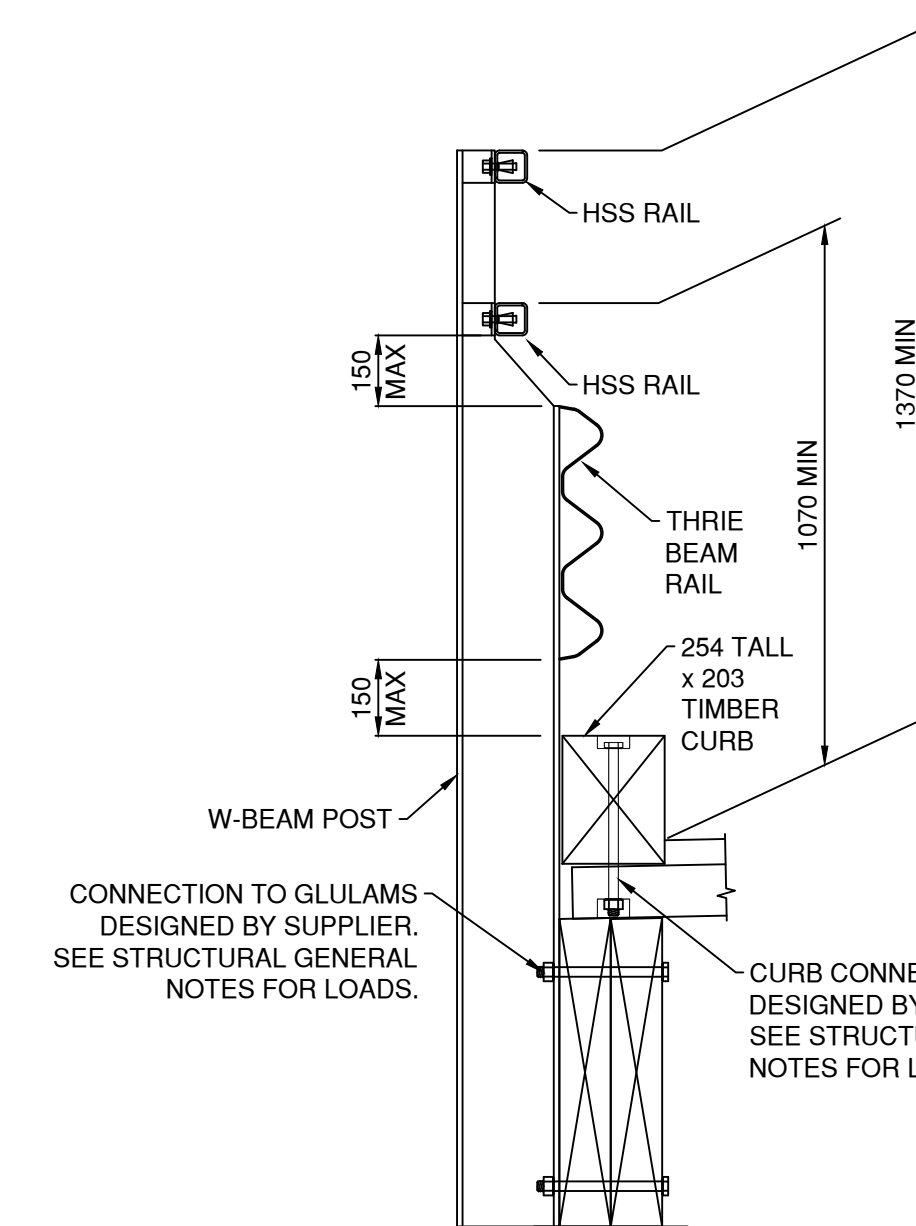
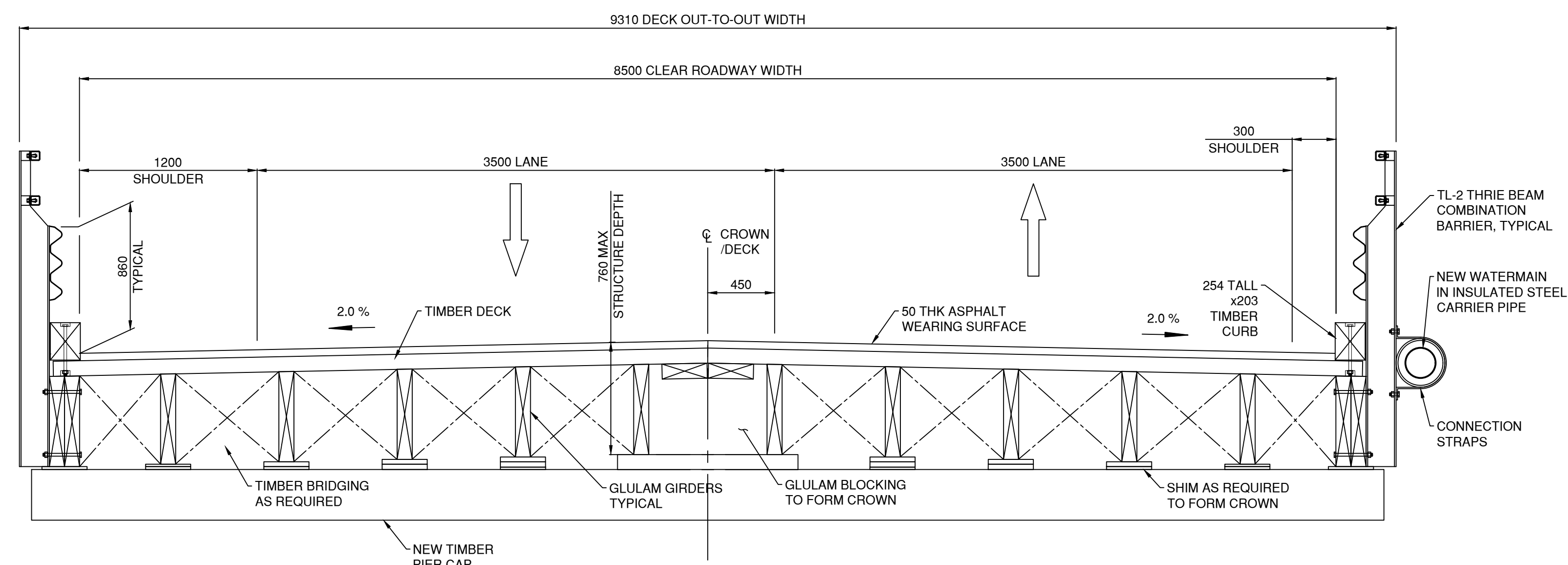
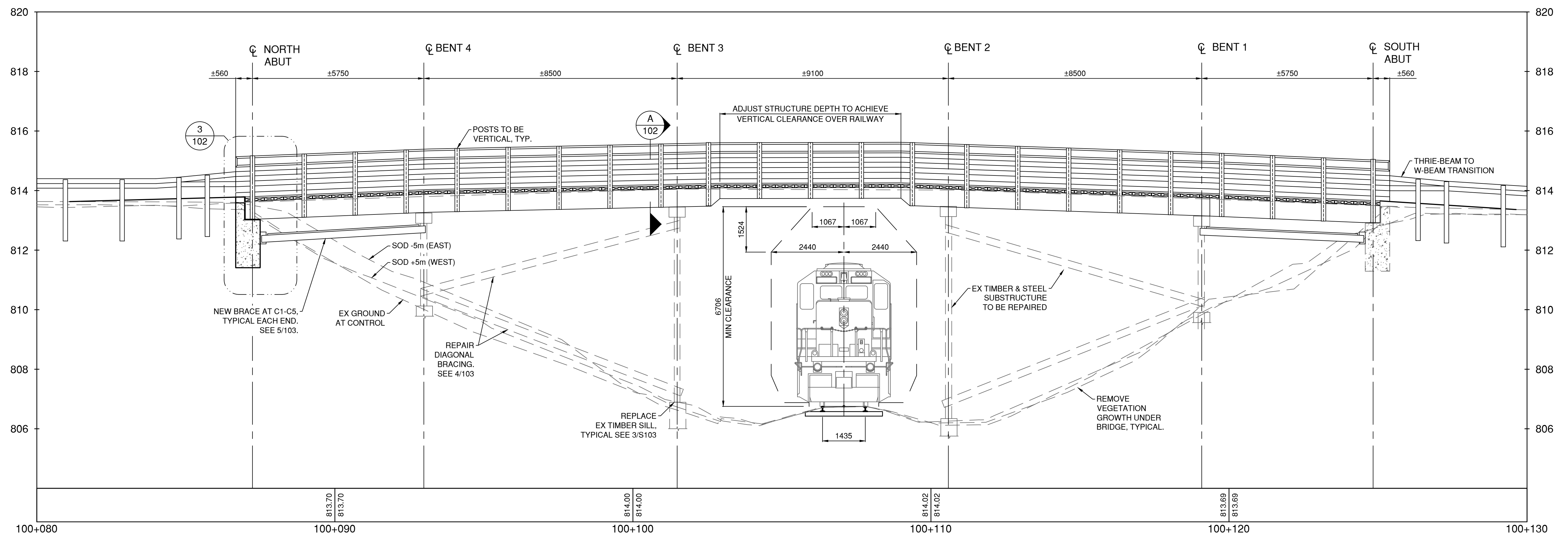
DESIGN

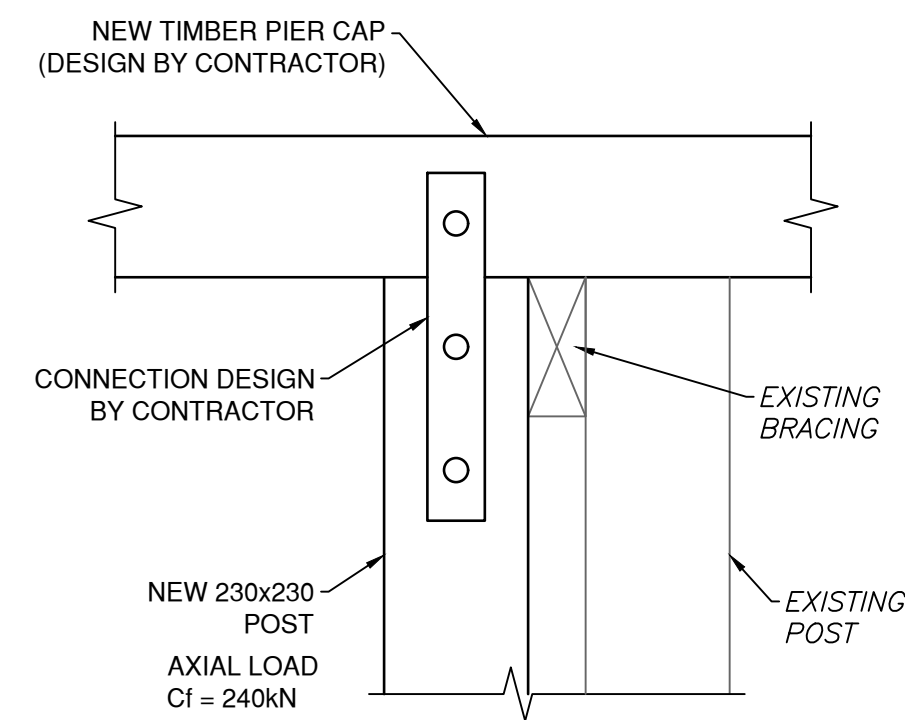
SCALE	AS NOTED
DRAWN BY	SJS
CHECKED BY	MCB

GENERAL ARRANGEMENT

DATE	2026-04-17	DWG. NO.	S-101
DESIGN BY	MCB	4 OF 7	
APPROVED BY	XXX	REV.	0

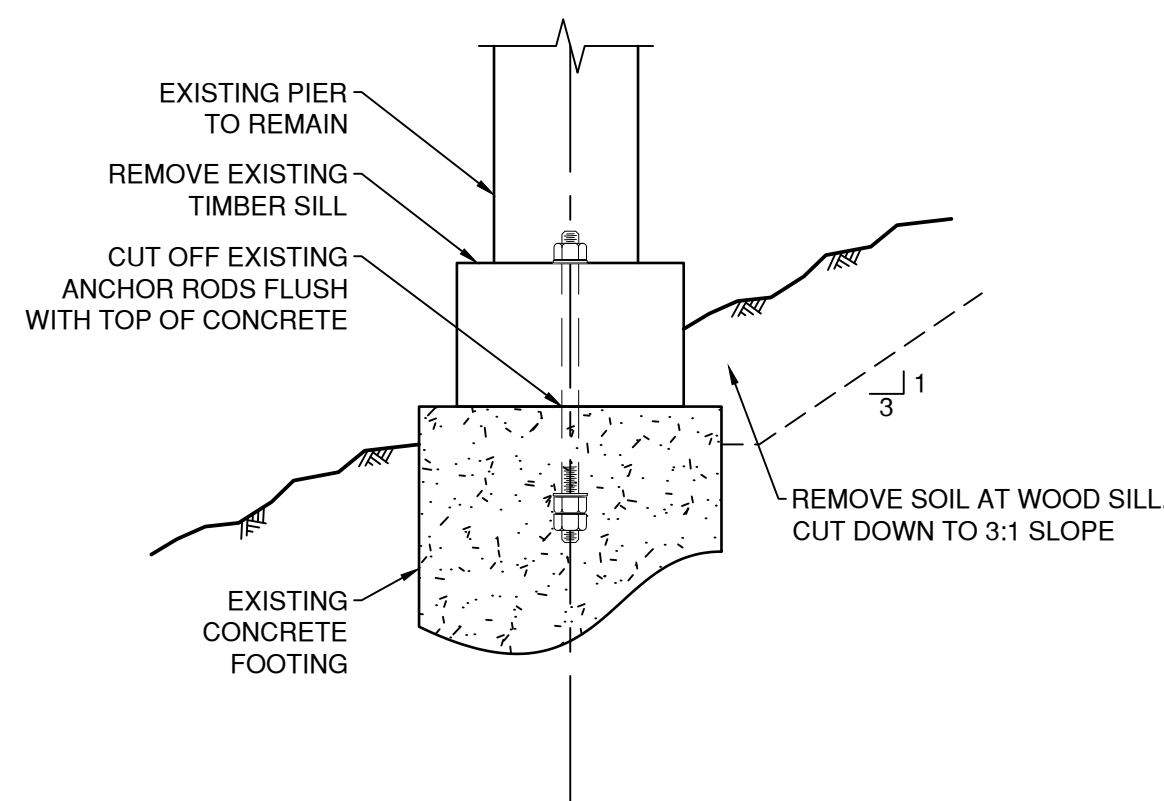
DESTROY ALL PRINTS BEARING PREVIOUS NO.





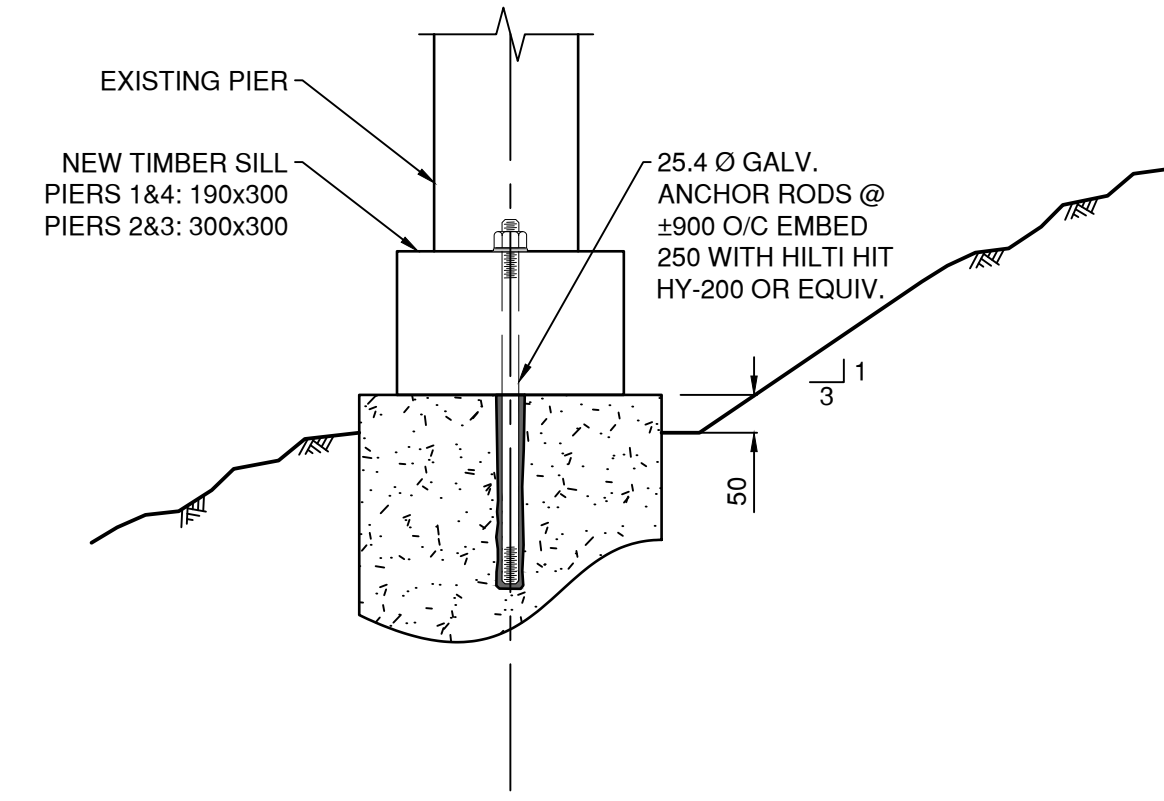
PIER STRENGTHENING
Scale: 1:10

1
103



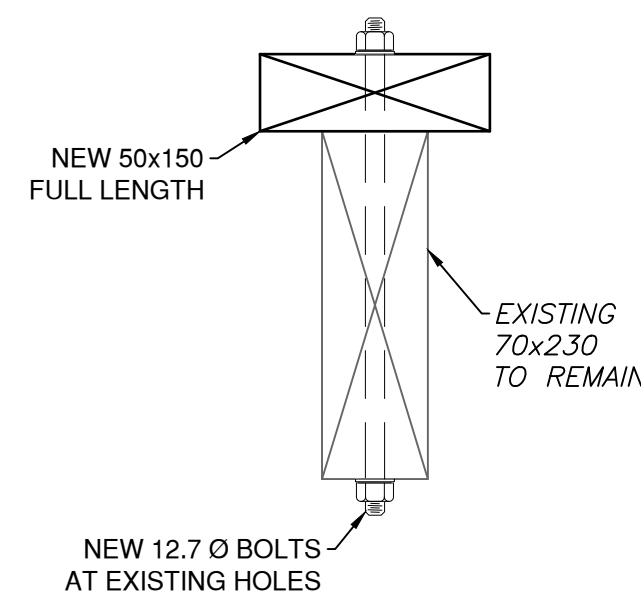
SILL REMOVAL
Scale: 1:10

2
103



SILL REPLACEMENT
Scale: 1:10

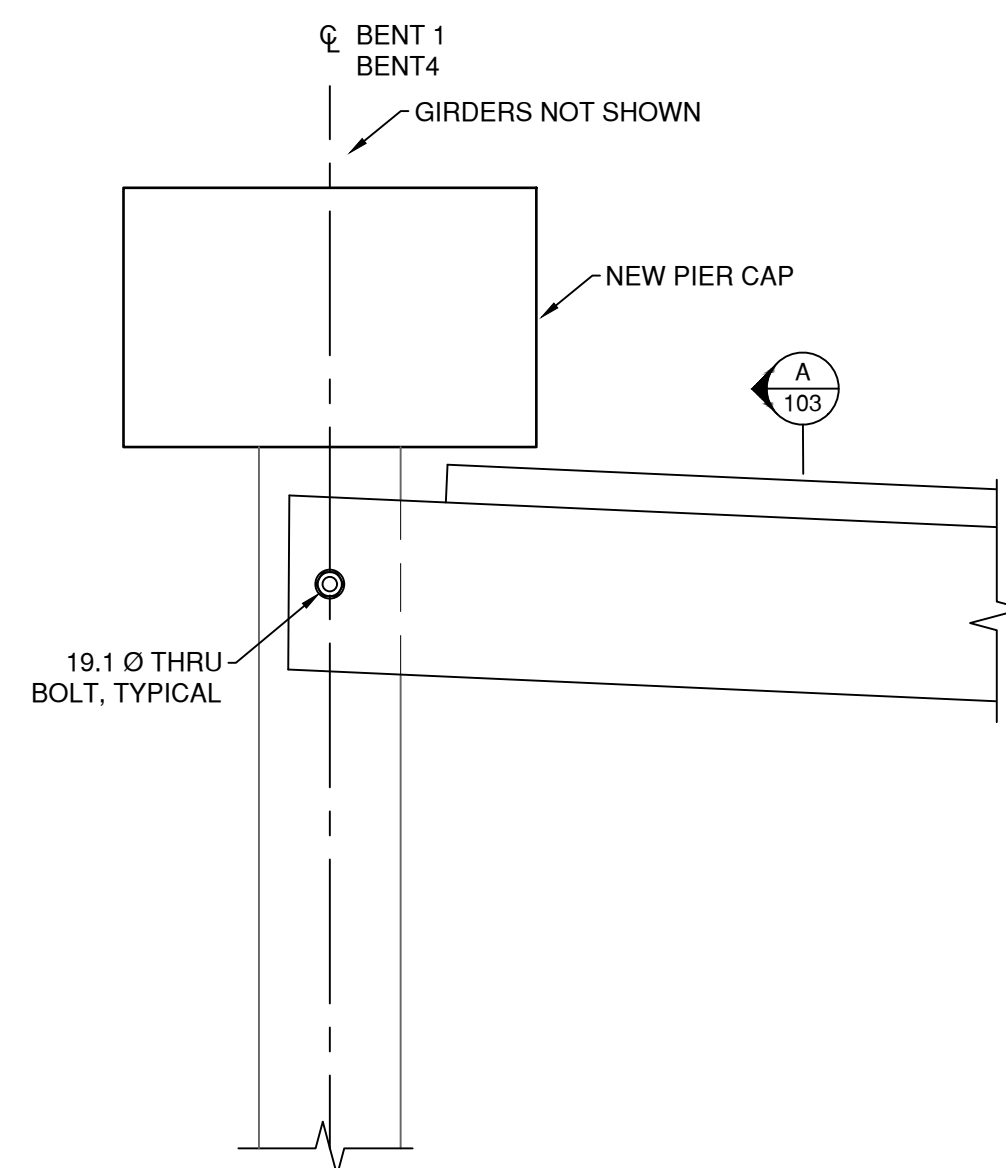
3
103



BRACE REPAIR
Scale: 1:5

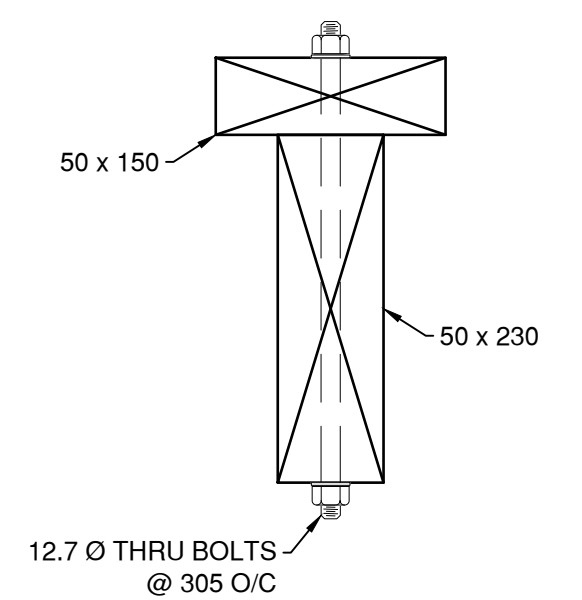
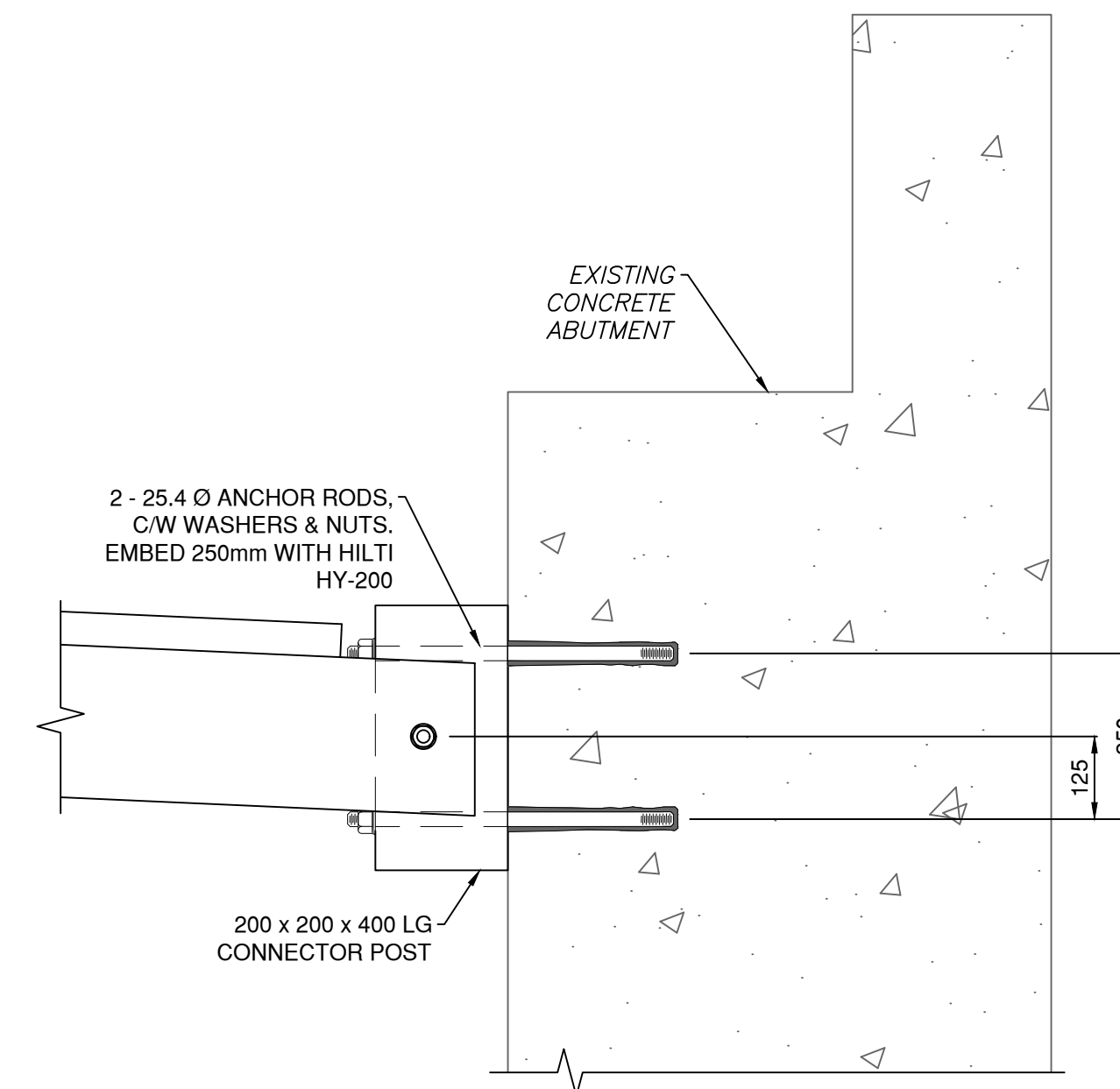
4
103

TYPICAL AT:
LOW BRACE - 5 LOCATIONS
UPPER BRACE - 5 LOCATIONS



BENT 1, BENT 4 BRACE
Scale: 1:10

5
103



SECTION
Scale: 1:5

A
103

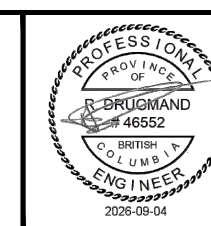
NOTES

- SEE S-001 AND S-002 FOR GENERAL NOTES
- CONTRACTOR TO DESIGN AND INSTALL TEMPORARY SHORING AS REQUIRED TO SUPPORT EXISTING STRUCTURE WHICH IS TO REMAIN.

REV NO	REVISIONS	DATE	DRAWN	APPR'D
0	ISSUED FOR TENDER	2026-09-04	SJS	MCB



FORT POINT BRIDGE OVER CPKC RAILWAY BRIDGE REHABILITATION



CAL.104245.0019



DESIGN

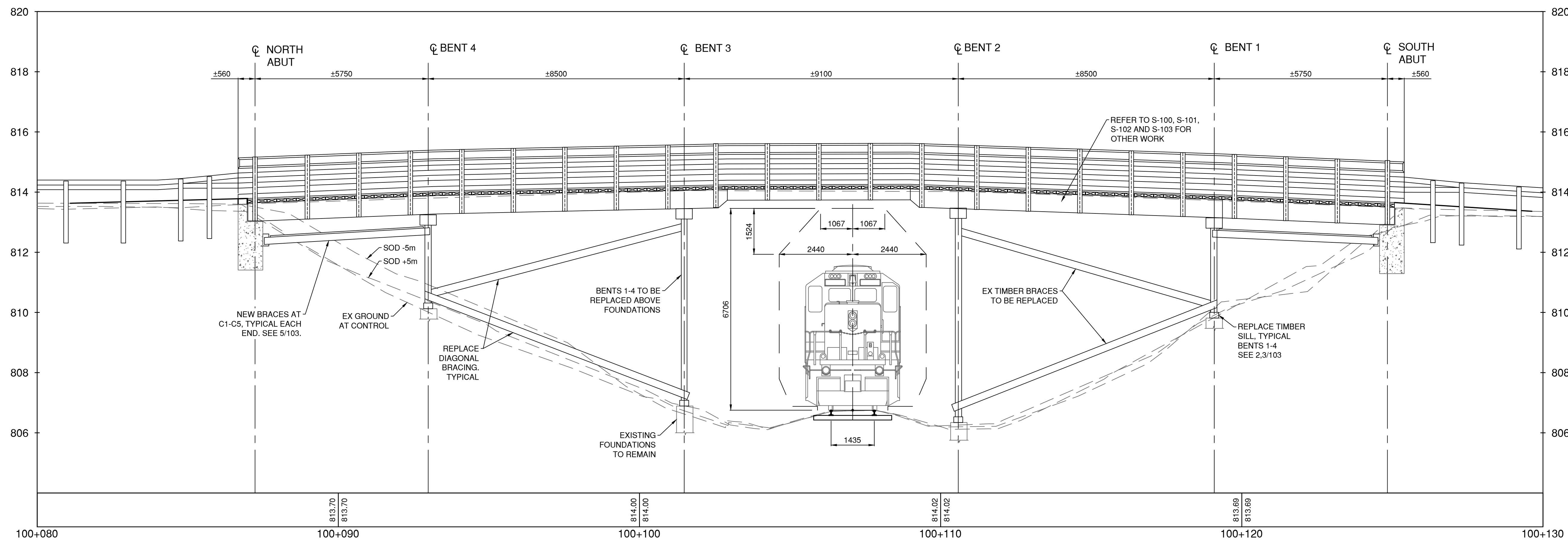
SCALE	AS NOTED
DRAWN BY	SJS
CHECKED BY	MCB

DETAILS

DATE	2026-04-17	DWG. NO.
DESIGN BY	MCB	S-103
APPROVED BY	XXX	6 OF 7
REV.	0	

DESTROY ALL PRINTS BEARING PREVIOUS NO.

PLOT DATE: September 3, 2026 P:\CAL\104202\CAL_104245\0019 - 4th W Bridge Design Build Procurement\Drafting\CAL_104245\0019 S-101.dwg



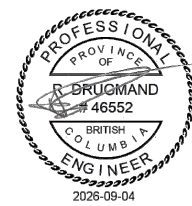
NOTE: THIS DRAWING SHOWS OPTIONAL WORK ITEMS ONLY TO BE INCLUDED IN OW1. ALL OTHER WORK PER DRAWINGS S-100, S-101, S-102 AND S-103

NOTE:SEE S-001 AND S-002 FOR GENERAL NOTES

REV NO	REVISIONS	DATE	DRAWN	APPR'D
0	ISSUED FOR TENDER	2026-09-04	SJS	MCB



FORT POINT BRIDGE OVER CPKC RAILWAY
BRIDGE REHABILITATION



CAL.104245.0019



DESIGN

SCALE	AS NOTED
DRAWN BY	SJS
CHECKED BY	MCB

OPTIONAL WORK ITEM OW1

DATE	2026-04-17	DWG. NO.
DESIGN BY	MCB	S-104
APPROVED BY	XXX	7 OF 7
REV.	0	

FORT POINT BRIDGE OVER CPKC RAILWAY LINE CONDITION STATE ASSESSMENT - LEVEL II INSPECTION REPORT



SUBMITTED TO:
ANGELA MACLEAN
250-341-8255
dpwo@invermere.net

SUBMITTED BY:
MARC COTE, P.Eng.
EMAIL: COTEM@WOODRANDD.COM



WOOD RESEARCH AND DEVELOPMENT
SUITE 202, 1113 BAKER STREET
CRANBROOK, BC, V1C 1A7
877-353-0683
WOODRANDD.COM

June 19th, 2026

REPORT DOCUMENTATION PAGE		
1. REPORT DATE (DD-MM-YYYY) 19-06-2026	2. REPORT TYPE Inspection report	3. REVISION Rev. 1
4. PROJECT NUMBER 5246S	5. CONTRACT NUMBER	6. WRD CONTACT PERSON Marc Cote cotem@woodrandd.com
7. PROJECT NAME Fort point bridge inspection		
8. CLIENT NAME AND ADDRESS TOWN OF INVERMERE 914 8 th Avenue, Invermere, BC V0A 1K0		9. CLIENT CONTACT PERSON(S) ANGELA MACLEAN 250-341-8255 dpwo@invermere.net
10. SPONSOR		11. SPONSOR CONTACT PERSON(S)
12. TITLE AND SUBTITLE Fort point bridge inspection, Town of Invermere, BC (Condition Assessment - Level II)		13. AUTHOR(S) Marc Cote
14. ABSTRACT This report presents the findings of a comprehensive inspection and condition assessment of the Fort Point Bridge substructure, commissioned by the Town of Invermere. The primary objective was to evaluate the suitability of the existing timber components for reuse in the proposed bridge reconstruction. The assessment incorporated Stress Wave Timer (SWT) testing, detailed visual inspections, and laboratory analysis of extracted core samples. Field observations were systematically correlated with laboratory data to determine key parameters, including moisture content, specific gravity, and species identification. The results indicate that, although certain structural elements exhibit localized deterioration and corrosion, the overall condition of the bridge remains serviceable. The integration of field measurements with laboratory findings provides a sound basis for informing future maintenance, asset management, and design decisions related to the bridge substructure.		
15. COLLABORATIVE ORGANIZATION(S)/COMPANY(S): NAME(S) AND ADDRESS		
16. SUPPLEMENTARY NOTES		

CONTENTS

1.	INTRODUCTION	7
1.1	Problem Statement	8
1.2	Objectives	8
1.3	Overall Approach	9
1.4	Scope of Work	9
2.	VISUAL INSPECTION	10
3.	STRESS WAVE TIME RESULTS	22
3.1	The SWT Summary Drawings	24
4.	WOOD BEHAVIOUR IN THE PRESENCE OF DECAY	26
4.1	Wood Deterioration	26
4.2	Wood Deterioration Due to Biotic Agents	26
4.3	Bacteria	27
4.4	Fungi	27
4.5	Corrosion	29
5.	CORE SAMPLES	31
5.1	Methodology and Equipment	31
5.2	Wood species identification	32
5.3	Core Sample Testing Results	34
5.4	Conclusion	36
6.	COMPARISON OF CORE TESTING RESULTS TO SWT	37
7.	CURRENT CONDITION STATE RATING	38
8.	CONCLUSION	40
9.	REFERENCES	42
10.	APPENDIX -A	43

FIGURES

Figure 1-1: Bridge elevation showing general arrangement of the bridge structural elements and nomenclature

8

Figure 2-1: Bent 4 columns had no signs of decay however there is a small soil failure around column 5 that is causing the column to displace a small amount. This displacement is also evident in the bottom longitudinal bracing which has a bend in the brace between bents 3 and 4

11

Figure 2-2: Longitudinal bracing between Bents 3 and 4 near the west side (adjacent to Column 1), showing deformation/loose connection in the brace members.....	12
Figure 2-3: Bent-1 Cap shows water stains and degradation.....	12
Figure 2-4: Bent 3 cap shows signs of water leaking from the superstructure.	13
Figure 2-5: Fasteners and plates show signs of corrosion.	13
Figure 2-6: Bent-2 sill shows degradation.	14
Figure 2-7: Bent 3 cap, steel plate is severely corroded, creating a gap between the timber and steel and compromising bearing.	14
Figure 2-8: a) and b) Bent-4 Cap shows degradation.	15
Figure 2-9: Bent-1 Column-4 exhibits wide checks. Enhanced by vertical drift pinning and subsequent decay in the top of the column.	16
Figure 2-10: Bent 2, column 2 - detailed zoom view.	16
Figure 2-11: Bent 2 Column 4 large shrinkage check.	17
Figure 2-12: a) Bent-2, column 5 shows signs of water staining and b.) shows wide nonstructural shrinkage checks where exposed more to the environment.....	17
Figure 2-13: Bent 2 bottom sill founded on concrete footing.....	18
Figure 2-14: Bent 3-Column 1 shows a split at the bolt location extending along its length.	18
Figure 2-15: Pile cap bent 3 decayed and crushing over the timber columns.	19
Figure 2-16: a) and b) Bent 3 Column 5 large shrinkage check in column and split at the top of the column.....	19
Figure 2-17: Bent 2 bottom of cap shows high moisture content.	20
Figure 2-18: Bent 2 Column 5 split at top of column and cap is decayed.....	20
Figure 2-19: a) and b) Build-up debris around the timber members at Bent-3.....	21
Figure 2-20: Build-up debris between Bent 3 and Bent 4.	21
Figure 3-1: Stress Wave Testing (SWT): (a) directional nomenclature; (b) results drawing key.22	
Figure 3-2: Example of SWT readings from columns with yellow readings.	23
Figure 3-3: The SWT Readings at Bent-1.	24
Figure 3-4: The SWT Readings at Bent-2.	24
Figure 3-5: The SWT Readings at Bent-3.	25
Figure 3-6: The SWT Readings at Bent-4.	25
Figure 4-1: a) Rain exposure zones and b) decay hazard map for North America.....	26
Figure 4-2: Areas in a timber bridge that are highly susceptible to decay when exposed to ambient moisture.....	29
Figure 4-3: Metal corrosion map for North America.....	30

Figure 4-4: Metal fasteners from a covered bridge in New Brunswick holding the assembly of chords together are severely corroded and are in very poor condition (CSR4) left hand photograph. Photograph on the right is a three pinned truss arch under bridge in Vancouver Island where buried fasteners corroded inside and had to be replaced with new fasteners.. 30

Figure 5-1: Microscopic features identifying sample 1 as CDF. 33

TABLES

Table 5-1: Summary of test methods used and attributes being tested.....	31
Table 5-2: Summary of equipment utilized for tests.	32
Table 5-3: Results of testing to establish Specific Gravity and Moisture Content.	34
Table 7-1: Current CSR of different components and average CSR.	38
Table 7-2: Condition State Rating Descriptions	39
Table 8-1: Summary of structural defects and recommended corrective actions to improve the structure to CSR 2.	40

EXECUTIVE SUMMARY

Wood Research and Development (WRD) was commissioned by the Town of Invermere to conduct an inspection and condition assessment of the Fort Point Bridge substructure in support of a planned design-build Request for Proposal (RFP) for bridge replacement. The primary objective of this investigation was to determine whether the existing timber substructure, including piles and associated elements, is suitable for reuse in the forthcoming reconstruction project. Inspection of the concrete superstructure and condition rating is outside of the scope of work for this inspection report.

The inspection included Stress Wave Timer (SWT) testing, visual assessment, and laboratory analysis of core samples. Core samples were collected from the bridge and tested in WRD's laboratory to determine moisture content, specific gravity, and species identification following ASTM standard procedures. Core sampling was completed at locations where SWT readings were also obtained, allowing direct correlation between laboratory results and field testing.

The results indicate that while several elements exhibit signs of deterioration, the bridge remains in serviceable condition. The SWT readings combined with laboratory data provide a reliable understanding of the structural timber properties, including potential reductions in specific gravity. Species identification further allows comparison against anticipated values for sound timber.

The SWT recordings are included in Appendix A. These recordings should be used in conjunction with the field inspection findings to guide future maintenance and management decisions for the bridge.

1. INTRODUCTION

The inspection of the Fort point Bridge was completed by WRD Level II certified technicians on April 14th, 2026. The objective of this inspection was to identify the condition state of the substructure of the bridge. Inspection of the concrete abutments and superstructure are outside the scope of this inspection report. The information collected was employed to determine the deteriorated elements and their level of degradation. This inspection report has been prepared by Marc Cote, P.Eng. and reviewed by Dan Tingley, Ph.D., P.Eng., P.E., MIEAust, CPEng, RPEQ, senior timber structures engineer and wood technologist.

Visual inspection, non-destructive testing (NDT) techniques, and assay sampling were used to conduct the inspection. Several instruments were employed to execute the non-destructive tests, including EPHOD® Stress Wave Technology, a distometer, a moisture meter, and a digital camera.

Assay samples were recovered from the bridge using an increment borer and sent to WRD's in-house laboratory for examination in terms of identifying the type of species, specific gravity, and moisture content. The WRD laboratory follows the ISO 17025 accreditation standard (1999). The core samples were analyzed in accordance with the requirements of the ASTM standard test methods to determine Specific Gravity (*ASTM D2395-17 – Standard Test Methods for Density and Specific Gravity (Relative Density) of Wood and Wood-Based Materials*), Moisture Content (*ASTM D4442-20 – Standard Test methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials*) and species identification (using light microscopy).

The Fort Point Bridge is over the CPKC railway. The bridge substructure consists primarily of 4 timber bents and 2 concrete abutments. The structure also includes timber cross-bracing between the bents. The bridge superstructure appeared to be in poor condition; however, it was outside the scope of this inspection.

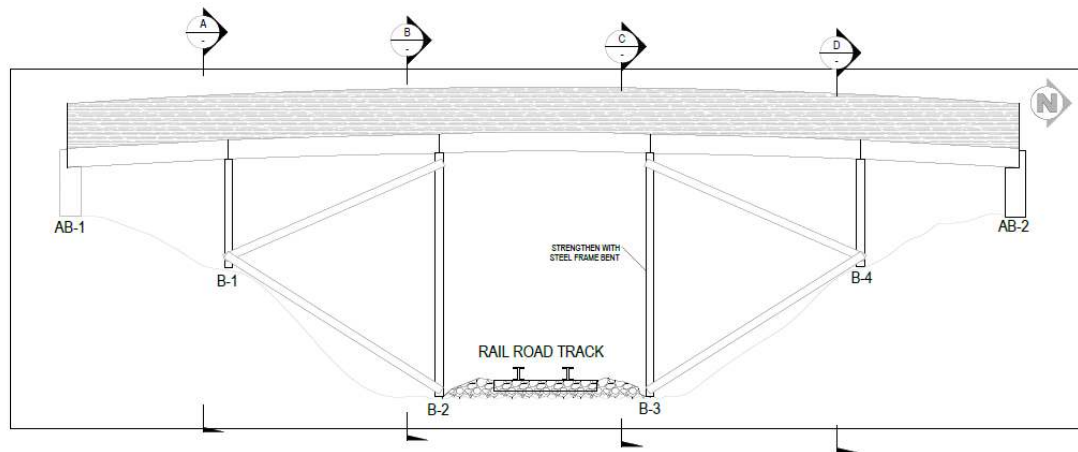


Figure 1-1: Bridge elevation showing general arrangement of the bridge structural elements and nomenclature.

The inspection team inspected all accessible structural elements, including the pile bent column, cap and sill. They visually examined the structural elements in addition to using the SWT at intervals to determine any internal damage (decay) in the element and its level. Based on this data, the weak areas in the elements were identified and categorized by color as shown in the SWT sketches included within this report.

1.1 PROBLEM STATEMENT

The Town of Invermere retained WRD to carry out an inspection of the Fort Point Bridge timber substructure to assess its current condition and determine whether it can be reused as part of the new design-build bridge project. The purpose of this inspection is to identify any areas of deterioration, evaluate the extent and severity of that deterioration, and recommend appropriate repair or strengthening measures where feasible. The findings will help inform whether reuse of the existing substructure is a viable and practical option for the new bridge.

1.2 OBJECTIVES

- 1 – Inspect the bridge.
- 2 – Report the findings.
- 3 – Rate the bridge condition state.

1.3 OVERALL APPROACH

The professional staff at WRD use their extensive experience in timber structures to evaluate the condition of the bridge elements using our specialized techniques, including non-destructive and limited destructive tests. The test results are interpreted in the following sections of this report.

1.4 SCOPE OF WORK

1. Visual inspection
2. NDT tests
3. Core samples
4. Inspection report

2. VISUAL INSPECTION

Visual inspection is an essential step in evaluating the condition of an existing structure. The visual aspect of the inspection is used to identify structural features that the non-destructive testing will not detect, such as missing or failed elements, cracks and splits, cavities, connection details, abutment condition, undermining and debris build-up. Gathering this information is critical for completing an inclusive and comprehensive investigation, which considers the surroundings in addition to the main structural elements.

The timber bridge substructure was visually inspected. Overall, the bridge exhibits shrinkage checking (some of which are deep), moisture-related distress, and connection deficiencies and some timber decay typical of aging timber structures. These conditions should be addressed through routine maintenance and ongoing monitoring.

There were visual signs of decay and crushing present in all the pile caps. It is recommended that all the pile caps be replaced in kind. Pile cap on bent 3 was in the worst condition with significant decay and crushing of the pile cap. It is suspected that the steel frame installed at bent 3 was placed to increase the bearing support of the pile cap as replacement of the cap under the concrete girders was difficult.

Overall, the timber columns were in fair condition with a few locations that exhibited minor decay around the base of the column or around brace connections. The columns should be monitored for further decay and can be posted, reinforced, or replaced to eliminate the decayed areas. Areas indicating some visual decays are the base of columns 1 and 2 in bent 2, top of column 1 bent 2, and bottom and top of column 5 in bent 3. Bent 4 columns had no signs of decay however there is a small slope failure around column 5 that is causing the column to displace a small amount. This displacement is also evident in the bottom longitudinal bracing which has a bend in the brace between bents 3 and 4. The north slope around the abutment should be regraded along with a swale graded to keep water from flowing around the bridge foundations.

The bottom sills of the frame bents were all resting on a concrete footing. Soil covered most of the sills therefore there were minimal SWT measurements taken of these members. The sill for bent 3 and 4 had visible splits and signs of crushing, these members exhibited signs of decay, and it is recommended that both sills be replaced.

Although the abutments were considered outside the scope of this inspection, a cursory inspection of the abutments was completed and there were no signs of visible distress in the concrete. The abutments appeared to be sound and suitable for reuse with a new timber superstructure.



Figure 2-1: Bent 4 columns had no signs of decay however there is a small soil failure around column 5 that is causing the column to displace a small amount. This displacement is also evident in the bottom longitudinal bracing which has a bend in the brace between bents 3 and 4.



Figure 2-2: Longitudinal bracing between Bents 3 and 4 east side (adjacent to Column 5), showing deformation/loose connection in the brace members.



Figure 2-3: Bent-1 Cap shows water stains and degradation.



Figure 2-4: Bent 3 cap shows signs of water leaking from the superstructure.



Figure 2-5: Fasteners and plates show signs of corrosion.



Figure 2-6: Bent-2 sill shows degradation.



Figure 2-7: Bent 3 cap, steel plate is severely corroded, creating a gap between the timber and steel and compromising bearing.



a)



b)

Figure 2-8: a) and b) Bent-4 Cap shows degradation.



Figure 2-9: Bent-1 Column-4 exhibits wide checks. Enhanced by vertical drift pinning and subsequent decay in the top of the column.



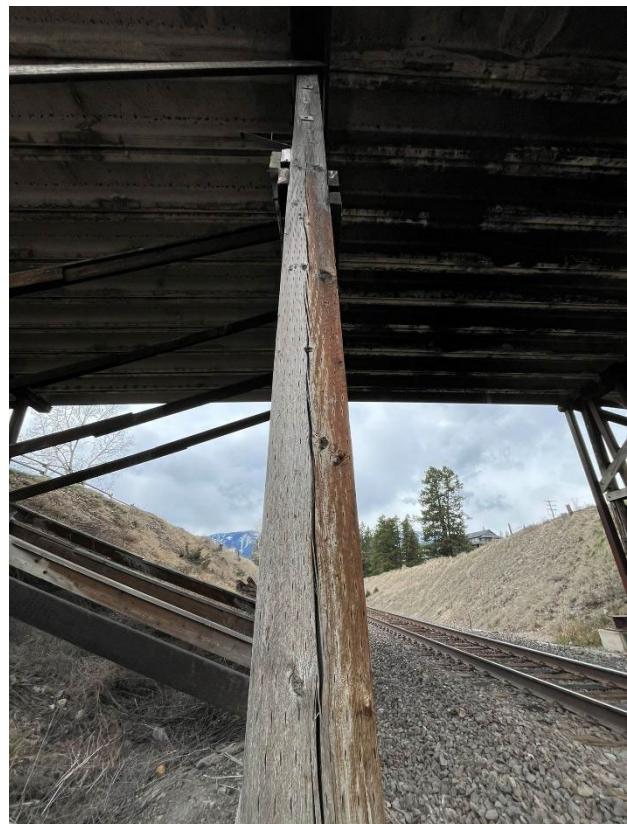
Figure 2-10: Bent 2, column 2 - detailed zoom view.



Figure 2-11: Bent 2 Column 4 large shrinkage check.



a)



b)

Figure 2-12: a) Bent-2, column 5 shows signs of water staining and b.) shows wide nonstructural shrinkage checks where exposed more to the environment.



Figure 2-13: Bent 2 bottom sill founded on concrete footing.



Figure 2-14: Bent 3-Column 1 shows a split at the bolt location extending along its length.



Figure 2-15: Pile cap bent 3 decayed and crushing over the timber columns.



a)



b)

Figure 2-16: a) and b) Bent 3 Column 5 large shrinkage check in column and split at the top of the column.



Figure 2-17: Bent 2 bottom of cap shows high moisture content.



Figure 2-18: Bent 2 Column 5 split at top of column and cap is decayed.



a)



b)

Figure 2-19: a) and b) Build-up debris around the timber members at Bent-3.



Figure 2-20: Build-up debris between Bent 3 and Bent 4.

3. STRESS WAVE TIME RESULTS

The inspection of Fort point Bridge included the use of non-destructive test equipment identified as EPHOD[®] (Electronic Pulse Highlight and Outline Diagnostic) compressive wave technology. The EPHOD[®] Equipment was employed to complete stress wave measurements along with other WRD techniques to locate internal decay in a non-destructive manner. Stress wave times were recorded on timber elements in the timber frame bents.

Each of the values recorded by the EPHOD[®] System qualifies the amount of decay within a timber element. When the through-wave time values (adjusted for a 12 inch gauge length, treatment, temperature, submersion, species, or other factors that affect the SWT reading) exceed 700 microseconds (μs) but are below 1,000 μs (shown in yellow) the area measured is capable of carrying its own dead weight and an unknown live load at the localized area where the reading was recorded. When the times exceed 1,000 μs (shown in red), the element cannot carry its own dead weight at that localized area. Readings more than 2,200 μs are indicative of cavities within the member, and when the values reach numbers over 3,300 μs , the element could cause sudden collapse in the localized area where the reading was recorded. The SWT adjusted readings below 700 μs are shown in green on the SWT sketches. The orientation of SWT readings is described using the points on a clock face, with 12:00 being upward or toward Abutment 2 (AB2). The figure below depicts this nomenclature and the drawing key for the SWT scale. Stress wave time readings are designated using a clock-face nomenclature to identify the direction of the reading.

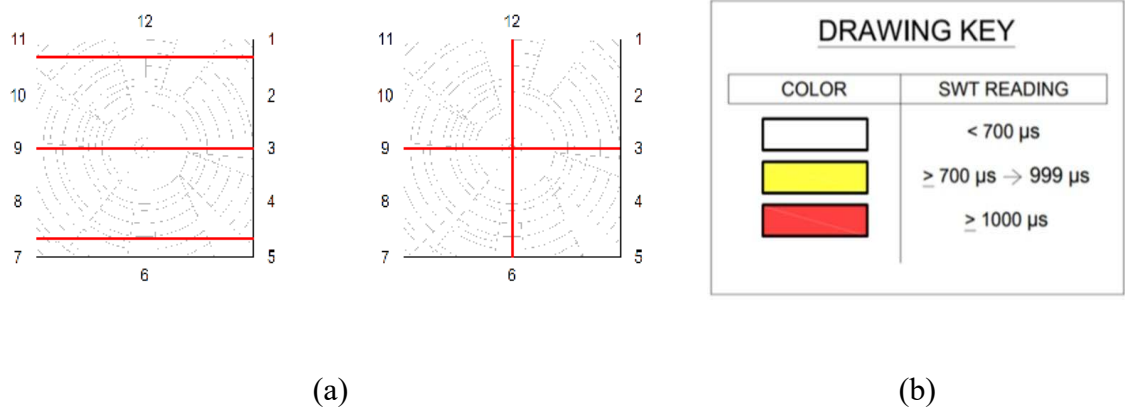


Figure 3-1: Stress Wave Testing (SWT): (a) directional nomenclature; (b) results drawing key.

The EPHOD[®] Equipment measures the time of flight of a compression wave through a timber member. These values are recorded in the field and subsequently adjusted by the engineering team to account for gauge length and other factors that may affect the SWT reading, such as preservative treatment, temperature, submersion, and species. Examples of adjusted SWT readings are shown in the following figures. SWT results for all elements tested during this inspection are shown in Appendix A.

Location Number : Sub-Location # or Letter : Component Number :		Bent	2	Length : Height : Width :	22.08	feet							
		N/A			9	inches							
		Column	1		9	inches							
		Frame Bent		Visual Condition									
		Solid Sawn											
Rectangular													
Location (feet) :		1	2	4	6	8	10	12	14	16	18	20	22
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	563	512	404	384	395	369	588	445	451	497	501	480
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	731	572	476	692	641	551	652	617	521	519	991	991
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
Comments :													

Location Number : Sub-Location # or Letter : Component Number :		Bent	2	Length : Height : Width :	22.08	feet							
		N/A			9	inches							
		Column	2		9	inches							
		Frame Bent		Visual Condition									
		Solid Sawn											
Rectangular													
Location (feet) :		0.08	0.5	2	4	6	8	10	12	14	16	18	20
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	701	756	536	519	623	425	431	597	479	591	544	457
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	464	-	467	508	453	404	379	499	475	564	484	484
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-
Comments :													

Figure 3-2: Example of SWT readings from columns with yellow readings.

3.1 THE SWT SUMMARY DRAWINGS

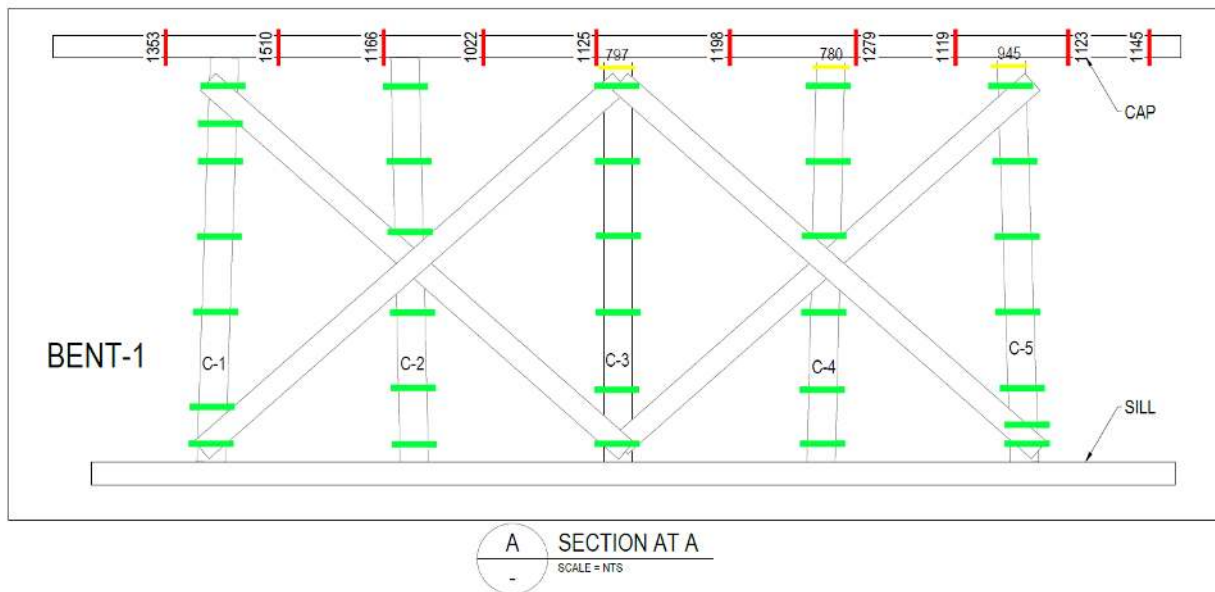


Figure 3-3: The SWT Readings at Bent-1.

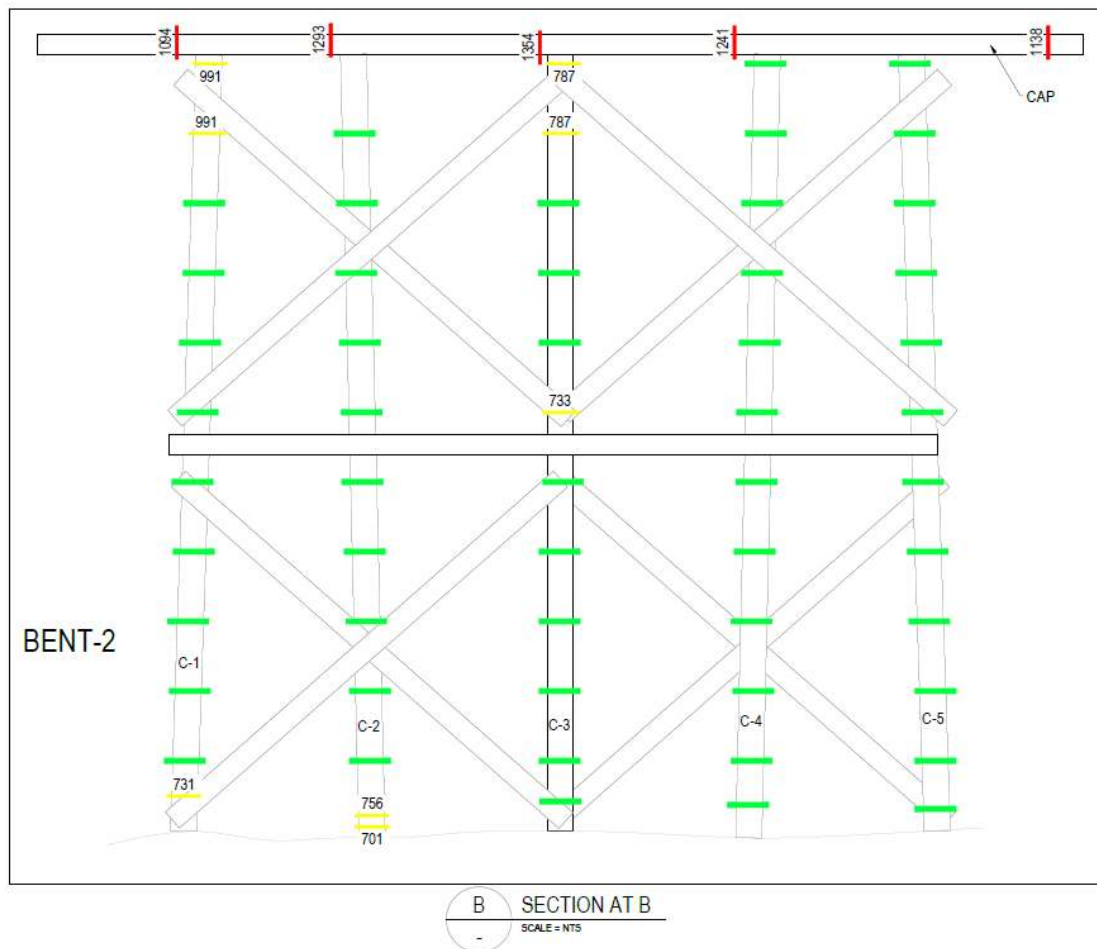


Figure 3-4: The SWT Readings at Bent-2.

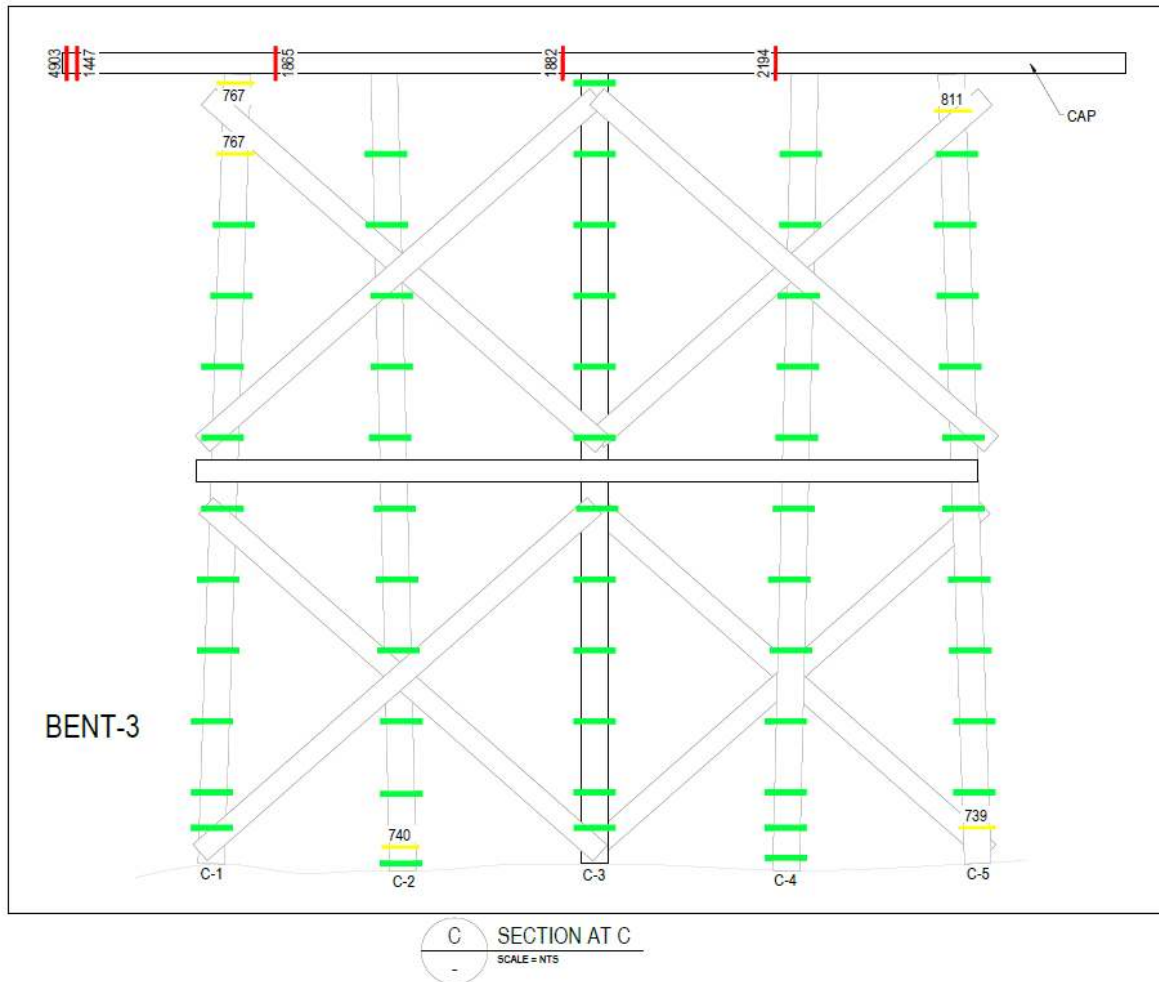


Figure 3-5: The SWT Readings at Bent-3.

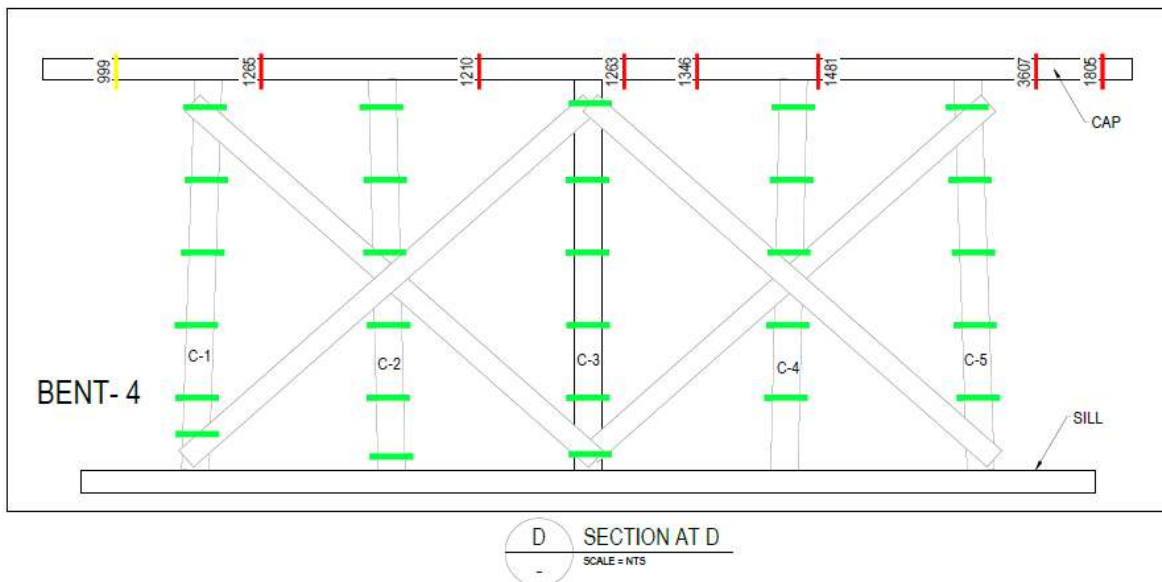


Figure 3-6: The SWT Readings at Bent-4.

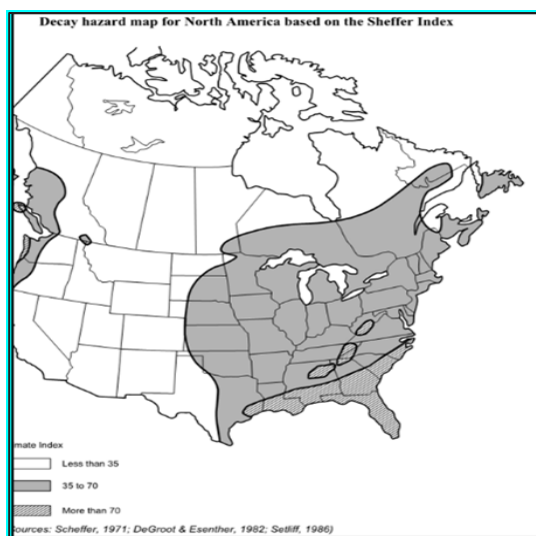
4. WOOD BEHAVIOUR IN THE PRESENCE OF DECAY

4.1 WOOD DETERIORATION

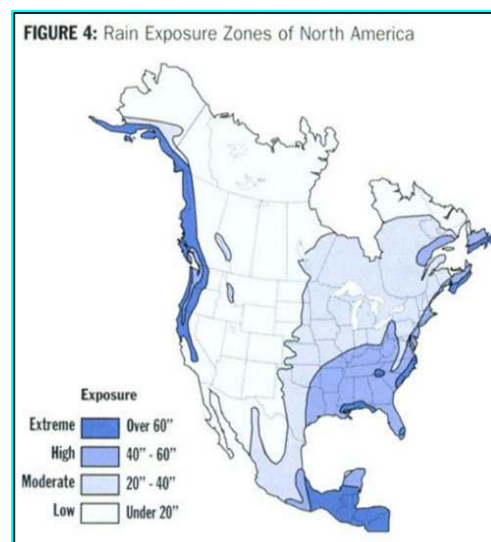
Wood deteriorates for numerous reasons, and, as deterioration implies, this adversely affects wood's properties. The two primary causes of deterioration in wood are: biotic (living) agents and physical (nonliving) agents. In many cases, the agents that initially alter the wood then provide the right conditions for other agents to attack (e.g., insects bring woodpeckers). The effectiveness of an inspection of deteriorated wood depends upon the inspector's knowledge of the agents of deterioration. A well-trained inspector is essential for accurately assessing wood deterioration.

4.2 WOOD DETERIORATION DUE TO BIOTIC AGENTS

Biotic, or living, organisms that attack wood include bacteria, fungi, and insects. As living organisms, they require certain conditions for survival, such as moisture, oxygen, temperature, and food, which is usually wood. When the basic necessary living conditions are available, biotic agents of wood deterioration are free to proliferate, but if any one of them is removed, the wood is safe from further biotic attack. Figure 4-1 illustrates a map determining the structure's susceptibility to these elements based on their location. As shown in the figures, Fort Point Bridge is in low decay hazard and low rain exposure zones. Timber structures in these zones can be designed for adequate performance and longevity by implementing reasonable protection strategies.



a



b

Figure 4-1: a) Rain exposure zones and b) decay hazard map for North America.

4.3 BACTERIA

In very wet environments, bacteria can colonize in untreated wood. Bacterial damage can include softening of the wood surface, increased permeability, and even degradation of chemical preservatives, making the wood more susceptible to less chemically tolerant organisms. Usually, the bacterial attack process is very slow; however, under prolonged exposure, damage can become significant.

4.4 FUNGI

When exposed to favourable conditions, most types of wood become an attractive food source for a variety of decay-producing fungi. The fungi require moderate temperature, oxygen, and a moisture content of approximately 19% or greater (oven dry basis) to become active. Decay progresses most rapidly at temperatures between 10°C (50°F) and 35°C (95°F); outside this range, decay growth slows considerably and ceases when the temperature drops as low as 2°C (35°F) or rises as high as 38°C (100°F). Wood can also be too wet for decay. If the wood is water-soaked, the supply of oxygen may be inadequate to support the development of typical decay fungi. Thus, wood will not decay, and decay already present from prior infestation will not progress if appropriate conditions are not met.

Examples of wood preservation by environmental conditions are common. Timber pagodas in China have survived hundreds of years, and in some cases over 1,000 years, because the wood was kept dry. Entrepreneurs in the U.S. are recovering old-growth wood from sunken transport ships and selling the recovered wood. The sunken wood has been almost perfectly preserved by being kept saturated, such that oxygen is not available for decay to proceed.

Decaying fungi may be generally classified into two categories by the appearance on the wood surface.

1. **Brown rot** appears darker and can crack across the grain. Brown rot fungi attack the cellulose in the wood fibres. The brown colour is due to the remaining lignin (the binder which holds the cellulose structure together), which is not consumed by the fungi. The decayed wood tends to form into small cubic-shaped sections, which is a sign of advanced decay.

2. **White rot** appears lighter in colour and does not crack across the grain until severely degraded. In contrast to brown rot, white rot consumes both the lignin and cellulose and leaves the

surface appearing generally intact, but with little or no significant mechanical strength. The surface of the decayed wood tends to have a “white” appearance.

Dry rot is a term for fungal decay in which the wood has already decayed due to fungal attack and has become brown and crumbly and has an apparent dry condition—the technical term is frass. However, dry rot is a misnomer because the wood must have some moisture in it to decay, although it may become dry later. A few fungi have water-conducting strands (hyphae) which can carry water, usually from the soil, into buildings or wood posts, where they moisten and rot wood that would otherwise be dry.

Interior decay damage can occur even when some precautions have been taken. Surface-treated wood material can form cracks which extend beyond the treated surface into the untreated core material. Water can also get into the core of “protected” wood through the fungi hyphae. In either case, water enters the core material and provides adequate conditions for decay fungi to live. It is known that a loss of as little as 10% in Specific Gravity (SG) due to decay can lead to a loss of 75% in bending strength and 80% in compression perpendicular to grain strength. Figure 4-2 shows the areas that are more susceptible to decay in a timber bridge. It indicates, also, how vertical fasteners lead to highly decayed zones. Splits and checks can also lead to decay if they are not properly sealed. Proper use of horizontal fasteners is recommended in lieu of these types of vertical fasteners shown below.

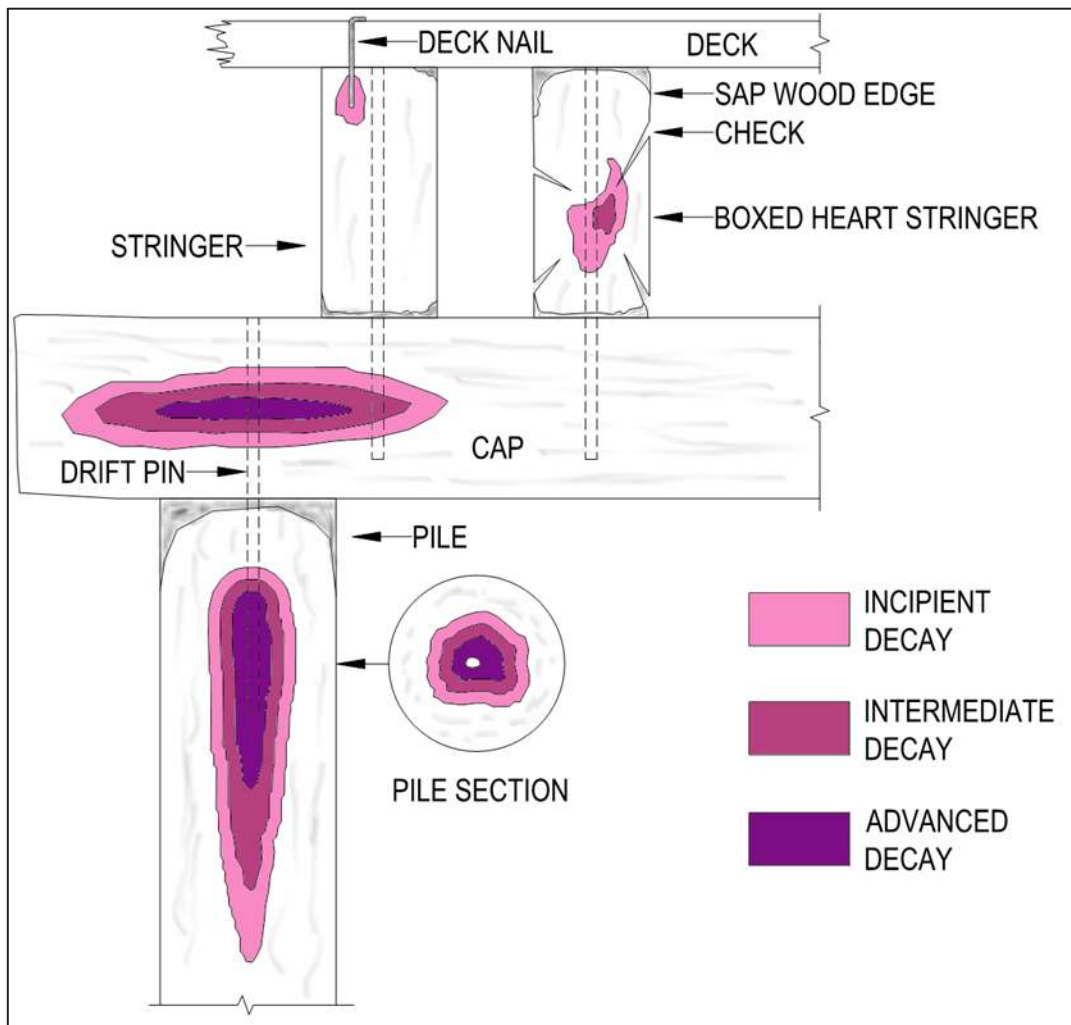


Figure 4-2: Areas in a timber bridge that are highly susceptible to decay when exposed to ambient moisture.

4.5 CORROSION

In addition to wood deterioration, timber structures are affected by corrosion of steel components and fasteners. In general, fabricated steel components and fasteners in timber bridges should be hot-dipped galvanized or stainless steel to avoid corrosion and ferric degradation of the wood. In extreme conditions, stainless steel components may be appropriate. In some situations, specific to timber structures, steel components may be at increased risk of corrosion. In other cases, corrosion of steel may also damage adjacent timber elements. For reference, the metal corrosion hazard map for North America is presented as Figure 4-3. This figure shows both embedded and exposed corrosion zones. British Columbia is in a negligible corrosion zone. There are two types of corrosion: embedded and exposed. Embedded is most dangerous as it cannot be seen during an inspection, and since associated with low levels of MC,

the metal can be significantly corroded inside the timber element. See Figure 4-4 for a photograph of embedded corrosion of a fastener that is 100 years old.

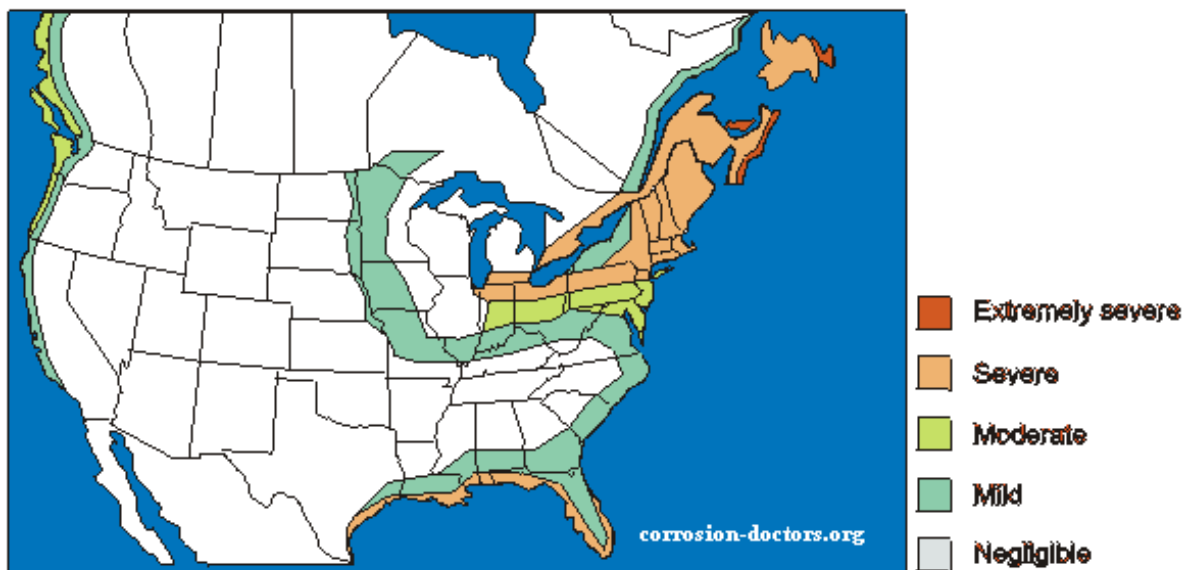


Figure 4-3: Metal corrosion map for North America.



Figure 4-4: Metal fasteners from a covered bridge in New Brunswick holding the assembly of chords together are severely corroded and are in very poor condition (CSR4) left hand photograph. Photograph on the right is a three pinned truss arch under bridge in Vancouver Island where buried fasteners corroded inside and had to be replaced with new fasteners.

5. CORE SAMPLES

An inspection was conducted of the Fort Point Bridge over CPKC Railway on behalf of the town of Invermere, BC. Core samples were collected from three different locations throughout the timber bridge substructure. Core samples were collected by the inspection team lead by Marc Cote on site and divided into four parts: Outer 1, Inner 1, Inner 2 and Outer 2. The four subsamples give insight into the condition of the timber at various depths. Outer 1 is the first outer 25% length of the sample, starting from the outside face of the timber element. Inner 1 is the next 25% length of the sample, and so on. The samples were sent to WRD's laboratory to be tested for Moisture Content (MC), Specific Gravity (SG), and species identification using microscopic imagery.

Typically, WRD obtains core samples at locations where SWT data is collected. Correlating the SWT readings with laboratory results on a given inspection allows a more thorough understanding of how the SWT readings correspond to any reduced SG in the structure. Species identification allows comparison of the observed results against anticipated values for sound timber of that species.

5.1 METHODOLOGY AND EQUIPMENT

Tables 5-1 and 5-2 summarize the test methods and measuring equipment for the testing of the collected core samples. All testing was performed in adherence to applicable ASTM standards under the supervision of the WRD laboratory supervisor at WRD's IAS certified, TL- 193 testing facility in Jefferson, OR. All equipment has been calibrated by 3rd-party calibration agencies according to WRD Laboratory ISO 17025 standards. The results of testing presented in this report apply only directly to the samples tested.

Table 5-1: Summary of test methods used and attributes being tested

Test Method	Description/Purpose
ASTM D2395	Specific Gravity
ASTM D442	Moisture Content
Microscopic Anatomy	Species Identification

Table 5-2: Summary of equipment utilized for tests.

Calibrated Testing Equipment	
WRD #	Testing Equipment
WRD #201	Psychrometer (Due 12/2027)
WRD #206	6" Digital Callipers (Due 03/2026)
WRD #210	Gram Scale (Due 03/2026)
WRD #001	Electric Drying Oven (Due 03/2026)

5.2 WOOD SPECIES IDENTIFICATION

Each of the 3 core samples collected was analyzed by WRD technicians to determine the species of the timbers as well as to identify if any evidence of treatment was present. The timber species was determined by using light microscopy to observe specific minute features of the cellular structure of the wood. The species of the core samples is determined by observation of unique combinations of cellular features. The primary references utilized by WRD in species identification are the Inside Wood database (Wheeler, EA 2011), FPL USDA Wood Handbook (FPL 2010), and Identifying Wood by Bruce Hoadley.

5.2.1 CELLULAR FEATURES

All core samples were identified as Douglas fir (*Pseudotsuga menziesii*). Specifically, the species is determined to most likely be Coastal Douglas fir (CDF). The microscopic features identified which confidently ID the samples as Douglas fir were:

- Presence of axial and horizontal resin canals.
- Presence of cross-filed pitting in the form of small pits.
- Presence of tracheids with abundant spiral thickenings.
- Presence of primarily uniseriate bordered pits. These pits were predominantly non-aspirated, which suggests Douglas fir of the costal variety.

These features are shown in **Figure 1** for Sample 1. A species ID report for each sample is included in **Appendix A**.

1 for Sample 1. A species ID report for each sample is included in **Appendix A**.

Project Name :	Invermere
Project Number :	9139L
Specimen Number :	Sample 1
Specimen Location :	Bent 1, Col. 3
Date :	28-Apr-26

Species Identification Results			
Common Name :	Coastal Douglas fir		
Scientific Name :	<i>Pseudotsuga menziesii</i>		
Analyzed by :	AD	DT	

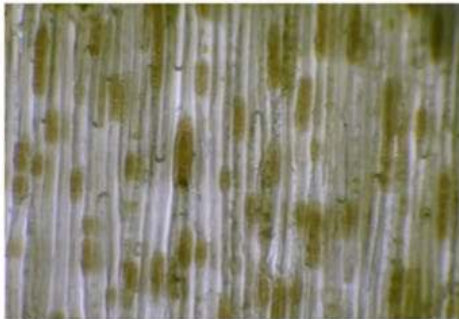


Figure A: Tangential View 1 | Investigation of the tangential face demonstrates the presence of horizontal resin canals.

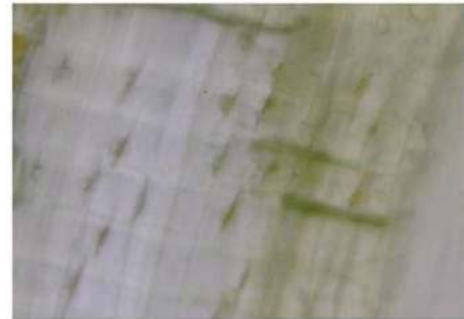


Figure B: Radial View 1 | Analyses of the radial face shows cross-field pitting in the form of small pits of variable size and number.

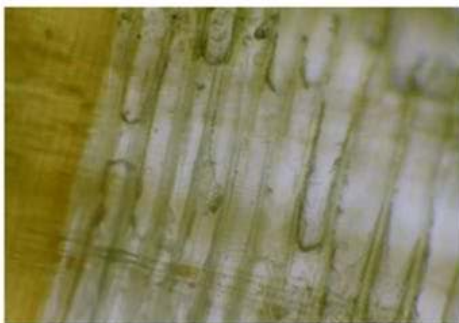


Figure C: Radial View 2 | Observation of the Radial face confirms the presence of longitudinal tracheids with abundant spiral thickenings.



Figure D: Radial View 3 | Additional analyses of the radial face identifies primarily uniseriate bordered pits. The pits are non-aspirated, suggesting the Coastal variety.

Figure 5-1: Microscopic features identifying sample 1 as CDF.

5.3 CORE SAMPLE TESTING RESULTS

The cores collected by inspectors on-site were sent to the laboratory facility in Jefferson, OR, for processing. Two testing protocols were carried out to establish the Specific Gravity and Moisture Content of the samples, respectively. The results presented in this section only apply directly to the specimens tested and represent point estimators and may only be reproduced in their full context.

5.3.1 SPECIFIC GRAVITY AND MOISTURE CONTENT (SG/MC)

Testing was conducted on the 6 core samples in accordance with ASTM D2395/D4442 to establish the SG/MC of each sample. The core samples were tested in the as-received condition. Each of the samples was separated into 4 sub-samples by the inspectors prior to arrival at the laboratory for a total of 12 sub-samples that were tested. The samples were tested over a period of several days from April 27th, 2026 to April 29th, 2026. The results of both SG and MC along with important sample information is presented in Table 3.

Table 5-3: Results of testing to establish Specific Gravity and Moisture Content.

Moisture Content – ASTM D 4442(Method B Oven drying secondary)											
Specific Gravity ASTM D 2395(Method E) / ASTM D 2395 (Method B)											
Project Number :		9139L	Measuring Equipment			Equip ID	Cal. Due			Oven Temperature :	217.0° F
Start Date for Tests :		4/27/2026	Length measurement WRD#			206	Mar-27			Lab Temperature :	47.5° F
End Date for Tests :		4/29/2026	Weight measurement WRD #:			123	Mar-27			Relative Humidity (RH) :	69.0%
Reviewed by :		DT	Relative humidity measurement WRD #:			182	Mar-27				
Recorded by :		AD	Temperature measurement WRD #:			1	Mar-27			Increment Bore Diameter :	0.2 in
SPECIFIC GRAVITY		The overall value of the SPECIFIC GRAVITY was determined to be 0.44 based on the tests of 12 specimens conducted in accordance with Specific Gravity ASTM D 2395(Method E) / ASTM D 2395 (Method B). The expanded uncertainty of ±0.135 is based on a coverage factor of 1.96 (95% confidence) calculated in accordance with the GUM.									
MOISTURE CONTENT		The overall value of the MOISTURE CONTENT was determined to be 17% based on the tests of 12 specimens conducted in accordance with Moisture Content – ASTM D 4442(Method B Oven drying secondary). The expanded uncertainty of ±12% is based on a coverage factor of 1.96 (95% confidence) calculated in accordance with the GUM.									
			4/27/2026 9:00	Measurement Method E		Increment Cores Method E					
						4/28/2026 13:00	4/29/2026 8:00	-			
								-			
Specimen Location	SWT Reading	ID	Initial Weight (grams)	Initial Length (inches)	Final Length (inches)	Weight (grams)	Weight (grams)	Weight (grams)	Final Volume (in³)	Calculated Moisture Content	Specific Gravity
Bent 1, Col. 3	White	S1-O1	0.335	1.325	1.234	0.300	0.300	-	0.039	12%	0.47
		S1-I1	0.415	1.866	1.743	0.366	0.366	-	0.055	13%	0.41
		S1-I2	0.322	1.475	1.233	0.285	0.285	-	0.039	13%	0.45
		S1-O2	0.252	1.159	1.081	0.228	0.228	-	0.034	11%	0.41
B2, Sill	White	S2-O1	0.448	1.399	1.349	0.370	0.370	-	0.042	21%	0.53
		S2-I1	0.500	1.974	1.896	0.405	0.405	-	0.060	23%	0.41
		S2-I2	0.556	2.031	1.936	0.428	0.428	-	0.061	30%	0.43
		S2-O2	0.365	1.236	1.119	0.272	0.272	-	0.035	34%	0.47
Bent 3, Col. 2	White	S3-O1	0.468	1.826	1.798	0.419	0.419	-	0.056	12%	0.45
		S3-I1	0.370	1.451	1.423	0.333	0.333	-	0.045	11%	0.45
		S3-I2	0.512	2.054	1.999	0.462	0.462	-	0.063	11%	0.45
		S3-O2	0.582	2.271	2.199	0.535	0.535	-	0.069	9%	0.47
Notes / Comments :		~ The yellow fields under 'Increment Cores Method E' contain date and times of readings.							Average	17%	0.45
		Creosote Present in S2-O1							Std. Dev	8%	0.03
									Median	12%	0.45
									Robust C.O.V	64%	8%

The average SG of all samples was found to be 0.45, which matches the expected range for healthy CDF of 0.45-0.48 (FPL 2010, Bodig and Jayne 1982). The presence of an oil-based preservative treatment was identified on S2-O1, which is reflected in its higher SG of 0.53. All samples exhibited normal SG values for normal CDF. The Average MC was 17% which is right near the threshold required for decay progression, however only S2 exhibited MC above this threshold of 18%.

5.4 CONCLUSION

The WRD Laboratory technicians analyzed 3 core samples, which were divided into 12 total sub-samples, determine SG/MC via ASTM D2395/D4442 at their laboratory facility in Jefferson, OR. This testing was done under the scope of the laboratory's IAS accreditation (TL-193). The samples were also investigated using light microscopy to determine the species. The processing results determined that they were all Douglas fir.

The average SG was found to be 0.45. This matches very closely with what is expected for sound Douglas fir wood. The published SG range for normal Coastal Douglas fir is 0.45-0.48 (Bodig and Jayne 1982, FPL USDA 2010). The finding of an SG higher in this range suggests there is little evidence of fungal decay in these samples. It is not uncommon to observe SG values in the range of 0.48 – 0.52 for Coastal Douglas fir used in structural applications with high ring density and/or the presence of any oil-based preservative treatments. The results of moisture content testing found the average to be 17%. The average MC of S1 and S3 were 12% and 11% respectively. The average of 17% was driven mainly by S2 which had an average MC of 27%. This is above the threshold required for the progression of fungal decay. This sample had an oil-based preservative, likely creosote present on the S2-O1 specimen. It is important to note that S2-I1 and S2-I2 both had slightly reduced SG values of 0.41 and 0.43 respectively. This is lower than the expected range. The SWT on all core samples was white.

The results of the testing presented in this report apply only directly to the samples tested. All samples were tested in WRD's TL-193 accredited laboratory in "as-received" condition. This report may only be reproduced in its' full context. All laboratory testing reported conformed to all relevant ASTM, ISO, and IAS requirements.

6. COMPARISON OF CORE TESTING RESULTS TO SWT

In this section, the results of the determination of SG/MC by the WRD Jefferson, OR testing laboratory facility are compared to the results of NDT-SWT collected by inspectors on-site.

Sample 1 Bent 1 Column 3 core sample location 4'-0" – 6/12 – Douglas fir – SG = 0.44 – SWT = 540 (white)

The adjusted SWT time for Sample 1 was 540 μ s, corresponding to the “white” zone classification. The calculated SG 0.44, consistent with the published average for Douglas fir (0.45–0.48). The SWT results indicate no evidence of degradation, and the SG similarly shows no measurable loss attributable to decay.

Sample 2 Bent 2 sill core sample location (East end) 30'-0" – Douglas fir – SG = 0.46 – SWT = 998 (Yellow)

The adjusted SWT for Sample 2 was 998 μ s, which falls within the “yellow” zone classification. The calculated specific gravity (SG) values were 0.53 for S2-O1, 0.41 for S2-I1, 0.43 for S2-I2, and 0.47 for S2-O1, resulting in an average SG of 0.46. This average is consistent with the published range for Douglas fir (0.45–0.48).

The measured moisture content ranged from 21% to 34%, which is above the typical threshold where timber decay can begin. The SWT and laboratory results suggest evidence of degradation, and the lower SG values observed in the Inner 1 and Inner 2 samples further support the presence of deterioration.

Sample 3 Bent 3 Column 2 core sample location 4'-0" – 6/12 – Douglas fir – SG = 0.45 – SWT = 576 (white)

The adjusted SWT time for Sample 3 was 576 μ s, corresponding to the “white” zone classification. The calculated SG 0.44, consistent with the published average for Douglas fir (0.45–0.48). The SWT results indicate no evidence of degradation, and the SG similarly shows no measurable loss attributable to decay.

7. CURRENT CONDITION STATE RATING

The Condition State Rating (CSR) system utilized in this report is shown in Table 7-1 below. The rating has been developed by Wood Research and Development, through timber bridge inspection experience, to clearly describe the condition of the elements inspected. While similar rating systems are found in bridge inspection manuals, the ratings outlined in this report are element-specific. The CSR is not to be confused with the load rating. The CSR value is a description of the condition of the elements, and the load rating is an assessment of the load capacity of the bridge in its current form. A drop in the CSR value can affect the load rating negatively over time.

The current CSR for Fort Point Bridge timber substructure is 2 - 3 fair with some elements in poor condition. All the pile caps were found to be in poor condition and will require in-kind replacement. The bottom sills on bents 2 and 3 also have signs of crushing and were found to be in poor condition. Some of the columns had minor areas of decay due to the existence of ungalvanized steel connections, causing ferric degradation and moisture retention at the nodes. A CSR of 3 indicates that it is Defects affecting durability/serviceability, which may require monitoring and/or remedial action or inspection by a structural engineer. The cap at all bents shows advancing deterioration, including loss of moderate SWT readings, loose connections, cracks and moisture build-up in the members.

Table 7-1: Current CSR of different components and average CSR.

S.no.	Member	Current CSR	Average CSR
1.)	Column	2	2
2.)	Caps	4	
3.)	Braces at bent	2	
4.)	Braces between bents	2-3	
5.)	Sill	3	

Table 7-2: Condition State Rating Descriptions

Condition State	Subjective Rating	Estimated Remaining Life Span	Description
1	Good	100% 80 Years	Like new condition and free of defects.
2	Fair	80% 64 Years	Free of defects affecting structural performance, integrity and durability. Deterioration of a minor nature in the protective coating and/or parent material is evident.
3	Poor	30% 24 Years	Defects affecting the durability/serviceability, which may require monitoring and/or remedial action or inspection by a structural engineer. Component or element shows marked and advancing deterioration, including loss of protective coating, and minor loss of section from the parent material is evident. Intervention is normally required.
4	Very Poor	5% 4 Years	Defects affecting the performance and structural integrity of the structure, which require urgent action as determined by a detailed structural engineering inspection. Component or element shows advanced deterioration, loss of section from the parent material, signs of overstressing or evidence that it is acting differently than its intended design mode or function.
5	Unsafe	1% Less Than 2 Years	Structure should be closed. Structural integrity is severely compromised, and the structure must be taken out of service until a structural engineer has inspected the structure and recommended the required remedial action.

*Note: typically, a structure may be defined as defective when greater than 25% of principal components are rated as condition state 4 in a single abutment, pier, span or element group.

8. CONCLUSION

Wood Research and Development (WRD) was commissioned by the town of Invermere to complete an inspection of the Fort Point Bridge timber substructure and provide a current condition state of the structure. The concrete abutments and superstructure were considered outside the scope of work of this inspection. The inspection was completed by WRD Level II certified technicians on April 14th, 2026. Stress Wave Timer testing was used in combination with visual inspection and laboratory examination. The structural defects were identified, and the bridge's substructure condition state was rated as level 2-3, which indicates that there are defects affecting the performance and structural integrity of the structure which require monitoring, as determined by a detailed structural engineering inspection. Based on the findings, WRD recommends the following initial corrective actions to restore the capacity of degraded elements and extend the usable life of the structure:

Table 8-1: Summary of structural defects and recommended corrective actions to improve the structure to CSR 2.

Structural element	Defect	Recommended corrective action
Cap	High moisture content in members. Splits and cracks. Ferric ion staining at connection location.	Replace column caps on all bents.
Column	Shear cracks/ shrinkage cracks across the lengths of the members	At locations with elevated SWT readings, post column in kind or wrap columns with FiRP® Reinforcement and diffuse timber to prevent further decay. Bent 1 column 5. Bent 2 columns 1, 2, & 3. Bent 3 columns 1, 2, & 5.
Sills	High moisture content in members. Splits and cracks visible in bents 2 and 3.	Replace bent 2 & 3 sills and monitor or replace bent 1 & 4 sills.
Abutments	Debris buildup and vegetation growth.	Routine maintenance on the abutments/embankments to remove vegetation and debris.

The timber elements not mentioned above are in good to fair condition and suitable for continued service. With the above recommendations, the timber elements showing signs of decay

can be replaced or restored and the timber substructure is suitable for reuse with a new lighter timber superstructure.

Thank you for employing Wood Research and Development to provide engineering services for the inspection of Fort Point Bridge.

Respectfully submitted by

Marc Cote, P. Eng.

Manager Special Projects

Wood Research and Development

9. REFERENCES

ASTM D2395-17, 2017. Standard Test Methods for Density and Specific Gravity (Relative Density) of Wood and Wood-Based Materials. *American Society for Testing and Materials International*, Volume 04.10, p. 13.

ASTM D4442-20, 2020. Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials. *American Society for Testing and Materials International*, Volume 04.10, p. 5.

International Organisation for Standardisation, 1999. *ISO/IEC 17025:1999 General requirements for the competence of testing and calibration laboratories*. Geneva, International Organisation for Standardisation.

Bodig, J. and Jane, B. A., 1982. *Mechanics of Wood and Wood Composites*. Krieger Publishing Company, Florida, USA.

10. APPENDIX -A

Location Number : Sub-Location # or Letter : Component Number :		Bent		1	Length : Height : Width :	10.75	feet							
		N/A				9	inches							
		Column		1		9	inches							
		Frame Bent		Visual Condition										
		Solid Sawn												
		Rectangular												
Location (feet) :		0.5	1.5	4	6	8	9	10	-	-	-	-	-	-
1/11	Adjusted	-	453	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	605	536	512	552	400	491	507	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	528	541	445	407	528	544	401	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	476	-	-	-	-	-	-	-	-	-	-	-
Comments :														

Location Number : Sub-Location # or Letter : Component Number :		Bent		1	Length :		10.75	feet								
		N/A			Height :		9	inches								
		Column		2	Width :		9	inches								
		Frame Bent			Visual Condition											
		Solid Sawn														
		Rectangular														
Location (feet) :		0.5	2	4	6	8	10	-	-	-	-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-		
6/12	Adjusted	396	381	308	561	340	379	-	-	-	-	-	-	-		
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-		
3/9	Adjusted	432	417	373	443	411	515	-	-	-	-	-	-	-		
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-		
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-		
Comments :		Small Check W-side														

Location Number : Sub-Location # or Letter : Component Number :		Bent		1	Length :		10.75	feet						
		N/A			Height :		9	inches						
		Column		3	Width :		9	inches						
		Frame Bent			Visual Condition									
		Solid Sawn												
		Rectangular												
Location (feet) :		0.5	2	4	6	8	10	10.5	-	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	665	557	436	419	387	593	-	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	489	377	540	375	367	468	797	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :		Large Check N-side												

Location Number : Sub-Location # or Letter : Component Number :		Bent		1	Length :		10.75	feet						
		N/A			Height :		9	inches						
		Column		4	Width :		9	inches						
		Frame Bent		Visual Condition										
		Solid Sawn												
		Rectangular												
Location (feet) :		0.5	2	4	6	8	10	10.5	-	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	545	443	465	444	479	621	780	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	487	476	469	452	385	463	556	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :		Check at Top in 3/9 Direction to Crack at Mid brace Bolt												

Location Number : Sub-Location # or Letter : Component Number :		Bent		1	Length : Height : Width :	10.75	feet							
		N/A				9	inches							
		Column		5		9	inches							
		Frame Bent		Visual Condition										
		Solid Sawn												
		Rectangular												
Location (feet) :		0.5	1	2	4	6	8	10	10.5	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	621	563	564	475	433	465	508	711	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	527	529	399	511	424	473	484	945	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :														

Location Number :		Bent		1		Length :	30.00	feet							
Sub-Location # or Letter :		N/A				Height :	7	inches							
Component Number :		Cap		Pile Cap		Width :	15	inches							
		Frame Bent				Visual Condition									
		Solid Sawn													
		Rectangular													
Location (feet) :		3	6	9	12	15	18		21	24	27	29	-	-	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	1153	1110	1166	1027	1175	1198	1295	1138	1129	1146	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :		Small check W-side													

Location Number :		Bent		1		Length :		feet							
Sub-Location # or Letter :		N/A				Height :	7.25	inches							
Component Number :		Headstock		Sill 1		Width :	11.5	inches							
		Frame Bent				Visual Condition									
		Solid Sawn													
		Rectangular													
Location (feet) :		30	-	-	-	-	-	-	-	-	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	998	-	-	-	-	-	-	-	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :															

Location Number :		Bent		2		Length :	22.08	feet							
Sub-Location # or Letter :		N/A				Height :	9	inches							
Component Number :		Column		1		Width :	9	inches							
		Frame Bent				Visual Condition									
		Solid Sawn													
		Rectangular													
Location (feet) :		1	2	4	6	8	10		12	14	16	18	20	22	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	563	512	404	384	395	369	568	445	451	497	501	480	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	731	572	476	692	641	551	652	617	521	519	991	991	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :															

Location Number :		Bent		2		Length :	22.08	feet							
Sub-Location # or Letter :		N/A				Height :	9	inches							
Component Number :		Column		2		Width :	9	inches							
		Frame Bent				Visual Condition									
		Solid Sawn													
		Rectangular													
Location (feet) :		0.08	0.5	2	4	6	8		10	12	14	16	18	20	22
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	701	756	536	519	623	425	431	597	479	591	544	457	569	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	464	-	467	508	453	404	379	499	475	564	484	484	499	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :															

Location Number :		Bent		2		Length :	22.08	feet							
Sub-Location # or Letter :		N/A				Height :	9	inches							
Component Number :		Column		3		Width :	9	inches							
		Frame Bent				Visual Condition									
		Solid Sawn													
		Rectangular													
Location (feet) :		1	2	4	6	8	10		12	14	16	18	20	22	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	-	511	516	447	281	431	733	511	451	340	439	537	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	503	471	525	413	487	387	513	416	505	489	787	787	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments :															

Location Number:	Bent	2	Length:	22.08	feet												
Sub-Location # or Letter:	N/A		Height:	9	inches												
Component Number:	Column	4	Width:	9	inches												
Frame Bent			Visual Condition														
Solid Sawn																	
Rectangular																	
Location (feet):	1	2	4	6	8	10	12	14	16	18	20	22	-				
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	432	496	429	404	504	499	516	443	521	532	501	468	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	595	468	516	407	343	391	435	549	581	535	609	609	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments:																	

Location Number:	Bent	2	Length:	22.08	feet												
Sub-Location # or Letter:	N/A		Height:	9	inches												
Component Number:	Column	5	Width:	9	inches												
Frame Bent			Visual Condition														
Solid Sawn																	
Rectangular																	
Location (feet):	0.5	2	4	6	8	10	12	14	16	18	20	22	-				
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	540	548	391	540	457	619	699	445	556	491	504	603	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	588	484	515	471	424	543	585	413	489	339	604	604	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments:																	

Location Number:	Bent	2	Length:	30.00	feet												
Sub-Location # or Letter:	N/A		Height:	7	inches												
Component Number:	Cap	Pile cap	Width:	15	inches												
Frame Bent			Visual Condition														
Solid Sawn																	
Rectangular																	
Location (feet):	4	9	15	20	25	-	-	-	-	-	-	-	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	1094	1261	1354	1241	1186	-	-	-	-	-	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments:																	

Location Number:	Bent	3	Length:	22.17	feet												
Sub-Location # or Letter:	N/A		Height:	9	inches												
Component Number:	Column	1	Width:	9	inches												
Frame Bent			Visual Condition														
Solid Sawn																	
Rectangular																	
Location (feet):	1	2	4	6	8	10	12	14	16	18	20	21	-				
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	537	639	520	560	581	508	641	521	584	517	615	616	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	651	-	540	580	453	641	605	648	435	619	767	767	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments:			Top Crack 6/12, check W-side														

Location Number:	Bent	3	Length:	22.17	feet												
Sub-Location # or Letter:	N/A		Height:	9	inches												
Component Number:	Column	2	Width:	9	inches												
Frame Bent			Visual Condition														
Solid Sawn																	
Rectangular																	
Location (feet):	0.08	0.5	2	4	6	8	10	12	14	16	18	20	22				
1/11	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6/12	Adjusted	612	740	491	517	348	515	592	519	459	449	500	495	1011	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/9	Adjusted	428	448	460	576	648	519	516	444	492	468	423	423	683	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Comments:																	

Location Number : Sub-Location # or Letter : Component Number :		Bent		3	Length : 22.17 feet										
		N/A			Height : 9 inches										
		Column		3	Width : 9 inches										
		Frame Bent		Visual Condition											
		Solid Sawn													
		Rectangular													
Location (feet) :		1	2	4	6	8	10	12	14	16	18	20	22	+	
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
6/12	Adjusted	*	325	363	396	385	512	625	456	365	419	477	620	*	
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
3/9	Adjusted	561	561	333	469	479	405	515	425	373	336	552	552	*	
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
Comments :		Split top 6" in 3/9 Direction.													

Location Number : Sub-Location # or Letter : Component Number :		Bent		3	Length : 22.17 feet									
		N/A			Height : 9 inches									
		Column		4	Width : 9 inches									
		Frame Bent			Visual Condition									
		Solid Sawn												
		Rectangular												
Location (feet) :		0.5	1	2	4	6	8	10	12	14	16	18	20	22
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
6/12	Adjusted	585	553	587	597	535	473	605	523	453	468	373	563	749
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
3/9	Adjusted	*	363	536	532	632	467	361	509	537	515	464	464	440
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
Comments :		Check in 3/9 Direction, At Top and Mid-way												

Location Number : Sub-Location # or Letter : Component Number :		Bent		3	Length : 22.75 feet									
		N/A			Height : 9 inches									
		Column		5	Width : 9 inches									
		Frame Bent		Visual Condition										
		Solid Sawn												
		Rectangular												
Location (feet) :		1	2	4	6	8	10	12	14	16	18	20	21	*
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
6/12	Adjusted	560	491	468	604	557	500	593	465	456	433	547	480	*
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
3/9	Adjusted	739	371	568	671	593	476	567	524	555	476	379	379	*
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
11/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	811	*
Comments :		Check south side, bottom sill crushed.												

Location Number : Sub-Location # or Letter : Component Number :		Bent		3	Length :		feet								
		N/A			Height :	7	inches								
		Cap		Pile cap	Width :	15	inches								
		Frame Bent		Visual Condition											
		Solid Sawn													
		Rectangular													
Location (feet) :		0.083	0.75	6	15	21	*	*	*	*	*	*	*	*	
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
6/12	Adjusted	4909	1447	1866	1807	2194	*	*	*	*	*	*	*	*	
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
3/9	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
Comments :															

Location Number : Sub-Location # or Letter : Component Number :		Bent		4	Length : 10.16		feet								
		N/A			Height : 9		inches								
		Column		1	Width : 9		inches								
		Frame Bent			Visual Condition										
		Solid Sawn													
		Rectangular													
Location (feet) :		2	4	6	8	10	+	*	*	*	*	*	*	*	*
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6/12	Adjusted	515	493	413	508	535	*	*	*	*	*	*	*	*	*
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3/9	Adjusted	453	487	429	537	652	*	*	*	*	*	*	*	*	*
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	*
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Comments :															

Location Number : Sub-Location # or Letter : Component Number :		Bent		4	Length : Height : Width :	10.16	feet								
		N/A				9	inches								
		Column		2		9	inches								
		Frame Bent		Visual Condition											
		Solid Sawn													
		Rectangular													
Location (feet) :		1	2	4	6	8	10	*	*	*	*	*	*	*	
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
6/12	Adjusted	521	404	600	515	539	580	*	*	*	*	*	*	*	
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
3/9	Adjusted	424	459	455	504	476	427	*	*	*	*	*	*	*	
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
Comments :															

Location Number : Sub-Location # or Letter : Component Number :		Bent		4	Length : Height : Width :	10.16	feet							
		N/A				9	inches							
		Column		3		9	inches							
		Frame Bent		Visual Condition										
		Solid Sawn												
		Rectangular												
Location (feet) :		0.5	2	4	6	8	10	*	*	*	*	*	*	*
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	
6/12	Adjusted	525	549	512	292	448	465	*	*	*	*	*	*	
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	
3/9	Adjusted	552	597	543	499	528	527	*	*	*	*	*	*	
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	
Comments :														

Location Number : Sub-Location # or Letter : Component Number :	Bent	4	Length :	10.16	feet								
	N/A		Height :	9	inches								
	Column	4	Width :	9	inches								
	Frame Bent		Visual Condition										
	Solid Sawn												
	Rectangular												
Location (feet) :	1	2	4	6	8	10	*	*	*	*	*	*	*
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*
6/12	Adjusted	*	363	479	553	381	540	*	*	*	*	*	*
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*
3/9	Adjusted	*	547	547	559	576	648	*	*	*	*	*	*
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*
Comments :													

Location Number : Sub-Location # or Letter : Component Number :		Bent	4	Length : Height : Width :	10.16	feet								
		N/A			9	inches								
		Column	5		9	inches								
		Frame Bent		Visual Condition										
		Solid Sawn												
		Rectangular												
Location (feet) :		2	4	6	8	10	*	*	*	*	*	*	*	*
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
6/12	Adjusted	572	459	340	576	393	*	*	*	*	*	*	*	*
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
3/9	Adjusted	611	424	383	384	429	*	*	*	*	*	*	*	*
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*
Comments :		Slope siding into Column brace is buckling.												

Location Number : Sub-Location # or Letter : Component Number :		Bent		4	Length :		feet								
		N/A			Height :		7	Inches							
		Cap		Pile cap	Width :		15	Inches							
		Frame Bent		Visual Condition											
		Solid Sawn													
		Rectangular													
Location (feet) :		2	6	12	16	18	21	27	29	*	*	*	*	*	
1/11	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
6/12	Adjusted	999	1146	1110	1363	1346	1481	9807	1805	*	*	*	*	*	
2/8	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
3/9	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
4/10	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
5/7	Adjusted	*	*	*	*	*	*	*	*	*	*	*	*	*	
Comments :															



INVERMERE 4TH AVENUE BRIDGE OVER CPR

2022 CONDITION INSPECTION

Invermere, BC

Prepared for:

Sara Anderson

Urban Systems Ltd.
101, 134 11th Avenue SE
Calgary, AB, T2G 0X5

And:

Angela MacLean

District of Invermere
Box 339
Invermere, BC, V0A 1K0

Prepared by:

RJC Engineers

1816 Crowchild Trail NW, Suite 200
Calgary, AB, T2M 3Y7

November 9, 2022
CAL.104245.0012



TABLE OF CONTENTS

1.0	INTRODUCTION	3
2.0	DESCRIPTION OF STRUCTURE	3
3.0	STRUCTURE PERFORMANCE HISTORY	4
4.0	CONDITION ASSESSMENT	6
4.1	METHODOLOGY	6
4.2	OBSERVATION SUMMARY	6
5.0	DISCUSSION	7
5.1	CHANNEL (CUTTING)	7
5.2	SUBSTRUCTURE	8
5.3	SUPERSTRUCTURE	9
5.4	DECK	11
5.5	APPROACHES	13
6.0	RECOMMENDATIONS	13
6.1	CHANNEL (CUTTING)	14
6.2	SUBSTRUCTURE	14
6.3	SUPERSTRUCTURE	15
6.4	DECK	15
6.5	APPROACHES	16
7.0	LIMITATIONS	17
8.0	CLOSURE	17



List of Appendices

Appendix A: Photographs.....	A.1
Appendix B: Definitions.....	B.1
Appendix C: Sketches.....	C.1
Appendix D: Bridge Condition Inspection.....	D.1
Appendix E: Excecutive Summary of the 2018 & 2019 Reports.....	E.1

1.0 INTRODUCTION

Read Jones Christoffersen Ltd. (RJC) has been retained by Urban Systems Ltd. to provide structural engineering services for the condition inspection of the 4th Avenue Bridge. This report addresses the findings of the condition inspection of the bridge.

The 4th Avenue Bridge is located within the Town of Invermere and provides a crossing over the Canadian Pacific Railway (CPR) tracks. It is RJC's understanding that the District of Invermere is seeking funds to replace the bridge. The existing bridge has been periodically monitored in order to assess its condition and expected remaining service life.

2.0 DESCRIPTION OF STRUCTURE

There are no drawings available for the existing bridge. RJC has prepared sketches of the existing bridge structure based on site observations and measurements, see Appendix C.

The 4th Avenue Bridge is a 5-span precast concrete HC girder structure with asphalt deck overlay, approximately 39m long by 9m wide, supported on four timber piers and concrete abutments. The bridge carries two traffic lanes and a sidewalk. The bridge has no skew. See Appendix A for photos of the bridge.

The substructure consists of four timber piers and two concrete abutments. The piers include timber pier caps, cross-bracing, pier columns, and K-bracing between piers perpendicular to the embankment slope. Pier 2 was previously strengthened with steel square HSS posts. The pier substructure are concrete foundations; however, it is not clear if the foundations are piles or strip footings. The concrete abutments include a short back wall to retain the approach fills. It is not clear if the abutment is supported on piles or a strip footing. There is no slope protection underneath the bridge.

The precast girders are simply supported and directly bear on the timber-pier and concrete abutment substructure. There are no bearings underneath the girders.

An asphalt wearing surface is placed directly on the top flange of the girders. Deck joints appear to have been bridged with asphalt. Barriers on each side of the deck are comprised of steel I-section posts mounted to the concrete curbs with three sets of timber guardrails. A concrete sidewalk runs along the north side with the topside overlaid by asphalt. A timber-framed utility enclosure runs along the traffic face of the south barrier.

The deck does not appear to have a distinct cross-fall, as surface drainage is controlled via the longitudinal grades starting from the middle of the bridge towards the approaches. There are

numerous drainage holes through the deck along the south curb, and between the sidewalk and curb along the north side. The sidewalk at the north side dams the drains on this side and instead redirects surface water towards the approaches.

3.0 STRUCTURE PERFORMANCE HISTORY

Prior to this condition assessment, the following documents were reviewed, which report on previous condition assessments of the bridge. These are listed in chronological order:

- “District of Invermere Bridge Condition Inspections” (Dillon Consulting Ltd., September 9, 2005).
- “4th Avenue Bridge Inspection” (Dillon Consulting Ltd., September 21, 2006).
- “4th Avenue over CPR – Invermere, 2014 Bridge Condition Inspection” (RJC, June 18, 2014).
- “Invermere 4th Avenue Bridge over CPR – 2018 Condition Inspection” (RJC, January 15, 2019).
- “Invermere 4th Avenue Bridge over CPR – 2019 Condition Inspection” (RJC, July 9, 2019).

Based on the 2005 report, it is our understanding that the bridge was constructed in 1963 and underwent a major structural intervention in 1998. The 1998 work involved restoration of Pier 2 where structural capacity had been compromised due to rot in the timber pier cap and sill.

The 2005 report generally indicated that all the major components of the bridge were in “Fair” condition. Only the wearing surface was partially rated to be in “Poor” condition. Other particular deficiencies were also noted – including the bridge rails not meeting the current bridge code, fine but widespread cracking in the precast concrete girders, and erosion in the head-slopes. It was recommended that the bridge be inspected annually and replacement be contemplated in the next five to ten years.

The 2006 report recognized that continuing degradation was ongoing, but indicated little change with respect to 2005. Major issues with the structure remained, and regular inspections were recommended. A few maintenance activities to slow the rate of deterioration were listed; including grinding and sealing cracks in the ACP, filling the openings in the steel armour angles at the abutment joint, and removing soil from the upslope side of the timber pier sills.

The 2014 report indicated progressive levels of deterioration for the deck and girders. The deck was considered in “Poor” condition due to severe weathering of the wearing surface, and observation of numerous cracks. A few girders exhibited larger cracks, spalling and exposed reinforcement; the status for these were downgraded to poor. More frequent inspections were recommended to monitor the cracking and spalling observed on the girders with repairs to be completed within 3-5 years. The report



also recommended reductions in vehicle speeds and maximum Gross Vehicle Weight (GVW) - suggesting posting of 30km/h and 9 tonnes respectively.

The 2018 report indicated ongoing deterioration. As it was understood that the existing bridge was slated for a complete replacement in the near future, regular monitoring was recommended, with priority repairs to extend the service life beyond 5 years. As per the 2014 report recommendations, speed signs and load restrictions were recommended unless a load evaluation be performed.

The 2019 condition inspection was a routine short-form inspection to assess notable changes from 2018. As a result, the 2019 report maintained the recommendations made in 2018, except that concrete scaling, delamination and spalling of the sidewalk surface was recommended to be repaired in the near future. The report acknowledged that comprehensive rehabilitation work could be deferred provided routine inspections and monitoring of the bridge structure be performed annually.

An executive summary of deterioration observed and associated repair recommendations for the 2018 and 2019 reports is provided in Appendix E.

This report is the first bridge inspection since 2019. During the inspection, we observed the following repairs had been completed since 2019:

1. Painting of guardrails and the utility enclosure, and
2. Asphalt overlay on the sidewalk.

No other repairs were noted.

4.0 CONDITION ASSESSMENT

4.1 METHODOLOGY

On September 30, 2022, the following persons from RJC were in attendance at the 4th Avenue Bridge:

- Robbe Drugmand, P.Eng. (EGBC, APEGA)
- Derek Lee, E.I.T. (APEGA)

At the time of the investigation, the weather was 15 degrees Celsius and sunny. The inspections were performed on foot.

The foundations, abutments, pier columns, pier caps, girders, wearing surface, curb and sidewalk were visually inspected to identify deterioration and to assess the condition of these elements. The sloped grade underneath the bridge, the barrier/railings, and the signage were also observed as part of the investigation, but were not inspected in detail.

Hammer or chain-drag sounding of the exposed and reachable parts of the abutments, girders, wearing surface and sidewalk was performed to detect areas of delamination and unsound concrete or asphalt. A majority of concrete surfaces on the same elements were sounded in reachable locations that were showing visible signs of deterioration (cracking, efflorescence and scaling). Hammer sounding of the reachable portions of timber elements – namely the guardrails and lower portions of the piers – was also performed to detect softer areas.

Select photos have been provided in Appendix A.

4.2 OBSERVATION SUMMARY

A tabular condition summary is provided in Appendix D: Bridge Condition Inspection. This summary includes results of the visual review and acoustic sounding for each bridge component. For easier comparison to previous Bridge Condition Inspection Reports, Appendix D has been modeled after the British Columbia Ministry of Transportation and Highways' Bridge Condition Inspection Form.

The condition codes indicated in the observation summary are per the rating of deficiencies in Appendix B: Definitions.

For each component, the numbers indicate the percentage of the component that fall under the condition code. For example: for the Girders, a 33% condition rating under "P" indicates 33% of the

girders are in Poor condition. Components indicated as “Not Inspected” were inaccessible at the time of inspection. Items indicated as “Not Applicable” are not present on the structure.

Inspection Notes are summarized and bolded where changed from 2019. Inspection notes are also elaborated upon in the following Discussion section.

5.0 DISCUSSION

The following section elaborates on the tabular condition summary provided in Appendix D: Bridge Condition Inspection, particularly where the condition rating has been rated less than “Good” (normal wear and deterioration). See Appendix A for photographs. See Appendix C for sketches.

5.1 CHANNEL (CUTTING)

5.1.1 Bank/Bed Scour/Buildup

Abutment head slopes are unprotected. Erosion of both head-slopes has resulted in build-up of the displaced soil against the pier sills. Water promoting the erosion appears to be coming from seepage through the wearing surface and the girder joints, as well as from surface water draining off the approaches and around the abutment. Continued scouring underneath the abutments may result in undermining of the foundation, foundation movements, and displacement of the fill upslope of the abutment – leading to differential settlement in the approach slab. Comparing photographic evidence from previous years, ongoing erosion appears to be minor.

Displaced soil against the pier substructure will result in unbalanced loads on the foundation and promote a wetter environment against the timber sill plates. No evidence of foundation movement was observed. Soil against the sills can trap moisture and cause the adjacent timber structure to deteriorate at a faster rate. A close review of the timber sills indicated wetting in localized areas and some localized softness – mainly around the pier columns – but did not appear to reveal a larger extent decay. Observations are unchanged from the previous report.

Near the North-East end of the bridge, a tree is growing directly underneath exterior girder #1. Whilst the tree currently does not seem to pose a problem, if it were to keep growing, it could eventually affect the girder, railings or substructure, as well as obstruct use of the sidewalk. The tree appears to have grown significantly since the previous report.

5.2 SUBSTRUCTURE

5.2.1 Abutments

Water staining is evident on the abutment at every joint between girders. Surface scaling is observed at these locations. Hammer sounding did not indicate delamination. Compared to the previous reports, scaling appears to be increasing in amplitude and area albeit at a slow rate. Graffiti is observed throughout.

Two layers of de-bonded roofing felt was observed on the bearing shelf – see Section 5.2.4. Deterioration is advancing since the last report.

5.2.2 Footings/Piling

Despite the soil erosion observed, the foundations remain buried and could not be assessed. All pier and abutment foundations appear to be stable, with no foundation movement observed.

5.2.3 Pier Columns, Sills, and K-Bracing

Vertical splitting/checking is observed in nearly all of the timber posts. Although these are generally discontinuous, collectively their length ranged from half to full column height – often transitioning from one face to the adjacent face. The width of these were generally small. Normally, checks in columns are not a structural concern; as they develop due to differential drying within a cross-section, occurring early on when the moisture content of the timber element is out of balance with the relative humidity of the environment. Depths of the checks into the timber cross section range from 25mm to 90mm and do not appear to be progressing based on measurements taken in previous years. The deeper checks extend approximately 37% into the pier columns.

As observed in the 2018 report, one of the cross-bracing members at Pier 2 and Pier 3 exhibit a split with notable loss in the effective section. The split observed at Pier 3 would indicate a reduced capacity. The split cross-brace at Pier 2 appears to be the same noted in the 2006 report. This brace is bolted to the timber piers which were made redundant with the 1998 installation of the adjacent steel piers.

Pier 2 was reinforced in 1998 with steel HSS columns and timber caps in response to a badly decayed pier cap. The steel columns are uncoated and covered in surface rust. No loss of section is noted. Tack welds provided for the shims underneath the steel column baseplates appear to have corroded through. As the connection is primarily vertical bearing, the tack welds are not critical to the structural function of the pier cap. No change since the 2019 Report.

The timber K-bracing appeared to be in Fair condition, with no change since the 2019 Report.

5.2.4 Bearings

Bearings at the abutments were reviewed at arms length. Due to accessibility constraints, bearings for the tall piers (Pier 2 and 3) were assessed at a distance.

Girders bear on a liner roofing felt along the full length of the pier caps and abutment bearing shelves. The liner appears weathered and debonded, similar to the observations made in the 2018 Report.

Direct bearing between concrete elements can reduce movement at expansion joints. This can lead to increased stresses and strains in the girder and deck section; resulting in propagation of cracks within these elements due to temperature movements and vehicle traffic. The roofing felt may help in creating a sliding surface to relieve these stresses; however, as it is an unconventional bearing material, it is difficult to quantify.

5.2.5 Pier Caps

As observed in 2018, a weathered and debonded roofing felt covers the top of the piers. The felt has debonded and now has a tendency to retain water against the timber caps. A moist environment promotes rot and decay. The caps at the shorter piers (Pier 1 and 4) did not reveal signs of crushing or decay. Whilst the caps for Pier 2 and 3 were out of reach and could not be observed up close, these are likely to be in a similar condition to the shorter piers.

5.3 SUPERSTRUCTURE

5.3.1 Girders

As observed in the 2018 Report, widespread fine cracks were observed on the girder webs and soffits. Complementary corrosion staining and delamination in the web soffit was observed at about half of the longitudinal crack locations. Since the previous report, a number of the cracks have developed into new delamination locations – particularly the span over the CPR track. Previously spalled areas appear to be growing in size, with ongoing section loss of the embedded reinforcing. An increased girder area has been downgraded from Poor to Very Poor.

Similar to 2018 Report, surface staining was observed throughout the bridge on the webs underneath the joints. These could not be sounded directly (due to the small gap between adjacent girder webs), but some spalling was observed in select areas.

Similar to 2018 Report, soffit and Web staining was observed underneath each drain and through the joints. At some locations, spalling can be observed. Continued seepage of water through the joints, and uncontrolled drainage through the drain-holes will further deteriorate the girders.

For the span between Pier 1 and 2, Girders 1 and 2 are considered to be in Very Poor condition. Long sections of web spalling were observed, complete with corrosion of the reinforcement. These girders are located underneath the sidewalk, rather than underneath the driving surface, so experience reduced vehicle loads. Comparing to 2018/2019 reports, the spalled areas is increasing in size, and exhibiting ongoing section loss of the embedded reinforcing.

Delamination and/or spalling in the girder webs with exposed corroded reinforcing was observed at several bearing locations. At the delaminated locations, corroded rebar has been exposed. The most severe spall location is on Girder 10 at the South abutment.

The girders in the span directly above the tracks are stained by train exhaust. However, this should not be an immediate structural concern. Since the 2018/2019 report, portions of this span are clean at locations where water is able to seep through the joints between girders. These clean locations highlight cracks and delamination.

In general, the girders are nearing the end of their serviceable life.

5.3.2 Bracing/Diaphragms

Spalled concrete was observed on girder end diaphragms at abutments at eight locations compared to three locations in the 2019 Report. A single corroded steel dowel – connecting the girder to abutment – has been exposed at each location.

5.3.3 Camber/Sag

No visual sag or excess camber was observed.

5.3.4 Coatings (Structure)

No coatings were observed.

5.4 DECK

5.4.1 Wearing Surface

The asphalt wearing surface is severely weathered. Numerous longitudinal and transverse cracks were also observed. Longitudinal cracks appear to coincide with the underlying joints between girders with water able to seep through these cracks. This water seepage promotes deterioration of the structure below.

The wearing surface is deteriorated and ravelled in three wheel tracks; indicating traffic in either direction tend to share the middle wheel track.

Previously repaired locations of delamination were observed over approximately 10% of the wearing surface. Chain drag of the wearing surface indicated widespread delamination over roughly 15% of the wearing surface.

In general, the wearing surface appears to be in a similar condition to the 2019 Report, although at one location a crack has debonded to expose a small area of girder underneath.

5.4.2 Deck Joints

As noted in the 2018 Report, there do not appear to be any effective expansion joints. Expansion joints at the abutments appear to have been paved-over with asphalt, resulting in cracks on either side of the repair, and some localized delamination exposing the expansion joint armour angles underneath.

Based on the surface staining on the girders underneath, water is seeping through the cracks and finding its way through the joints between the girders.

5.4.3 Curbs

Along the south side of the bridge, isolated small locations of delamination were sounded in the curb face. Random map cracking was evident throughout the interior face.

The curb had been painted since the 2019 Report. No new deteriorations were observed.

5.4.4 Sidewalk

In the 2018 and 2019 Reports, scaling, delamination, and spalling complete with exposed corroded rebar was observed throughout the sidewalk on the topside and on the exposed. Since 2019, the

sidewalk has been covered with an asphalt overlay, and spalled portions of curb (with exposed reinforcing) have been covered with steel plates that are bolted to the curb. At each of the pier locations, transverse cracks were observed in this new asphalt overlay.

Whilst the new asphalt overlay does not address the concrete deterioration underneath, it has addressed the potential tripping hazards.

5.4.5 Railing

The steel railing posts typically exhibited spalling at their embed plates along the outside edge of the bridge. At three (3) guard-post embed location, major spalling was observed. The condition is similar to the 2019 report, although a small quantity of additional concrete has spalled.

For the wood rails, splitting was observed at one (1) location; just above the bridge joint at Pier 1. Hammer sounding indicated softness and rot at two (2) separate locations. No additional observations were made in comparison to the 2018 report.

As indicated in previous reports, the bridge rails do not meet the current bridge code.

5.4.6 Drains/Pipes

Each of the exterior girders (Girder #1 and 10) exhibited two drain holes per span. These were formed with the girder. There are no drain pipe extensions, so water is able to stain the soffit of the girders and/or drop down onto the substructure below; deteriorating these components. Comparing to the 2019 Report, there is increased delamination and scaling of the girder soffit immediately adjacent to drains.

As indicated in 2018 report, the sidewalk prevents water from reaching the drains. Runoff is directed towards the abutments. Vegetation is growing in the gap between the sidewalk and the girder curb along edge of the bridge.

5.4.7 Coating (Railings)

The railings and utility enclosure have been repainted since the 2019 Report. In general, the paint appears to be in good condition, although some small and difficult-to-access locations have been missed.

5.5 APPROACHES

5.5.1 Signing/Lighting

There is no lighting on the bridge, but there is street lighting to illuminate the intersections at either ends of the bridge. The review was performed during daytime hours; so it was not confirmed whether the lights were working.

A timber-framed utility enclosure runs across the bridge alongside the south barrier. It is not confirmed whether the enclosure protects service lines, active or not. Although the enclosure has been recoated since the last report, approximately a quarter of the boards are loose or uneven. The joint filler between boards is unravelled and/or weathered solid over at least half the length of the utility.

Bridge load limit signage is posted at 12 tonnes GVW on both ends of the bridge. No speed limit is posted other than at the North end; to indicate a pedestrian crossing. The previous reports recommended to post vehicle speed to 30km/h and a reduced GVW of 9 tonnes unless a load rating assessment is undertaken.

5.5.2 Roadway Approaches

As there are no structural drawings available for the bridge, it could not be confirmed whether there is an approach slab.

The wearing surface leading up to the bridge at both approaches is in a similar condition as the wearing surface on the bridge; with the surface deteriorated and ravelled in three wheel tracks, as well as asphalt repairs and longitudinal cracks observed.

In general, the approaches appear to be in a similar condition to the 2019 Report.

6.0 RECOMMENDATIONS

As the progress of structural deterioration tends to advance in an accelerating manner, it is imperative that regular inspections be performed on an annual cycle until the bridge is rehabilitated or replaced.

It is recommended that the bridge be posted for 30km/h speeds and a reduced GVW of 9 tonnes unless a load rating assessment is undertaken.

Recommendations to extend the service life of the bridge by two (2) to five (5) years are presented below.

6.1 CHANNEL (CUTTING)

Stabilization of the slopes is important to maintain the structural function of the abutment. Removing soil build up from the pier sills will maintain the durability of the pier. By controlling runoff around the abutment and seepage through the superstructure, a significant source of the problem will be partially resolved as well.

The recommendations made in the 2018 and 2019 Reports are still valid. It is recommended that:

- The soil upslope from the piers be removed and the side slopes be re-graded back to the abutment. This will help alleviate potential moisture buildup against the sills and the base of the piers; thereby extending the life of these two elements.
- The soil slopes be stabilized by means of geotextile material, shotcrete, or other methods. Stabilizing the slope will keep the soils from re-migrating down the slope.
- Seepage through the superstructure be controlled as per the recommendations indicated for the superstructure – see below.
- Runoff from the approach and around the abutment be controlled. This could be achieved via swales or drainage channels to redirect water either away from the bridge or down the slope.
- The tree (growing underneath Girder #1 at the North-West most span) be removed.

6.2 SUBSTRUCTURE

The annual condition assessments on the substructure should include review of all timber elements. The timber elements, compared to concrete, are more susceptible to moisture-deterioration.

It is recommended that:

- Foundations, abutments, piers and pier sills are protected from soil erosion.
- The debonded and weathered roofing liner is removed and replaced with an appropriate product.
- The split cross-brace on Pier 3 be replaced.

6.3 SUPERSTRUCTURE

In general, the girders are in Fair condition, with a few in a Poor state, and two in a Very Poor state. Depending on the anticipated replacement date of the bridge, minor but targeted repairs to minimize further deterioration should be considered in the near future.

It is recommended that:

- An initial load evaluation be performed on the girders. As there are no drawings available, a more detailed at-arms-length inspection will be required to ascertain girder geometry and reinforcement.
- Targeted girder repairs on the basis of the load evaluation would involve removing deteriorated concrete to sound concrete, repair of corroded reinforcement, and completing patch repairs.
- The seepage and drainage of water through girder joints be minimized and controlled to help prolong the rate of deterioration of the structure underneath. See Section 6.4, Deck.

6.4 DECK

Cracks in the asphalt over the joints between girder, and uncontrolled drainage through the drains are conveying water onto the superstructure, substructure, and slope below; accelerating the deterioration of these elements. Addressing the leaks and drainage of the deck will significantly help in extending the life-span of the bridge.

It is recommended that:

- Cracks in the asphalt wearing surface be filled with an asphaltic sealant, and spalled/delaminated locations be repaired. Whilst the repairs would better control drainage, as there is no waterproofing between the asphalt and the concrete superstructure, ongoing seepage is still expected albeit at reduced rate.
- Water seeping through the drains along the west side be controlled and directed away from the soffit of the girders. This would delay the deterioration observed around the drains. Installing short sections of vertical PVC pipe through the drains and extending these below the girders' webs is a possible repair.
- The drains along the north side are unnecessary (these are in the gap between the sidewalk and girder). These drains could be plugged and sealed to prevent seepage onto the superstructure below.
- The spalled concrete at the guardrail post be repaired.



- Wooden railings that are cracked or rotten be replaced.

6.5 APPROACHES

It is recommended that:

- Cracks, spalls, delamination, and potholes in the approach asphalt be dealt with in a similar manner as the wearing surface on the deck.
- Should the performance of the services warrant it, the loose boards for the utility enclosure be refastened via screws or nails, and gaps be resealed.

7.0 LIMITATIONS

The intent of this assessment was to identify and quantify areas of deterioration accessible at the time of inspection. RJC did not perform calculations to confirm the current adequacy of any structural elements. No destructive testing or dismantling of any concealed connections was performed. It should be understood that the recommendations are based on a restricted evaluation due to limitations inherent in the review, and comments are not a guarantee or warranty of any aspect of the condition of the structure whatsoever.

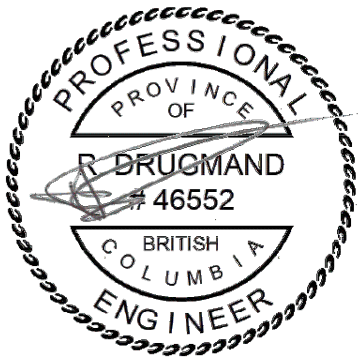
8.0 CLOSURE

We trust this letter addresses your present requirements and we respectfully remain at your service. If you have any questions or concerns, please contact the undersigned at your convenience.

Sincerely,

READ JONES CHRISTOFFERSEN LTD.

Reviewed by:



2022-11-15

EGBC Permit to Practice No: 1002503

Robbe Drugmand, MEng, P.Eng.

Design Engineer

A handwritten signature in blue ink, appearing to read "Mark Bowen".

Mark Bowen, MEng, P.Eng., CEng, MStructE

Principal

RRD/ms

CAL.104245.0012-RPT-20221107-RRD-4th Ave Bridge Invermere - 2022 Condition Assessment (DRAFT).docx



Engineers

APPENDIX A

PHOTOGRAPHS

REPORT PHOTOS

Descriptions	Photographs
Overall View of Bridge – South Face.	 Photo 1
Erosion of the head slopes. Graffiti on the abutment and girders.	 Photo 2

Typical Pier – slope erosion settling against sills, moisture on sill, typical pier column checking.



Photo 3

South Abutment – surface scaling, head-slope erosion, debonded roofing felt, graffiti, and delamination on the girder web.



Photo 4

Typical Checking in pier columns.



Photo 5

Advanced girder spalling, complete with reinforcement corrosion.



Photo 6

Spall at girder end. Recoated railing and utility enclosure, typical spall at a guardrail embed.



Photo 7

Spalling at girder end diaphragm.



Photo 8

Cracking, weathering, raveling, potholes, and previous delamination repairs in the asphalt wearing surface.



Photo 9

New Asphalt overlay over the sidewalk and steel plate bolted to curb.



Photo 10

Spalling at guardrail embeds, and recoated painting on the guardrails.



Photo 11



Engineers

APPENDIX B

DEFINITIONS

Delamination is generally defined as the cracking of concrete cover caused by the corrosion of reinforcement or other ferrous elements embedded in the concrete. In the case of asphalt, delamination may be caused by water permeating between the asphalt and underlying substrate and deteriorating the bond until the asphalt becomes loose.

Differential Settlement is uneven displacement between adjacent elements, usually caused by varying soil or loading conditions and results in cracks and distortions in the foundation.

Corrosion is the degradation of a material due to a chemical reaction with its environment. With respect to steel, moisture and oxygen must be present for corrosion to occur. Iron in steel is thus oxidised to produce rust.

Efflorescence is a whitish discolouration of the concrete surface caused by salt deposits. It occurs when moisture permeates through the concrete and renders salts contained within the concrete into solution. Through means of vapour transmission or hydrostatic pressure, the solution travels through natural pores to the surface, where the water evaporates and a salt deposit is left behind.

Scaling is a visibly rough concrete surface, usually where the aggregate is visible, and is caused by a loss of the cement paste layer on the concrete surface.

Spalling is the loss of, or missing, concrete cover and can be caused by delamination, freeze-thaw cycling, and restraint of the concrete from natural expansion and contraction, or impact.

Paint Delamination or Flaking is the peeling or detaching of the paint layer from the substrate underneath. There are numerous reasons paint can flake or delaminate. With respect to steel paint coating, it can be attributed to the steel surface-corroding below the coating or inadequate initial preparation of the steel surface for the original paint coating application.

The **rating of deficiencies** are as defined below:

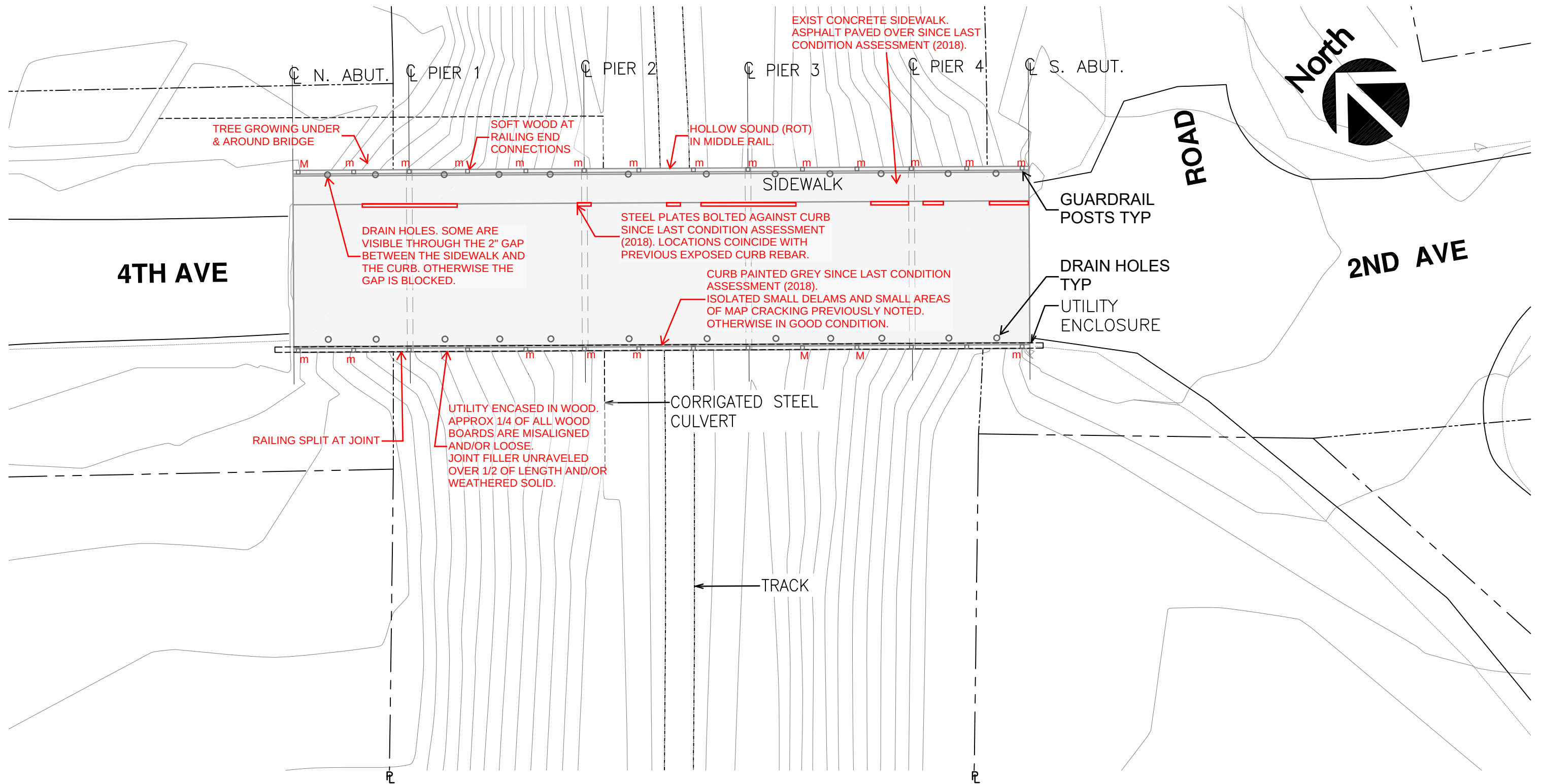
Excellent	As-built condition, no observed defects
Good	Normal wear and deterioration
Fair	Minor loss in condition or minor observed defects
Poor	Advanced loss in condition or significant defects
Very Poor	Serious loss in condition or serious defects



Engineers

APPENDIX C

SKETCHES



EXISTING BRIDGE PLAN

AS PER

LEGEND

- M INDICATES MAJOR CONCRETE SPALL AT RAIL ANCHORAGE
- m INDICATES MINOR CONCRETE SPALL AT RAIL ANCHORAGE



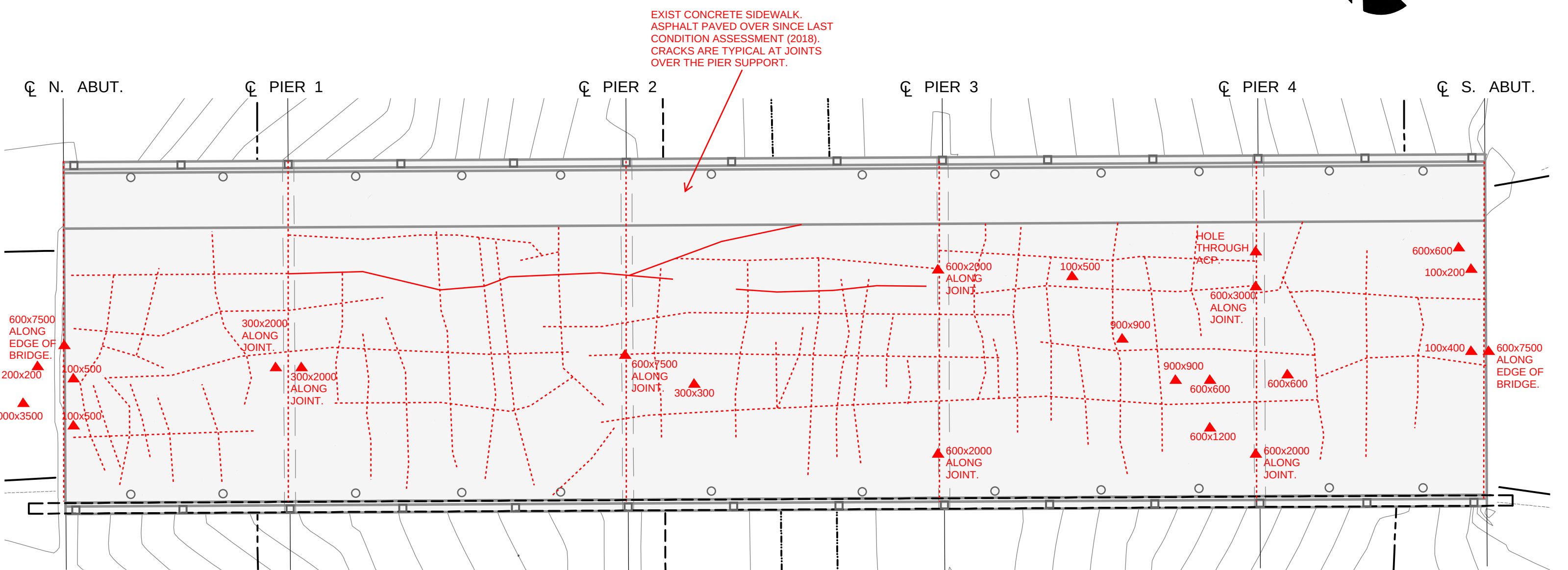
Engineers

GENERAL COMMENTS:

-GUARDRAILS HAVE BEEN REPAINTED SINCE THE LAST CONDITION ASSESSMENT (2018). SOME SMALL AND/OR NOT-EASILY ACCESSIBLE AREAS APPEAR TO HAVE BEEN MISSED

Project Name
4th AVENUE BRIDGE INVERMERE
2022 CONDITION ASSESSMENT
Sketch Title
SITE PLAN

Dwg. Ref. **N.A.**
Scale **NOTED**
Date **2022/10/13**
Project No. **CAL.104245.0012**
Sketch Number
SK-01
Rev. **00**



元世宗大正

100x300
▲ INDICATES ASPHALT
SPALL OR DELAMINATION
AS WELL AS APPROXIMATE
SIZE, mm.

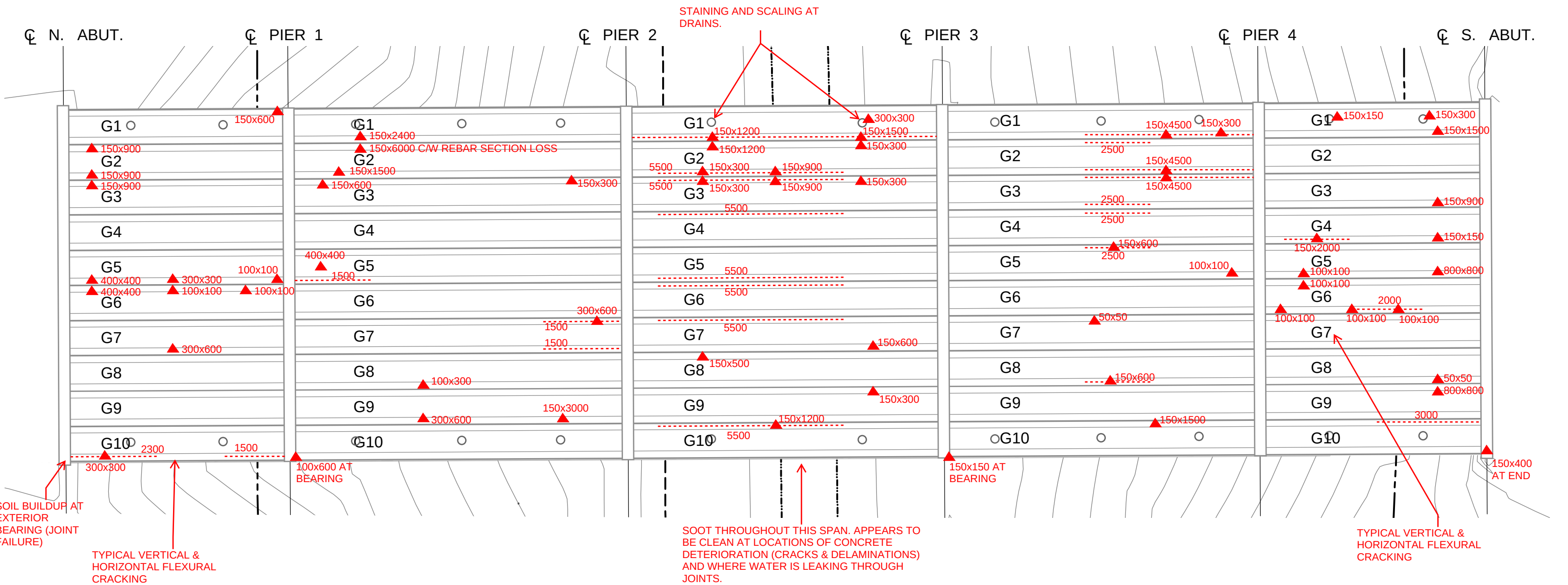
...1500...
INDICATES ASPHALT CRACK
AS WELL AS APPROXIMATE
LENGTH, mm.

———— INDICATES SCRAPE IN
ASPHALT



- ACP SURFACE DETERIORATED/RAVELLED IN 3 WHEEL TRACKS.
- CRACKS ARE PARALLEL TO GIRDER JOINTS

Dwg. Ref. **N.A.**
Scale **NOTED**
Date **2022/10/13**
Project No. **CAL.104245.0012**
Sketch Number **SK-02**
Rev. **00**



EXISTING GIRDER SOFFIT PLAN

元坂入

GENERAL COMMENTS:

- NUMEROUS LOCATIONS OF ABANDONED WASP NESTS
- ALL JOINTS BETWEEN GIRDERS ARE LEAKING

LEGEND

▲ 100x300

INDICATES CONCRETE SPALL OR DELAMINATION AS WELL AS APPROXIMATE SIZE, mm.

---1500---

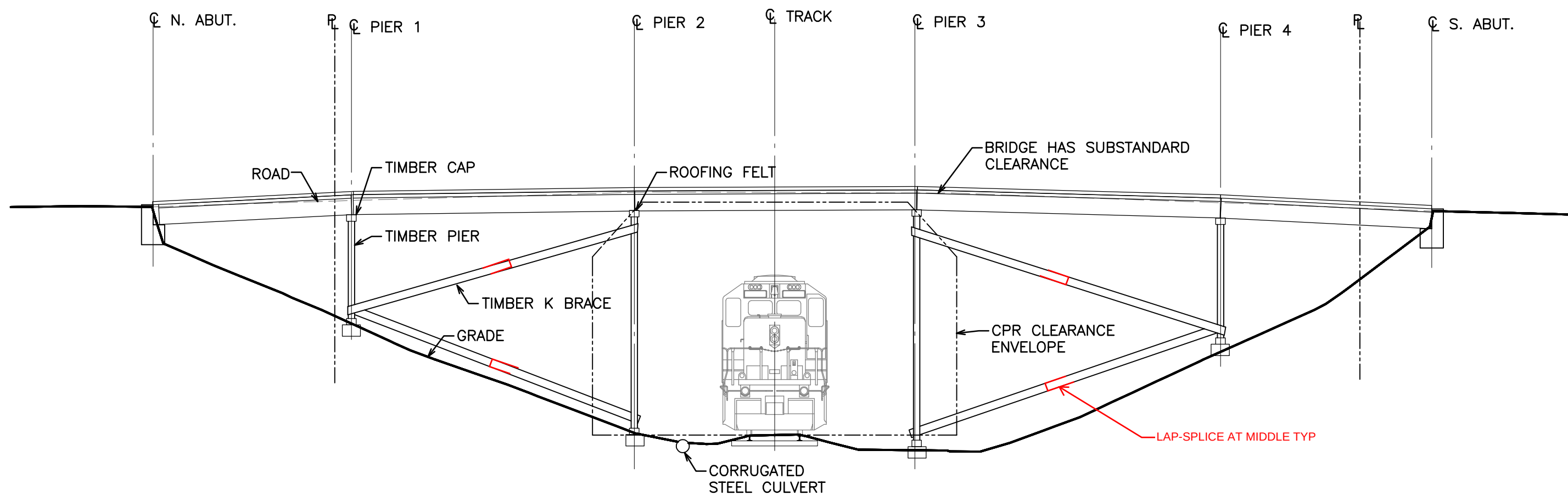
INDICATES CONCRETE CRACK AS WELL AS APPROXIMATE LENGTH, mm.



Engineers

Project Name
4th AVENUE BRIDGE INVERMERE
2022 CONDITION ASSESSMENT
Sketch Title
SOFFIT PLAN

Dwg. Ref.	N.A.
Scale	NOTED
Date	2022/10/13
Project No.	CAL.104245.0012
Sketch Number	
SK-03	
Rev.	00



EXISTING BRIDGE ELEVATION

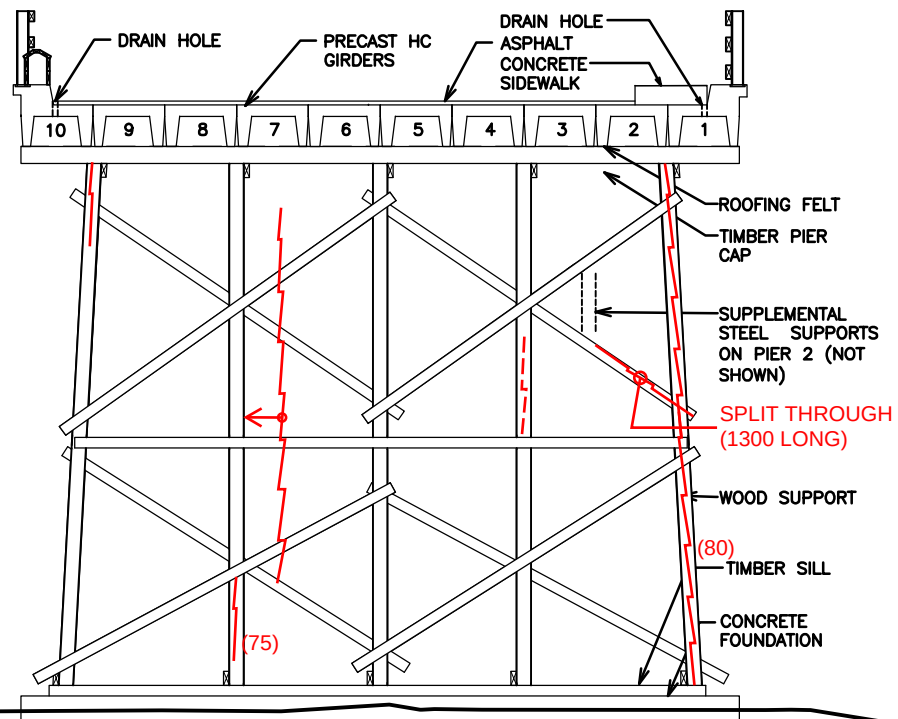
1:125



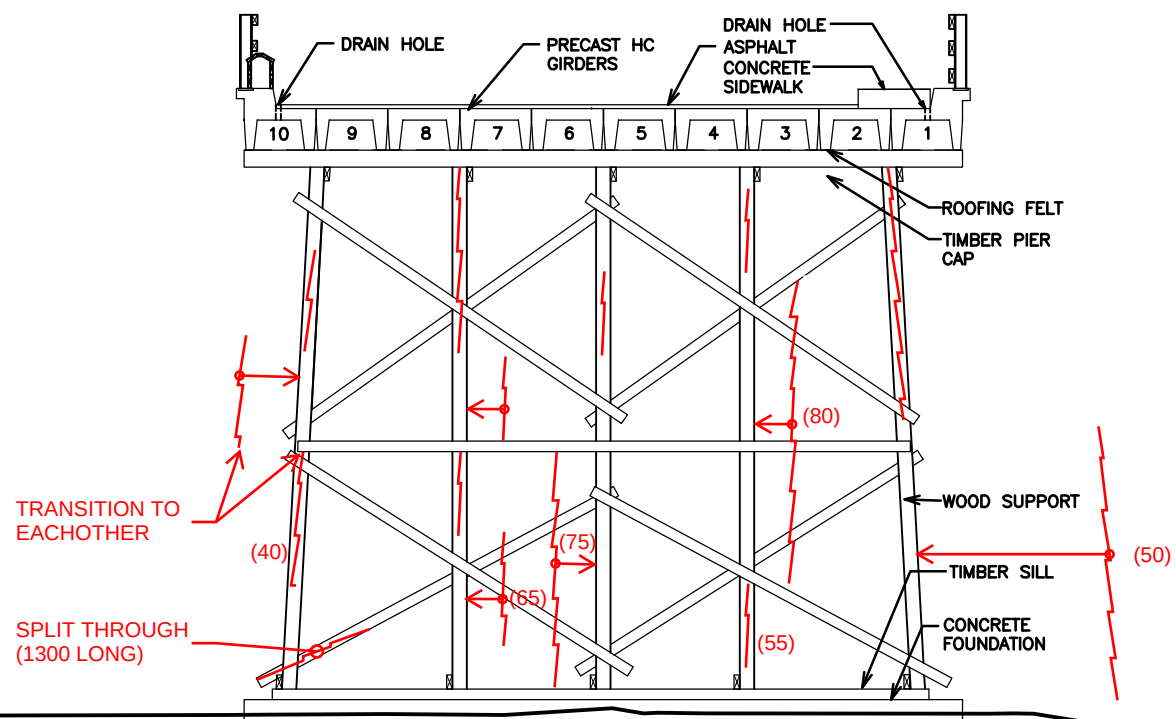
Engineers

Project Name
4th AVENUE BRIDGE INVERMERE
2022 CONDITION ASSESSMENT
 Sketch Title
BRIDGE ELEVATION

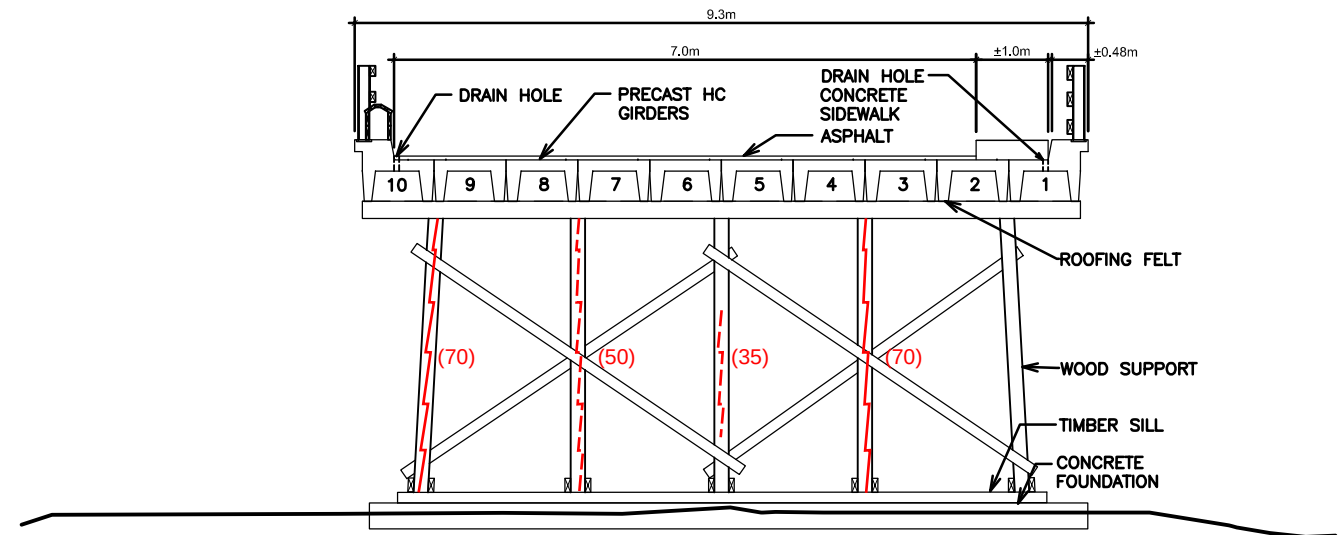
Dwg. Ref. **N.A.**
 Scale **NOTED**
 Date **2022/10/13**
 Project No. **CAL.104245.0012**
 Sketch Number **SK-04**
 Rev. **00**



ELEVATION PIER 2 (LOOKING NORTH)
1:100



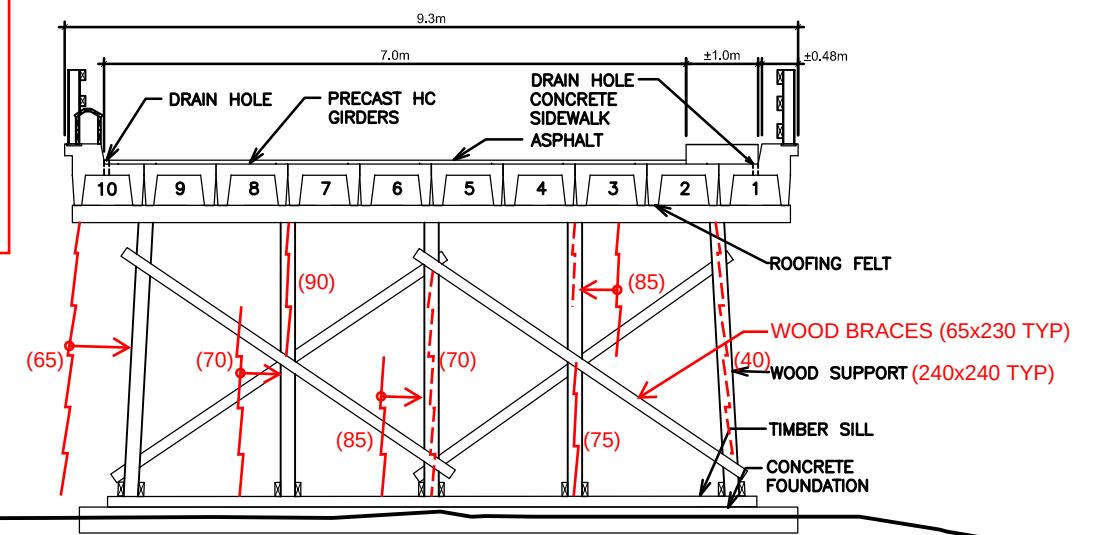
ELEVATION PIER 3 (LOOKING NORTH)
1:100



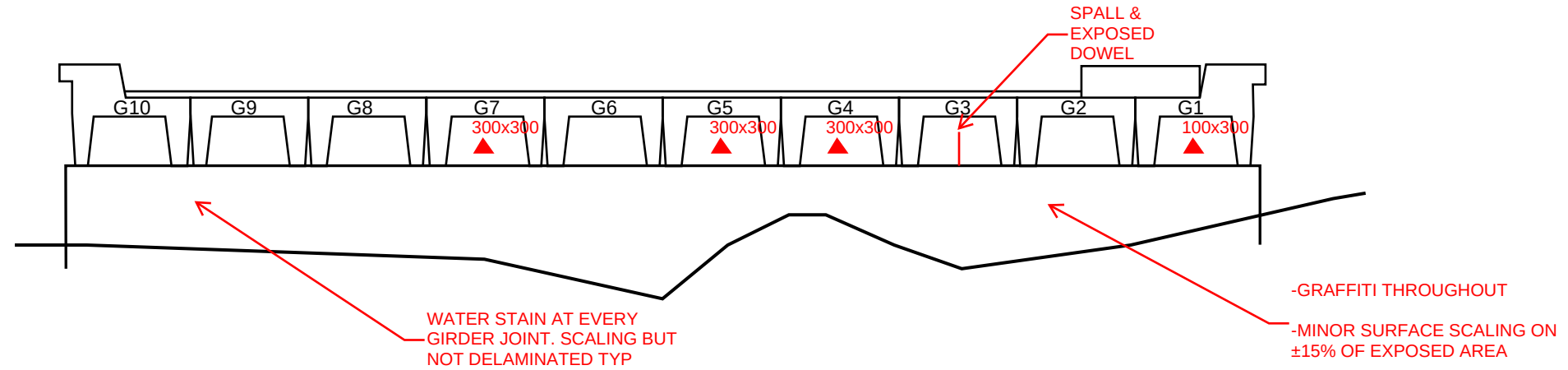
ELEVATION PIER 1 (LOOKING NORTH)
1:100

LEGEND

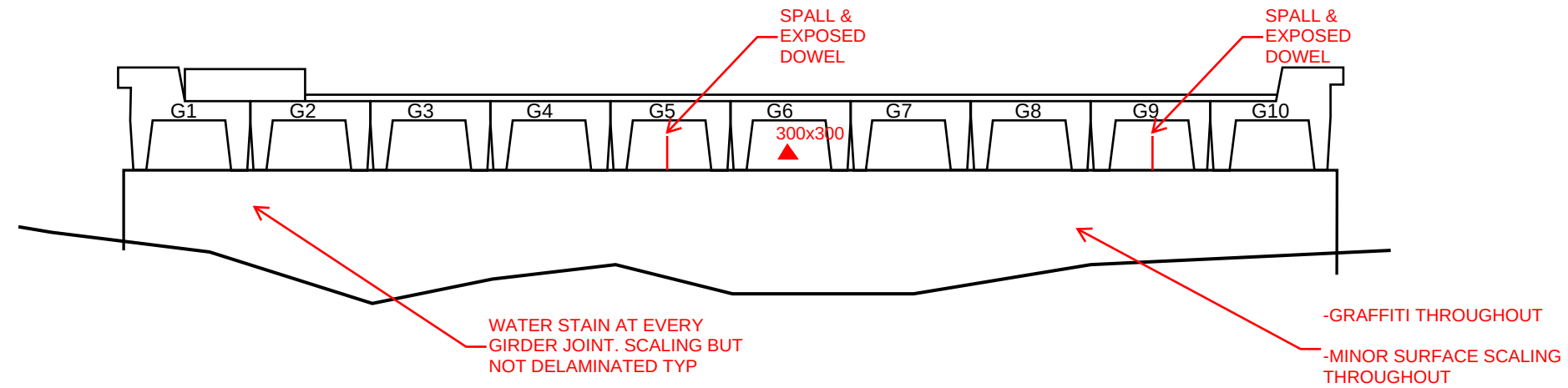
- INDICATES WOOD SPLIT
- INDICATES WOOD SPLIT BEHIND
- INDICATES MAX DEPTH OF SPLIT, mm



ELEVATION PIER 4 (LOOKING NORTH)
1:100



ELEVATION NORTH ABUTMENT
北岸



ELEVATION SOUTH ABUTMENT
南岸

LEGEND

100x300 ▲ INDICATES CONCRETE SPALL OR DELAMINATION AS WELL AS APPROXIMATE SIZE, mm.



Project Name
4th AVENUE BRIDGE INVERMERE
2022 CONDITION ASSESSMENT

Sketch Title
ABUTMENT ELEVATION

Dwg. Ref. **N.A.**
Scale **NOTED**
Date **2022/10/13**
Project No. **CAL.104245.0012**
Sketch Number **SK-06**
Rev. **00**



APPENDIX D

BRIDGE CONDITION INSPECTION

Inspection Type

Routine

X

Detailed

Bridge Condition Inspection

Structure
Number

N/A

Structure
NameInvermere 4th Avenue Bridge over
CPRInspection Date
(yyyy-mm-dd)

2022-09-30

COMPONENT

PERCENTAGE CONDITION RATING

INSPECTION NOTES BY COMPONENT

Enter % in each condition

All poor or very poor conditions must be explained.

Label explanations(s) with component numbers.

****BOLDED ITEMS ARE CHANGES FROM PREVIOUS****

		E	G	F	P	V	X	N
1	Debris Risk							100
2	Bank/Bed Scour/Buildup				100			
3	Dolphins/Fenders							100
SUBSTRUCTURE								
4	Foundation Movement		100					
5	Abutments			100				
6	Wing/Retaining/Walls							100
7	Footings/Piling						100	
8	Pier Columns/Walls/Cribs			90	10			
9	Bearings				70		30	
10	Caps			50			50	
11	Corbels							100
SUPERSTRUCTURE								
12	Floor Beams/Transoms							100
13	Stringers							100
14	Girders			55	33	12		
15	Portals							100
16	Bracing/Diaphragms			92		8		
17	Truss Chords/Arch Ribs							100
18	Arch Ties							100
19	Truss Diagonals							100
20	Truss Rods/Verticals							100
21	Cables							100
22	Panels							100
23	Pins/Bolts/Rivets							100
24	Camber/Sag		100					
25	Live Load Vibration						100	
26	Coating (structure)							100
DECK								
27	Sub Deck/Cross ties							100
28	Wearing Surface			20	62	18		
29	Deck Joints							100
30	Curbs/Wheelguards			100				
31	Sidewalk(s)			98	2			
32	Railing/Parapets			85	15			
33	Median Barrier							100
34	Drains/Pipes							100
35	Coating (Railings)			95	5			
APPROACHES								
36	Signing/Lighting						100	
37	Roadway Approaches			25	60	15		
38	Roadway Flares							100

2. Unprotected Headslopes. Level of scouring **still** appears unchanged. **Tree is growing under and around bridge.**

5. Scaling of the abutment face underneath the girders appears to **continue** progressing. **Graffiti throughout.**

8. Checking throughout the pier columns. Depths varied 25mm to **90mm. Condition appears similar to before.**

9. Debonded and weathered liner. **Deterioration appears to be progressing.**

14. Changed from **55/38/7 (F/P/V)** from previous year. **Deterioration is progressing - cracks are longer or have turned into delamination. Spalls are growing in select locations. Where rebar is exposed, section loss is ongoing.**

16. Changed from **95/5 (F/V)** from previous due to **additional locations.**

28. Similar condition as previous. At one location the **girder joint below is exposed.**

31. **Asphalt has been installed overtop the sidewalk. Cracks at the joints over the pier support. Plates have been mounted to the curb side at previous spalls.**

35. **Railings have been recoated.**

Condition Codes

E	Excellent	As-built condition, no observed defects
G	Good	Normal wear and deterioration
F	Fair	Minor loss in condition or minor observed defects
P	Poor	Advanced loss in condition or significant defects
V	Very Poor	Serious loss in condition or serious defects
X	Not Inspected	
N	Not Applicable	

Robbe Drugmand, P.Eng.

Inspector (type or print)

Signature



APPENDIX E

EXECUTIVE SUMMARY OF THE 2018 & 2019 REPORTS



APPENDIX E: EXECUTIVE SUMMARY OF THE 2018 & 2019 REPORTS		
2018 Observations	2019 Observation Updates	Recommendations
1.0 Channel (Cutting):		
- Localized wetting and softness at and around pier sills and columns, due to retained water in the soil settling against the uphill side of these elements. - Tree growing underneath.	No change.	- Removed Soil upslope from piers, regrade and stabilize the slope, control runoff via swales or drainage channels. - Remove the tree.
2.0 Substructure:		
- Water staining and scaling on the exposed face of the abutments. - Weathering and de-bonding of the roofing felt on the bearing shelf of the abutments and over the pier caps. - Splitting/checking on nearly all of the timber posts. - A notable split in two of the cross-braces resulting in a reduced capacity of these elements. - Corrosion and section loss on the tack welds at the base of the 1998 steel rehabilitation of Pier 2.	The progression of scaling on the exposed face of the abutments with scaling increasing in amplitude and area	- Remove and replace the weathered roofing felt. - Replace the timber cross-brace at Pier 3. - All other items to be monitored for change.
3.0 Superstructure:		
- Widespread fine cracks were observed on girder webs and soffits complete with complementary corrosion staining, delamination, and spalling at about half of the crack locations. - Delamination/spalling complete with reinforcement corrosion was observed at a few of the girders' web-bearing locations. - Two girders are in Very Poor condition due to long sections of web spalling complete with reinforcement corrosion. - At the abutments, spalled concrete was observed at three separate girder end diaphragms.	Advanced deterioration on the girders. The number of locations of observed spalling on the underside of the girders had increased.	Repair locations exhibiting the greatest amount of concrete deterioration.
4.0 Deck:		
- Numerous cracks and delamination were observed on the asphalt wearing surface. - Uncontrolled drainage and seepage through drains and cracks were noted to be the largest source of deterioration for the superstructure, substructure, and slopes below. - Scaling and/or spalling complete with exposed reinforcement was observed throughout the sidewalk becoming a hazard to pedestrians. - Spalling at the steel railing post embeds was typical. - The three wood guardrail boards with a split and/or softness. - The guardrails do not meet the current bridge code. - The guardrails exhibited minor coating deterioration, corrosion spotting on all the railing posts, and heavy weathering along the west side.	- New locations of spalling were observed adjacent to cracks and previous patch repairs in the asphalt wearing surface. - The deterioration of the concrete sidewalk was advancing at an accelerated rate. Spalling of the concrete walking surface and curbs was observed at previous cracks, with an increase in the amount of exposed embedded steel reinforcing. Surface scaling of the concrete was rapidly increasing in area. The observed condition were identified to be tripping hazard to pedestrians. - Paint on the wood barriers, and the utility enclosure was exhibiting ongoing debonding and flaking. The surface area of deteriorated paint coating was increasing.	- Address leaks through the deck via asphaltic sealant. - Control drainage via installation of downspouts. - Perform targeted concrete repairs on the sidewalk and at the steel railing post embeds. - Repaired/replace split or soft wood in the guardrails. - Recoat the guardrails.
5.0 Approaches:		
Cracks in the asphalt approach were noted.	New locations of spalling were observed adjacent to cracks and previous patch repairs.	Address cracks on the approach via asphaltic sealant.

June 12, 2025



Angela Maclean, P.Eng
Director of Public Works & Operations
District of Invermere
Box 339, Invermere, BC V0A 1K0

Email: dpwo@invermere.net

Dear Angela Maclean,

**RE: Invermere 4th Avenue Bridge over CPR
2025 Condition Assessment**

RJC No. CAL.104245.0018

As requested, Read Jones Christoffersen Ltd. (RJC) has performed a routine structural condition assessment of the 4th Avenue Bridge. This letter addresses the findings of the 2025 routine condition assessment of the bridge, noting any condition changes to the reported condition of the 2024 routine condition assessment, "Invermere 4th Avenue Bridge over CPR – 2024 Condition Inspection". The 2018, 2019, 2022, and 2023 reports should be referenced for additional information and as the baseline to which this routine assessment was conducted.

RJC was on site on June 6, 2025, to perform the condition assessment. At the time of the assessment, the weather was 20 degrees Celsius and slightly overcast. The assessment was performed by Robbe Drugmand, P.Eng. and Jon Jarvie of RJC. The assessment was a visual inspection of readily accessible surfaces and performed on foot from the ground, with use of binoculars when needed. For readily accessible areas, suspect areas of concrete deterioration and suspect areas of timber deterioration were respectively identified through acoustic sounding and through prodding and acoustic sounding.

Observation Summary

Tabular representation of the condition assessment is broken down by component in the attached Bridge Condition Inspection Form. Items that are bold indicate change since the 2024 Condition Inspection. Unless noted otherwise, conditions appear similar to the 2024 condition inspection.

Notable changes observed between the 2024 and 2025 condition assessments are as below. These have been numbered in accordance with the attached Bridge Condition Inspection Form. Refer to the 2024 condition assessment for further information.

14. Concrete deterioration at the underside of the girders continues to progress:

- The number of locations displaying cracking, delamination, and spalling on the underside of the girders has increased.
- 26% of the exposed girders surface area are now in very poor condition, with 24% being in poor condition.
- A large representation of the girder soffit is covered in hairline cracks:
 - Near the abutment on the inner face of girder line 10, hairline cracking occurs every ~600mm.
- Joint plates between girder line 1 & 2, south of pier 4 continue to experience extreme corrosion. Heavy corrosion is also visible between girder line 4 & 6, and 4 & 5 north of pier 1. Similar conditions are expected at other joint plate locations.
- Four additional locations on the girder diaphragms at the South Abutment exhibited a crack and/or delamination.
- Girder line 2 (the girder line that partially supports the sidewalk) spanning between piers 1 and 2:
 - Crack and delamination sizes have slightly advanced since the 2024 assessment.
- Girder lines 1 to 5 (the girder lines that have been closed off to vehicle traffic) spanning between Pier 4 and the South Abutment:
 - Growth in crack/ delamination size, majority of new deterioration located north of pier 2.
 - Girder line 5 deterioration has increased significantly since 2024. Full span cracking between piers 2 and 3 was observed.

28. Wearing Surface

- Visual review was limited due to the buildup of sand and gravel on the deck, obscuring cracks and spalls.

31. Sidewalk:

- For the steel plates fastened to the original concrete sidewalk, additional plates have disconnected and protrude proud of the curb. One of the plates protrudes to a greater extent.
- On the plates, deterioration of the coatings is progressing
- New cracks and delaminations on the sidewalk face are present.

32. Railings:

- Since the 2024 assessment, the concrete spall at the anchorage of two of the railing posts have progressed to a major spall, one has progressed to a minor spall. This is due to the growth of the deterioration and partial exposure of the guardrail post anchors.
- New delaminations were observed at the railings' anchor zones on the exterior bridge edge:
 - between pier line 2 & pier line 3
 - between pier line 3 & pier line 4.
- Concrete spalls at the base plate of 4 post locations appear to have progressed in size since the 2024 assessment.

35. Coating (Railings):

- No significant continuation of paint flaking or surface corrosion of the steel was observed at the base of the posts. Minor and localized section loss (less than 10% section loss) was consistent with the 2024 review.

36. Signing/Lighting:

- Lock blocks have experienced significant paint flaking (paint flakes scattered across bridge approach).
- For the traffic delineators:
 - Some sandbags were ripped open (rendering these obsolete), others were displaced or missing.
 - Loose bolt on traffic delineation signage.

37. Roadway Approaches:

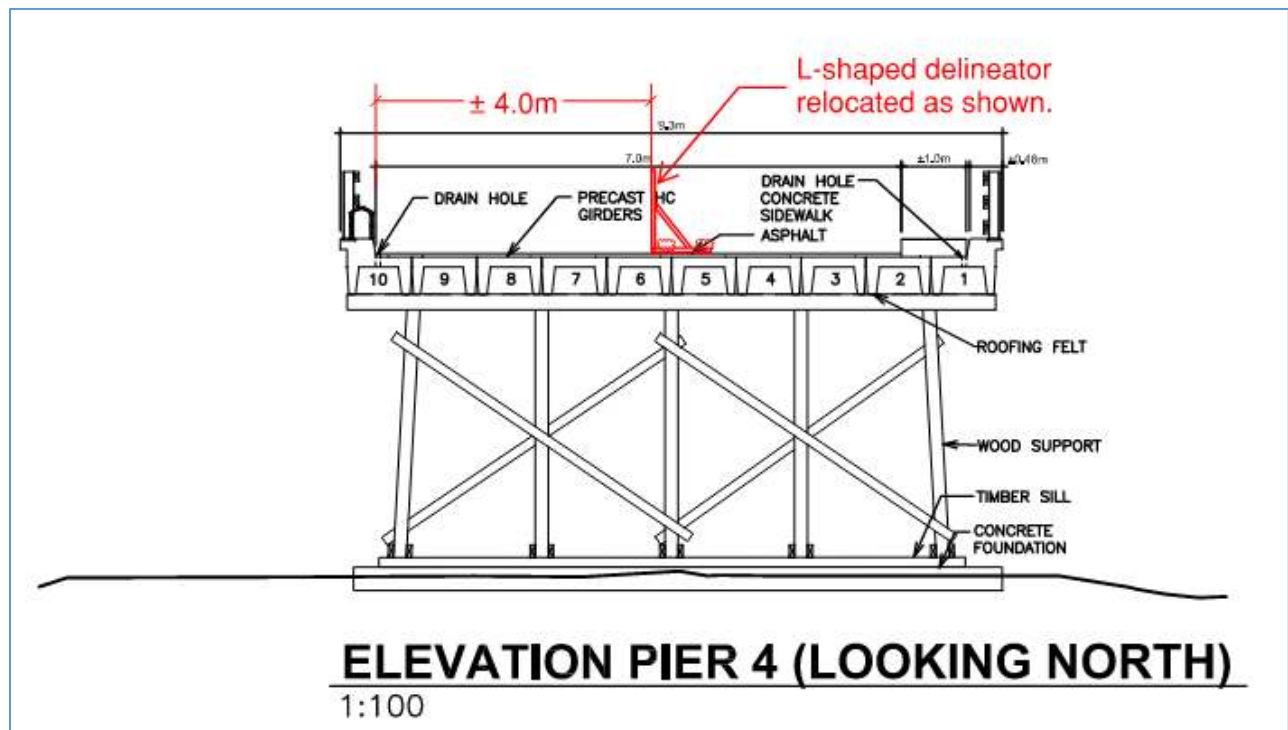
- Dirt and debris accumulation on the north-west approach to the bridge.

Recommendations

The urgent recommendations provided in the 2023 condition assessment report were implemented in 2023/2024. Including the addition of signage (30km/h speed and 9 tonnes GVW limits) recommended in the 2022 condition assessment report.

Other than this 2025 routine bridge inspection, recommendations presented in the 2024 condition assessment report have not been implemented. However, it is RJC's understanding that the District is intending to replace the bridge in 2026. Considering this information, RJC's updated recommendations are as follows:

1. Routine condition assessment and/or rehabilitation work are recommended should the bridge remain in service beyond the intended 2025 replacement. The routine condition assessments should be completed by a structural engineer or certified structural bridge inspector and should focus on changes in the observed areas of deterioration.
2. Signage, barriers, and delineators should remain in place until the bridge is replaced. The frame for the delineators on the bridge should be adjusted so that the bases do not protrude into the traffic lane (L shaped delineators would be preferred). Deteriorated components of the traffic delineation system should be replaced as needed; such as plywood backing, connections, and sandbags.
3. Due to the progression of deterioration observed on Girder Line 5, it is recommended that live load be limited on this girder line. Traffic delineators across the bridge should be adjusted to ensure the traffic lane is limited to approximately four (4) meters from the curb. Refer to the sketch below:



4. As they present a hazard to pedestrian users, the disconnected and bulging plates on the sidewalk are recommended to be removed.
5. It is anticipated that the bridge will be replaced in 2026. If not, the next routine condition assessment should incorporate a detailed review of the pier caps and girders within close proximity (at-arms-length). Use of a specialized under-bridge access equipment platform could be considered; however, this type of equipment may not be practical given bridge weight limits, limited train clearance, and obstructions caused by the pier's K-bracing. A review utilizing drone equipment and tall ladders is recommended instead. RJC's specialized drone equipment and operators can assist with this.

Limitations

The intent of this assessment was to identify and quantify areas of deterioration accessible at the time of the condition assessment. RJC did not perform calculations to confirm the current adequacy of any structural elements. No destructive testing or dismantling of any concealed connections was performed. The recommendations are based on a restricted evaluation due to limitations inherent in the review, and comments are not a guarantee or warranty of any aspect of the condition of the structure whatsoever.

Closure

We trust this letter addresses your present requirements and we respectfully remain at your service. If you have any questions or concerns, please contact the undersigned at your convenience.

Yours truly,
READ JONES CHRISTOFFERSEN LTD.

Reviewed by:



Jon Jarvie, BSc, EIT (Alberta)
Engineer-In-Training



Robbe Drugmand, MEng, P.Eng.
Project Engineer

JJ/rd

CAL.104245.0018-RPT-20250612-JJ-4th Avenue Bridge Invermere - 2025 Condition Assessment (RRD).docx

Encl. 2025 Bridge Condition Inspection Form

Inspection Type

Routine

X

Detailed

Bridge Condition Inspection

Structure
Number

N/A

Structure
NameInvermere 4th Avenue Bridge over
CPRInspection Date
(yyyy-mm-dd)

2025-06-19

COMPONENT

PERCENTAGE CONDITION RATING

INSPECTION NOTES BY COMPONENT

Enter % in each condition

All poor or very poor conditions must be explained.

Label explanations(s) with component numbers.

CHANNEL

	E	G	F	P	V	X	N
1 Debris Risk							100
2 Bank/Bed Scour/Buildup				100			
3 Dolphins/Fenders							100

****BOLDED ITEMS ARE CHANGES FROM PREVIOUS******(Unless noted, conditions appear similar to 2024 review)**

2. Unprotected Head-slopes. Level of scouring appears unchanged.
Tree continues to grow under and around bridge.

SUBSTRUCTURE

	E	G	F	P	V	X	N
4 Foundation Movement		100					
5 Abutments			100				
6 Wing/Retaining/Walls							100
7 Footings/Piling						100	
8 Pier Columns/Walls/Cribs			90	10			
9 Bearings				70		30	
10 Caps			50			50	
11 Corbels							100

5. Scaling of the abutment face underneath the girders appears be progressing. Graffiti throughout.

8. Checking throughout the pier columns. Depths varied 25mm to 90mm.

9. Debonded and weathered liner. Deterioration appears to be progressing.

SUPERSTRUCTURE

	E	G	F	P	V	X	N
12 Floor Beams/Transoms							100
13 Stringers							100
14 Girders			50	24	26		
15 Portals							100
16 Bracing/Diaphragms			92		8		
17 Truss Chords/Arch Ribs							100
18 Arch Ties							100
19 Truss Diagonals							100
20 Truss Rods/Verticals							100
21 Cables							100
22							100
23							100
24							100
25							100
26							100
27							100
28							100
29							100
30							100
31							100
32							100
33							100
34							100
35							100
36							100
37							100
38							100

14. Deterioration is progressing (**cracks, delaminations, and/or spalls: number of locations have increased, are longer, or have advanced into delaminations, or spalls**). Where rebar is exposed, minor section loss is ongoing. For 6 girders, exposed rebar exhibits surface corrosion and minor section loss. For 1 girder (localized to the anchorage zone), bottom rebar appears to have 25-50% section loss.

16. Spalls concrete on girder end diaphragms at 8 locations. Single corroded steel dowel exposed at each location.

28. & 37. Asphalt wearing surface is severely weathered. Additional ravelling and wear at wheel tracks. Numerous cracks and delaminations. **Dirt and debris accumulation on deck and approaches. Deteriorated components of the traffic delineation system.**

31. **Cracks at the joints over the pier support. Deterioration of the coating on the misaligned and bulging steel plates is progressing.**

32. **12 Major and 15 Minor delamination/spalls observed at anchorage locations.**

35. Localized paint flaking at bottom of posts. Surface corrosion and minor section loss observed.

DECK

	E	G	F	P	V	X	N
27 Sub Deck/Cross ties							100
28 Wearing Surface			20	58	22		
29 Deck Joints							100
30 Curbs/Wheelguards			100				
31 Sidewalk(s)			89	11			
32 Railing/Parapets			4	53	43		
33 Median Barrier							100
34 Drains/Pipes							100
35 Coating (Railings)			90	10			

APPROACHES

	E	G	F	P	V	X	N
36 Signing/Lighting			80	20			
37 Roadway Approaches			20	60	20		
38 Roadway Flares							100

Condition Codes

E Excellent	As-built condition, no observed defects
G Good	Normal wear and deterioration
F Fair	Minor loss in condition or minor observed defects
P Poor	Advanced loss in condition or significant defects
V Very Poor	Serious loss in condition or serious defects
X Not Inspected	
N Not Applicable	

Jon Jarvie, E.I.T. (Alberta)

Inspector (type or print)

Signature



Minimum Safety Requirements for Contractors Working on CP Property in Canada



Approval Authority:	Corporate Risk	Effective Date:	January 20, 2020
Version:	4.0	Review Date:	January 20, 2023

Table of Contents

Table of Contents	2
Introduction	3
1 Application	3
2 Definitions and Interpretation.....	3
3 Contractor Compliance & Responsibilities	5
4 Site Safety Plan.....	6
5 Safety Training.....	7
6 Safety Orientation.....	7
7 Job Safety Briefing	7
8 Applicable Legislation.....	8
9 Security Access to CP Property	9
10 Personal Conduct.....	10
11 Personal Protection.....	12
12 Railroad Track Protection.....	14
13 WHMIS	17
14 Operation of Highway Vehicles.....	18
15 Tools, Equipment and Machinery	20
16 Emergency Response.....	22
17 Confined Space	23
18 Reportable Accidents, Incidents and Injuries.....	24
19 Reporting	25
20 Contractor & Contractor Personnel Acknowledgement	26
21 Attachment A - Emergency Information Sheet	28

Introduction

At Canadian Pacific (CP), safety is an integral part of the way we do business. We expect everyone working on Canadian Pacific's property to be unconditionally committed to safety. Safety must be given top priority and will take precedence over deadlines, production schedules, and all other considerations.

1 Application

1.1 Application

- 1.1.1 These Minimum Safety Requirements are applicable to all who work on CP property (except as noted in 1.13 and 1.14 below) including Contractors and other persons performing Work or otherwise providing services to Canadian Pacific on CP Property in Canada.
- 1.1.2 These Minimum Safety Requirements cannot be waived or altered, in whole or in part, without a prior Risk Assessment specific to the Work conducted and the Manager-In-Charge has provided written consent.
- 1.1.3 Notwithstanding the foregoing, these Minimum Safety Requirements do not apply to other railway companies who only operate trains on CP Property under various trackage or interchange agreements.
- 1.1.4 Further, notwithstanding the foregoing, these Minimum Safety Requirements may not apply to Work or services provided in CP Property in Canada that are Office Premises, in which case, CP's Minimum Safety Requirements for Contractors Working In CP's Office Premises may apply.

2 Definitions and Interpretation

2.1 Definitions

- 2.1.1 In these Minimum Safety Requirements, the following capitalized terms shall have the ascribed meaning below:
 - (a) "**Applicable Legislation**" means all applicable legislation, regulations, by-laws, codes, rules, standards, policies, procedures, promulgated by any federal, state, and municipal governmental body, including those of its agencies, having authority over CP and, or a Contractor in relation to the Work in the matter of health and safety of the person, property and, or the environment;
 - (b) "**Canadian Pacific**" or "**CP**" means Canadian Pacific Railway Company Ltd., and its subsidiaries and affiliates, and includes each of their respective directors, officers, employees, agent, and representatives;
 - (c) "**CP Personnel**" means CP's employees, agents, and representatives;
 - (d) "**CP Property**" means any building, facility, yard, track, right of way or other property owned or controlled by CP;
 - (e) "**Contractor**" means the company or person, and their respective employees and authorized agents, representative and subcontractors who are providing goods or services to CP; or on behalf of a third party working on CP property.
 - (f) "**Contractor Personnel**" means the Contractor's employees, and authorized agents, representative and subcontractors;
 - (g) "**Co-mingled Work**" means Work where Contractor Personnel works directly with or, in close proximity (time or space) to CP Personnel;

- (h) **“eTest”** an efficiency test. It is a planned procedure to evaluate compliance with rules, instructions and procedures, with or without the employee's knowledge.
- (i) **“Foul of Track”** means the placement of an individual or equipment within 4’ feet of the outside rail of a railway track that could be struck by a moving train or on- track work equipment (e.g. Hi-rail equipment).
- (j) **“Hazardous Materials”** means any substance, which is hazardous to persons or property and includes, without limiting the generality of the foregoing:
 - (i) radioactive, explosive, poisonous, or toxic substances;
 - (ii) any substance that if added to any water, would degrade or alter the quality of the water to the extent that it is detrimental to its use by man or by any animal, or plant;
 - (iii) any solid, liquid, gas or odour or combination of any of them that, if emitted into the air, would create or contribute to the creation of a condition of the air that endangers the health, safety, or welfare of persons, or the health of animal life, or causes damage to plant life or to property; and
 - (iv) substances declared to be hazardous, toxic or dangerous under any law or regulation now or hereafter enacted by any governmental authority having jurisdiction.
- (k) **“Manager-in-Charge”** means a CP manager as designated or otherwise identified by CP as being responsible for overseeing the Work to be performed, such Manager-in-Charge may include, but is not limited to Local CP Management, Regional Superintendents, Division Engineers, and Project Managers.
- (l) **“Mobile Equipment”** means any motorized and self-propelled equipment, excluding Railway equipment and highway vehicles, but including, for example, forklifts, tractors, cranes, ATVs, mules, motorized scissor lifts, and similar equipment that are not designed to operate or move on railway tracks;
- (m) **“Office Premises”** means any building, facility, or portion thereof, or other premises, whether owned or controlled by CP, which is used solely for clerical or administrative purposes and which does not contain heavy equipment or machinery, as designated by CP from time to time;
- (n) **“Qualified and Authorized”** means a status attained by a person who has successfully completed any required training and demonstrated proficiency in the duties of a particular position or function and who has been given the right to act.
- (o) **“Railway equipment”** means trains, locomotives, railcars, track units, hi-rail vehicles and any other equipment designed to operate or move on railway tracks;
- (p) **“Site Safety Plan”** means a contractors’ documented plan which set out how Work is to be conducted in a safe manner, as required by Applicable Legislation see 3.16;
- (q) **“Third Party Project”** means any work being performed on CP property that CP is not managing (i.e. road authority, utility company, commuter agency, or other similar entity, are on CP property for their own purposes, and not a project sponsored or managed by CP.
- (r) **“Work”** means the provision of products and services and related activities;
- (s) **“Work Site”** means any CP Property where CP Personnel or Contractor Personnel are present, or permitted to be present, while engaged in any Work, including any railway equipment, Mobile Equipment and highway vehicles operated by or used to convey a person engaged in such Work. This applies also to work immediately adjacent to CP property, which can pose a risk to safe railway operations (i.e., blasting, excavation next to Right-of-Way (ROW), etc.).

2.2 Interpretation & Application

- 2.2.1 Where legislation is referred to in these Minimum Safety Requirements, it shall include all amendments and replacements thereto as promulgated from time to time.
- 2.2.2 Where standards, such as those of the Canadian Standards Association (CSA), is referred to in these Minimum Safety Requirements, they shall include all amendments and replacements thereof from time to time.
- 2.2.3 Where there is any ambiguity, inconsistencies, or omissions between or among any agreements with CP, expressed or implied; any Applicable Legislations; any applicable CP policies and practices; and any applicable industrial standards and practices, Contractor and Contractor Personnel shall adhere to that which is most stringent and current.

3 Contractor Compliance & Responsibilities

3.1 General Compliance

- 3.1.1 Contractor shall be fully and solely responsible for ensuring the safety and health of Contractor Personnel and for ensuring that its Work and other activities do not compromise the health and safety of CP Personnel or any other party, the protection of the environment, the protection of CP's property and those of any other party, and do not interfere with the safety of CP's railway operations.
- 3.1.2 Contractor shall comply with and shall ensure all of Contractor Personnel are trained and qualified to safely perform the Work and that they comply with all Applicable Legislation pertaining to the protection against fire, safety, health, and environmental hazards, and with any license, permits, authorizations issued by the respective authority.
- 3.1.3 Contractor shall comply with and shall ensure all of Contractor Personnel comply with all terms and conditions of all agreements, expressed or implied, between Contractor and CP, and all applicable CP policies and practices.
- 3.1.4 Subject to the requirements of CP's Access Control Procedures, the contractor shall provide CP eRailsafe training for each employee engaged in work on CP property. Where there is no agreement between CP and the Contractor, the Contractor is responsible for meeting the additional requirements outlines within CP's Access Control Procedures.
- 3.1.5 Contractor shall provide Contractor Personnel, at its own expense, all safety equipment required to protect against injuries during the performance of the Work and shall ensure that Contractor Personnel are knowledgeable of and utilize safe practices in performing the Work.
- 3.1.6 The Contractor shall have a copy of the following documents at the Work Site at all times, and shall produce them as and when requested by CP:
 - (a) These Minimum Safety Requirements for Contractors Working on CP Property;
 - (b) Licenses, Certifications, permits, training records or other documents required by Applicable Legislation or these Minimum Safety Requirements;
 - (c) Contractor's Site Safety Plan;
 - (d) Contractor's Emergency Information Sheet (see Attachment A); and
 - (e) Any additional documents required by Contract or by agreement with Manager-in-Charge.
- (f) Employee identification (eRailsafe badge – see 9.1.1).

3.2 Compliance Assurance

- 3.2.1 CP reserves the right to observe, inspect, test and audit Contractor and Contractor Personnel for compliance with all requirements herein, and to demand and receive all relevant records, documentation, and materials evidencing compliance, at any time, and from time-to-time.
- 3.2.2 Failure of the Contractor or Contractor Personnel to comply with any applicable provisions herein may be considered a material breach, and in addition to all other remedies available, CP may without prejudice:
 - (a) take over control of that Work or activity;
 - (b) order the Work to stop; and/or
 - (c) order Contractor Personnel to leave CP Property.
- 3.2.3 Upon the earlier of the completion of the Work, the expiration of the applicable agreement, or the request of a Manager-in-Charge, Contractor and Contractor Personnel shall return all identification, badges, access cards, and decals, issued or provided by CP to the Manager-in-Charge.

4 Site Safety Plan

4.1 General Requirements

- 4.1.1 Prior to starting any Work on CP Property, the Contractor must have a written Site Safety Plan that identifies:
 - (a) All applicable legislation, rules, policies and work practices in relation to the Work being performed;
 - (b) Specific hazards that are associated with the Work being performed on CP property for CP, and Work being performed not for CP:
 - For example:
 - (i) Construction, maintenance or inspections of buildings;
 - (ii) Working on or adjacent to railroad tracks;
 - (iii) Maintenance or inspection of railroad tracks, crossings or signal systems;
 - (iv) Maintenance, reconstruction or construction of railway crossings, crossing approaches, grade separations, passenger facilities, passenger platforms, utility crossings or any other work which may affect the safe movement of trains;
 - (v) Operating Railroad Equipment on CP tracks; or
 - (vi) When/where Contractor Personnel work directly with or in proximity (time or space) to CP Personnel; and
 - (c) Methods of verifying compliance.
- 4.1.2 The Contractor will provide Manager-in-Charge with a copy of this Safety Management Plan on reasonable request.
- 4.1.3 The Contractor must be able to demonstrate an awareness of applicable legislation, rules, policies and work practices in relation to the work being performed.

5 Safety Training

5.1 Minimum Training & Qualifications

- 5.1.1 At its sole cost and expense, Contractor shall ensure that all Contractor Personnel be fully trained and qualified for the Work they will be performing. Contractors and Contractor Personnel shall meet, or exceed, all applicable legislation requirements relating to training and qualification.
- 5.1.2 Additionally, Contractor Personnel training and qualification shall meet or exceed all applicable industry standards.

5.2 Proof of Training & Qualification

- 5.2.1 Contractor Personnel shall at all times have proof of such training and qualifications and shall produce them as and when requested by the Manager-in-Charge.
- 5.2.2 CP reserves the right to inspect qualification certificates, licenses, training records and/or Work-history records for any Contractor Personnel, and, or to be provided with copies thereof, on reasonable request. In addition, CP reserves the right to perform eTests on contractor employees, and request discipline for non-conformance.

6 Safety Orientation

6.1 General Requirements

- 6.1.1 Prior to beginning Work, all Contractor Personnel shall participate in a CP authorized safety orientation, including on-site orientation presented by the Manager-in-charge or designate.
- 6.1.2 Any time the scope of Work, location, condition or supervision changes, Contractor Personnel may be required to attend additional safety orientation sessions.
- 6.1.3 After successful completion of such safety orientation, Contractors must be able to produce company identification or an eRailsafe photo identification badge authorizing access to CP property unescorted for the purposes of conducting work. Managers have the ability to enter the tracking code into CM (Compliance management). Third parties who hire subcontractors must ensure required compliance while on CP property. The eRailsafe identification card shall be worn or be made visible at all times, or produced upon request and cannot be transferred under any circumstances.

7 Job Safety Briefing

- 7.1.1 Contractor Personnel shall attend all Job Safety Briefings as and when conducted. Contractor Personnel shall be solely and fully responsible for understanding the content of the Job Safety Briefing, and at a minimum shall:
 - (a) have an understanding of the scope of Work to be performed and an appreciation of the nature of the location, environment, and conditions where such Work is to be performed;
 - (b) be aware of specific or unusual hazardous condition, existing or potential and the control measures required to protect against, control, mitigate, or where possible, avoid said hazard; and
 - (c) Have emergency response plan/evacuation procedures.

- 7.1.2 Where Contractor Personnel are working directly with or in proximity (time or space) to CP Personnel, job briefings must include both CP Personnel and Contractor Personnel, and any other affected third parties. The Job Safety Briefing shall identify nature and extent of the interaction between the Work being performed by Contractor Personnel, and those performed by CP Personnel or other third parties. Contractor Personnel shall inform CP Personnel, and any other third parties of known or potential unsafe conditions and hazards that may be created by, resulting from, or inherent in their Work and the corresponding preventative, mitigation, and/or control measures at all job safety briefings prior to commencing Work, or as soon as Contractor Personnel becomes aware of such conditions.
- 7.1.3 In all situations, all Contractor Personnel are expected to:
- (a) continually identify hazards and assess risk of hazards and to continually and clearly communicate all hazards to the Manager-in-Charge and to all other parties that may be affected at job briefings, and at any other time as and when appropriate or necessary;
 - (b) take actions that are within their assigned responsibility to eliminate or control hazards and risks; and
 - (c) immediately notify their supervisor or the Manager-in-charge of hazards that pose unacceptable risk that they are unable to eliminate or control.
- 7.1.4. Where Contractor Personnel are unable to eliminate or control a hazard, Contractor Personnel shall take interim measures to protect people, property, equipment and the environment until the hazard can be properly assessed and appropriate corrective actions taken.

8 Applicable Legislation

8.1 General Requirements

- 8.1.1 Contractor and Contractor Personnel shall be solely responsible for identifying and complying with all Applicable Legislation. Contractors and Contractor Personnel providing Work to CP are likewise required to comply with all Applicable Provincial and Federal Legislations. At a minimum, Contractor and Contractor Personnel shall comply with the federal legislations set out below which list is intended solely for general guidance, and not as a comprehensive list of all applicable legislation.
- 8.1.2 Additionally, the Railway Association of Canada (RAC) is an industry association which can provide support and guidance on matters related to railway safety and the transportation of dangerous goods.

8.2 Transportation of Dangerous Goods

- 8.2.1 When Work involves the handling or transportation of dangerous goods, that Work must comply with the federal *Transportation of Dangerous Goods Act*, (TDG). Contractor shall be solely responsible for ensuring that all Contractor Personnel who handles, offers for transport and/or transports dangerous goods by any transportation mode be trained and holds a valid training certificate or is working under the direct supervision of someone who is trained and holds a valid training certificate. The training must be based on the Work that the person is expected to perform and the DG that the person is expected to handle, offer for transport or transport.
- 8.2.2 Contractors shall be solely responsible for ensuring that Contractor Personnel who handles, offers for transport and/or transports dangerous goods by any transportation mode are trained and hold a valid training certificate or is working under the direct supervision of someone who is trained and holds a valid training certificate. That training must be based on the Work that the person is expected to perform and the dangerous goods that the person is expected to handle, offer for transport or transport.

- 8.2.3 Transport Canada enables the Transportation of Dangerous Goods Act to publish Transportation of Dangerous Goods Regulation. The TDG Regulations divide dangerous goods into 9 classes according to the type of hazard they present

8.3 Canada Labour Code

- 8.3.1 Where Work is being performed that may create a risk to the health and safety of CP Personnel, Contractor Personnel must comply with Part II of the Canada Labour Code.
- 8.3.2 Additionally, Contractor and Contractor Personnel shall comply with all applicable provisions of the Occupational Health and Safety Regulations (COHS) which are intended to prevent accidents and injuries to employees working for federally regulated companies. Compliance with these regulations may extend to Contractors, depending on the type of Work being done and their proximity to CP Personnel (i.e. Co-mingled Work). Alternatively, provincial occupational health & safety regulations will govern Contractors.

8.4 Railway Safety Act

The *Railway Safety Act* (RSA) governs all federally certified railways in Canada and some provincial railways through various agreements with Transport Canada. The RSA addresses all

- 8.4.1 matters relating to the construction, alteration, operation, inspection and maintenance of railway works and railway equipment, and contains training and qualification requirements for certain types of Work. When applicable, Contractor and Contractor Personnel shall perform Work in accordance with the RSA, as if directly bound by it.

8.5 Environmental Protection Act

- 8.5.1 Where Work is being performed that may impact the environment, that Work must comply with all applicable federal and provincial environmental acts and regulations. Some examples of applicable legislations includes the Canadian Environmental Protection Act; Fisheries Act, Navigable Waters Protection Act; Species at Risk Act; Migratory Birds Convention Act; and all corresponding Regulations. Provincial requirements are normally set out in a general Environmental Protection Act which is complemented by numerous regulations addressing more specific areas of concern. Canadian Environmental Protection Act <http://laws-lois.justice.gc.ca/eng/acts/C-15.31/>

9 Security Access to CP Property

9.1 Access to CP Property

- 9.1.1 All Contractor Personnel must have the following identification in their possession at all times while on CP Property, and present them for review to any Manager-in-Charge, other CP managers and employees, Police Officer, security guard, or regulatory officer upon request:
- (a) photo identification (e.g. driver's license);
 - (b) proof of employment document or card;
 - (c) identification card, or other proof of safety orientation issued by CP;
 - (d) access pass, issued and signed by a CP manager, where Work requires Contractor Personnel to ride in any locomotive or other non-passenger rolling stock;
 - (e) security identification card, where required by CP; and
 - (f) building access pass, where required by CP or by a third party having control of the premises.
 - (g) Valid eRailsafe card
- 9.1.2 Where any Work requires Contractor Personnel to ride in locomotive or other non-passenger railroad equipment, the Contractor must also possess a CP ACCESS PASS for riding non-passenger railroad equipment, signed by the responsible operating manager.

Such a signed pass must be presented to the train crew or operator when boarding the equipment. Failure to possess such a pass will result in the equipment not moving, removal from the equipment, and/or the filing of trespasser charges.

9.2 Security Awareness

- 9.2.1 The Contractor shall conduct such background check as is necessary to ensure that Contractor Personnel do not pose a security risk to CP, such security risk includes the risk of the commission of terrorist activities, sabotage, vandalism, theft, and violence. CP reserves the right, at all times, to require that Contractor undertake certain security training and/or perform background checks of Contractor Personnel, prior to allowing such Contractor Personnel to enter onto CP Property.
- 9.2.2 On request CP can make available a copy of CP's Railway Security Awareness program for use by Contractor Personnel.

9.3 Firearms & Explosives

- 9.3.1 Firearms (loaded or empty) are not permitted on CP Property, except for Police officers and other designated government officials when authorized to do so.
- 9.3.2 No explosives will be permitted on CP Property without written approval by the Manager-in-Charge.

9.4 Reporting

- 9.4.1 Contractor Personnel must report any security concern, security incident, criminal activity (known or suspected), suspicious happenings and/or suspicious persons on CP Property to the Manager-in-Charge or to CP Police Services in accordance with Section 18.

10 Personal Conduct

10.1 Drug and Alcohol Standards

- 10.1.1 The Contractor and Contractor Personnel shall comply with CP's Alcohol and Drug Policy and Procedure while under contract to perform services for CP. Any contravention of these requirements will be considered a breach of contract.
- 10.1.2 The Contractor and Contractor Personnel shall report fit to work and remain fit for work as scheduled and when on scheduled call and be able to perform their duties free from the negative effects, including the after effects of alcohol, legal recreational cannabis, illicit or illegal drugs, other mood altering substances or medications including medical marijuana, any of which can have the potential to adversely affect the way a person thinks, feels or acts.
- 10.1.3 It is prohibited to be in control of a CP vehicle or moving equipment (either on or off duty), while under the influence of alcohol and/or drugs, including the after effects of such use.
- 10.1.4 All Contractors must comply with these requirements when scheduled on call and/or subject to duty.
- 10.1.5 If there are grounds to believe a contract worker is unfit for work, the worker will be removed from CP property in a safe manner under the care of another adult person, to a safe place for example, to their local place of residence, or provided the opportunity to arrange the same or an escort is arranged to the nearest appropriate medical facility if there is a medical problem that requires immediate attention. The primary contractor is required to ensure appropriate investigation, follow up and a fitness for duty assessment is conducted to ensure the contractor

is fit to return to work prior to any return to CP property or work. CP reserves the right not to allow a contractor back on CP property or to CP work.

- 10.1.6 In the event a contract worker is directly involved in a significant work related incident as described by CP's Alcohol and Drug Policy and Procedure, the worker may be subject to Post Incident Testing under the CP Testing Program. They may be removed from CP premises pending the results of the investigation, including receipt of alcohol and drug testing results. Depending on the test results and the outcome of the investigation, a fitness for work medical assessment may also be required through the primary contractor before the Contractor can return to CP premises or work. CP reserves the right not to allow a contractor back on CP property or to CP work.
- 10.1.7 CP reserves the right to request drug and alcohol testing for Contractor Personnel performing Safety Critical and Safety Sensitive duties under CP's workplace testing program requirements as and where permitted by law.

10.2 Inappropriate Behavior

- 10.2.1 CP is committed to maintaining a Work environment that supports the dignity of all individuals. No person working at CP may be subjected to any form of discrimination or harassment, including sexual harassment.
- 10.2.2 Acts or threats of violence are unacceptable at all times on CP Property. Uttering of threats or committing acts of violence will result in the removal of the responsible Contractor Personnel from CP Property, termination of the Contract, and/or criminal charges.
- 10.2.3 Horseplay, practical jokes, fighting or any other activity that may create a safety hazard will not be tolerated.
- 10.2.4 Inappropriate language directed at any CP employee or agent of CP, will not be tolerated.

10.3 Electronic Entertainment and Communication Devices

- 10.3.1 The use of personal entertainment devices, including portable audio and video devices such as compact DVD, CD, video game players, tablets, SMART watches and MP3 players, is prohibited:
 - (a) while working on CP Property;
 - (b) while transporting CP personnel, whether on and off CP property; and
 - (c) while operating any CP highway vehicles, Railroad Equipment or Mobile Equipment, when on and off CP property
- 10.3.2 The use electronic communication devices, including cell phones, Smart Phones, Blackberries, walkie-talkies, PDAs, iPads, tablets, GPS navigation units, portable computers and similar devices, is prohibited:
 - (a) while operating a highway vehicle, unless it is stopped and parked in a safe location;
 - (b) while operating or assisting in the operation of any railroad equipment or mobile equipment;
 - (c) while operating power tools, equipment or machinery;
 - (d) when Foul of Track for any reason;
 - (e) whenever use of such a device creates an unsafe condition.

- 10.3.3 Notwithstanding the foregoing, company cell phones, radios, walkie-talkies, GPS units, iPads, tablets, and other communication devices may be used solely for the conduct of business when authorized by the CP Manager-in-Charge and where not prohibited by state or municipal legislation. Any electronic communication device may be used when it is necessary to communicate an emergency condition.

10.4 Smoking

- 10.4.1 Smoking, including the use of e-cigarettes is prohibited on all CP Property, and in or on all highway vehicles, Railroad Equipment, and Mobile Equipment, except for CP designated outdoor smoking areas.

11 Personal Protection

11.1 Work Clothing

- 11.1.1 The Contractor must ensure that Contractor Personnel wear clothing that meets Applicable Legislation and is suitable to perform the Work safely. This includes at minimum ankle length pants and waist length shirts with a minimum quarter-length sleeves at all times. Clothing must not interfere with vision, hearing or use of hands and feet.

11.2 Personal Protective Equipment (PPE)

- 11.2.1 The Contractor shall ensure that Contractor Personnel wear personal protective equipment required by Applicable Legislation, regulations, codes and industry standards as necessary to protect against personal injuries while on Railway property. All personal protective equipment shall be approved by the Canadian Standards Associations (CSA) or by the American National Standards Institute (ANSI), and shall be in good condition and be properly fitted.
- 11.2.2 The following mandatory personal protective equipment ("PPE") shall be supplied by the Contractor at its own expense, and shall be worn at all times by Contractor Personnel while on CP Property:
- (a) safety hard hat, meeting CSA standard Z94.1 or ANSI 89.1 standards;
 - (b) safety boots with protective toe caps and soles, meeting CSA standard, Z195 (Green Triangle - Grade 1);
 - (c) safety glasses with permanently attached side shields, meeting CSA standard Z94.3;
 - (d) high visibility fluorescent outerwear with retro reflective striping (meeting CSA standard Z96, class 2 level 2), with such high visibility fluorescent outerwear not covered by other clothing or equipment, except where necessary for safety reasons such as where fall protection or pole climbing equipment is being used; and
 - (e) any other PPE as required by Applicable Legislation, CSA standard, or otherwise required to protect Contractor Personnel from injuries.

11.2.3 In addition to the foregoing minimum requirements, the following table contains further recommendations in relation to specific types of PPE:

Type of Protection	Additional Recommendations
Hard Hats	Have hi-visibility characteristics which are not obscured by markings or decals
Safety Eye & Face Protection	Tinted safety eyewear must meet Canadian standards for red signal recognition if operating railway equipment (safety eyewear meeting this requirement is available from Acklands-Grainger; ask for CP approved tinted safety eyewear) Transition lenses are discouraged and should be worn with caution when working in changing light conditions Personal sunglasses are discouraged and must not be worn when operating railway equipment Wear mesh face shields over top safety glasses when using any striking tool while performing on track maintenance work (e.g. spiking, snapping on/off anchors, etc.). If working alongside CP employees you will be required to comply with this practice.
Safety Footwear	Have defined heels Be laced and tied securely for ankle support When snow and ice conditions are present wear anti-slip winter footwear
High-Visibility Apparel	Lime-green is recommended when working on, or near tracks, or when performing Co-mingled Work

11.2.3 Contractor and Contractor Personnel shall be solely and fully responsible for assessing the risks related to the Work and determining whether additional PPE may be required such as:

- (a) Nomex or Proban fire-retardant protective gear when performing certain TDG Work and or handling certain Hazardous Materials or performing specialized Work.
- (b) hearing protection when working in any area where noise exposure levels:
 - (i) are consistently greater than 84 dBA ;
 - (ii) exceed 115 dBA at any time; and
 - (iii) any other Work areas where posted, or so notified by CP management.
- (c) respiratory protection where Contractor Personnel may be exposed to occupational dusts/particulates, fumes, mists, gases and vapors, in which case, in which case Contractors must have a written Respiratory Protection Program that meets or exceeds Applicable Legislation;
- (d) additional eye and face protection meeting CSA standard Z94.3 (i.e. face shields, impact/splash goggles, welding/cutting goggles and welding helmets); and
- (e) fall protection systems and equipment meeting appropriate CSA standards as required by Applicable Legislation and appropriate for the related fall hazards.
- (f) fall protection when working on an unguarded surface over water, where the water is deeper than 1.2 meters (4 feet), or where there is a hazard of drowning due to terrain, winter conditions, water velocity or current; contractors must use a fall protection system or a personal floatation device (PFD) meeting approved standards.

12 Railroad Track Protection

Contractor's Responsibilities for the Protection of Railroad Traffic and Property

- 12.1.1 Where the Work Site is in close proximity to, or is located on, above, or below railroad tracks, special attention, care and precautions shall be taken to ensure the safety of all Contractor Personnel, CP Personnel, all other third parties and to protect CP's property and railroad operations.
- 12.1.2 Contractor shall ensure that Contractor Personnel is made aware of all unique and inherent hazards in working near, on, above or below railroad tracks and shall ensure that all Contractor Personnel are fully trained and equipped to work safely.
- 12.1.3 Contractor Personnel shall at all times remain alert to the movement of trains, rolling stock and other Railway equipment.
- 12.1.4 No temporary structure, materials, or equipment shall be permitted closer than 3.66 meters (12 feet) to the nearest rail of any track without prior approval in writing of the Manager-In-Charge.
- 12.1.5 Contractor Personnel shall be especially alert in yards and terminal areas as
 - (a) Railway equipment that appears to be stationary may be moving;
 - (b) the rate of movement of Railway equipment may be faster than it appears;
 - (c) Railway equipment change tracks often; and
 - (d) movements may be occurring simultaneously on adjacent tracks
- 12.1.6 The Contractor shall, at all times, conduct its operations in a wholly responsible manner to avoid damage to CP's tracks or property.

12.2 15 m (50 ft.) Clearance Requirement

- 12.2.1 All work shall be performed as far away from railway tracks as possible.
- 12.2.2 Unless authorized by CP, Contractor Personnel, equipment, and vehicles are not permitted within 15 m (50 ft.) of the closest track centerline.
- 12.2.3 In the event work must be carried out within 15 m (50 ft.) of the closet track centerline, written authorization must be obtained from the Manager-in-Charge, and Contractor Personnel must still remain at the maximum practicable distance from all railway tracks at all times.
- 12.2.4 When crossing tracks, Contractor Personnel shall ensure a minimum of 15 m (50 ft.) separation between standing Railway equipment, stay at least 15 feet away from the end of the nearest equipment, and look both ways before crossing tracks, and if clear, walk at a right angle to the tracks. The 15 meters (50 feet) distance must take in account the swing radius of work equipment, vertical grade differences, and overhead work distances.
- 12.2.5 No work activities or processes are allowed within 15 m (50 feet) of the track while trains are passing through the work site unless specifically authorized.

12.3 Flagging Protection

- 12.3.1 When the Work requires Contractor Personnel to be within 15 m (50 ft.) of any railway tracks, Contractor or Contractor Personnel shall notify and obtain the written approval of the Manager-in-Charge in advance of the intended start date, and when approved, shall only perform Work strictly in accordance with all terms and conditions of that approval.
- 12.3.2 Unless otherwise indicated by the Manager-in-Charge, proper protection against the movement of trains, rolling stock and other Railway equipment shall be deemed required at all times

whenever Work or Contractor Personnel must be within 50 feet (approximately 15 metres) of the closet track centerline. Protection may be provided only by a qualified CP employee through use of a flag person, Canadian Railway Operating Rules (CROR) Track Occupancy Protection (TOP), mechanical blue flag protection or other protection methods designated by the Manager-in-Charge.

- 12.3.3 Where CP determines that flagging is required, then Work must be strictly conducted under the direction of a CP flag person or such other person designated by the Manager-in-Charge.
- 12.3.4 Contractor Personnel shall ensure that there is clear communication at all times between Contractor Personnel and any CP flag person. Contractor Personnel shall ensure that they are aware of:
 - (a) flagging distance limits;
 - (b) time limits; and
 - (c) any adjacent tracks where movement of Railway equipment may still occur.
- 12.3.5 Contractor Personnel shall not assume that a train movement is being stopped or cleared unless clear communication is received directly from the CP flag person.
- 12.3.6 A job safety briefing between the CP flag person and all Contractor Personnel must occur before beginning any Work on or Foul of Track, or within CP's ROW depending on the nature of the site.
- 12.3.7 Blue flag protection is used to indicate that CP or Contractor Personnel are working on, under or between Railway equipment and movement of trains or other Railway equipment is prohibited. Blue flags must not be tampered with or obstructed. Blue flags can only be removed by the person or group of persons who originally applied it. Application, use, and removal of blue flags, when appropriate, may only be done under the authorization and guidance of the Manager-in-Charge.
- 12.3.8 Red flag protection is used to indicate that CP or Contractor Personnel are working on or Foul of Track, or the track is out of service and movement of trains or other Railway equipment is prohibited. Red flags must not be tampered with or obstructed. Application, use, and removal of red flags, when appropriate, may only be done under the authorization and guidance of the Manager-in-Charge. Similarly, as with all other flags; blue, yellow and green flags.

12.4 Working on or near Tracks

- 12.4.1 When authorized to perform Work Foul of Track or otherwise be near railway tracks, Contractor Personnel shall ensure that Contractor Personnel, equipment, and vehicles are kept as far away from railway tracks as practicable, and shall at all times:
 - (a) be alert to train movements and shall expect the movement of trains, engines, cars, or other mobile Railway equipment at any time, on any track, and in any direction, even if they appear to be stationary or in storage;
 - (b) not rely on others to protect them from train movement;
 - (c) stay at least 15 feet (approximately 5 meters) away from the ends of stationary railway equipment when crossing the track;
 - (d) ensure a minimum of 50 feet (approximately 15 meters) separation prior to crossing between railway equipment;
 - (e) look both ways before crossing tracks, and if clear, walk at a right angle to them.

- (f) never climb on, under or between railway equipment;
- (g) be aware of the location of structures or obstructions where track clearances are close;
- (h) not stand on the track in front of an approaching engine, car or other equipment;
- (i) when possible, stand at least 20 feet back from the track(s) when there is a passing movement of trains, engines, cars, or other mobile Railway equipment, to prevent injury from flying debris or loose rigging and shall observe the train as it passes and be prepared to take evasive action in the event of an emergency;
- (j) not stand on or between adjacent tracks in multiple track territory when a train is passing;
- (k) not walk, stand or sit on the rails, between rails or on the end of ties, unless absolutely necessary. As the rail surface can be extremely slippery, personnel must step over the rails when crossing tracks. Personnel shall also be aware railway ties can also be slippery and that railway ballast can shift while walking on top of it. Situational awareness and use of proper footwear is important;
- (l) not remain in a vehicle that is within 15.2 meters (50 feet) of a passing train unless specifically authorized, or where this is not possible, park the vehicle as far away from the tracks as possible and walk to as safe a distance whenever trains pass.
- (m) keep away from track switches as remotely operated switch points can move unexpectedly with enough force to crush ballast rock. Personnel shall stay away from any other railway devices they are unsure of. Personnel shall not disturb or foul the ballast at any time.
- (n) Third party work that has a potential to impact rail traffic must take into account machine swing radius, vertical grade differences, overhead work, etc to ensure it will not impact a passing train; work and equipment must maintain a distance of 15.2 meters (50 feet) of a passing train.
- (o) When exiting on track machinery as trains are passing; exit on the opposite side.
 - (a) use 3-point contact when getting on/off any vehicle, equipment or track unit;
 - (b) face the vehicle or equipment/track unit when getting on/off
 - (c) place handheld items onto equipment/track unit or seek help prior to getting on/off
 - (d) get on/off on the operators side when possible

12.5 Equipment on or near tracks

- 12.5.1 Contractor Personnel shall not be Foul of Track with any piece of equipment without a CP flag person or other authorized track protection;
- 12.5.2 Contractor Personnel shall not move equipment across the tracks except at established road crossings, or unless under the protection and authorization of a CP flag person and only if the Work Site has been properly prepared for such a move. Tracked equipment will require a CP flag person any time railroad tracks are crossed.
- 12.5.3 Contractor Personnel shall not move equipment across railroad bridges or through tunnels, except as expressly authorized and only under such conditions as stipulated by the Manager-in-Charge.
- 12.5.4 Contractor Personnel shall move equipment away from the tracks at least 50 feet, or where not possible, park the equipment as far away from the tracks as possible, and walk to a safe distance whenever trains pass.
- 12.5.5 Buckets, shovels, and loads on cranes must be lowered to the ground to rest, and cranes without a load must have their load line tightened or retracted to prevent movement, whenever there are passing trains.

12.6 Railway Signs, Signals, Flags and other Communication Infrastructure

- 12.6.1 Signs, signals and flags shall not be obstructed, removed, relocated, disabled or altered in any way without proper authorization and qualification.
- 12.6.2 Only qualified Contractor Personnel who are authorized by CP are permitted to operate switches, derails, electric track mechanisms, signal and communication systems or other track control appliances.
- 12.6.3 Railway pole lines carry electric power and should be treated as any other power lines.
- 12.6.4 The Contractor shall keep all Contractor Personnel informed of current weather conditions. Personnel shall stay alert for possible high water conditions, or flash floods. During severe weather conditions:
 - a) Personnel shall be prepared to take cover in the event of a tornado;
 - b) Personnel shall not work while lightning is occurring;
 - c) If storm conditions arise unexpectedly, Contractor Personnel shall ensure that equipment is in the clear of the tracks and secured before seeking cover. Contractor Personnel shall stay away from railroad tracks when visibility is poor, such as during fog or blizzard conditions.

Any Contractor personnel discovering a hazardous or potentially unsafe condition, which may affect the safe passage of railway traffic, must advise CP Police immediately by calling the CP Police Communications Centre – 1-800-716-9132

Excavation

- 12.7.1 Before starting excavation operations, the Contractor shall ascertain that there are no underground wires, fiber optic cables, pipelines or other utilities which could be damaged or, if present, that such installations are properly protected. Fiber optic cables are present on most segments of the right-of-way. Prior to commencing any excavation, the Contractor shall contact the proper authority to obtain the necessary permit and to locate and protect such cables or other underground utilities.
- 12.7.2 Excavations shall not be left unattended unless they are properly protected; and the Manager-in-Charge shall be notified.
- 12.7.3 Contractors MUST obtain and maintain utility locates in accordance with applicable law.

13 WHMIS

- 13.1.1 If at any time Contractor's Work involves the use, handling, storage, or disposal of Hazardous Materials ("Handling of Hazardous Materials"), Contractor Personnel must inform the Manager-in-Charge.
- 13.1.2 Contractors shall ensure that all Contractor Personnel are fully trained in the Handling of Hazardous Materials and that Contractor and Contractor Personnel are in full compliance with all Applicable Legislation, and as directed by the Manager-in-Charge.

- 13.1.3 Contractor Personnel shall have appropriate processes, systems and controls in place to prevent or otherwise mitigate potential environmental, health and safety risks associated with the Handling of Hazardous Materials.

13.2 Access to Safety Data Sheets (SDS)

- 13.2.1 Prior to beginning any Work that may expose CP Personnel to Hazardous Materials, Contractor or Contractor Personnel shall:
- (a) provide a copy of the respective Safety Data Sheet (SDS) to the Manager-in-Charge; and
 - (b) keep a copy of the SDS at the Work Site and shall such that it is readily available at all times.

13.3 Hazardous Material Incident or Spill

- 13.3.1 In the event of a hazardous material incident or spill, the Contractor must:
- (a) ensure that no Contractor or CP Personnel have or will be exposed;
 - (b) take all reasonable actions to contain the spill;
 - (c) respond in accordance with its emergency response plan; and
 - (d) notify CP immediately in accordance with Section 18.

14 Operation of Highway Vehicles

14.1 Highway Vehicles

- 14.1.1 The following requirements apply to all highway vehicles, when operated on CP Property; or used to transport CP Personnel.

14.2 Regulations and Inspection

- 14.2.1 Before using a highway vehicle, Contractor Personnel shall:
- (a) complete a pre-trip inspection;
 - (b) maintain an inspection log;
 - (c) ensure periodic inspections are completed at official testing locations as required;
 - (d) ensure the vehicle is maintained and in safe operating conditions at all times; and
 - (e) ensure the vehicle is in compliance with applicable motor vehicle regulations and license requirements.
- 14.2.2 Vehicle maintenance, inspection records and logs must be made available to the Manager-in-Charge on request.

14.3 Vehicle Operator Requirements

14.3.1 Operation of highway vehicles is restricted to those Contractor Personnel who are licensed, qualified and authorized to do so. Such Contractor Personnel shall be responsible for the safety of all passengers at all times. For greater certainty, such Contractor Personnel shall:

- (a) hold a valid license for the class of vehicle being operated, in accordance with applicable local, state and federal requirements, and
- (b) strictly comply with all posted traffic signs, signals, and all shall obey all Applicable Legislations; and
- (c) maintain the required driver log, and make the log available to the Manager-in-Charge on request, and
- (d) comply with the requirements on the use of electronic devices as set out in Section 10 above.

14.4 Driving on CP Property

14.4.1 In addition to the requirements set out above, while on CP Property, Contractor Personnel shall:

- (a) travel only on designated roadways unless otherwise instructed;
- (b) keep daytime running lights on (if so equipped);
- (c) not exceed 15 mph unless otherwise posted;
- (d) come to a full stop at all blind corners, rail and roadway crossings;
- (e) yield the right of way to all Mobile Equipment and other non-highway equipment or service vehicles;
- (f) not operate vehicles (or any internal combustion equipment) inside buildings or enclosed structures unless adequate ventilation is provided;
- (g) not park Foul of Track unless on-track protection is provided;
- (h) not leave vehicles running unnecessarily;
- (i) park only in pre-determined or designated areas;
- (j) always use the parking brake (or wheel chocks) when leaving an unoccupied vehicle running;
- (k) prior to operation of a vehicle the driver must conduct a walk around of the vehicle to identify any obstacles, clearance restrictions, or adjacent vehicles that may interfere with executing a safe movement.
- (l) where safe and practicable, pull vehicles through or back into marked parking spaces to avoid reverse collisions when exiting.
- (m) If a passenger is present, he exit the vehicle prior to a reverse movement to provide guidance and direction to the driver during the reverse movement and applies to commercial vehicles and vehicles with restricted rear views

14.4.2 All Contractor Personnel who will be operating a highway vehicle or Mobile Equipment in any CP intermodal facilities must complete a Driver Safety Orientation program prior to first entry, and from time-to-time thereafter as directed by the Manager-in-Charge.

14.5 Seat Belts

- 14.5.1 Seat belts must always be worn while operating or riding in any equipped vehicle unless Contractor Personnel is actively engaged in inspections requiring said Contractor Personnel to be free of such restraint, and then only when the vehicle is operating at less than 25 km/h.

14.6 Loads

- 14.6.1 Contractor Personnel shall ensure vehicles are loaded according to weight and dimensional requirements as authorized by state regulations and permits, and properly load and secure tools, material, equipment and freight to avoid shifting, falling, leaking or otherwise escaping from vehicles during operation.

14.7 Riding in CP Vehicles

- 14.7.1 Contractor Personnel are prohibited from operating or riding in any CP vehicles unless authorized to do so, or in case of emergency.

15 Tools, Equipment and Machinery

15.1 General Safety Requirements Respecting All Tools, Equipment and Machinery

- 15.1.1 Contractor Personnel shall ensure that all tools, equipment, and machinery used be:
- (a) in compliance with all applicable legislation;
 - (b) in good working order, properly serviced and maintained;
 - (c) safe for their proposed use and used only for purposes specified by the manufacturer;
 - (d) operated and maintained only by persons properly trained and qualified for that duty;
 - (e) seat belts (if present on equipment) must be worn while operating or riding any such equipped mobile equipment;
 - (f) if mobile, equipped with appropriate safety devices (e.g. lights, horns, back-up alarms, safety beacons), and prevented from moving through use of the hand brake, wheel blocking, wheel chocking and/or a derail where applicable.
- 15.1.2 The Contractor shall provide adequate lighting when performing work between sunset and sunrise.
- 15.1.3 Use of CP tools, equipment and machinery by Contractor Personnel is prohibited unless specifically authorized by local CP management.

15.2 Hazardous Energy Control- Lockout/Tagout

- 15.2.1 Contractor Personnel shall employ such hazardous energy lockout/tagout procedures as required to eliminate the accidental or unexpected start-up, energizing, or release of stored (residual) energy during maintenance, repair and/or servicing activities.
- 15.2.2 All tools, equipment and machinery must be made safe and isolated from all energy sources rendering the machine, equipment, or process inoperative prior to performing maintenance, repair or servicing related tasks.
- 15.2.3 No Contractor Personnel can remove any CP applied lock or tag, including bad-order tag.
- 15.2.4 Notwithstanding the foregoing, if Contractor's Work may create an energy hazard to any CP Personnel, then all affected parties must follow the requirements set forth in CP's Lockout – Hazardous Energy Control Policy and Code of Practice.
- 15.2.5 If CP Personnel and Contractors are jointly performing maintenance, repair or servicing activities on the same machine, equipment or using the same energy source, then they must apply a multi-

lock hasp and individual locks and tags (as per CP's Lockout – Hazardous Energy Control Policy and Code of Practice).

15.3 Electrical Safety Requirements

15.3.1 In addition to the hazardous energy control lockout requirements above, all electrical Work must comply with Applicable Legislation, CSA and National Fire Protection Association (NFPA) requirements.

15.3.2 Contractor Personnel Working on electrical systems must:

- (a) if in proximity to CP Personnel, inform them of:
 - (i) existing or potential electrical hazards;
 - (ii) any specific additional personal protective equipment that may be required;
 - (iii) applicable safe Work practices;
 - (iv) applicable emergency and evacuation procedures; and
 - (v) apply lock out procedures as per section above on Hazardous Energy Control-Lockout
- (b) have practices, procedures and training that comply with:
 - (i) applicable sections of CSA-Z462 Workplace Electrical Safety Standards;
 - (ii) Canadian Electrical Code Parts 1 and 2; and
 - (iii) any other Applicable Legislation
- (c) not operate or allow cranes or other mobile equipment to approach closer to any live electrical power line than is permitted by CSA Z150 Standards for mobile cranes.

15.4 Lifting Devices

15.4.1 All lifting devices, including but not limited to jacks, cranes, cables, slings, chains and hooks shall:

- (a) meet Applicable Legislation governing design, inspection, maintenance and operation;
- (b) be safety certified and labeled or tagged with load capacity limits where required;
- (c) have sufficient capacity for the planned lift;
- (d) have sufficient footing or support area to properly distribute the load during a lift.

15.5 Welding and Torch Cutting

15.5.1 When welding or torch cutting, Contractor Personnel shall:

- (a) be properly trained and qualified;
- (b) ensure that all closed containers have been properly purged;
- (c) direct flame or sparks away from other Workers, equipment and flammable material;
- (d) have a fire extinguisher readily available;
- (e) keep compressed gas and oxygen cylinders stored in a secure, vertical position, with regulators removed and caps applied, labeled properly and located in vented cabinets or other designated locations.

15.6 Explosive Actuated Tools

- 15.6.1 Only Contractor Personnel who are qualified and licensed in accordance with Applicable Legislation, and authorized by CP, may use explosives or explosive actuated tools.

15.7 Unattended Equipment or Machinery

- 15.7.1 Tools, Equipment and Machinery shall not be left unattended at any time and shall not be stored on CP Property, unless expressly permitted pursuant to a written agreement with CP or by the Manager-in-Charge in writing, and where so permitted, Contractor shall ensure that:
- (a) storage shall be restricted to the designated area, or as otherwise specified by CP.
 - (b) all such tools, equipment and machinery shall be secured in a safe position well clear of all tracks to prevent accidental contact with trains and moving equipment and to not restrict train crew sightlines;
 - (c) as much as possible, tools, equipment and machinery shall be stored in locations out of public view.
 - (d) Machines must be secured in accordance with on-track machinery rules.

16 Emergency Response

16.1 Emergency Response Plan

- 16.1.1 The Contractor must maintain a current emergency response plan and make it available to CP on request. Emergency response plans must include at a minimum:
- (a) contractor reporting procedures in the event of an incident or spill;
 - (b) emergency response contacts and phone numbers, including phone numbers for CP incident reporting and local CP managers (See Attachment A); and
 - (c) containment measures to be taken in the event of an incident or spill.

16.2 Initial Response

- 16.2.1 Initial response to any emergency condition must follow the following sequence:
- (a) Protect the safety and security of all individuals and communities
 - (b) Provide environmental protection and mitigation
 - (c) Conduct incident investigation and evidence preservation
 - (d) Restore railroad operations

16.3 First Aid

- 16.3.1 Contractor Personnel must have sufficient First Aid qualified personnel and the required First Aid kit and any other required First Aid equipment at the Work Site, suitable for the crew size, nature of Work being performed and location, all of which shall, at a minimum, comply with Part II of the Canada Labour Code.

16.4 Fire Protection

16.4.1 The Contractor must have appropriate fire extinguishers, suitable in type, size and quantity having regards to the nature of Work and Applicable Legislation, readily available at all times on:

- (a) the Work Site; and
- (b) all Contractor equipment, machinery and highway vehicles.

16.4.2 Contractor Personnel shall ensure that all necessary precautions are taken to prevent fires, including the following:

- (a) storing flammable material (e.g., paper, rubbish, sawdust, oily or greasy rags, etc.) in proper containers;
- (b) storing and transporting fuel, gasoline or other flammable liquids in approved containers. Use of unapproved containers is prohibited;
- (c) proper disposal of flammable material daily;
- (d) preventing static electricity when dispensing or transferring flammable liquids by using proper grounding and bonding techniques;
- (e) avoid using cutting or welding torches during the last one-half hour of shifts, if possible;
- (f) taking special precautions with fusees, including:
 - (i) store and transport in approved containers;
 - (ii) do not allow fusees to come in contact with any combustible material, including railroad ties or wooden timbers; and
 - (iii) fully extinguish fusees before leaving the location where used;
- (g) promptly advise CP management of any fire on CP Property; and
- (h) fully extinguish or provide protection for any fire prior to leaving the Work Site.

16.4.3 Contractors Working on the CP right-of-way where a high risk of fire exists (e.g., during rail grinding, rail welding) must have:

- (a) appropriate fire prevention and suppression plans (including emergency numbers for CP, local firefighters and fire control districts); and
- (b) additional firefighting equipment and trained Contractor Personnel on site, as required by Applicable Legislation or the Manage In Charge.

17 Confined Space

17.1 Confined Space

- (a) Qualified and authorized Contractor Personnel must follow all required confined space entry procedures in accordance with applicable legislation and standards prior to entering into a confined space.
- (b) Rescue procedures and equipment must readily available when required to enter a confined space.

18 Reportable Accidents, Incidents and Injuries

18.1 Reportable Injuries

18.1.1 Reportable injuries include any personal injury to:

- (a) Contractor Personnel;
- (b) any CP Personnel; or
- (c) to any third party on CP Property.

18.2 Reportable Accidents

18.2.1 Reportable accidents include any occurrence that results in:

- (a) damage to railroad tracks, right of way, buildings or other CP Property;
- (b) damage to railroad equipment;
- (c) damage to CP highway vehicles;
- (d) release or potential for release of hazardous material;
- (e) damage to a container, spill or loss of transported commodities; and
- (f) any threat to the environment.

18.3 Reportable Incidents

18.3.1 Reportable incidents include:

- (a) unintended movement of railroad equipment;
- (b) failure to provide track protection for Workers when required;
- (c) movement of railroad equipment beyond authorized limits;
- (d) operation of railroad equipment by an unqualified person;
- (e) unauthorized handling of a track switch;
- (f) damage, vandalism or tampering with any railroad signals, structures or railroad safety device;
- (g) seepage, leakage, spills of, or other contamination from, Hazardous Materials;
- (h) actual, threaten or suspected security related incidents;
- (i) slides, washouts or other on-track obstructions; or
- (j) any occurrence that may disrupt the movement of trains or affect safe rail operations.

19 Reporting

19.1 Emergency Reporting

19.1.1 In the case of an emergency, Contractor Personnel must call:

- (a) 911, where this emergency response system exists, or
- (b) the local police, fire or emergency department in all cases; and
- (c) **CP Police Services Communication Center- 1-800-716-9132.**

19.2 Accident, Incident, Injury Reporting

19.2.1 When an accident, incident or injury occurs on CP Property, the Contractor must:

- (a) immediately report it to the
 - (i) **CP Police Services Communication Center 1-800-716-9132;** and
 - (ii) **CP Manager-in-Charge**
- (b) follow all instructions given to protect the scene.

19.2.2 CP does not report Contractor Personal Injuries to WCB. Such WCB reporting remains the Contractor's responsibility.

19.3 Information to Report

19.3.1 Information required with the initial report includes:

- (a) type of incident;
- (b) date and time of occurrence;
- (c) location (mileage, subdivision, building, yard or other physical description);
- (d) identity of person(s) involved or injured (company & name);
- (e) description of any hazardous materials involved;
- (f) type & unit number of any railroad equipment or vehicle involved;
- (g) description of occurrence, damage and/or injury, and cause if known;
- (h) description of any emergency response;
- (i) name and contact information of person making the report; and
- (j) any such other information that CP may require.

19.4 Environmental Incidents and Spills

19.4.1 In the event of an environmental incident spill, leak or potential release of a hazardous material, the Contractor must immediately:

- (a) immediately report the incident to:
 - (i) CP Police Services Communication Center 1-800-716-9132;
 - (ii) CP Manager-in-Charge,
 - (iii) Designated CP contact as per the governing agreement relating to the Work; and
 - (iv) Regulatory authorities that require notification related to the nature of the incident.
- (b) follow all instructions given to protect the scene.

- (c) take all reasonable actions to contain the spill;
- (d) respond in accordance with its emergency response plan; and
- (e) provide CP with the following information;
 - (i) description of location and surrounding area, including any sensitive environmental areas nearby (e.g., rivers, parks, sewers);
 - (ii) type and quantity of substance released;
 - (iii) cause of spill or deposit, if known; and
 - (iv) details of any immediate action taken or action proposed to be taken to contain spill and recover substance.
 - (v) details of any external or regulatory agency reporting completed as a result of the incident.

19.5 Additional Contractor Requirements

19.5.1 Contractor and Contractor Personnel must:

- (a) ensure an appropriate emergency response is initiated;
- (b) protect any evidence until released by the CP Manager-in-Charge;
- (c) cooperate fully with any CP investigation;
- (d) cooperate fully with any investigating government agency; and
- (e) notify CP if information is requested by any investigating government agency.

20 Contractor & Contractor Personnel Acknowledgement

Acknowledgement

- 20.1.1 Contractor and Contractor Personnel who Work on CP Property shall be deemed to have read and understood the content of these Minimum Safety Requirements for Contractors While Working on CP Property in Canada, as amended from time to time, and to agree to be bound by them.
- 20.1.2 These Minimum Safety Requirements for Contractors While Working on CP Property in Canada are subject to change without prior notice. The most current version of these Minimum Safety Requirements can be viewed at www.cpr.ca or by contacting the Manager-in-Charge.



*Home Safe™ is a commitment to be vigilant about personal safety
and the safety of co-workers.*

NOTES:

21 Attachment A - Emergency Information Sheet

EMERGENCY CONTACT INFORMATION		
EMERGENCY CONTACTS	PHONE	LOCATION
CP Calgary Operations Center	1-800-795-7851	.
CP Police Services	1-800-716-9132	
CP Railroad Traffic Controller Radio Channel		
Manager-in-Charge		
Local Police Services		
Local Fire Services:		
Local EMS		
Hospital		
Physician		
Aircraft Service, (if applicable):		
Watercraft Service, (if applicable):		
Other Emergency Services		
Emergency Evacuation Route (Describe nearest evacuation assembly location OR Provide sketch on back)		

WORK SITE INFORMATION		
	PHONE	LOCATION
Work Site Location Name		
Railroad Subdivision & Mileage		
Address, Number and Street		
Nearest Town		
CP Manager-in-Charge		
Emergency Site Access Route (Describe route from nearest emergency services location in detail including access roads & physical landmarks OR provide sketch on back.)		
Contractor Supervisor		
Site Telephone		
Certified First Aid Attendant		
Location of First Aid Supplies at Site		
Location of Fire Extinguishing Equipment:		
Location of WHIMS data sheets		
UTILITY INFORMATION		
UTILITIES CONTACT	PHONE	LOCATION
Natural Gas:	()	
Electrical:	()	
Fiber Optic Line:	()	
Water & Sewer:	()	
Telephone:	()	
Cable System:	()	
Qualified employee(s) in:	()	
Confined Space Entry, (if applicable):	()	
Equipment requirements for Confined Space Entry, (if applicable):	()	
Other:		



**CANADIAN
PACIFIC
RAILWAY**

OPERATIONAL CONSTRAINT FOR WORK ON, ABOVE OR BELOW RAILWAY RIGHT OF WAY

GENERAL

- 1) The term Railway refers to Canadian Pacific Railway.
- 2) This Operational Constraint shall be read in conjunction with Canadian Pacific Railway Minimum Safety Requirements for Contractors Working on Railway Property and where applicable the more restrictive requirement shall apply.
- 3) The Contractor shall comply fully with all requirements of the Railway in planning, scheduling and control of the works within the Railway right of way.
- 4) No work shall be progressed by the Contractor on, over or below the Railway right of way until proof of liability insurance in accordance with requirements stipulated elsewhere have been complied with.
- 5) The Contractor shall plan and carry out the works in a manner that does not interfere with rail traffic or cause clearance restrictions and minimizes the requirement for railway flagging.

RAILWAY FLAGGING

- 6) The Railway will assign one Railway flagperson per project.
- 7) The provision of a Railway flagperson by the Railway shall not relieve the Contractor from liability for damages to Railway facilities caused by the Contractor's operations.
- 8) All communications with the Railway shall be done through the Road Authority or its agent. The Railway will not deal directly with the Contractor.
- 9) Charges for Railway flagperson services shall be invoiced to and paid by the Road Authority.
- 10) The Contractor shall make the following facilities available for the flagperson's use during the course of the project: washroom/lavatory, lunch room, fax machine, four lockers.

- 11) The Contractor shall have a responsible person present at all times to whom the Road Authority or its agent will issue orders regarding work on the Railway right of way.
- 12) All instructions from the Railway flagperson shall be obeyed immediately by all personnel on site.
- 13) A Railway flagperson will be required when any personnel or equipment is working on the Railway right of way; within 15 metres of the centreline of the nearest track or on the structure or any falsework or protective devices where the work, in the opinion of the Road Authority, or its agent, or the Railway, may be exposed to or interfere with the operation of the Railway tracks.
- 14) When a Railway flagperson is required, the Contractor, through the Road Authority, or its agent, shall provide a minimum written notice of 90 days, in advance, to allow the Railway time to bulletin the position to the unionized labour force. If prior to work commencing, the Contractor, through the Road Authority, or its agent, should receive confirmation that such Railway flagperson is not available, the Contractor, through the Road Authority, or its agent, shall reschedule the proposed work to a date and time when such flagging protection will be available.
- 15) The Railway flagperson will be available a maximum of 40 hours per week inclusive of travel time, to and from assigned headquarters, and time to set up and remove track protection each day.
- 16) Bulletined flagging positions will be invoiced a minimum of 8 hours per day, 5 days per week, until properly cancelled.
- 17) Bulletined flagging positions may only be cancelled by providing the Railway with written notice a minimum of 10 business days prior to the cancellation date.
- 18) In the event that flagging protection is arranged for a given day and the Contractor does not show up at the site, or no work is done that day, a minimum charge of 8 hours for flagging services will be invoiced to the Road Authority.

CONSTRUCTION

- 19) In no case shall the Contractor or any of the Contractor's equipment or personnel work closer than 3.66 metres from the nearest rail of the nearest track without prior written consent of the Road Authority or its agent.
- 20) The Contractor shall provide full details of their plans for track protection, work scaffolding, formwork construction, formwork removal, shoring, falsework and equipment placement and shall allow a minimum of six (6) weeks for review by the Road Authority and/or its agent and the Railway. All submissions shall be stamped and signed by a Professional Engineer in good standing in the Province in which the work is to take place. A minimum of four (4) copies of plans and calculations should be forwarded for review by the Railway.
- 21) All scaffolding, formwork and any other protective coverings to be used on the project must be satisfactorily secured such that they will not come loose by the movement of passing high speed trains.
- 22) All equipment must stop working on the approach of any train when said equipment is on the Railway right of way, or within 15 metres of the centreline of the nearest track; or when said equipment is in the vicinity of the track(s) and where the work, in the opinion of the Road Authority or its agent or the Railway, may be exposed to, or interfere with the operations of the Railway.
- 23) The Contractor shall not be permitted to cross any Railway tracks with equipment or vehicles. Contractor's personnel will only be permitted to cross the Railway tracks under the protection of the Railway flagperson.
- 24) The construction of a temporary construction crossing will only be permitted where, in the opinion of the Railway, it is safe to do so and subject to a temporary crossing agreement being executed.
- 25) The Contractor shall ensure that both rails of the same track are never connected with any conductor of electricity such as a steel measuring tape or metal traction equipment.
- 26) The Contractor shall maintain positive drainage during construction.
- 27) No material or debris will be permitted to be stored or stockpiled on the Railway right of way. The Railway right of way shall be restored to its original condition at the end of the project including track ballast that has become fouled as a result of the construction. The Road Authority shall bear all costs to restore the site.

SAFETY

- 28) Canadian Standards Association (CSA) approved hard hats, safety footwear and safety glasses for head, foot and eye protection and safety vests for high visibility must be worn at all times while on the Railway right of way.
- 29) The colour red shall not be used for hard hats, safety vests or survey markers on or adjacent to the Railway right of way in order to avoid conflict with Railway operational practices. Other highly visible colours such as yellow, orange or white are acceptable.

Mississauga, May 1, 2009

Hazardous Material Inspection Report:

4th Avenue Bridge (Fort Point), Invermere

Aug 26, 2026

1. Introduction

To satisfy the requirements of British Columbia Occupational Health and Safety Regulation 296/97, including amendments up to British Columbia Regulation 143/2017 (BC OH&S Regulation), namely those requirements prescribed in Part 20, Section 20.112 – *Hazardous Materials* and Part 6, Section 6.4 – *Inventory*, First Phase Consulting (FPC) was retained by City of Invermere (the client) to complete a pre-renovation inspection to identify and sample potential hazardous materials at 4th Avenue Bridge (Fort Point), Invermere, British Columbia (herein referred to as the Project Area) because of the recent need to perform bridge renovations.

The limitations of this report are bound by the scope of the work to be completed. It should not be considered as a full site inventory report, as any potential hazardous materials that fall outside of the scope of work to be completed (or the Project Area) were not inventoried or sampled. Furthermore, if the scope of work changes from what was communicated to FPC by the Client on August 5, 2026, then additional sampling and subsequent reporting amendments may be required.

This report provides a description of the assessment objectives, methodology, a summary of analytical laboratory results, conclusions, and based on the conclusions provides appropriate corrective recommendations.

2. Hazardous Material Assessment

2.1. Scope of Work

The Client indicated that the scope of work for the area includes the replacement of 4th Avenue Bridge; thus concrete, piping insulation, bridging shingles, road and sidewalk asphalt, and paint samples were collected.

2.2. Hazardous Materials

WorkSafeBC defines a hazardous material as “a hazardous substance, or material containing a hazardous substance, including asbestos-containing material (ACM), lead or any other heavy metal, or toxic, flammable or explosive material, that may be handled, disturbed or removed in the course of the demolition or salvage of machinery, equipment, a building or a structure, or the renovation of a building or structure” (BC Reg 296/97).

Additionally, WorkSafeBC requirements state, “before work begins on the demolition or salvage of machinery, equipment, a building or a structure, or the renovation of a building or structure, all employers responsible for that work, and the owner, must ensure that a qualified person inspects the worksite to identify the hazardous materials, if any” (BC Reg 296/97).

2.3. ALARA Substances

Asbestos, lead and silica are substances that are governed by the ALARA principle, meaning that “measures must be taken to keep a worker’s exposure to a level as low as reasonably achievable” (BC Reg 296/97). In effect, this means that although the BC OH&S Regulation provides explicit exposure limits, action levels and other significant

criteria for asbestos, lead and silica, employers must also demonstrate further efforts (beyond those prescribed in the regulation) to reduce, or eliminate worker exposure to asbestos, lead and silica, when it is considered reasonable to do so.

2.4. Methodology

The survey involved a scope of work provided by the Client for areas to be assessed. These areas included and was limited to the following:

- 4th Avenue Bridge; concrete, asphalt, pipe insulation, bridging singles and paint samples were collected.

Connor Munday (ASB-10007140) completed a systematic walk-through inspection of each area and/or room of the site that is scheduled to be disturbed to make a preliminary determination of whether hazardous materials could be present prior to sampling. The sampling was completed on August 5, 2026.

The Subject structure was estimated to have been built in 1964 with a number of more recent renovations apparent to the FPC representatives (e.g., asphalt). Sampling was semi-destructive in nature, meaning inaccessible areas of the bridge (i.e., piping interior) may not have been accessed to identify potentially concealed ACMs and/or lead-containing coatings (LCCs). A site map of the locations sampled, including photos is provided as Appendix 2 to this document.

2.5. Asbestos-Containing Materials

WorkSafeBC defines an asbestos-containing material as “a manufactured article or other material, other than vermiculite insulation, that would be determined to contain at least 0.5% asbestos is tested in accordance with NIOSH 9002, or equivalent method. Vermiculite insulation containing any asbestos, as determined by the approved EPA/600/R-04/004 (January 2004) method, is also asbestos-containing material” (BC Reg 296/97).

2.5.1. Asbestos Sample Collection

To confirm or discount the presence of asbestos, representative bulk samples were collected. Bulk sample collection was performed in compliance with FPC’s Exposure Control Plan, Respiratory Protection Program and Safe Work Procedure for collecting an asbestos bulk sample. Thus, sampling was performed in such a way that is consistent with recognized industry standards and principles of good occupational hygiene practice. Following WorkSafeBC’s Bulk Material Sample Collection Guide, the following samples were collected for analysis.

2.5.2. Asbestos Sample Analysis

Bulk asbestos samples were analyzed at the FirstPhase Laboratory in Cranbrook, British Columbia. FirstPhase Consulting is CALA-accredited and undergoes rigorous quality assurance procedures, including participation in AIHA proficiency testing. Samples were analyzed for the presence of asbestos in accordance with EPA 600/R-93/116, supplemented by NIOSH 9002.

Table 2-1: Summary of Asbestos Samples Collected

Sample Location (Number)	Material Type	Analytical Result	Current Condition	Friable (Yes/No)	Accessibility ¹	Approximate Quantity	Current Risk of Exposure ¹
1(A-E) – Bridge, footings and underside	Concrete	Not Detected	-	-	-	-	-
2(A-C) – Bridge, Sidewalk	Asphalt	Not Detected	-	-	-	-	-

Sample Location (Number)	Material Type	Analytical Result	Current Condition	Friable (Yes/No)	Accessibility ¹	Approximate Quantity	Current Risk of Exposure ¹
3(A-C) – Bridge, Road	Asphalt	Not Detected	-	-	-	-	-
4(A-C) – Bridge	Piping Insulation	Not Detected	-	-	-	-	-
5(A-C) – Bridge	Bridge Buffering Shingles	Not Detected	-	-	-	-	-

¹ Standard definitions for terms such as Accessibility and Risk of Exposure are provided in Appendix 3.

None of the bulk samples collected from site within the current scope of work were found to contain asbestos.

A copy of the analytical laboratory report for the ACMs is provided as Appendix 1 to this document.

2.6. Lead-Based Coatings

The Canadian Federal Government limits the amount of lead in certain paints to 0.009% (or 90 ppm, 90 µg/g or 90 mg/kg) pursuant to the Hazardous Products Act (RSC, 1985), as amended in 2018.

2.6.1. Lead Sample Collection

To confirm or discount the presence of lead, representative bulk samples were collected. Bulk sample collection was performed in compliance with FPC's Exposure Control Plan, Respiratory Protection Program and Safe Work Procedure for collecting a lead bulk sample. Thus, sampling was performed in such a way that is consistent with recognized industry standards and principles of good occupational hygiene practice. Following WorkSafeBC's Bulk Material Sample Collection Guide, the following samples were collected for analysis.

2.6.2. Lead Sample Analysis

Bulk lead samples were sent to Bureau Veritas Canada Inc. (BV), Burnaby, British Columbia for analysis. BV is an AIHA accredited laboratory. Samples analyzed using Digestion EPA Analytical Method 6010d m for the presence of lead are listed below:

Table 2-2: Summary of Lead Samples Collected

Sample Location (Number)	Material Type	Analytical Result (µg/g)	Lead Coating (Yes/No)	Current Condition	Accessibility ¹	Approximate Quantity	Current Risk of Exposure ¹
L01 – Bridge, Handrail	Paint, Green	2460	Yes	Moderate	High	1100 ft ²	Low
L02 – Bridge, Central	Paint, Light Blue	147	Yes	Moderate	High	200 ft ²	Low
L01 – Bridge, Footing	Paint, Red	15.5	No	-	-	-	-

¹ Standard definitions for terms such as Accessibility and Risk of Exposure are provided in Appendix 3.

NOTE:

The green and light blue paint sampled from the bridge were found to contain a hazardous level of lead (i.e., more than 90 µg/g of lead). The paints were observed to be accessible and in moderate condition. The current risk of exposure has been assessed as low.

It is important to note that while the Hazardous Products Act identifies a hazardous level of lead as greater than 90 µg/g, the ALARA principle states that employers must also demonstrate further efforts (beyond those prescribed in the regulation) to reduce, or eliminate worker exposure to lead, when it is considered reasonable to do so. This means that any amount of lead found in a coating (including those with less than 90 µg/g) should be controlled appropriately.

A copy of the analytical laboratory report for the LCCs is provided as Appendix 1 to this document.

2.7. Other Potentially Hazardous Materials

Materials suspected to contain other potentially hazardous materials were identified during the initial site walk-through inspection. The suspect materials found within the Subject Building include:

- **Physical Hazard:** given the position of the bridge, incoming traffic can pose as a potential hazard for workers on-site. Traffic diversion practices should be in place should there be work on the highway of the bridge.
- **Respirable Crystalline Silica:** the concrete foundation of the bridge has the potential to produce respirable crystalline silica dust (RCSD) if damaged. Given the undamaged condition of these materials, the current risk of exposure is low.

3. Conclusions and Recommendations

Based on the analytical laboratory results for the samples collected, no ACMs were found to exist within the Project Area. Two LCCs were identified in the faded railing paint and bridge paint that occurs throughout the Project Area. The paint was observed to be in moderate condition and the risk for approaching this hazardous building material was assessed as low. Other potentially hazardous materials identified during the inspection include respirable crystalline silica and physical traffic hazard. The risk associated with the scheduled renovation work will need to be assessed prior to work commencing, following a careful review of the proposed work procedures.

4. Discovery of Additional Hazardous Materials

Due to the nature and variation of construction methods and materials and the restrictions imposed by the client's scope of work, it is impractical to assume that all areas either concealed or otherwise, were, or can be tested to ensure with absolute certainty the presence or absence of all hazardous materials. With this in mind, Part 20, Section 20.112 of the BC OH&S Regulation states that, if "after written confirmation is provided, a person discovers material that may be hazardous material on or in the machinery, equipment, building or structure or at the worksite, not previously determined to be a hazardous material, all employers responsible for the demolition or salvage or the machinery, equipment, building or structure, or the renovation of the building or structure, and the owner, must ensure that a qualified person repeats the inspection process" (BC Reg 296/97).

5. Limitations

The conclusions presented in this report represent the judgement of the assessor based on current environmental and health and safety standards, and on-site conditions on the date(s) cited in this report. Due to the nature of the investigation and the limitations of the data, the assessor cannot warrant against undiscovered environmental liabilities.

Should additional information become available, FPC requests that this information be brought to our immediate attention so that we may reassess the conclusions presented herein.

Prepared by FirstPhase Consulting (FPC) – Aug 26, 2026

This report was completed in part by:



Alvin Tan - Field Technician
Hazardous Materials Building Inspector ASB-10002435



Connor Munday – Field Technician
Hazardous Materials Building Inspector ASB - 10007140

This report was technically reviewed, directed and approved by:



Richard Hilton – President/Senior Hygienist,
CRSP, NCSO, CABIR-22-163, ASB-10002945

Appendix 1: Analytical Laboratory Results



FirstPhase
CONSULTING

FirstPhase Consulting
217B Industrial Rd F
Cranbrook, BC V1C6N4
info@firstphase.ca
778-517-0311

Lab number	P26080505
Customer ID	
TAT:	5day
FPC Project ID	106-0002

Client	City of Invermere	Amendment Details
Job Location:	4th Avenue Bridge (Fort Point), Invermere	Supersedes Report #: N/A
Phone		Sample Date: 05/08/26
Email		Received Date: 05/08/26
Sampled By:	Connor Munday	Analysis Date: 12/08/26
Analysed By	Geoffrey Richards	Date of Issue: 12/08/26

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116
supplemented with Niosh Method 9002 using Polarized Light Microscopy

Asbestos Analytical Results

Sample	Description	Location	Appearance	Non-Asbestos		Asbestos
				% Fibrous	% Non-Fibrous	% Type
1A	Concrete	Footing, North	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1B	Concrete	Underside of Bridge, North	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1C	Concrete	Bridge, Central	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1D	Concrete	Underside of Bridge, South	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1E	Concrete	Footing, South	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
2A	Sidewalk Asphalt	Bridge, North	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
2B	Sidewalk Asphalt	Bridge, Central	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
2C	Sidewalk Asphalt	Bridge, South	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
3A	Road Asphalt	Bridge, North	Black Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
3B	Road Asphalt	Bridge, Central	Black Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
3C	Road Asphalt	Bridge, South	Black Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
4A	Pipe Insulation	Bridge, South	Grey Fibrous Homogeneous	85% Cellulose	15% Non-Fibrous	None Detected
4B	Pipe Insulation	Bridge, South	Grey Fibrous Homogeneous	85% Cellulose	15% Non-Fibrous	None Detected
4C	Pipe Insulation	Bridge, North	Grey Fibrous Homogeneous	85% Cellulose	15% Non-Fibrous	None Detected
5A	Footing/Bridge Buffer ("Shingles")	Bridge, North	Black Fibrous Homogeneous	30% Cellulose	70% Non-Fibrous	None Detected

5B	Footings/Bridge Buffer ("Shingles")	Bridge, North	Black Fibrous Homogeneous	30% Cellulose	70% Non-Fibrous	None Detected
5C	Footings/Bridge Buffer ("Shingles")	Bridge, South	Black Fibrous Homogeneous	30% Cellulose	70% Non-Fibrous	None Detected

Total Samples 17

Comments	
----------	--

Geoffrey Richards

Geoffrey Richards, Laboratory Manager

FPC maintains liability limited to the cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by FPC. FPC bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. All laboratory analyses incorporate standard QC protocols; however, unsigned test reports are preliminary and unofficial. If required, contact the Laboratory Supervisor for QC data reports. Results are generated from the field sampling data (sampling volumes, areas, and locations) provided by the client on the Chain of Custody. Samples are within quality control criteria and meet method specifications unless otherwise noted. The above analyses were performed in general compliance with EPA 600/R-93/116, and are augmented with procedures outlined in the NIOSH 9002 Method (Issue 3, 2019). Asbestos results are reported as estimated percentage ranges in accordance with EPA 600/R-93/116. These ranges represent the analyst's precision and are used in the laboratory's measurement-uncertainty evaluation. Unless requested by the client, building materials manufactured with multiple layers (e.g., linoleum, wallboard, etc.) are reported as a single composite sample. Estimation of uncertainty is available upon request. Any remaining samples will be disposed of 30 days following analysis unless additional storage time is requested in writing.

Samples analyzed by FirstPhase Consulting, Cranbrook, BC

K042 V1.2 10nov25

FirstPhase Consulting is accredited by the Canadian Association for Laboratory Accreditation (CALA) for demonstrating competency in accordance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories. This accreditation signifies our commitment to providing reliable, accurate, and technically proficient laboratory services in compliance with industry standards and best practices.



CALA
Testing
Accreditation No. 1005039



Your Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere
Your C.O.C. #: 137931

Attention: Info

FirstPhase Consulting
217 Industrial Road F
Cranbrook, BC
CANADA V1C 6N4

Report Date: 2026/08/13

Report #: R3816340

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C649999

Received: 2026/08/07, 08:52

Sample Matrix: Solid
Samples Received: 3

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Elements by ICP-AES (acid extr. solid)	3	2026/08/11	2026/08/11	BBY7SOP-00004 / BBY7SOP-00018	EPA 6010d m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere
Your C.O.C. #: 137931

Attention: Info

FirstPhase Consulting
217 Industrial Road F
Cranbrook, BC
CANADA V1C 6N4

Report Date: 2026/08/13
Report #: R3816340
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C649999

Received: 2026/08/07, 08:52

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Shanaz Akbar, Project Manager

Email: Shanaz.Akbar@bureauveritas.com

Phone# (604)789-1691

=====

This report has been generated and distributed using a secure automated process.

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rob Gilbert, BBY General Manager responsible for British Columbia Environmental laboratory operations.



LEAD IN PAINT CHIPS (SOLID)

Bureau Veritas ID		EKH277		EKH278		EKH279		
Sampling Date		2026/08/06 21:12		2026/08/06 21:12		2026/08/06 21:12		
COC Number		137931		137931		137931		
	UNITS	L01 - Green Paint, Handrail	RDL	L02 - Light Blue Paint, Central Bridge	RDL	L03 - Red Paint, Bridge Footing	RDL	QC Batch
Total Metals by ICP								
Total Lead (Pb)	mg/kg	2460	2.0	147 (1)	4.0	15.5	2.0	C374337
RDL = Reportable Detection Limit								
(1) Duplicate exceeds acceptance criteria due to sample non homogeneity.								



Bureau Veritas Job #: C649999
Report Date: 2026/08/13

FirstPhase Consulting
Client Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere

GENERAL COMMENTS

LEAD IN PAINT CHIPS (SOLID) Comments

Sample EKH278 [L02 - Light Blue Paint, Central Bridge] Elements by ICP-AES (acid extr. solid): Detection limits raised due to insufficient sample volume.

Results relate only to the items tested.



Bureau Veritas Job #: C649999
Report Date: 2026/08/13

FirstPhase Consulting
Client Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C374337	JBN	Spiked Blank	Total Lead (Pb)	2026/08/11		110	%	80 - 120
C374337	JBN	Method Blank	Total Lead (Pb)	2026/08/11	<2.0		mg/kg	
C374337	JBN	RPD [EKH278-01]	Total Lead (Pb)	2026/08/11	118 (1)		%	40
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.								
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.								
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.								
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.								



Bureau Veritas Job #: C649999
Report Date: 2026/08/13

FirstPhase Consulting
Client Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Bureau Veritas Certified by David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rob Gilbert, BBY General Manager responsible for British Columbia Environmental laboratory operations.



Custody Tracking Form



W137931

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: L01 - Green Paint, Handrail
Last Sample: L03 - Red Paint, Bridge Footing
Sample Count: 3

Relinquished By				Received By			
Print Connor M	Sign <i>[Signature]</i>	Date 08/07/2026	Time (24 HR) 2:49pm	Print Nata Laura	Sign <i>[Signature]</i>	Date 2026/08/07	Time (24 HR) 08:52
Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM	Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM
Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM	Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at www.bvna.com.

Triage Information

Sampled By (Print)

of Coolers/Pkgs:

Connor Murphy

01

Immediate Test ☐

Rush ☐

Micro ☐

*** LABORATORY USE ONLY ***

Received At

Lab Comments:

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
N	N	N	NA	-	-

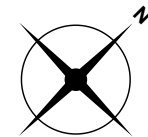
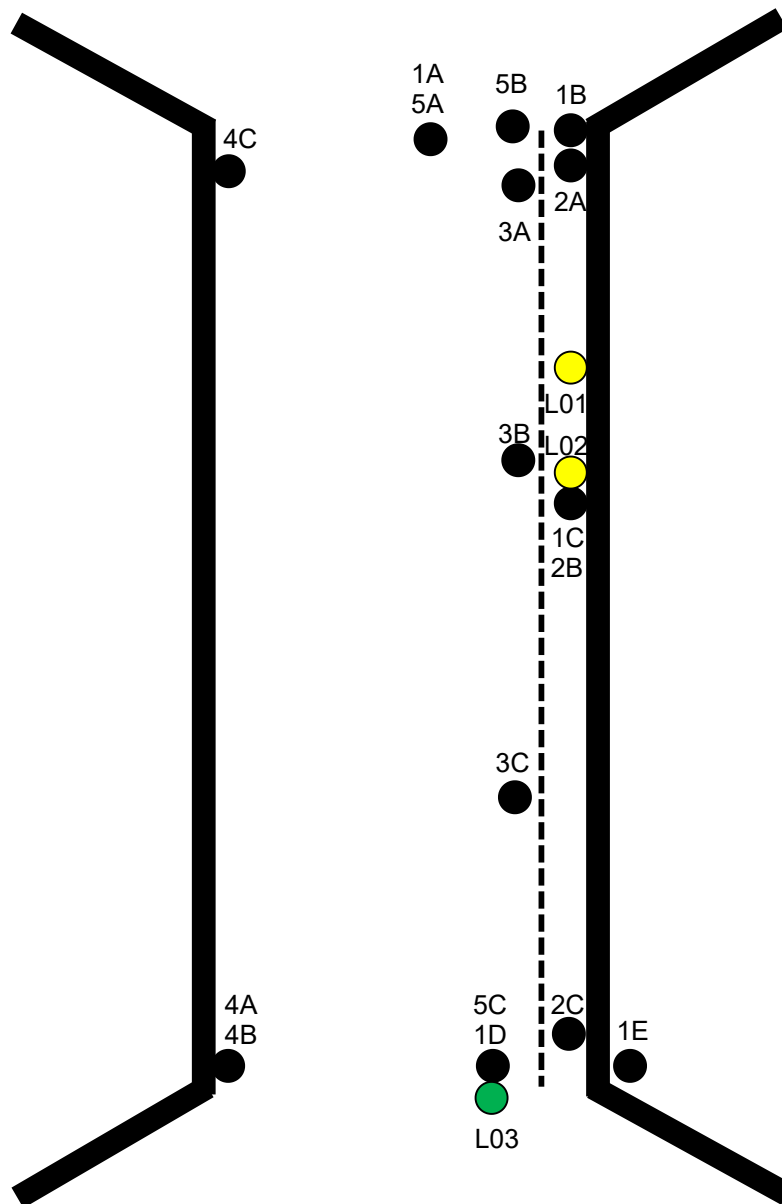


MVAN-2026-08-467

COR FCD-00383/5

Page 1 of 1

Appendix 2: Site Map and Photos



FirstPhase Consulting
4th Avenue Bridge (Fort Point)

Legend	
	Asbestos Sample
	Positive Asbestos Sample
	Lead Sample
	Positive Lead Sample

Surveyor	CMunday
FPC Pro. #	106-0002
Date of Survey	Aug 5, 20206
Number of ACMs	0
Number of LCCs	2

Project Address: 4th Avenue Bridge (Fort Point), Invermere
Date of Inspection: 5-Aug-2026
Surveyor(s): Connor Munday (ASB-10007140)



Photo 1: Overall view of Project Area



Photo 2: Green paint sampled in the Project Area (Handrail) contains 2460 $\mu\text{g/g}$ of lead

Project Address: 4th Avenue Bridge (Fort Point), Invermere
Date of Inspection: 5-Aug-2026
Surveyor(s): Connor Munday (ASB-10007140)



Photo 3: Light blue paint sampled in the Project Area (Central Bridge) contains 147 µg/g of lead



Photo 4: Hazard of note includes blocking traffic when working on renovation of bridge

Appendix 3: Definition of Terms

ALARA SUBSTANCE

ALARA, or as low as reasonably achievable, means, in reference to a substance, that measures must be taken to keep a worker's exposure to a level as low as is reasonably achievable.

ASBESTOS

Accessibility:

High – easily accessible

Moderate – not easily accessible but in view

Low – not easily accessible, enclosed or obscured

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Asbestos*, as amended from time to time, must be followed in order to be in proximity to the substance.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Asbestos*, as amended from time to time, must be followed in order to be in proximity to the substance.

Low – Indicates that low risk safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Asbestos*, as amended from time to time, must be followed in order to be in proximity to the substance.

LEAD

Accessibility:

High – easily accessible

Moderate – not easily accessible but in view

Low – not easily accessible, enclosed or obscured

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

Low-Moderate – Indicates that low-moderate risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

Low – Indicates that low risk safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

MOULD

Accessibility:

High – easily accessible

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to disturb materials that are visibly contaminated with mould and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; the establishment of ventilated work areas; air monitoring; decontamination facilities; and the use of PPE, including a NIOSH approved respirator, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mould contaminated materials in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures must be followed in order to disturb materials that are visibly or suspected to be contaminated with mould and is likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mould contaminated materials in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that are visibly or suspected to be contaminated with mould and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for mould contaminated materials in the workplace.

RESPIRABLE CRYSTALLINE SILICA & ROCK DUST

Accessibility:

High – dust is generated through work and is not controlled

Moderate – dust may be generated through work but is suppressed through controls

Low – not easily accessible, remains intact (i.e., no dust generation)

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work must be followed in order to disturb materials that may produce respirable silica and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; enclosing and ventilating the work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for silica dust generating materials in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work must be followed in order to disturb materials that may produce respirable silica and is likely to pose a risk of exposure. This may include

marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for silica dust generating materials in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may produce respirable silica if disturbed and worker training and education. WorkSafeBC provides information on exposure and control for silica dust generating materials in the workplace.

MERCURY

Accessibility:

High – easily accessible (e.g., broken equipment)

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain mercury and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; the establishment of ventilated work areas; air monitoring; decontamination facilities; and the use of PPE, including a NIOSH approved respirator, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mercury-containing materials in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain mercury and is likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mercury-containing materials in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may contain mercury and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for mercury-containing materials in the workplace.

POLYCHLORINATED BIPHENYLS (PCBs)

Accessibility:

High – easily accessible (e.g., broken equipment)

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain PCBs that pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the establishment of ventilated work areas; air monitoring; decontamination facilities; and the use of PPE, including a NIOSH approved respirator, in addition to worker education and training. WorkSafeBC provides information on exposure and control for PCB-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

Moderate – Indicates that moderate risk personal protective equipment and safe work must be followed in order to handle or dispose of materials that may contain PCBs and are likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for PCB-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may contain PCBs and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for PCB-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

OZONE DEPLETING SUBSTANCES (ODSs)

Accessibility:

High – easily accessible (e.g., broken equipment)

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain ODSs that pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. The BC Regulation 387/99 provides information on controlling and containing ODSs.

Moderate – Indicates that moderate risk personal protective equipment and safe work must be followed in order to handle or dispose of materials that may contain ODSs and are likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. The BC Regulation 387/99 provides information on controlling and containing ODSs.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may contain ODSs and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for ODS-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

CHEMICAL HAZARDS

Accessibility:

High – easily accessible

Moderate – contained, but accessible

Low – contained, not easily accessible

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce a chemical hazard and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; enclosing and ventilating the work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for chemical hazards in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce a chemical hazard and is likely to pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for chemical hazards in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may produce a chemical hazard if disturbed and worker training and education. WorkSafeBC provides information on exposure and control for chemical hazards in the workplace.

COMBUSTION BY-PRODUCTS

Accessibility:

High – dust is generated through work and is not controlled

Moderate – dust may be generated through work but is suppressed through controls

Low – not easily accessible, not disturbed (i.e., no dust generation)

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce respirable combustion by-products and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; enclosing and ventilating the work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for toxic gases in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce respirable combustion by-products and is likely to pose a

risk of exposure. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for toxic gases in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may produce respirable combustion by-products if disturbed and worker training and education. WorkSafeBC provides information on exposure and control for toxic gases in the workplace.

Hazardous Material Risk Assessment:

4th Avenue Bridge (Fort Point), Invermere

August 26, 2026

1. Introduction

To satisfy the requirements of British Columbia Occupational Health and Safety Regulation 296/97, including amendments up to British Columbia Regulation 143/2017 (BC OH&S Regulation), namely those requirements prescribed in Part 20, Section 20.112 – *Hazardous Materials* and Part 6, Section 6.6 – *Assessment and Classification*, FirstPhase Consulting (FPC) was retained by City of Invermere (Invermere) to complete a pre-demolition risk assessment for the scope of work to be completed at the 4th Avenue Bridge (Fort Point) over the CPKC rail, Invermere, British Columbia (herein referred to as the Project Area) as a result of recent needs to perform extensive bridge renovation and/or demolition. A copy of the analytical laboratory results for all sampled building materials is provided as Appendix 1 to this document.

The purpose of this document is to identify the risk associated with the identified hazardous materials in their current state and the risk associated with their abatement and encapsulation.

2. Site Overview

Connor Munday (ASB-10007140) of FPC, with guidance from Richard Hilton (CRSP, NCSO, ASB - 10002945) of FPC completed a site inspection of the Project Area on August 5th, 2026, to assess the risk associated with the known hazardous materials identified in the pre-renovation site inventory and sampling. Both current risk of exposure and risk associated with the renovation work were assessed. The results of the site inspection are presented in this report.

2.1. Scope of Work & Re-Occupancy

The Contractor's scope of work for the renovation/demolition, with respect to hazardous materials, includes the removal and disposal of approximately:

Lead-containing Coatings (LCCs)

- 1100 ft² of green paint found on the bridge handrail and wood pipe protective covering; and
- 200 ft² of light blue paint found on the edges of the bridge

The bridge will be herein referred to as the Project Area. The Project Area will be reoccupied following the renovation work. A visual assessment must be conducted by a qualified person following the abatement and a project completion letter posted on-site prior to re-occupancy of the work area as per 20.112(8) of the WorkSafeBC regulations.

2.2. Asbestos-Containing Materials

Connor Munday (ASB-10007140) of FPC completed the pre-demolition inspection of the Project Area to inventory, sample and submit for analysis, suspect asbestos-containing materials (ACMs). The sampling was completed on August 5th, 2026. No ACMs were identified through laboratory analysis.:

2.3. Lead-Containing Coatings

Connor Munday (ASB-10007140) of FPC completed the pre-demolition/renovation inspection of the Project Area to inventory, sample and submit for analysis, suspect lead-containing coatings (LCCs). The sampling was completed on August 5th, 2026. The following LCCs were identified:

- Green paint sampled from the bridge handrail – 2460 µg/g of lead
- Light blue paint sampled from the central bridge area – 147 µg/g of lead

2.3.1. Accessibility and Likelihood of Damage

At the time of the sampling, the paints were observed to be accessible, in moderate condition, and poses a low likelihood of being damaged.

2.4. Other Potentially Hazardous Materials

The hazardous material report for the Subject Building identified the following other potentially hazardous materials:

- **Respirable crystalline silica:** where concrete is scheduled to be cut, grinded, drilled, or sanded there is the potential for worker exposure to respirable crystalline silica. The risk of exposure to silica dust through inhalation will be reduced on site using the risk controls presented herein and will be implemented along with the Contractor's exposure control plan. Respirable crystalline silica has a 10-hour time-weighted average over a 40-hour work week recommended exposure limit (REL) of 0.05 mg/m³ (NIOSH), and an 8-hour time-weighted average occupational exposure limit (OEL) of 0.025 mg/m³ (WorkSafeBC).
- **Physical Hazard:** given the position of the bridge, incoming traffic can pose a potential hazard for workers on-site. Traffic diversion practices should be in place should there be work on the highway of the bridge

3. Risk Assessment

This hazardous material risk assessment was completed by Jacquelyn Diveky-Wells of FPC, with technical support and review by FPC's Senior Hygienist Richard Hilton (CRSP, NCSO, ASB - 10002945). This risk assessment has been developed for occupants of the Subject Building (those who may enter and occupy the building) as well as for workers associated with the scheduled abatement and/or renovation work.

To determine the level of risk for each group, FPC has carefully considered each of the following:

- The concentration of hazardous materials identified within the building;
- The friability of the hazardous materials, if applicable (i.e., for asbestos only);
- The condition and accessibility of the hazardous materials;
- The relevant properties and characteristics for each hazardous material (e.g., consideration of the ALARA principle);
- The appropriate exposure limits and associated health effects for each hazardous material; and
- The abatement or renovation methodology, including consideration of safe work procedures.

3.1. Risk of Harmful Exposure: Persons Being in proximity to the Subject Building

Based on a critical evaluation of the appropriate criteria discussed in Section 2, FPC has determined that at the time of this report that the risk of exposure to persons occupying or entering the Subject Building is as follows:

- There is a **low risk** of exposure to airborne lead to persons occupying or being in proximity to the Subject Building.
- There is a **low risk** of exposure to respirable crystalline silica dust to persons being in proximity to the Subject Building.

Table 3.1. Summary of Risk Assessment for Occupying or Entering the Subject Building

Mateterial	Accessibility	Condition	Friability	Air Plenum Contamination	Overall Risk Assessment ¹
Lead	High	Mode	N/A	-	Low
Silica	High	Good	N/A	-	Low

¹Definitions of risk assessment levels (e.g., low, moderate, high) are provided in Appendix 2.

3.2.Risk of Harmful Exposure: Abatement and Renovation Workers

Based on a critical evaluation of the appropriate criteria, FPC has determined that at the risk of exposure to abatement and/or renovation workers that are disturbing hazardous materials is as follows.

Table 3.2. Summary of Lead and Silica Risk Assessment for the Subject Building

Task	Description of Work	Level of Risk ¹
1	Set up of moderate risk containment and decontamination infrastructure for Task 2.	Low
2	Removing and disposing of all concrete and asphalt, which is likely to contain respirable crystalline silica. Removing and disposing of concrete from the bridge's edges finished with a lead containing paint	Moderate
3	Set up of low-moderate risk containment and decontamination infrastructure for Task 4.	Low
4	Removal and disposal of a handrail and wood pipe protective shell finished with a lead containing paint	Low-moderate

¹ Definitions of risk assessment levels (e.g., low, moderate, high or small, medium, large for mould) are provided in Appendix 2.

3.3.Summary of Other Workplace Hazards

Due to the nature of abatement and renovation work, other health and safety risks need to be recognized, evaluated and controlled by the responsible Contractor(s). Examples of such risks may include but is not limited to noise; eye hazards; sharp hazards; electrical hazards; slips, trips and falls.

4. Recommended Work Procedures

Based on the determined levels of risk associated with the removal and disposal of the identified hazardous materials, FPC recommends that the workers involved in the abatement and/or renovation complete their work following the safe work procedures outlined below.

4.1.Lead Work Procedures

Table 4.1. Recommended Lead Work Procedures

Task	Brief Description of Work	Recommended Work Procedures	Level of Risk ¹
1	Set up of moderate risk containment and decontamination infrastructure for Task 2.		Low

Task	Brief Description of Work	Recommended Work Procedures	Level of Risk ¹
2	Removing and disposing of all concrete and asphalt, which is likely to contain respirable crystalline silica. Removing and disposing of concrete from the bridge's edges finished with a lead containing paint	As outlined in the WorkSafeBC publication " Safe Work Practices for Handling Lead ".	Moderate
3	Set up of low-moderate risk containment and decontamination infrastructure for Task 4.		Low
4	Removal and disposal of a handrail and wood pipe protective shell finished with a lead containing paint		Low-moderate

¹ Definitions of risk assessment levels (e.g., low, moderate, high or small, medium, large for mould) are provided in Appendix 2.

4.1.1. Lead Air Monitoring

Per WorkSafeBC's OH&S Regulation for Substance Specific Requirements section 6.61.1(2)(a), air monitoring is not required if existing control measures are effective in keeping worker exposure as low as reasonably achievable below the exposure limit. The control measures and PPE outlined in *Safe Work Practices for Handling Lead* are based on objective monitoring data from reliable scientific sources and are designed to help an employer be in compliance with section 6.61 of the OH&S Regulation.

4.2. Silica Work Procedures

Table 4.2. Recommended Silica Work Procedures

Task	Brief Description of Work	Recommended Work Procedures	Level of Risk ¹
1	Set up of moderate risk containment and decontamination infrastructure for Task 2.	Refer to the Contractor's exposure control plan and written safe work procedures (as required under the OHS Regulation) for the safe cutting, grinding, drilling or sanding of concrete materials that may produce respirable silica dust.	Low
2	Removing and disposing of all concrete and asphalt, which is likely to contain respirable crystalline silica. Removing and disposing of concrete from the bridge's edges finished with a lead containing paint	WorkSafeBC's sample controls can be found here . This may include, but is not limited to marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training.	Moderate

¹ Definitions of risk assessment levels (e.g., low, moderate, high or small, medium, large for mould) are provided in Appendix 2.

4.2.1. Silica Air Monitoring

Section 6.112.3 of the WorkSafeBC OH&S Regulation requires that employers monitor the exposure of workers to respirable crystalline silica dust (RCSD). FPC does not recommend silica air monitoring based on a moderate result for exposure to RCSD through our risk assessment process.

4.5. Work Procedure Requirements

Tasks 2 and 4 will require that the work is completed following recommendations for containment, decontamination procedures, engineering/administrative controls and PPE as outlined below. Prior to dismantling the containment, it must be fully HEPA vacuumed and wet wiped. The tear-down of the containments and decontamination facilities is considered a moderate risk work activity.

Table 4.3. Work Procedure Requirements

Task	Containment/Decontamination Facilities	Engineering Controls	PPE
2	• Designated work area marked with appropriate Silica barrier tape and signage • Wash-up station (soap and water) • Impervious waste bag • HEPA vacuum	• HEPA vacuum • Amended water misting • Double layer poly sheeting placed to ensure no asbestos/ lead/ silica deposition or accumulation on building materials that are remaining in place (e.g., existing flooring, fixtures) and to reduce worker exposure during clean up and tear down	• NIOSH approved half face respirator with P100 filters • Disposable coveralls w/ head and boot covering (or laceless rubber boots) • Disposable gloves
4	• Designated work area marked with barrier tape and warnings of lead contamination • Wash-up station (soap and water) • Impervious waste container • HEPA vacuum	• Isolate HVAC • HEPA vacuum • Amended water misting • Double layer poly sheeting placed to ensure no asbestos/ lead/ silica deposition or accumulation on building materials that are remaining in place (e.g., existing flooring, fixtures) and to reduce worker exposure during clean up and tear down	• NIOSH approved half face respirator with P100 filters • Disposable coveralls w/ head and boot covering (or laceless rubber boots) • Disposable gloves

5. Discovery of Additional Hazardous Materials

Due to the nature and variation of construction methods and materials and the restrictions imposed by the client's scope of work, it is impractical to assume that all areas either concealed or otherwise, were, or can be tested to ensure with absolute certainty the presence or absence of all hazardous materials. With this in mind, Part 20, Section 20.112 of the BC OH&S Regulation states that, if "after written confirmation is provided, a person discovers material that may be hazardous material on or in the machinery, equipment, building or structure or at the worksite, not previously determined to be hazardous material, all employers responsible for the demolition or

salvage or the machinery, equipment, building or structure, or the renovation of the building or structure, and the owner, must ensure that a qualified person repeats the inspection process" (BC Reg 296/97).

6. Limitations

The conclusions presented in this report represent the judgement of the assessor based on current environmental and health and safety standards, and on-site conditions on the date(s) cited in this report. Due to the nature of the investigation and the limitations of the data, the assessor cannot warrant against undiscovered environmental liabilities.

Should additional information become available, FPC requests that this information be brought to our immediate attention so that we may re-assess the conclusions presented herein.

Prepared by FirstPhase Consulting (FPC) – August 26, 2026

This report was completed in part by:



Jacquelyn Diveky-Wells - Field Technician
Hazardous Materials Building Inspector ASB-10016936

This report was technically reviewed, directed and approved by:



Richard Hilton – President/Senior Hygienist,
CRSP, NCSO, ASB - 10002945

Appendix 1: Analytical Laboratory Results



FirstPhase
CONSULTING

FirstPhase Consulting
217B Industrial Rd F
Cranbrook, BC V1C6N4
info@firstphase.ca
778-517-0311

Lab number	P26080505
Customer ID	
TAT:	5day
FPC Project ID	106-0002

Client	City of Invermere	Amendment Details
Job Location:	4th Avenue Bridge (Fort Point), Invermere	Supersedes Report #: N/A
Phone		Sample Date: 05/08/26
Email		Received Date: 05/08/26
Sampled By:	Connor Munday	Analysis Date: 12/08/26
Analysed By	Geoffrey Richards	Date of Issue: 12/08/26

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116
supplemented with Niosh Method 9002 using Polarized Light Microscopy

Asbestos Analytical Results

Sample	Description	Location	Appearance	Non-Asbestos		Asbestos
				% Fibrous	% Non-Fibrous	% Type
1A	Concrete	Footing, North	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1B	Concrete	Underside of Bridge, North	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1C	Concrete	Bridge, Central	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1D	Concrete	Underside of Bridge, South	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
1E	Concrete	Footing, South	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
2A	Sidewalk Asphalt	Bridge, North	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
2B	Sidewalk Asphalt	Bridge, Central	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
2C	Sidewalk Asphalt	Bridge, South	Grey Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
3A	Road Asphalt	Bridge, North	Black Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
3B	Road Asphalt	Bridge, Central	Black Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
3C	Road Asphalt	Bridge, South	Black Non-Fibrous Homogeneous		100% Non-Fibrous	None Detected
4A	Pipe Insulation	Bridge, South	Grey Fibrous Homogeneous	85% Cellulose	15% Non-Fibrous	None Detected
4B	Pipe Insulation	Bridge, South	Grey Fibrous Homogeneous	85% Cellulose	15% Non-Fibrous	None Detected
4C	Pipe Insulation	Bridge, North	Grey Fibrous Homogeneous	85% Cellulose	15% Non-Fibrous	None Detected
5A	Footing/Bridge Buffer ("Shingles")	Bridge, North	Black Fibrous Homogeneous	30% Cellulose	70% Non-Fibrous	None Detected

5B	Footings/Bridge Buffer ("Shingles")	Bridge, North	Black Fibrous Homogeneous	30% Cellulose	70% Non-Fibrous	None Detected
5C	Footings/Bridge Buffer ("Shingles")	Bridge, South	Black Fibrous Homogeneous	30% Cellulose	70% Non-Fibrous	None Detected

Total Samples 17

Comments	
----------	--

Geoffrey Richards

Geoffrey Richards, Laboratory Manager

FPC maintains liability limited to the cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by FPC. FPC bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. All laboratory analyses incorporate standard QC protocols; however, unsigned test reports are preliminary and unofficial. If required, contact the Laboratory Supervisor for QC data reports. Results are generated from the field sampling data (sampling volumes, areas, and locations) provided by the client on the Chain of Custody. Samples are within quality control criteria and meet method specifications unless otherwise noted. The above analyses were performed in general compliance with EPA 600/R-93/116, and are augmented with procedures outlined in the NIOSH 9002 Method (Issue 3, 2019). Asbestos results are reported as estimated percentage ranges in accordance with EPA 600/R-93/116. These ranges represent the analyst's precision and are used in the laboratory's measurement-uncertainty evaluation. Unless requested by the client, building materials manufactured with multiple layers (e.g., linoleum, wallboard, etc.) are reported as a single composite sample. Estimation of uncertainty is available upon request. Any remaining samples will be disposed of 30 days following analysis unless additional storage time is requested in writing.

Samples analyzed by FirstPhase Consulting, Cranbrook, BC

K042 V1.2 10nov25

FirstPhase Consulting is accredited by the Canadian Association for Laboratory Accreditation (CALA) for demonstrating competency in accordance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories. This accreditation signifies our commitment to providing reliable, accurate, and technically proficient laboratory services in compliance with industry standards and best practices.



CALA
Testing
Accreditation No. 1005039



Your Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere
Your C.O.C. #: 137931

Attention: Info

FirstPhase Consulting
217 Industrial Road F
Cranbrook, BC
CANADA V1C 6N4

Report Date: 2026/08/13

Report #: R3816340

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C649999

Received: 2026/08/07, 08:52

Sample Matrix: Solid
Samples Received: 3

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Elements by ICP-AES (acid extr. solid)	3	2026/08/11	2026/08/11	BBY7SOP-00004 / BBY7SOP-00018	EPA 6010d m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere
Your C.O.C. #: 137931

Attention: Info

FirstPhase Consulting
217 Industrial Road F
Cranbrook, BC
CANADA V1C 6N4

Report Date: 2026/08/13
Report #: R3816340
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C649999

Received: 2026/08/07, 08:52

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Shanaz Akbar, Project Manager

Email: Shanaz.Akbar@bureauveritas.com

Phone# (604)789-1691

=====

This report has been generated and distributed using a secure automated process.

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rob Gilbert, BBY General Manager responsible for British Columbia Environmental laboratory operations.



LEAD IN PAINT CHIPS (SOLID)

Bureau Veritas ID		EKH277		EKH278		EKH279		
Sampling Date		2026/08/06 21:12		2026/08/06 21:12		2026/08/06 21:12		
COC Number		137931		137931		137931		
	UNITS	L01 - Green Paint, Handrail	RDL	L02 - Light Blue Paint, Central Bridge	RDL	L03 - Red Paint, Bridge Footing	RDL	QC Batch
Total Metals by ICP								
Total Lead (Pb)	mg/kg	2460	2.0	147 (1)	4.0	15.5	2.0	C374337
RDL = Reportable Detection Limit								
(1) Duplicate exceeds acceptance criteria due to sample non homogeneity.								



Bureau Veritas Job #: C649999
Report Date: 2026/08/13

FirstPhase Consulting
Client Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere

GENERAL COMMENTS

LEAD IN PAINT CHIPS (SOLID) Comments

Sample EKH278 [L02 - Light Blue Paint, Central Bridge] Elements by ICP-AES (acid extr. solid): Detection limits raised due to insufficient sample volume.

Results relate only to the items tested.



Bureau Veritas Job #: C649999
Report Date: 2026/08/13

FirstPhase Consulting
Client Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere

QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
C374337	JBN	Spiked Blank	Total Lead (Pb)	2026/08/11		110	%	80 - 120
C374337	JBN	Method Blank	Total Lead (Pb)	2026/08/11	<2.0		mg/kg	
C374337	JBN	RPD [EKH278-01]	Total Lead (Pb)	2026/08/11	118 (1)		%	40
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.								
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.								
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.								
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.								



Bureau Veritas Job #: C649999
Report Date: 2026/08/13

FirstPhase Consulting
Client Project #: 106-0002
Site Location: 4th Avenue Bridge (Fort Point), Invermere

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Bureau Veritas Certified by David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rob Gilbert, BBY General Manager responsible for British Columbia Environmental laboratory operations.



Custody Tracking Form



W137931

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: L01 - Green Paint, Handrail
Last Sample: L03 - Red Paint, Bridge Footing
Sample Count: 3

Relinquished By				Received By			
Print Connor M	Sign <i>[Signature]</i>	Date 08/07/2026	Time (24 HR) 2:49pm	Print Nata Laura	Sign <i>[Signature]</i>	Date 2026/08/07	Time (24 HR) 08:52
Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM	Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM
Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM	Print	Sign	Date YYYY/MM/DD	Time (24 HR) HH:MM

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at www.bvna.com.

Triage Information

Sampled By (Print)

of Coolers/Pkgs:

Connor Murphy

01

Immediate Test ☐

Rush ☐

Micro ☐

*** LABORATORY USE ONLY ***

Received At

Lab Comments:

Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
N	N	N	NA	-	-



MVAN-2026-08-467

COR FCD-00383/5

Page 1 of 1

Appendix 2: Definition of Terms

ALARA: As Low As Reasonably Achievable

A risk management principle requiring exposure to hazards to be reduced to the lowest level reasonably achievable through the use of engineering controls, administrative controls, safe work practices, and personal protective equipment. Used to minimize risk even when exposure levels are below regulatory limits.

ASBESTOS

Accessibility:

High – easily accessible

Moderate – not easily accessible but in view

Low – not easily accessible, enclosed or obscured

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Asbestos*, as amended from time to time, must be followed in order to be in proximity to the substance.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Asbestos*, as amended from time to time, must be followed in order to be in proximity to the substance.

Low – Indicates that low risk safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Asbestos*, as amended from time to time, must be followed in order to be in proximity to the substance.

LEAD

Accessibility:

High – easily accessible

Moderate – not easily accessible but in view

Low – not easily accessible, enclosed or obscured

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

Low-Moderate – Indicates that low-moderate risk personal protective equipment and safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

Low – Indicates that low risk safe work procedures as outlined in WorkSafeBC's *Safe Work Practices for Handling Lead*, as amended from time to time, must be followed in order to be in proximity to the substance.

MOULD

Accessibility:

High – easily accessible

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

Large – Indicates the total surface area affected is greater than 10 square metres (100 square feet) or the potential for increased occupant or remediator exposure during remediation is estimated to be significant. High risk personal protective equipment and safe work procedures must be followed in order to disturb materials that are visibly contaminated with mould and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; the establishment of ventilated work areas; air monitoring; decontamination facilities; and the use of PPE, including a NIOSH approved respirator, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mould contaminated materials in the workplace.

Medium – Indicates the total surface area affected is between 1 square metre and 10 square metres (10 square feet to 100 square feet). FPC recommends moderate risk personal protective equipment and safe work procedures must be followed in order to disturb materials that are visibly or suspected to be contaminated with mould and is likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mould contaminated materials in the workplace.

Small – Indicates the total surface area affected is less than 1 square metre (10 square feet). FPC recommends that personal protective equipment and safe work procedures are followed in order to disturb materials that are visibly or suspected to be contaminated with mould and is likely to pose a risk of exposure if disturbed. This may include identifying materials that are visibly or suspected to be contaminated with mould and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for mould contaminated materials in the workplace.

RESPIRABLE CRYSTALLINE SILICA & ROCK DUST

Accessibility:

High – dust is generated through work and is not controlled

Moderate – dust may be generated through work but is suppressed through controls

Low – not easily accessible, remains intact (i.e., no dust generation)

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work must be followed in order to disturb materials that may produce respirable silica and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; enclosing and ventilating the work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for silica dust generating materials in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work must be followed in order to disturb materials that may produce respirable silica and is likely to pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for silica dust generating materials in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may produce respirable silica if disturbed and worker training and education. WorkSafeBC provides information on exposure and control for silica dust generating materials in the workplace.

MERCURY

Accessibility:

High – easily accessible (e.g., broken equipment)

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain mercury and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; the establishment of ventilated work areas; air monitoring; decontamination facilities; and the use of PPE, including a NIOSH approved respirator, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mercury-containing materials in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain mercury and is likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for mercury-containing materials in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may contain mercury and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for mercury-containing materials in the workplace.

POLYCHLORINATED BIPHENYLS (PCBs)

Accessibility:

High – easily accessible (e.g., broken equipment)

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain PCBs that pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the establishment of ventilated work areas; air monitoring; decontamination facilities; and the use of PPE, including a NIOSH approved respirator, in addition to worker education and training. WorkSafeBC provides information on exposure and control for PCB-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

Moderate – Indicates that moderate risk personal protective equipment and safe work must be followed in order to handle or dispose of materials that may contain PCBs and are likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for PCB-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may contain PCBs and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for PCB-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

OZONE DEPLETING SUBSTANCES (ODSs)

Accessibility:

High – easily accessible (e.g., broken equipment)

Moderate – not easily accessible but may be disturbed through work

Low – not easily accessible, enclosed or obscured, remaining undisturbed through the work

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to handle or dispose of materials that may contain ODSs that pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. The BC Regulation 387/99 provides information on controlling and containing ODSs.

Moderate – Indicates that moderate risk personal protective equipment and safe work must be followed in order to handle or dispose of materials that may contain ODSs and are likely to pose a risk of exposure if disturbed. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH

approved respirator; decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. The BC Regulation 387/99 provides information on controlling and containing ODSs.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may contain ODSs and pose a risk of exposure if disturbed, and worker training and education. WorkSafeBC provides information on exposure and control for ODS-containing materials in the workplace through the OHS Regulation Sections 5, 6 and 20.

CHEMICAL HAZARDS

Accessibility:

High – easily accessible

Moderate – contained, but accessible

Low – contained, not easily accessible

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce a chemical hazard and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; enclosing and ventilating the work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for chemical hazards in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce a chemical hazard and is likely to pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for chemical hazards in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may produce a chemical hazard if disturbed and worker training and education. WorkSafeBC provides information on exposure and control for chemical hazards in the workplace.

COMBUSTION BY-PRODUCTS

Accessibility:

High – dust is generated through work and is not controlled

Moderate – dust may be generated through work but is suppressed through controls

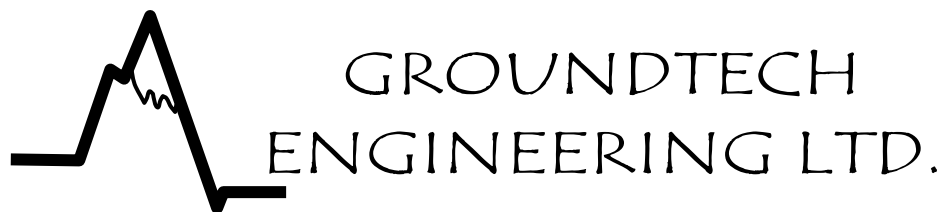
Low – not easily accessible, not disturbed (i.e., no dust generation)

Risk of Exposure:

High – Indicates that high risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce respirable combustion by-products and poses a risk of exposure. This may include marking, signing and restricting access to the designated work area; enclosing and ventilating the work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for toxic gases in the workplace.

Moderate – Indicates that moderate risk personal protective equipment and safe work procedures must be followed in order to disturb materials that may produce respirable combustion by-products and is likely to pose a risk of exposure. This may include marking, signing and restricting access to the designated work area; the use of PPE, including a NIOSH approved respirator; the use of engineering controls (e.g., wetting and HEPA filtered equipment); decontamination facilities; and appropriate disposal and clean up procedures, in addition to worker education and training. WorkSafeBC provides information on exposure and control for toxic gases in the workplace.

Low – Indicates that low risk safe work procedures must be followed in order to be in proximity to the substance (i.e., the material is not being disturbed). This may include identifying materials that may produce respirable combustion by-products if disturbed and worker training and education. WorkSafeBC provides information on exposure and control for toxic gases in the workplace.



BOX 688
FERNIE, BC, V0B 1M0
Phone-250.423.4829
Fax-250.423.4819
groundtech@shaw.ca

January 8, 2024

Urban Systems
101, 134-11th Avenue SE
Calgary, AB T2G 0X5

Attention: Ms. Sara Anderson, P.Eng., PE

**RE: GEOTECHNICAL SITE INVESTIGATION
PROPOSED REPLACEMENT OF FORT POINT BRIDGE
4TH AVENUE BRIDGE OVER CPR LINE
INVERMERE, BC**

Dear Ms. Anderson,

Please find attached a copy of the subject report. If you have any questions or require additional information, please contact me any time at (250) 423-4829.

Yours truly,

Douglas A. Clapp, P.Eng.

DAC/ng
encl.

**GEOTECHNICAL SITE INVESTIGATION
PROPOSED REPLACEMENT OF FORT POINT BRIDGE
4TH AVENUE BRIDGE OVER CPR LINE
INVERMERE, BC**

**Prepared For:
Urban Systems
Calgary, AB**

**Groundtech Engineering Ltd.
PO Box 688, Fernie, BC, V0B 1M0
(250) 423-4829**

January 2024

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	SITE LOCATION AND DESCRIPTION.....	1
3.0	PHYSIOGRAPHY	1
4.0	PROPOSED CONSTRUCTION.....	2
5.0	FIELD INVESTIGATION.....	2
5.1	Soil Conditions.....	2
5.2	Terrain Conditions	2
5.3	Lab Test Summary	3
5.4	Groundwater Conditions	3
5.5	Frost Conditions.....	3
6.0	GEOTECHNICAL RECOMMENDATIONS.....	3
6.1	Foundation Types and Parameters	3
6.2	Slope Stability/Cut Slopes	5
6.3	Lateral Earth Pressure Parameters for Buried Structures	5
6.4	Seismic Parameters	5
6.5	Corrosion Potential of Soils	6
6.6	Concrete Type.....	6
6.7	Structural Backfill.....	6
6.8	Flexible Pavement Structure	6
7.0	CLOSURE.....	7
8.0	REVIEW OF EXISTING INFORMATION	8

APPENDICES

Appendix I	Figures
Appendix II	Photos
Appendix III	Borehole Logs
Appendix IV	Lab Test Results

1.0 INTRODUCTION

This report provides the findings and recommendations of a geotechnical site investigation for the proposed replacement of the Fort Point Bridge on 4th Avenue over the Canadian Pacific Railway (CPR) line in Invermere, BC. Groundtech Engineering Ltd. (Groundtech) completed the site investigation at the request of Ms. Sara Anderson, P.Eng., of Urban Systems Ltd. (Urban), the civil engineering consultant working on behalf of the District of Invermere (DOI).

Urban defined the scope of the surficial site investigation as follows:

1. Drilling two boreholes – one at each or near the abutment location
2. Reporting to include recommendations for:
 - a. Foundation types and design parameters
 - b. Slope stability/cut slopes
 - c. Earth pressures of buried structures – rigid and flexible
 - d. Seismic Site Class and parameters
 - e. Corrosion potential of soils
 - f. Frost depth
 - g. Concrete type
 - h. Structural backfill
 - i. Groundwater
 - j. Road pavement structure and compaction

All recommendations for bridge foundations are to be in accordance with CSA S6-14 Canadian Highway Bridge Design Code.

Groundtech completed a geotechnical desktop study for the site entitled “Geotechnical Desktop Study Report, Proposed Replacement of 4th Avenue Bridge Over CPR Line, Invermere, BC”, dated November 2017. Groundtech is familiar with the soil and groundwater conditions in the area.

2.0 SITE LOCATION AND DESCRIPTION

The site is located in Invermere, BC, on a terrace on the west side of the Rocky Mountain Trench, upslope of the western shores of Lake Windermere (Figure 1, Appendix I). The existing vehicle bridge serves as an overpass of the CPR line. The road on the bridge is two-way with a concrete surface and pedestrian walkway on the east side of the bridge. The existing bridge is approximately 40 m long. It is surmised that a through-cut was created to construct the rail line.

Photos are included in Appendix II.

3.0 PHYSIOGRAPHY

Mapping indicates the site is located on a glaciofluvial terrace; glaciolacustrine sediments are indicated west and near the shoreline of Lake Windermere. The sediments are associated with glacial Lake Invermere, which had a shoreline elevation of approximately 870 m - 880 m. Meltwater streams feeding the lake deposited large quantities of silt and sand to depths exceeding 30 m. Rapid drainage of the lake eroded a deep, wide channel through the glaciolacustrine sediments. Post-glacial deposition by streams and surface runoff produced alluvial fans, deltas, and channel sediments. Erosion by streams and rivers resulted in terraces, fluvial channels, and gullies. Continued fluvial sediments produced deltas which

dammed portions of the Rocky Mountain Trench at Canal Flats, Dutch Creek, Toby Creek, former Columbia Lake, Lake Windermere, and the Columbia River floodplain.

4.0 PROPOSED CONSTRUCTION

The existing bridge will be replaced by a new bridge in the same location. The details of the new bridge have yet to be determined; this includes the foundation type. A flexible road structure may be required depending on the type of bridge that is selected.

5.0 FIELD INVESTIGATION

Mrs. Nicole Gietz, P.Eng. and Mr. Matthew Schwetz, E.I.T., both of Groundtech, completed the site investigation on November 1, 2023 and December 20, 2023. The investigation included a visual assessment of the subject site and adjacent areas.

The soils investigation included using a Becker-Hammer drill rig at two locations. Two boreholes (B1 and B2) were drilled to depths of 18 m. Both open-end and closed-end bits (i.e., twin holes) were used. Blow counts during drilling and chamber pressures were recorded to assess strength in the closed-end bit holes and open-end bit holes were used for sampling and stratigraphy assessment. Representative disturbed grab samples of selected materials were collected for future reference and/or laboratory testing.

The soils exposed in the open-end bit boreholes were visually classified and the associated stratigraphy was logged. Becker-Hammer number of blows per 0.305 m and bounce chamber pressure were recorded in the closed-end bit boreholes to assess soils in-situ for density/consistency. The Becker Penetration Test (BPT) data was converted to Standard Penetration Test (SPT) counts using NovoTech's NovoBPT software. SPT counts can be correlated to soil strength. The location of the boreholes is shown on Figure 2. Piezometers were installed in B1 and B2. All boreholes were backfilled. The borehole logs are found in Appendix III.

5.1 Soil Conditions

B1 was drilled near the south end of the bridge abutment to a depth of 18 m. The upper soil layer consisted of moist, loose to compact sand with some gravel and some silt to a depth of 3.35 m, underlain by moist, loose to compact sand, with some gravel to gravelly and trace silt to a depth of 5.79 m. Between 5.79 m and 8 m, moist, compact silt with trace to some sand, trace gravel, and trace clay was found. Wet, dense silt with trace to some sand and trace clay was encountered to a depth of 16.46 m. Wet, compact to dense, sand and silt was found to the bottom of the borehole.

B2 was completed near the north end of the bridge abutment to a depth of 18 m. Moist, compact sand with trace to some silt and trace to some gravel was discovered to a depth of 10.36 m. Moist, dense, gravelly sand with trace silt was encountered to a depth of 11.5 m, underlain by moist, compact, silty sand with trace to some gravel to a depth of 12.8 m. Wet, compact sand with some silt and trace gravel was encountered to a depth of 14.63 m. Wet, compact silt and sand was found to the bottom of the borehole.

5.2 Terrain Conditions

Based on Groundtech's experience in the area, no large-scale slope instabilities should be anticipated at the bridge site. Given the presence of sand and silt soils at the site there is potential for erosion. Site

reconnaissance and Google aerial imagery indicates minor erosion, which is mostly on south-facing slopes.

The through-cut containing the rail lines has a vertical relief of 5.4 m to 5.9 m with slope angles ranging from 32° to 39°.

5.3 Lab Test Summary

Washed gradation tests (ASTM C136 and C117) were completed on multiple soil samples to determine gradational characteristics. Moisture content tests were also completed on the samples. The test results are summarized in Table 1.

Table 1 – Gradation Test Results						
Sample	Cobble (%)	Gravel (%)	Sand (%)	Silt/Clay (%)	Moisture Content (%)	Description
B1 S4	0.0	0.0	9.6	90.4	9.5	SILT/CLAY, trace sand
B1 S7	0.0	0.0	4.4	95.6	22.6	SILT/CLAY, trace sand
B1 S9	0.0	0.0	54.5	45.5	23.2	SAND and SILT/CLAY
B2 S3	0.0	0.1	95.7	4.2	1.9	SAND, trace silt/clay
B2 S7	0.0	0.0	43.6	56.4	23.8	SAND and SILT/CLAY

The above samples are in native soils and most have significant silt content, indicating moderate to high frost action potential.

The lab test results are included in Appendix IV.

5.4 Groundwater Conditions

Groundwater levels in B1 and B2 were measured at 12.3 m and 13.1 m below ground surface, respectively, on December 20, 2023. Groundwater levels at the site are expected to be close to the lake level elevation. Groundwater levels will fluctuate seasonally, being supported by both lake levels and land-to-lake flowing groundwater, supported by snowmelt, which would peak in the late spring or early summer.

5.5 Frost Conditions

Assuming pavement and gravel surface conditions, as well as climatic conditions for Invermere averaged from 1976 to 2005, the estimated frost penetration depth is 2.1 m.

6.0 GEOTECHNICAL RECOMMENDATIONS

6.1 Foundation Types and Parameters

Shallow and deep foundations both have application at the site. Rail line operations may dictate which foundation type is more feasible as foundation construction could conflict with CPR requirements. To follow are design parameters for shallow and deep foundations.

Shallow Foundations

It is assumed shallow foundations will be based on compact sand soils at an embedment depth of 2.1 m.

Maximum allowable soil bearing values of 100 kPa (Serviceability Limit States (SLS)) and 600 kPa (Ultimate Limit States (ULS), Resistance Factor $\Phi = 0.5$ has been applied) may be used for footing design. Estimated total and differential settlements should be less than 25 mm and 19 mm, respectively. The subgrade soils should adequately support bridge loads provided the above-noted bearing values are used in footing design. If subgrade soils vary from the assumed soil type, Groundtech should reassess the above noted bearing values. Minimum footing sizes should be consistent with design codes.

Given the soil characteristics, footings should be founded at a minimum depth of 2.1 m below final site grade for protection from frost penetration. If these depths cannot be achieved, the footings should be suitably insulated.

Deep Foundations

Straight shaft, cast-in-place concrete piles or driven piles (e.g. steel pipe piles or H-piles) may be used to support the foundations. Tables 2 and 3 below present the recommended parameters for the design of deep foundations subject to downward loading. A geotechnical Resistance Factor ($\phi = 0.4$) has been applied to the ultimate values. If piles are subject to uplift forces, uplift capacity should be calculated based on shaft friction only, and a Resistance Factor (ϕ) of 0.3 should be applied to the ultimate shaft resistance values. Uplift ad-freeze pressures of 65 kPa acting along the pile shaft is recommended for soils frozen to the piles.

Table 2 – Pile Design Parameters for Cast-in-Place Piles				
Depth (m)	Ultimate ULS Shaft Resistance (kPa)	Factored ULS Shaft Resistance (kPa)	Ultimate ULS End Bearing Resistance (kPa)	Factored ULS End Bearing Resistance (kPa)
0.0 – 2.1	0	0	N/A	N/A
2.1 – 5.8	25	10	N/A	N/A
5.8 – 8.0	25	10	1300	520
8.0 – 16.5	30	12	2500	1000
16.5 – 18.0	29	11	2000	800

Table 3 – Pile Design Parameters for Driven Pipe Piles				
Depth (m)	Ultimate ULS Shaft Resistance (kPa)	Factored ULS Shaft Resistance (kPa)	Ultimate ULS End Bearing Resistance (kPa)	Factored ULS End Bearing Resistance (kPa)
0.0 – 2.0	0	0	N/A	N/A
2.0 – 5.8	30	12	N/A	N/A
5.8 – 8.0	30	12	1150	450
8.0 – 16.5	30	12	2500	1000
16.5 – 18.0	30	12	2000	800

The design parameters are based on the soil stratigraphy and BPT values encountered in B1.

Straight shaft, cast-in-place concrete piles should extend at least 6 m below final grade to resist uplift forces from frost jacking and should have a minimum diameter of 600 mm. If end-bearing resistance is included in pile design, the base of the pile must be cleaned and inspected to ensure no disturbed or slough material is present at the base of the pile installation hole. Concrete should be poured immediately after drilling and cleaning to prevent soil sloughing. Seepage and sloughing are expected to be encountered during drilling; appropriately sized temporary casing should be available for installation. Dewatering may be required for cast-in-place pile installation. To prevent segregation of the concrete and to prevent bridging within the casing, concrete should be placed using the Tremie method. Piles within three shaft diameters should not be drilled or poured consecutively within a 48-hour period to allow the concrete in adjacent piles to set. A

structural engineer should provide recommendations for steel reinforcement for the piles.

Driven piles should extend at least 6 m below final grade to resist uplift forces from frost jacking and should have a minimum diameter of 200 mm.

Pile spacing for groups of non-displacement piles should be greater than 2.5D; if less than 2.5D, group efficiency analysis should be completed to determine group capacities. For displacement piles, the group efficiency can be assumed to be one due to the densification that occurs during placement (i.e., pile driving).

Settlement in individual piles is estimated to be less than 25 mm, if the above design parameters are applied. If pile groups are planned, further Serviceability Limit States (SLS) analysis should be performed to ensure pile groups will not experience excessive settlement.

6.2 Slope Stability/Cut Slopes

Existing cut slopes in the area are relatively stable at slope angles of 32° to 39°. Slope stability modeling using RocScience's Slide2 program showed that neither shallow nor deep foundations negatively affect slope stability in the through-cut containing the rail line, provided that foundations above the through-cut are set back at least 3.0 m from the crest of the slope. Based on a review of stable cut slopes in the area, cut slopes should be graded at no steeper than 1.6H:1V (32°).

6.3 Lateral Earth Pressure Parameters for Buried Structures

Table 4 below presents lateral earth pressure parameters for buried structures:

Table 4 – Lateral Earth Pressure Parameters for Buried Structures	
Earth Pressure At-Rest Coefficient (K_o)	0.47
Rankine's Active Earth Pressure Coefficient (K_a)	0.31
Coulomb's Active Earth Pressure Coefficient (K_a)	0.28
Passive Earth Pressure Coefficient (K_p)	3
Backfill Unit Weight (kN/m^3)	24.2

Note, the above parameters are based on an effective friction angle of 32°. K_p is limited to a maximum value of 3. The unit weight value is based on Standard Proctor Maximum Dry Density (SPMDD) values for local soils, provided by Artech Consulting Ltd.

6.4 Seismic Parameters

The 30 m thickness of subgrade soils beneath the site are considered Class "D" (stiff) soils, in terms of site classification for Seismic Site Response. The Natural Resources Canada 2020 National Building Code of Canada Seismic Hazard Tool application was used to provide the spectral and peak ground acceleration values for the site for a 2% probability of exceedance in a 50-year event. The values are listed below in Table 5.

Table 5 - Spectrum Acceleration and PGA Data For Site D Conditions					
Return Period	Sa(0.2)	Sa(0.5)	Sa(1.0)	Sa(2.0)	PGA
1:2475 yr	0.42	0.36	0.20	0.10	0.17

6.5 Corrosion Potential of Soils

From soils mapping, soils in the area are expected to be neutral to slightly basic (expected pH of 7.5 to 8.5) and have mild corrosion potential. Foundations should not require protection against corrosion.

6.6 Concrete Type

General Use (GU) cement is recommended, as the soils in the area typically do not have any significant soluble sulphate content.

6.7 Structural Backfill

Structural fill should consist of clean (i.e., < 5 % passing the U.S. No. 200 sieve), well-graded, 75 mm minus sand and gravel (pit run) or crush and should be thoroughly compacted in maximum 150 mm thick lifts. In order to achieve suitable compaction, a minimum of six passes per lift should be completed with a minimum 1200 lb vibratory plate tamper or roller that provides similar compactive effort. Depending on the natural moisture content of the material, the addition of water may be required to achieve suitable compaction. Should this be the case, water should be applied to the fill during the spreading of lifts, prior to compaction. The material should be compacted within 2 % of the Optimum Moisture Content (OMC). The minimum compaction should be 100 % of the material's SPMDD. Compaction testing (i.e., with a nuclear densometer) should be conducted on structural fills that are thicker than 1.0 m.

6.8 Flexible Pavement Structure

The recommended flexible pavement structure for the approaches to the bridge is presented in Table 6:

Table 6 - Flexible Road Pavement Structure		
Component	Minimum Thickness (mm)	Comments/Specifications
Asphalt Concrete	75	Construction materials and procedures should conform to the MMCD/DOI specifications. Where differences occur in the specification, the more conservative specification should be used.
Granular Base Course	150	
Granular Sub-base Course	300	
Granular Subgrade Replacement	As required	Replacement of subgrade soils should occur where materials are considered unsuitable and/or where moisture conditioning is considered impractical/uneconomic and/or compaction of the subgrade is problematic.

Based on the DOI Subdivision and Development Servicing Bylaw No. 902, the road structure for a "residential road" where the California Bearing Ratio has not been determined is as follows:

Minimum compaction of road gravels should be at least 98 % of the material's SPMDD. Base and sub-base material gradation should meet specifications detailed in Bylaw No. 902. Embankment materials not supporting the road structure or sidewalks should be compacted to at least 95 % of the material's SPMDD. Asphalt materials and placement should be consistent with Bylaw No. 902.

7.0 CLOSURE

This report has been prepared for the exclusive use of Urban Systems and the District of Invermere for this project. Groundtech retains the intellectual material acquired from the project.

This report is based on subsurface information obtained during the site investigation, which was conducted with accepted geotechnical engineering principles and practices. It should be noted that natural soil and groundwater conditions can be variable. No other warranty, expressed or implied, is made. Groundtech should be contacted if subsurface conditions encountered during construction differ from those anticipated and/or interpreted from the site investigation.

Individual recommendations presented in this report should not be used out of context with the entire report. Interpretation of any part of this report should be made in consultation with Groundtech. Any use or reliance of this report by a third party is the responsibility of said party and Groundtech accepts no responsibility for any damages suffered by said party as a result of decisions made or actions taken based on this report.

If there are any questions or concerns regarding the foregoing information, please call Douglas Clapp, P. Eng., at (250) 423-4829.

Respectfully submitted,



Douglas A. Clapp, P. Eng.
Permit to Practice: 1003695



8.0 REVIEW OF EXISTING INFORMATION

The following information was reviewed as part of the investigation:

1. Geological Hazards and Geology of the South Columbia River Valley, British Columbia; Ministry of Highways and Public Works (Highways), Geotechnical and Material Branch; March 1978.
2. Soil Resources of the Lardeau Map Area RAB Bulletin 15; Province of British Columbia, Ministry of Environment, Resource Analysis Branch; 1980.
3. Soils and Landforms, Radium Hot Springs 82k/8; Surveys and Mapping Branch, Department of Energy and Mines; 1979.
4. Soil Survey of the Upper Columbia River Valley in the East Kootenay District of British Columbia, Report No. 7 of the British Columbia Soil Survey; British Columbia Department of Agriculture; 1961.
5. Geotechnical Desktop Study Report, Proposed Replacement of 4th Avenue Bridge Over CPR Line, Invermere, BC; Groundtech Engineering Ltd.; November 2017.
6. Subdivision and Development Servicing Bylaw No. 902, 1997; District of Invermere

APPENDIX I

Figures



Figure 1

Location Map

Project:
Geotechnical Site Investigation

Proposed Replacement of
Fort Point Bridge
4th Avenue Over CPR Line
Invermere, BC

Scale: NTS

File: 231202fg

Groundtech Engineering Ltd.



Figure 2

Site Map

Project:
Geotechnical Site Investigation

Proposed Replacement of
Fort Point Bridge
4th Avenue Over CPR Line
Invermere, BC

Legend:

Approximate location
of open end borehole:

○ **B1**

Approximate location
of closed end borehole:

● **B1**

Scale: NTS

File: 231202fg

Groundtech Engineering Ltd.

APPENDIX II

Photos



Photo 1
South View of Bridge

Project:
Geotechnical Site Investigation

Proposed Replacement of
Fort Point Bridge
4th Avenue Over CPR Line
Invermere, BC

Scale: NTS

File: 231202ph

Groundtech Engineering Ltd.



Photo 2

East View of Bridge

Project:
Geotechnical Site Investigation

Proposed Replacement of
Fort Point Bridge
4th Avenue Over CPR Line
Invermere, BC

Scale: NTS

File: 231202ph

Groundtech Engineering Ltd.



Photo 3

North Foundation of Existing Bridge

Project:
Geotechnical Site Investigation

Proposed Replacement of
Fort Point Bridge
4th Avenue Over CPR Line
Invermere, BC

Scale: NTS

File: 231202ph

Groundtech Engineering Ltd.



Photo 4

South Foundation of Existing Bridge

Project:
Geotechnical Site Investigation

Proposed Replacement of
Fort Point Bridge
4th Avenue Over CPR Line
Invermere, BC

Scale: NTS

File: 231202ph

Groundtech Engineering Ltd.

APPENDIX III

Borehole Logs

Bore Hole Log: B1

Project: DOI 4th Ave Bridge

Project No.: 231202

Borehole Location: South end of bridge abutment

Client: Urban Systems

Geographic Location: 

Investigation Date: November 2, 2023

DEPTH (M)	SOIL SYMBOL	LITHOLOGIC DESCRIPTION	SAMPLES		STANDARD PENETRATION TEST (SPT)	MOISTURE %	FINES %	ATTERBERG LIMITS		PIEZOMETER	COMMENTS		
			NO.	TYPE				LL (%)	PL (%)				
Ground Surface												PVC Cap	
0		Moist, loose to compact, sand, some gravel, some silt	S1	GS							Standpipe		
1													
2													
3		3.35 m	S2	GS									
4													
5													
6		Moist, loose to compact, sand, gravelly to some gravel, trace silt	S3	GS									
7													
8													
9		Moist, compact, silt, trace to some sand, trace gravel	S4	GS		9.5	90.4						
10													
11													
12		Moist, dense, silt, trace to some sand, trace clay	S5	GS									
13													
14													
15		Moist, dense, silt, trace to some sand, trace clay	S6	GS									
16													
17													
18		Wet, dense, silt, trace sand, trace clay	S7	GS		22.6	95.6						
19													
20													
21		Wet, dense silt, some sand	S8	GS									
22													
23													
24		Wet, compact to dense, sand and silt	S9	GS		23.2	45.5						
25													
26													
27	Test Hole Terminated at 18 m												

GW at 12.3 m on Dec 20/23



Subcontractor: Earth Drilling Co. Ltd

Equipment: Becker Hammer

Logged By: NG

Lead Engineer: Douglas A. Clapp P.Eng

Bore Hole Log: B2

Project: DOI 4th Ave Bridge

Project No.: 231202

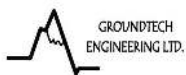
Borehole Location: North of bridge abutment

Client: Urban Systems

Geographic Location: 

Investigation Date: November 2, 2023

DEPTH (M)	SOIL SYMBOL	LITHOLOGIC DESCRIPTION	SAMPLES		STANDARD PENETRATION TEST (SPT)	MOISTURE %	FINES %	ATTERBERG LIMITS		PIEZOMETER	COMMENTS
			NO.	TYPE				LL (%)	PL (%)		
Ground Surface											
0		Moist, loose, sand, some silt, some gravel									
0.91 m											
1		Moist, compact, sand, some gravel, trace silt	S1	GS							
2											
3		Moist, compact, sand, trace silt, trace gravel	S2	GS							
4											
5											
6											
7											
8			S3	GS		1.9	4.2				
9											
10											
10.36 m											
11		Moist, dense, gravelly sand, trace silt	S4	GS							
11.5 m											
12		Moist, compact, silty sand, trace to some gravel	S5	GS							
12.8 m											
13		Wet, compact, sand, some silt, trace gravel	S6	GS							
14											
14.63 m											
15		Wet, compact, silt and sand	S7	GS		23.8	56.4				
16											
17											
18											
18 m											
19		Test Hole Terminated at 18 m									

GW at 13.1 m on
Dec 20/23

Subcontractor: Earth Drilling Co. Ltd

Equipment: Becker Hammer

Logged By: NG

Lead Engineer: Douglas A. Clapp P.Eng

APPENDIX IV

Lab Test Results

MATERIALS TESTING & INSPECTION

PARTICLE SIZE ANALYSIS REPORT

Tested in accordance with ASTM C136 Sieve Analysis of Fine and Coarse Aggregates / C117 Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing

Project No: 23.0002.AR
Project: Groundtech General
Client: Groundtech Engineering Ltd.
Attn: Doug Clapp
CC: -

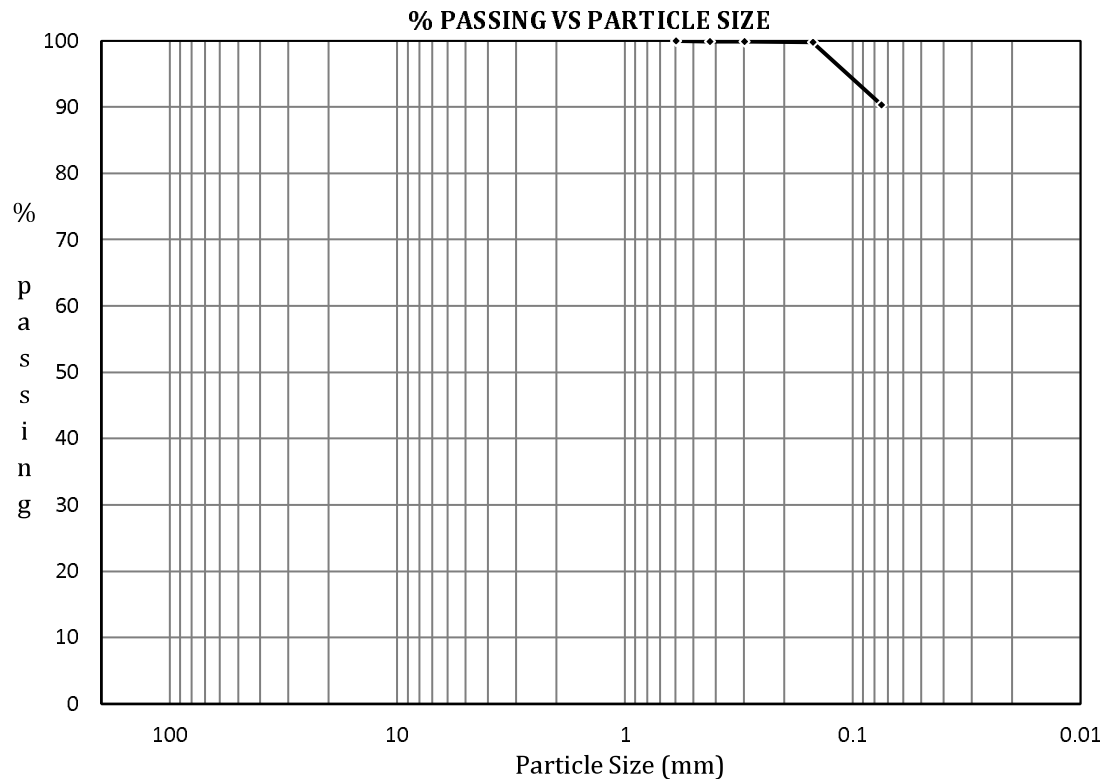
Lab ID: S23935
Client Project: 4th Ave Bridge
Date Received: November 2, 2023

Sample Description: SILT/CLAY, trace sand
Sample ID: B1 S4
Sample Source: Geotechnical Investigation

Sample Date: -
Sample Time: -
Sampled By: Client

Specification: NA

Sieve Analysis		
Sieve Size (mm)	% Passing	Specification limits
150.0		
100.0		
75.0		
37.5		
19.0		
12.5		
9.5		
4.75		
2.00		
1.18		
0.600	100.0	
0.425	99.9	
0.300	99.9	
0.150	99.8	
0.075	90.4	


Summary

Cobble : >75mm 0.0 %
Gravel : < 75mm and > 4.75mm 0.0 %
Sand : < 4.75mm and > 0.075mm 9.6 %
Silt/Clay : < 0.075mm 90.4 %

Moisture Content: 9.5 %

Comments: -

Report Date: November 12, 2023

Reviewed By: 
 Bryan Morrison, BSc.

*Reporting of these results constitutes a testing service only. No engineering interpretation of the results is expressed or implied.
 Additional data or information can be provided upon written request.*

MATERIALS TESTING & INSPECTION

PARTICLE SIZE ANALYSIS REPORT
Tested in accordance with ASTM C136 Sieve Analysis of Fine and Coarse Aggregates / C117 Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing

Project No: 23.0002.AR
Project: Groundtech General
Client: Groundtech Engineering Ltd.
Attn: Doug Clapp
CC: -

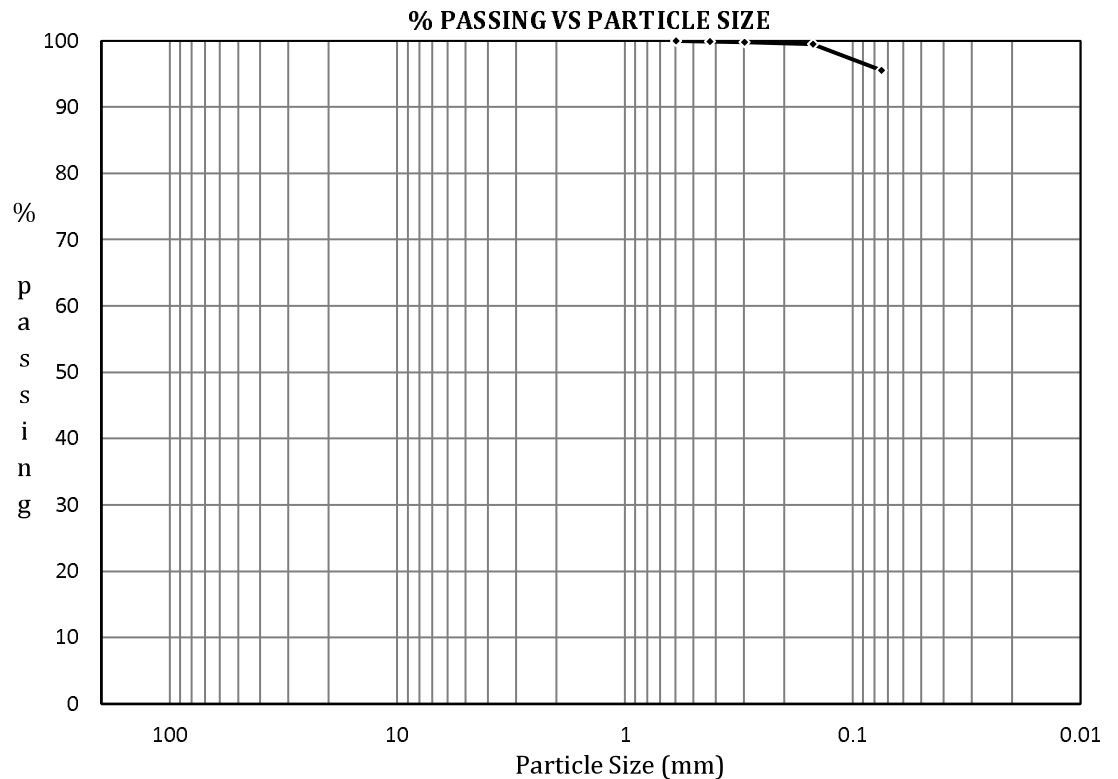
Lab ID: S23936
Client Project: 4th Ave Bridge
Date Received: November 2, 2023

Sample Description: SILT/CLAY, trace sand
Sample ID: B1 S7
Sample Source: Geotechnical Investigation

Sample Date: -
Sample Time: -
Sampled By: Client

Specification: NA

Sieve Analysis		
Sieve Size (mm)	% Passing	Specification limits
150.0		
100.0		
75.0		
37.5		
19.0		
12.5		
9.5		
4.75		
2.00		
1.18		
0.600	100.0	
0.425	99.9	
0.300	99.8	
0.150	99.5	
0.075	95.6	


Summary

Cobble : >75mm 0.0 %
 Gravel : < 75mm and > 4.75mm 0.0 %
 Sand : < 4.75mm and > 0.075mm 4.4 %
 Silt/Clay : < 0.075mm 95.6 %

Moisture Content: 22.6 %

Comments: -

Report Date: November 12, 2023

Reviewed By: 
 Bryan Morrison, BSc.

*Reporting of these results constitutes a testing service only. No engineering interpretation of the results is expressed or implied.
 Additional data or information can be provided upon written request.*

MATERIALS TESTING & INSPECTION

PARTICLE SIZE ANALYSIS REPORT
Tested in accordance with ASTM C136 Sieve Analysis of Fine and Coarse Aggregates /C117 Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing

Project No: 23.0002.AR
Project: Groundtech General
Client: Groundtech Engineering Ltd.
Attn: Doug Clapp
CC: -

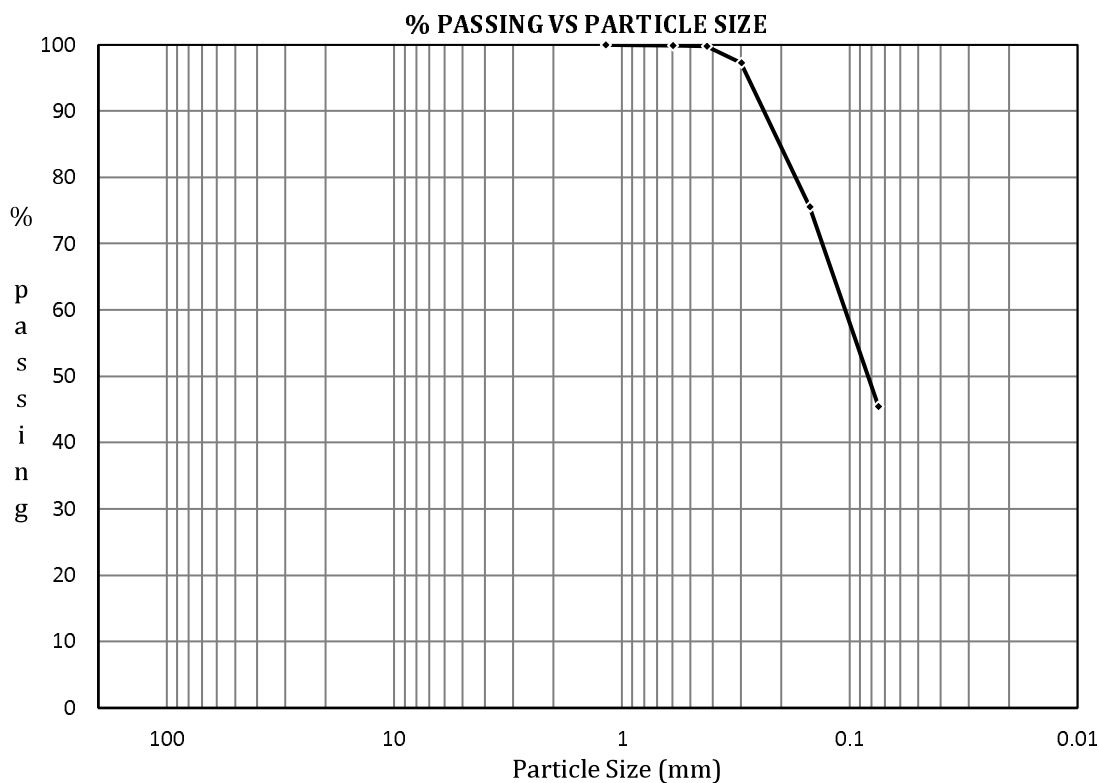
Lab ID: S23937
Client Project: 4th Ave Bridge
Date Received: November 2, 2023

Sample Description: SAND and SILT/CLAY
Sample ID: B1 S9
Sample Source: Geotechnical Investigation

Sample Date: -
Sample Time: -
Sampled By: Client

Specification: NA

Sieve Analysis		
Sieve Size (mm)	% Passing	Specification limits
150.0		
100.0		
75.0		
37.5		
19.0		
12.5		
9.5		
4.75		
2.00		
1.18	100.0	
0.600	99.9	
0.425	99.8	
0.300	97.3	
0.150	75.6	
0.075	45.5	


Summary

Cobble : >75mm 0.0 %
 Gravel : < 75mm and > 4.75mm 0.0 %
 Sand : < 4.75mm and > 0.075mm 54.5 %
 Silt/Clay : < 0.075mm 45.5 %

Moisture Content: 23.2 %

Comments: -

Report Date: November 12, 2023

Reviewed By: 
 Bryan Morrison, BSc.

*Reporting of these results constitutes a testing service only. No engineering interpretation of the results is expressed or implied.
 Additional data or information can be provided upon written request.*

MATERIALS TESTING & INSPECTION

PARTICLE SIZE ANALYSIS REPORT

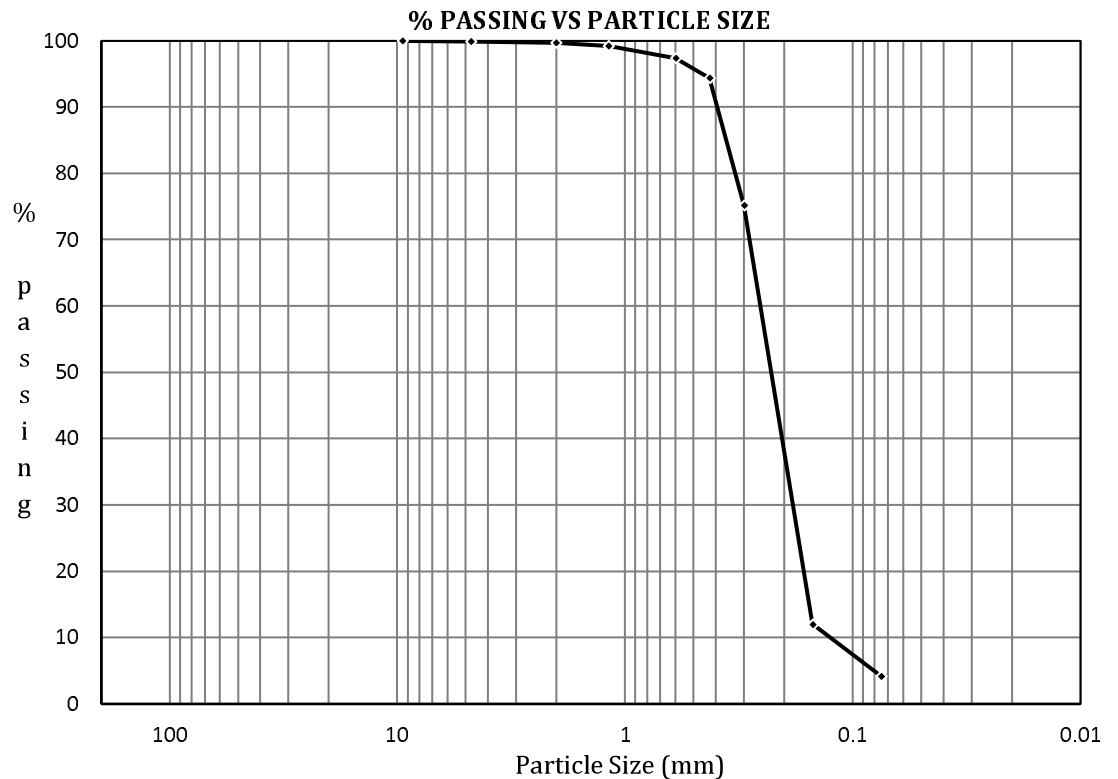
Tested in accordance with ASTM C136 Sieve Analysis of Fine and Coarse Aggregates /C117 Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing

Project No: 23.0002.AR
Project: Groundtech General
Client: Groundtech Engineering Ltd.
Attn: Doug Clapp
CC: -
Sample Description: SAND, trace silt/clay
Sample ID: B2 S3
Sample Source: Geotechnical Investigation

Lab ID: S23938
Client Project: 4th Ave Bridge
Date Received: November 2, 2023
Sample Date: -
Sample Time: -
Sampled By: Client

Specification: NA

Sieve Analysis		
Sieve Size (mm)	% Passing	Specification limits
150.0		
100.0		
75.0		
37.5		
19.0		
12.5		
9.5	100.0	
4.75	99.9	
2.00	99.7	
1.18	99.2	
0.600	97.4	
0.425	94.4	
0.300	75.2	
0.150	12.0	
0.075	4.2	


Summary

Cobble : >75mm 0.0 %
 Gravel : < 75mm and > 4.75mm 0.1 %
 Sand : < 4.75mm and > 0.075mm 95.7 %
 Silt/Clay : < 0.075mm 4.2 %

Moisture Content: 1.9 %

Comments: -

Report Date: November 12, 2023

Reviewed By: 
 Bryan Morrison, BSc.

*Reporting of these results constitutes a testing service only. No engineering interpretation of the results is expressed or implied.
 Additional data or information can be provided upon written request.*

MATERIALS TESTING & INSPECTION

PARTICLE SIZE ANALYSIS REPORT

Tested in accordance with ASTM C136 Sieve Analysis of Fine and Coarse Aggregates /C117 Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing

Project No: 23.0002.AR
Project: Groundtech General
Client: Groundtech Engineering Ltd.
Attn: Doug Clapp
CC: -

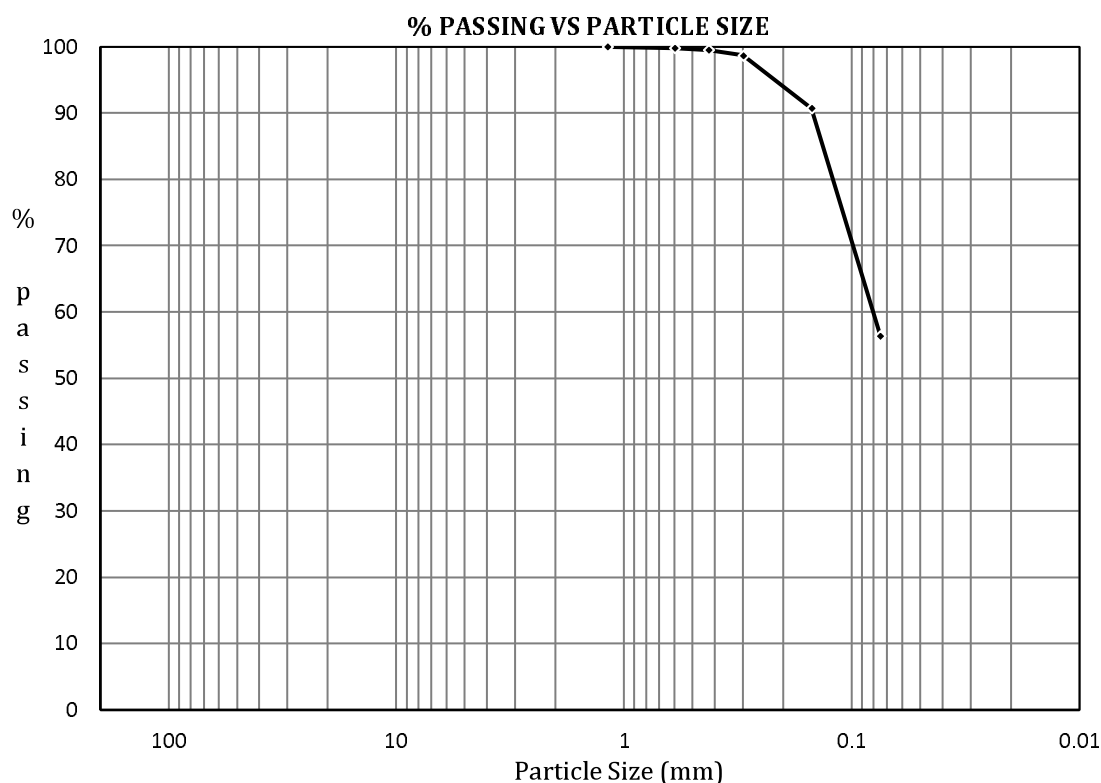
Lab ID: S23939
Client Project: 4th Ave Bridge
Date Received: November 2, 2023

Sample Description: SAND and SILT/CLAY
Sample ID: B2 S7
Sample Source: Geotechnical Investigation

Sample Date: -
Sample Time: -
Sampled By: Client

Specification: NA

Sieve Analysis		
Sieve Size (mm)	% Passing	Specification limits
150.0		
100.0		
75.0		
37.5		
19.0		
12.5		
9.5		
4.75		
2.00		
1.18	100.0	
0.600	99.8	
0.425	99.5	
0.300	98.7	
0.150	90.7	
0.075	56.4	


Summary

Cobble : >75mm 0.0 %
Gravel : < 75mm and > 4.75mm 0.0 %
Sand : < 4.75mm and > 0.075mm 43.6 %
Silt/Clay : < 0.075mm 56.4 %

Moisture Content: 23.8 %

Comments: -

Report Date: November 12, 2023

Reviewed By: 
 Bryan Morrison, BSc.

*Reporting of these results constitutes a testing service only. No engineering interpretation of the results is expressed or implied.
 Additional data or information can be provided upon written request.*