Request for Proposals

For

White Rock Pier Reconstruction

Marine Construction Contract

Request for Proposals No.: **WR019 - 010**

Issued: **Friday, March 1, 2019**

Submission Deadline: **March 19th, 4:00pm local time**

TABLE OF CONTENTS

PART 1 – REQUEST FOR PROPOSALS AND SUBMISSION INSTRUCTIONS

1.1 Request for Proposals

This Request for Proposals (the "**RFP**") by the City of White Rock (the "**City**") is to prospective Proponents ("**Proponents**") to submit Proposals for the White Rock Pier Reconstruction Marine Construction Contract, as further described in the work specifications in Appendix C (the "**Work**"). On December 20, 2018, the White Rock Pier located on the Marine Drive Promenade, White Rock, British Columbia sustained damage from a storm event. The City of White Rock has assigned funding to reconstruct sections of the pier that were damaged and replace timber components outside of the areas that collapsed. The reconstructed sections will consist of a more resilient structural system that looks similar to the original structure. The new structure comprises a modular system that is intended to minimize time on site for construction. The new structural system has been designed in accordance with current building codes and will allow for the possibility to raise the elevation of the deck in the future to accommodate sea level rise.

It is important to note the following:

- At the time of this RFP, the design of the structures is still ongoing, and the estimated quantities will be subject to change.
- When the final construction drawings are complete, there may be an adjustment in the amount of the work to meet available funds for the work. This may include an increase or decrease in the amount of deck structure and shoreline work at the eastern limit of the worksite.
- As the work progresses and the costs are forecast and any contingency monies are consumed, there may be an adjustment in the quantities or size of the reconstructed portions of the structure to maximize the delivered reconstructed pier within the available funds.

1.1.1 Definitions

In this RFP, the following definitions apply:

.1 "**Bid Bond**" means the security to accompany the Proposal as required by Section 1.5.8 of this RFP;

.2 "**Closing**" means the Submission Deadline;

.3 "**Contract**" means the contract described in Section 1.3 of this RFP;

.4 "**Contractor**" means the successful Proponent who enters into a Contract with the City;

.5 "**Proponent**" means a proponent submitting a Proposal;

.6 "**Proposal**" means a Proposal submitted in response to the RFP in accordance with Section 1.5.1 of this RFP;

.7 "**Proposal Price**" means the total monetary sum identified by the Proponent the Submission Form;

.8 "**RFP**" means this Request for Proposals;

.9 "**RFP Contact**" means the person identified in Section 1.2 of this RFP or their successor;

.10 "**RFP Documents**" means this RFP and all appendices and addenda;

.11 "**Submission Deadline**" has the meaning described in Section 1.4 of this RFP;

.12 "**Submission Form**" means the Submission Form described in Section 1.5.1 of this RFP; and

.13 "**Work**" means the White Rock Pier reconstruction work and specifications described in Schedule A of this RFP.

1.1.2 RFP Documents and Due Diligence

.1 RFP Documents are made available only for the purpose of obtaining Proposals for this RFP. Their use does not confer a license or grant for other purposes.

.2 Upon receipt of RFP Documents, verify that documents include all pages and attachments indicated by the Table of Contents. Notify RFP Contact should the documents be incomplete.

.3 The Proponent is required to satisfy itself by personal examination of the place of the Work and of the RFP Documents as to the provisions of the Contract, and to fully inform itself prior to submitting a Proposal regarding the conditions and limitations under which the Work is to be performed, the conditions which may be encountered, the materials that the Contractor will be required to supply, and other materials which are required in carrying out the Contract to a satisfactory conclusion. No claims will be entertained based on any assertion by the Proponent that the Proponent was not aware of the provisions or conditions intended to be covered by the Contract.

1.1.3 Resolution of Discrepancies and Ambiguities

.1 If a Proponent finds discrepancies in, or omissions from the RFP Documents, or if a Proponent is in doubt as to their meaning, the Proponent should contact the RFP Contact immediately in writing. Should addenda to the RFP Documents be required for any reason, it is the City's intention not to issue addenda during a period three days prior to the Submission Deadline. All addenda become part of the Contract. Proponents should include adjustment costs in the Proposal Price.

.2 Requests for clarification must be in writing and received by the RFP Contact six (6) business days before the date of Closing.

.3 No oral interpretations will be effective to modify the provisions of the Proposal or Contract.

1.2 RFP Contact

For the purposes of this procurement process, the City's contact person (the "**RFP Contact**") will be:

Lauren Tagg - Project Engineer
E-Mail: Lauren.Tagg@advisian.com

Proponents and their representatives are not permitted to contact any employees, officers, agents, elected or appointed officials or other representatives of the City, other than the RFP Contact, concerning matters regarding this RFP. Failure to adhere to this rule may result in the disqualification of the Proponent and the rejection of the Proponent's Proposal.

1.3 Type of Contract for Work

The successful Proponent will be required to enter into a CCDC4 - Unit Price Contract with the City for the provision of the Work which shall include the supplementary terms and conditions detailed in Appendix A to this RFP along with all addenda (the "**Contract**"). It is the City's intention to enter into the Contract with only one (1) legal entity. The term of the Contract is anticipated to be for a period of approximately four (4) months commencing on or about April 3, 2019, with substantial completion on or before July 15, 2019 and total completion of the work on or before July 31, 2019.

1.4 RFP Timetable

The timetable for this RFP consists of the following events, dates and times.

Issue Date of RFP	March 1, 2019
Mandatory Site Visit	March 5, 2019 at 1:00 PM local time
Deadline for Questions	March 11, 2019 at 4:00 PM local time
Deadline for Issuing Addenda	March 14, 2019 at 4:00 PM local time
Submission Deadline	March 19, 2019 at 4:00 PM local time
Anticipated Execution Date for Contract	April 2, 2019
End Date of Irrevocability Period for Proposals	May 18, 2019
Target Substantial Completion Date	July 15, 2019
Target Total Completion Date	July 31, 2019

The RFP timetable is tentative only and may be changed by the City at any time.

1.4.1 Mandatory Site Visit

All Proponents will be required to attend the mandatory site visit. Interested Proponents must meet at the Operations Meeting Room located at 877 Keil Street, White Rock, British Columbia on March 5th 2019 at 1:00 PM local time. Each Proponent is permitted to have a maximum of three (3) representatives attend at the site visit.

1.5 Submission of Proposals

Proposals submitted in response to this RFP must be in accordance with this section.

1.5.1 Proposals to be submitted in Prescribed Form

.1 Proposals must be submitted in the Submission Form attached as Appendix B along with all schedules consisting of:

Schedule A: Proponent's Experience, Reputation and Qualifications

Schedule B: Proponent's Work Plan and Methodology

Schedule C: Proponent's Work Schedule

Schedule D: Proponent's Pricing for Work

Schedule E: Proponent's Pricing for Additions and Deletions

(the "**Proposal**").

Other than inserting the information requested on the mandatory Submission Form set out in this RFP, a Proponent may not make any changes to any of the forms. Any Proposal containing any such changes, whether on the face of the form or elsewhere in the Proposal, may be disqualified.

.2 Proposals shall be typewritten or made in ink. Penciled entries or changes will not be considered.

.3 Proposals shall be in Canadian dollars and shall include all labour, material, freight, customs, and excise duties, and all applicable municipal, provincial and federal taxes, except GST, in effect on the date of Closing. The cost of bonding should be listed as an individual item and included in the Proposal Price.

.4 Proposals shall be for the entire Work described in this RFP, including inspection and testing by qualified independent agencies as specified.

.5 Proposals shall be firm for the duration of the Contract, and be unaffected by escalations in costs of wages and materials.

.6 Proposals shall be executed under seal by the hands of the Proponent's duly authorized officers. The City may require proof of authority to execute the Proposal, in the form of a certified copy of a resolution naming the person or persons in question as authorized to sign the Proposal for and on behalf of the corporation or partnership.

.7 The successful Proponent must obtain all necessary permits and the cost of permits shall be to the Contractor's account.

.8 The successful Proponent is required to obtain a City of White Rock business license prior to commencement of Work.

1.5.2 Proposals to be Submitted at Prescribed Location

Proposals must be submitted at:

City of White Rock
Engineering and Municipal Operations Department
877 Keil Street
White Rock, British Columbia, V4B 4V6
Attention: Rosaline Choy, Manager of Engineering

1.5.3 Proposals to be Submitted on Time

Proposals must be submitted at the location set out above on or before the Submission Deadline. Proposals submitted after the Submission Deadline will be rejected. Onus and responsibility rest solely with the Proponent to deliver its Proposal to the exact location (including floor, if applicable) indicated in this RFP on or before the Submission Deadline. The City does not accept any responsibility for Proposals delivered to any other location by the Proponent or its delivery agents. Proponents are advised to make submissions well before the Submission Deadline. Proponents making submissions near the Submission Deadline do so at their own risk.

Proponents are advised to allow at least 48 hours to ensure Proposals are delivered on time. The City assumes no responsibility for any failure by a Proponent to submit a Proposal in accordance with this RFP.

1.5.4 Proposals to be Submitted in Prescribed Format

Proponents must submit two (2) hard copies and one (1) electronic copy consisting of a single PDF file on USB, enclosed in a sealed package. If there is a conflict or inconsistency between the hard copy and the electronic copy of the Proposal, the hard copy of the Proposal will prevail. Proposals should be prominently marked with the RFP title and number (see RFP cover page), with the full legal name and return address of the Proponent.

1.5.5 Amendment of Proposals

Proponents may amend their Proposals prior to the Submission Deadline by submitting the amendment in a sealed package prominently marked with the RFP title and number and the full legal name and return address of the Proponent to the location set out above. Any amendment should clearly indicate which part of the Proposal the amendment is intended to amend or replace. Amended Proposals should also be submitted in the number and format described in section 1.5.4 above.

1.5.6 Withdrawal of Proposals

Proponents may withdraw their Proposals prior to the Submission Deadline. To withdraw a Proposal, a notice of withdrawal must be sent to the RFP Contact prior to the Submission Deadline and must be signed by an authorized representative of the Proponent. The City is under no obligation to return withdrawn Proposals.

1.5.7 Proposals Irrevocable after Submission Deadline

Proposals shall be irrevocable for a period of 60 days running from the moment that the Submission Deadline passes.

1.5.8 Bonding Requirements for Proposals

.1 Each Proposal shall be accompanied by security in the form of a Bid Bond in the amount of 10% of the Proposal Price, made payable to the City. The Bid Bond shall be with a Surety company licensed to transact business in the Province of British Columbia.

.2 Submit with the Bid Bond a Consent of Surety stating that the surety company providing the Bid Bond is willing to supply the Performance Bond and Labour and Materials Payment Bond required.

.3 The Bid Bond will be returned after delivery to the City of the required Performance Bond and Labour and Materials Payment Bond by the accepted Proponent.

.4 The security of unsuccessful Proponents will be returned without interest within 90 days from the date of Closing.

.5 If any Proponent withdraws its Proposal after the Closing time on the stipulated date and before or after receiving notification that its Proposal has been accepted by the City or if the accepted Proponent fails to execute the Contract or to provide the bonds required herein when called upon to do so, its security shall be forfeited, without recourse and without limiting the City's other legal rights and remedies against that Proponent.

1.5.9 Bonding Requirements for Successful Proponent

The accepted Proponent shall furnish a Performance Bond and Labour and Materials Payment Bond in accordance with the following:

.1 The accepted Proponent shall provide a Performance Bond and a Labour and Material Payment Bond each in the amount of 50% of the Contract Price.

.2 These bonds must be provided within ten (10) days of Contract award and must be maintained in good standing until the fulfillment of the Contract including the requirements of the warranty as provided for in GC 24 - Warranty and the payment of all obligations arising under the Contract. Should the accepted Proponent fail to provide these required bonds the Bid Bond may be forfeited.

.3 All such bonds shall be issued on a form approved by the Insurance Bureau of Canada and issued by a duly licensed Surety authorized to transact business in the province or territory of the Place of the Work and shall be maintained in good standing until the fulfillment of the Contract.

.4 The costs attributed to providing such bonds shall be included in the Bid Price.

.5 The obligee on the bonds shall be the City of White Rock.

1.5.10 Alternative products or materials

If, for any reason, the Proponent should propose to use alternative products or materials which, in the Proponent's opinion, would improve the Work or reduce the cost of the Work, the Proponent shall:

.1 Base a first Proposal on the exact requirements of the Proposal Documents;

.2 Submit a second Proposal describing in full detail the different products or materials the Proponent is proposing and the reasons for the proposed substitution;

.3 The second Proposal shall provide sufficient information to enable the Owner to determine acceptability of the proposed substitution(s) and include complete information, including the dollar amount of additions to or reductions from the Proposal Price, of required revisions to other Work to accommodate each substitution. A later claim by the Proponent for an addition to the Contract Price because of changes in the Work necessitated by use of alternative or substitute Products will not be considered.

The Owner may accept or reject any such proposal, without explanation.

1.6 Proposal Openings

1.6.1 Private Opening of Proposals

Proposals will be opened in private after the Closing.

1.6.2 Disqualification of Proposals

.1 Proposals which are incomplete, conditional, illegible or obscure, or that contain additions not called for, reservations, erasures, alterations or irregularities of any kind, may be rejected.

.2 Proposals not accompanied by a completed Submission Form, Bid Bond, Bid Deposit and Consent of Surety as specified herein may be rejected.

.3 Proposals may be rejected if the pricing for Work appears to be so unbalanced that it may adversely affect the interest of the City.

.4 Proposals may be rejected if they are based on an unreasonable period of time for the completion of the Work.

[End of Part 1]

PART 2 – EVALUATION AND AWARD

2.1 Evaluation Criteria

The evaluation of Proposals will be undertaken on behalf of the City by an evaluation team. The evaluation team may consult with others, including City staff members, third-party contractors and references, as the evaluation team may in its discretion decide is required.

The evaluation team will compare and evaluate all Proposals to determine each Proponent's strength and ability to provide the goods or services in order to determine the Proposal which is most advantageous to the City, using the following criteria:

(a) Experience, Reputation and Qualifications;
(b) Work Plan and Methodology;
(c) Work Schedule; and
(d) Pricing for Work.

The evaluation team will not be limited to the criteria referred to above, and may consider other criteria that the team identifies as relevant during the evaluation process. All criteria considered by the evaluation team will be applied evenly and fairly to all Proposals. The evaluation team may apply the evaluation criteria on a comparative basis, evaluating the Proposals by comparing one Proponent's Proposal to another Proponent's Proposal.

With respect to financial criteria, Proposals will be evaluated on the basis of which Proposal will provide the best overall value to the City.

2.1.2 Clarifications and Additional Information

The evaluation team may, at its discretion, request clarifications or additional information from a Proponent with respect to any Proposal, and the evaluation team may make such requests to only selected Proponents. The evaluation team may consider such clarifications or additional information in evaluating a Proposal.

2.1.3 Appearance before Evaluation Team to Provide Clarifications

The evaluation team may, at its discretion, invite some or all of the Proponents to appear before the evaluation team to provide clarifications of their Proposals. In such event, the evaluation team will be entitled to consider the answers received in evaluating Proposals.

2.1.4 No Disclosure of Evaluations

No totals, weights, prices, scores or other evaluation information or data will be provided to any Proponent.

2.1.5 Representations of Proponents

By submitting a Proposal, a Proponent is representing that it has the qualifications, experience, knowledge, skills and abilities necessary for the fulfillment of the Contract, and that all components, labour, materials

and equipment required to undertake the Work or to provide the goods or services have been identified in the Proposal or will be provided by the Proponent and are included in Proposal price.

2.1.6 Completeness of Proposal

Proponents will be deemed to have carefully examined this RFP, including all attached schedules and appendices and any addenda, prior to preparing and submitting a Proposal with respect to any and all facts which may influence a Proposal.

2.1.7 Lowest Proposal Price Not Determinant

Without limiting its rights under this RFP and for greater certainty, the lowest Proposal Price or any Proposal will not necessarily be accepted. Because maintaining schedule for this project is critical, a Proponent's demonstrated capabilities in executing the Work may be of greater importance to the City than the Proposal Price. The City reserves the right to reject any or all Proposals or to accept any Proposal should it be deemed in the interest of the City to do so.

2.2 Notice to Proponent and Execution of Contract

Notice of selection by the City to the selected Proponent shall be in writing. Upon notification, the City and the Proponent will execute the Contract in the form set out in Section 1.3 of this RFP in accordance with the terms of this RFP.

2.3 Failure to Enter into Contract

If a selected Proponent fails to execute the Contract or satisfy any applicable conditions within ten (10) days of notice of selection, the City may, without incurring any liability and without limiting its other legal rights and remedies against the selected Proponent, withdraw the selection of that Proponent and proceed with the selection of another Proponent.

[End of Part 2]

PART 3 – TERMS AND CONDITIONS OF THE RFP PROCESS

3.1 General Information and Instructions

3.1.1 RFP Incorporated into Proposal

All of the provisions of this RFP are deemed to be accepted by each Proponent and incorporated into each Proponent's Proposal. A Proponent who submits conditions, options, variations or contingent statements to the terms as set out in this RFP, including the supplementary conditions of the Contract in Appendix A, either as part of its Proposal or after receiving notice of selection, may be disqualified. If a Proponent is not disqualified despite such changes or qualifications, the provisions of this RFP, including the supplementary conditions of the Contract set out in Appendix A, will prevail over any such changes or qualifications in the Proposal.

3.1.2 Proponents to Follow Instructions

Proponents should structure their Proposals in accordance with the instructions in this RFP. Where information is requested in this RFP, any response made in a Proposal should reference the applicable section numbers of this RFP.

3.1.3 Proposals in English

All Proposals are to be in English only.

3.1.4 No Incorporation by Reference

The entire content of the Proponent's Proposal should be submitted in a fixed form, and the content of websites or other external documents referred to in the Proponent's Proposal but not attached will not be considered to form part of its Proposal.

3.1.5 References and Past Performance

In the evaluation process, the City may include information provided by the Proponent's references and may also consider the Proponent's past performance or conduct on previous contracts with the City or other institutions.

3.1.6 Information in RFP Only an Estimate

The City and its advisers make no representation, warranty or guarantee as to the accuracy of the information contained in this RFP or issued by way of addenda. Any quantities shown or data contained in this RFP or provided by way of addenda are estimates only, and are for the sole purpose of indicating to Proponents the general scale and scope of the Work. It is the Proponent's responsibility to obtain all the information necessary to prepare a Proposal in response to this RFP.

3.1.7 Proponents to Bear Their Own Costs

The Proponent will bear all costs associated with or incurred in the preparation and presentation of its Proposal, including, if applicable, costs incurred for interviews or demonstrations.

3.1.8 Proposal to be Retained by the City

The City will not return the Proposal or any accompanying documentation submitted by a Proponent.

3.1.9 No Exclusivity of Contract

The Contract will not be an exclusive contract for the provision of the described Work. The City may contract with others for goods and services the same as or similar to the Work or may obtain such goods and services internally.

3.1.10 Sub-Contracting

Proponents may use sub-contractors for the Work, subject to the following:

(a) Use of a sub-contractor (who should be clearly identified in the Proposal) is acceptable. This may include a joint submission by two (2) Proponents that are not affiliated and have no formal corporate links; however, in such case, one of these Proponents should be prepared to take overall responsibility for successful performance of the Contract and this should be clearly defined in the Proposal.

(b) Sub-contracting to any firm or individual whose current or past corporate or other interests may, in the City's opinion, give rise to a conflict of interest in connection with this RFP will not be permitted. This includes, but is not limited to, any firm or individual involved in the preparation of this RFP.

(c) Where applicable, the names of approved sub-contractors listed in the Proposal will be included in the Contract. No additional sub-contractors will be added nor other changes made to this list in the Contract, without the written consent of the City.

3.1.11 Contract Subject to applicable Permits and Licences

Neither acceptance of a Proposal nor execution of a Contract will constitute approval by the City of any activity or development contemplated in any Proposal that requires any approval, permit or license pursuant to any federal, provincial, regional district or municipal statute, regulation or by-law.

3.2 Communication after Issuance of RFP

3.2.1 Proponents to Review RFP

Proponents shall promptly examine all of the RFP Documents and

(a) shall report any errors, omissions or ambiguities; and

(b) may direct questions or seek additional information

in writing by email to the RFP Contact on or before the Deadline for Questions. All questions or comments submitted by Proponents by email to the RFP Contact shall be deemed to be received once the email has entered into the RFP Contact's email inbox. No such communications are to be directed to anyone other

than the RFP Contact, and the City shall not be responsible for any information provided by or obtained from any source other than the RFP Contact. The City is under no obligation to provide additional information. It is the responsibility of the Proponent to seek clarification from the RFP Contact on any matter it considers to be unclear. The City shall not be responsible for any misunderstanding on the part of the Proponent concerning this RFP or its process.

3.2.2 All New Information to Proponents by Way of Addenda

This RFP may be amended only by addendum in accordance with this section. If the City, for any reason, determines that it is necessary to provide additional information relating to this RFP, such information will be communicated to all Proponents by addenda. Should the City issue an addendum, it will be posted only on the BCBid website. Each addendum forms an integral part of this RFP and may contain important information, including significant changes to this RFP. Proponents are responsible for obtaining all addenda issued by the City. In the Submission Form (Appendix B), Proponents should confirm their receipt of all addenda by setting out the number of each addendum in the space provided.

3.2.3 Post-Deadline Addenda and Extension of Submission Deadline

If the City determines that it is necessary to issue an addendum after the Deadline for Issuing Addenda, the City may extend the Submission Deadline for a reasonable period of time.

3.2.4 Verify, Clarify and Supplement

When evaluating Proposals, the City may request further information from the Proponent or third parties in order to verify, clarify or supplement the information provided in the Proponent's Proposal. The response received by the City shall, if accepted by the City, form an integral part of the Proponent's Proposal.

3.3 Notification and Debriefing

3.3.1 Notification of Successful Proponent and Execution of Contract

1. The successful Proponent shall be notified by the City of its successful Proposal and upon notification, will be required to execute the Contract and provide a Performance Bond and Labour and Materials Payment Bond within ten (10) days of notification in accordance with the requirements of this RFP and the Contract Documents.

.2 The successful Proponent shall provide confirmation of insurance from an approved company stating that the Proponent is insured as required by the General and Supplementary Conditions.

3.3.2 Notification to Other Proponents

Once the Contract is executed by the City and a Proponent, the other Proponents shall be notified by public posting, in the same manner that this RFP was originally posted, of the outcome of the procurement process on the BCBid website.

3.3.3 Debriefing

Proponents may request a debriefing after receipt of a notification of the outcome of the procurement process. All requests must be in writing to the RFP Contact and must be made within thirty (30) days of such notification.

3.3.4 Procurement Protest Procedure

If a Proponent wishes to challenge the RFP process, it should provide written notice to the RFP Contact in accordance with the City's procurement protest procedures and any applicable trade agreement or other applicable Proposal protest procedures. The notice must provide a detailed explanation of the Proponent's concerns with the procurement process or its outcome.

3.4 Conflict of Interest and Prohibited Conduct

3.4.1 Conflict of Interest

For the purposes of this RFP, a conflict of interest ("**Conflict of Interest**") includes, but is not limited to, any situation or circumstance where:

(a) in relation to the RFP process, the Proponent has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not limited to (i) having, or having access to, confidential information of the City in the preparation of its Proposal that is not available to other Proponents, (ii) communicating with any person with a view to influencing preferred treatment in the RFP process (including but not limited to the lobbying of decision makers involved in the RFP process), or (iii) engaging in conduct that compromises, or could be seen to compromise, the integrity of the open and competitive RFP process or render that process non-competitive or unfair; or

(b) in relation to the performance of its contractual obligations contemplated under a contract for the Work, the Proponent's other commitments, relationships or financial interests (i) could, or could be seen to, exercise an improper influence over the objective, unbiased and impartial exercise of its independent judgement, or (ii) could, or could be seen to, compromise, impair or be incompatible with the effective performance of its contractual obligations.

3.4.2 Disqualification for Conflict of Interest

The City may disqualify a Proponent for any conduct, situation or circumstances, determined by the City, in its sole and absolute discretion, to constitute a Conflict of Interest as defined above.

3.4.3 Disqualification for Prohibited Conduct

The City may disqualify a Proponent, rescind a notification of selection or terminate a contract subsequently entered into if the City determines that the Proponent has engaged in any conduct prohibited by this RFP.

3.4.4 Prohibited Proponent Communications

Proponents must not engage in any communications that could constitute a Conflict of Interest and should take note of the Conflict of Interest declaration set out in the Submission Form (Appendix B).

3.4.5 Proponent Not to Communicate with Media

Proponents must not at any time directly or indirectly communicate with the media in relation to this RFP or any Contract or other agreement entered into pursuant to this RFP without first obtaining the written permission of the RFP Contact.

3.4.6 No Lobbying

Proponents must not, in relation to this RFP or the evaluation and selection process, engage directly or indirectly in any form of political or other lobbying whatsoever to influence the selection of the successful Proponent(s).

3.4.7 Illegal or Unethical Conduct

Proponents must not engage in any illegal business practices, including activities such as bid-rigging, price-fixing, bribery, fraud, coercion or collusion. Proponents must not engage in any unethical conduct, including lobbying, as described above, or other inappropriate communications; offering gifts to any elected officials, employees, officers, agents, elected or appointed officials or other representatives of the City; deceitfulness; submitting Proposals containing misrepresentations or other misleading or inaccurate information; or any other conduct that compromises or may be seen to compromise the competitive process provided for in this RFP.

3.4.8 Past Performance or Past Conduct

The City may prohibit a supplier from participating in a procurement process based on past performance, previous or current legal proceedings against the City, or based on inappropriate conduct in a prior procurement process, including but not limited to the following:

(a) illegal or unethical conduct as described above;

(b) the refusal of the supplier to honour submitted pricing or other commitments; or

(c) any conduct, situation or circumstance determined by the City, in its sole and absolute discretion, to have constituted a Conflict of Interest.

3.5 Confidential Information

3.5.1 Confidential Information of the City

All information provided by or obtained from the City in any form in connection with this RFP either before or after the issuance of this RFP

(a) is the sole property of the City and must be treated as confidential;

(b) is not to be used for any purpose other than replying to this RFP and the performance of the Contract;

(c) must not be disclosed without prior written authorization from the City; and

(d) must be returned by the Proponent to the City immediately upon the request of the City.

3.5.2 Confidential Information of Proponent

A Proponent should identify any information in its Proposal or any accompanying documentation supplied in confidence for which confidentiality is to be maintained by the City. The confidentiality of such information will be maintained by the City, except as otherwise required by law or by order of a court or tribunal. Proponents are advised that their Proposals will, as necessary, be disclosed, on a confidential basis, to advisers retained by the City to advise or assist with the RFP process, including the evaluation of Proposals. If a Proponent has any questions about the collection and use of personal information pursuant to this RFP, questions are to be submitted to the RFP Contact.

3.6 Reserved Rights and Limitation of Liability

3.6.1 Reserved Rights of the City

The City reserves the right to:

(a) make public the names of any or all Proponents;

(b) make changes, including substantial changes, to this RFP provided that those changes are issued by way of addendum in the manner set out in this RFP;

(c) request written clarification or the submission of supplementary written information in relation to the clarification request from any Proponent and incorporate a Proponent's response to that request for clarification into the Proponent's Proposal;

(d) assess a Proponent's Proposal on the basis of: (i) a financial analysis determining the actual cost of the Proposal when considering factors including quality, service, price and transition costs arising from the replacement of existing goods, services, practices, methodologies and infrastructure (howsoever originally established); and (ii) in addition to any other evaluation criteria or considerations set out in this RFP, consider any other relevant information that arises during this RFP process;

(e) waive formalities and accept Proposals that substantially comply with the requirements of this RFP;

(f) verify with any Proponent or with a third party any information set out in a Proposal;

(g) check references other than those provided by any Proponent;

(h) disqualify a Proponent, rescind a notice of selection or terminate a contract subsequently entered into if the Proponent has engaged in any conduct that breaches the process rules or otherwise compromises or may be seen to compromise the competitive process;

(i) select a Proponent that the City considers provides the best value to the City and other than the Proponent whose Proposal reflects the lowest cost to the City;

(j) cancel this RFP process at any stage in whole or in part at any time for any reason; or reject any or all Proposals;

(k) issue another request for Proposals for the same or similar Work or on the same or different terms, sole source the Contract to anyone, or do nothing further, without liability to any Proponent or non-Proponent;

(l) enter into discussion with one or more of the Proponents without such discussions in any way creating a binding contract between the City and any such Proponent;

(m) negotiate changes to the scope of Work with any one or more Proponents without having any duty or obligation to advise any or all other Proponents;

(n) change the date to accept a Proposal; or

(o) accept any Proposal in whole or in part.

and these reserved rights are in addition to any other express rights or any other rights that may be implied in the circumstances.

3.6.2 Limitation of Liability

By submitting a Proposal, each Proponent agrees that

(a) neither the City nor any of it employees, officers, agents, elected or appointed officials, advisors or representatives will be liable, under any circumstances, for any claim arising out of this RFP process including but not limited to costs of preparation of the Proposal, loss of profits, loss of opportunity or for any other claim; and

(b) the Proponent waives any right to or claim for any compensation of any kind whatsoever, including claims for costs of preparation of the Proposal, loss of profit or loss of opportunity by reason of the City's decision not to accept the Proposal submitted by the Proponent, to enter into the Contract or another agreement with any other Proponent or to cancel this procurement process, and the Proponent shall be deemed to have agreed to waive such right or claim.

3.6.3 Contract subject to Financing, Council Approval and Applicable Enactments

Award of the Contract is subject to available financing by the City, the approval of the City's municipal council and the City's compliance with all applicable enactments.

3.7 Governing Law and Interpretation

These Terms and Conditions of the RFP Process in this Part 3:

(a) are intended to be interpreted broadly and independently (with no particular provision intended to limit the scope of any other provision);

(b) are non-exhaustive and shall not be construed as intending to limit the pre-existing rights of the City; and

(c) are to be governed by and construed in accordance with the bylaws of the City, the laws of the province of British Columbia and the federal laws of Canada applicable therein.

[End of Part 3]

APPENDIX A –SUPPLEMENTARY CONDITIONS OF THE CONTRACT

SUPPLEMENTARY GENERAL CONDITIONS OF THE UNIT PRICE CONTRACT

CCDC4-2011

For this Contract, the Owner will use the Canadian Construction Documents Committee, Standard Construction Document CCDC4 Unit Price Contract – 2011 for the duration of this Contract with amendments as noted in the sections below.

These Supplementary Conditions presuppose the use of the CCDC4 Unit Price Contract – 2011. These "Supplementary Conditions" void, supersede or amend the applicable provisions of the standard form CCDC4 Unit Price Contract – 2011 "Agreement", "Definitions" and "General Conditions", as the case may be, as hereinafter provided.

ARTICLE A-3 CONTRACT DOCUMENTS

Add article A-3.2 to provide as follows:

"3.2 The *Contractor* acknowledges that it has reviewed and satisfied itself as to the *Contract Documents*, including without limitation, the plans, specifications and other materials referred to in this Article, and all other materials it desires, prior to execution of this *Contract*."

ARTICLE A-5 PAYMENT

Revise the article A-5.3.1 to provide as follows:

"5.3.1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by arbitration or court, interest at the following rates on such unpaid amounts shall also become due and payable until payment:

(1) 0% per annum above the prime rate for the first 60 days.

(2) 0% 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 the Bank of Canada, for prime business loans as it may change from time to time."

Retitle Article A-7 as follows:

ARTICLE A-7 ADDITIONAL PROVISIONS

Add the following articles 7.3 and 7.4 to Article A-7

"7.3 The *Contractor* acknowledges that the *Owner*, in the preparation of the *Contract Documents*, supply of oral or written information to *Tenderers*, review of *Tenders* or the carrying out of the *Owner's* responsibilities under the *Contract* does not owe a duty of care to the *Contractor* and the *Contractor* waives for itself and its successors the right to sue the *Owner* in tort for any loss, including economic loss, damage, cost or expense arising from or connected with any error,

omission or misrepresentation occurring in the preparation of the *Contract Documents*, supply of oral or written information to *Tenderers*, review of tenders or the carrying out of the *Owner's* responsibilities under the *Contract*."

"7.4 All time limits stated in this *Contract* are of the essence of the *Contract*."

DEFINITIONS

The following definitions are amended:

1. Consultant

   Add the following sentence:

   "The words "Engineer", "Contract Administrator" or "Consultant" wherever used in the *Contract Documents* shall be regarded as synonymous."

2. Contractor

   Add the following sentence:

   "For the purpose of the *Contract*, the words "*Contractor*" and "*General Contractor*" shall be regarded as synonymous."

3. Subcontractor

   Delete and replace with the following:

   "A *Subcontractor* is a person, firm or corporation, which has been approved by the *Owner*, undertaking the execution of a part of the *Work* by virtue of an agreement with the *Contractor*."

The following definitions are added to the Agreement:

4. Builders Lien Act
   Builders Lien Act means the *Builders Lien Act*, S.B.C. 1997, c45, as amended, and all regulations thereto, and any successor legislation in the Province of British Columbia in relation to builders liens.

5. Certificate of Completion
   A *Certificate of Completion* is a certificate of completion as defined in the *Builders Lien Act*.

6. Engineer's Representative
   The *Engineer's Representative* means any person authorized from time to time by the *Engineer* to perform the duties of the *Engineer* whose authority shall be notified in writing to the Contractor by the *Engineer*.

7. Final Acceptance
Final Acceptance means the *Work* has successfully passed all inspections and testing requirements at the end of the warrantee period.

9. RFP

RFP means the Request for Proposals issued by the Owner for the Project dated March 1, 2019.

GENERAL CONDITIONS OF THE UNIT PRICE CONTRACT

GC 1.1 CONTRACT DOCUMENTS

Add new paragraph 1.1.11 as follows:

"1.1.11 The table of contents and the headings of all the articles, paragraphs, parts and sections of any of the *Contract Documents* are provided for convenience of reference only and shall not affect the construction or interpretation of the *Contract Documents*."

GC 2.4 DEFECTIVE WORK

Amend paragraph 2.4.1 by adding ", at the *Contractor's* expense," after "*Contract Documents*".

GC 3.4 DOCUMENT REVIEW

Add new paragraph 3.4.2 as follows:

"3.4.2 Notwithstanding the foregoing, inconsistencies and omissions shall not include lack of reference on the *Drawings* or in the *Specifications* to labour and/or *Products* that are required or normally recognized within respective trade practices as being necessary for the complete execution of the *Work*."

GC 4.2 CONTINGENCY ALLOWANCE

Delete paragraph 4.2 in its entirety.

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

Delete paragraph 5.1 in its entirety.

GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

Add paragraph 5.2.8 as follows:

"5.2.8 Before any payment is made by the *Owner* to the *Contractor*, the *Consultant* or the *Owner* may by written notice require that the *Contractor* furnish such further detailed information as the *Consultant* or the *Owner* may determine is necessary to establish compliance by the *Contractor* with the *Contract Documents*."

GC 5.3 PROGRESS PAYMENT

Amend paragraph 5.3.1.2 to provide as follows:

"5.3.1.2 the *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 30 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* amends the application, the *Consultant* will promptly advise the *Contractor* in writing giving reasons for the amendment,"

Amend paragraph 5.3.1.3 to provide as follows:

"5.3.1.3 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement - PAYMENT on or before 30 calendar days after the later of:
- receipt from the *Consultant* of the certificate of payment, or
- the last day of the monthly payment period for which the application for payment is made."

Add paragraph 5.3.3 as follows:

"5.3.3 Notwithstanding any other provision of this *Agreement*, the *Owner* shall not be obligated to make any payment on account of the *Contract Price* under this GC 5.3 PROGRESS PAYMENT if following payment, the balance of the *Contract Price* would be less than the potential reduction in the *Contract Price* under GC 13.1 LIQUIDATED DAMAGES."

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

5.4.1 Delete "if permitted by the lien legislation applicable to the *Place of the Work*" on the first two lines.

Add at the end of paragraph 5.4.1:

"The *Contractor* shall submit the following documents with its request for review by the *Consultant* to establish *Substantial Performance of the Work.* These requirements do not limit the *Contractor's* obligations for *Substantial Performance* noted elsewhere in the *Contract*. A deficiency holdback will be retained for three (3) times the estimated value of correcting or supplying the following items until they are all submitted, reviewed and accepted by the *Consultant*:

.1 The list of all deficient and incomplete items of *Work* including the estimated value of each item;
.2 Complete reports including a balancing report for the mechanical system and certification by all testing, cleaning or inspection authorities or associations as specified in the *Contract Documents*;
.3 A complete demonstration of all mechanical and electrical systems and electrically-operated devices to the *Owner*'s operating and maintenance staff and any training required by the specifications, to the *Owner*'s satisfaction;
.4 All maintenance manuals, operating instructions, maintenance and operating tools, replacement parts or materials and warranties as specified in the *Contract Documents*;

.5 A complete set of marked up construction *Drawings* and other data in the form specified in the *Contract Documents*, or as required by the *Consultant*, for the production of as built *Drawings* to show all significant changes to the *Work* made during construction;

.6 Current certification by the *Workers' Compensation Board* that the *Contractor* and all *Subcontractors* are in good standing;

.7 A statement that all claims and demands for extra work or otherwise, under or in connection with the *Contract*, have been presented to the *Consultant* and that the *Contractor* expressly releases the *Owner* from all claims and demands except those made in writing prior to that date and still unsettled;

.8 A statutory declaration in accordance with paragraph 5.2.8 of these Supplementary Conditions of the *Contract*; and

.9 All keys required for the entire *Project*.

The requirement to provide documents and other items listed in sub-paragraphs .1 through .9 does not limit the *Contractor's* obligations for *Substantial Performance of the Work* noted elsewhere in the *Contract*. A deficiency holdback will be retained for documents and other items not submitted and an estimated value is to be submitted for review and acceptance by the *Consultant.*

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

Add the following as GC 5.5.6 and 5.6.7:

"5.5.6 At the time of *Substantial Performance of the Work*, the *Owner* may retain a deficiency holdback established by the *Consultant* based upon three times the estimated value of the outstanding items to be completed or corrected. The amount will be released by the *Owner* in one lump sum only upon correction of all deficiencies.

5.6.7 In addition to the deficiency holdback, the Owner may retain additional holdbacks as specified in the *Contract Documents* to be retained until receipt of items specified, such as close-out documentation, as-built documentation and *Owner's* manuals."

GC 6.2 CHANGE ORDER

Add paragraph 6.2.4 to provide as follows:

"6.2.4 The allowance for overhead and profit charged by the *Contractor* and *Subcontractor*s shall be as follows:

.1 Cost of materials and labour plus 10% mark-up by the *Contractor* for changes in the *Work* performed by the *Contractor*;

.2 Cost of labour and materials plus 10% mark-up by the *Contractor* on changes in the *Work* performed by the *Subcontractor*s;

.3 Cost of labour and materials plus 10% mark-up by the *Subcontractor*s for changes in the *Work* performed by the *Subcontractor*s; and

.4 The overhead and profit for changes in the *Work* shall include supervision, administrative costs, small tools, miscellaneous materials, layout, additional bonding costs, and recording of the changes on the record drawings."

GC 6.5 DELAYS

Add the following new paragraphs:

"6.5.6 If the *Contractor's* operations expose any items which may indicate an archaeological find, such as building remains, hardware, accumulations of bones, pottery, or arrowheads:

.1 The *Contractor* shall immediately notify the *Consultant* and suspend operations within the area identified by the *Consultant*. *Work* shall remain suspended within that area until otherwise directed by the *Consultant* in writing.

.2 Any delay in the completion date of the *Contract* that is caused by such a cessation of construction operations will be considered to be beyond the *Contractor's* control in accordance with paragraph GC 6.5.3, but will not be considered to be a delay resulting from an action of the *Owner* or the *Consultant* or anyone employed or engaged by them directly or indirectly.

.3 Any work directed or authorised by the *Consultant* with an archaeological find will be considered a change in *Work* authorized by a *Change Directive,* and GC 6.3 shall apply."

GC 9.1 PROTECTION OF WORK AND PROPERTY

Add the following new paragraphs:

"9.1.5 The *Contractor* shall be responsible generally for the care, maintenance and protection of the *Work* during construction and during any shut-down or suspension of the *Work*.

9.1.6 The *Contractor* shall ensure that all rights and privileges presently accorded to all properties adjacent to the *Place of the Work* are maintained.

9.1.7 When carrying out excavation work, the *Contractor* may encounter underground utilities such as, without limitation, sewers, gas mains, telephone cables, power cables, and water mains. The *Contractor* shall be fully responsible for any breakage or damage to such utilities, and the *Contractor* shall pay the full cost of repairing such damages and making good any losses or damages which are caused as a result of his or her operation in carrying out this *Contract*.

9.1.8 It shall be the *Contractor's* responsibility to obtain written permission and to make any required arrangements with the owners of any adjacent properties on which the *Contractor* may encroach.

9.1.9 The *Contractor* shall furnish and bear the cost of any watchman the *Contractor* may require for protection to perform this *Contract*."

GC 9.4 CONSTRUCTION SAFETY

Add the following new paragraph:

"9.4.2 The *Contractor* shall be responsible for and ensure the safety not only of the workers, *Subcontractors*, tradesmen and suppliers and their plant and equipment but also of all other persons who enter the *Place of the Work* whether during working hours or not and for that purpose shall erect such fencing, boardings and signs and shall employ such safety measures as may be necessary to ensure the safety of such persons."

GC 11.1 INSURANCE

Amend paragraph 11.1.1 as follows:

Delete the words "the minimum requirements of which are specified in CCDC 41 – CCDC Insurance Requirements in effect at the time of bid closing except as hereinafter provided" in lines 2 and 3.

Delete paragraph 11.1.1.1 and replace with the following:

".1 Commercial general liability insurance in the form of a wrap-up liability insurance in the amount of not less than five million dollars ($5,000,000) per occurrence. The *Owner*, the *Consultant*, sub-consultants and special consultants as identified by the *Owner* and all *Subcontractors* involved in the performance of the *Work* shall be additional insureds under the commercial general liability insurance policy which shall contain a cross liability clause whereby one insured can make a claim, or bring an action, against another insured. The commercial general liability insurance shall remain in force from the commencement of the performance of the Work under the Contract, and shall include completed operations coverage effective for a period of two (2) years following issuance of the Certificate of Completion."

Delete paragraph 11.1.1.2 and replace with the following:

".2 Vehicle liability insurance in the amount of not less than $5,000,000 per occurrence from the date of commencement of the *Work* until one year after the date of issue of the *Certificate of Completion*."

Delete paragraph 11.1.1.3 in its entirety.

Delete the first sentence in paragraph 11.1.1.4 and replace with the following:

".4 "Broad form" property insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant* and sub-consultants and special consultants as identified by the *Owner*."

Delete paragraph 11.1.1.5 in its entirety.

Add the following to paragraph 11.1.1:

".8 Course of construction or builder's risk insurance in the amount of 100% of the *Contract Price*."

".9 Professional liability insurance in the amount of not less than $2,000,000 for any professionals that the *Contractor* may engage in performing the *Work* in this *Contract*."

Delete paragraphs 11.1.6 to 11.1.8 in their entirety and replace with the following new paragraphs:

"11.1.6 All insurance policies shall have the right of subrogation waived as against the *Owner*, the *Consultant*, their employees and agents.

11.1.7 All insurance policies shall contain provisions to the effect that thirty (30) days prior notice of cancellation will be given in writing to each insured, including the *Owner*. In the event that some or all of the insurance policies required under this *Contract* are cancelled, the *Contractor* shall promptly obtain insurance with other insurers so as to comply with the provisions of this *Contract*.

11.1.8 The *Contractor* shall ensure that its *Subcontractors* comply with all applicable insurance requirements.

11.1.9 Where the *Work* involves blasting and other activities, any exclusions of such aspects of the *Work* shall be deleted from the insurance policies."

GC 11.2 CONTRACT SECURITY

Delete paragraph 11.2.1 in its entirety and replace with the following:

"11.2.1 The *Contractor* shall, at least 7 calendar days prior to the commencement of construction, provide to the *Owner* 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*."

Delete paragraph 11.2.2 in its entirety and replace with the following:

"11.2.2 All bonds shall be issued by a duly licensed surety company authorized to transact a business of suretyship in British Columbia and in a form acceptable to the *Owner*, and shall be maintained in good standing until the fulfillment of the *Contract* including all warranty obligations pursuant to GC12.3 WARRANTY.

GC 12.3 WARRANTY

Amend paragraph 12.3.1 to provide as follows:

"12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is two years from the date of *Substantial Performance of the Work*."

Amend paragraphs 12.3.3, 12.3.4 and 12.3.6 to provide as follows:

"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 two-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 two-year warranty period.

12.3.6 Any extended warranties required beyond the two-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."

Add new PART 13 ADDITIONAL GENERAL CONDITIONS:

"PART 13 ADDITIONAL GENERAL CONDITIONS

GC 13.1 LIQUIDATED DAMAGES

13.1.1 If the *Contractor* fails to attain *Substantial Performance of the Work* on or before the date stipulated for attaining *Substantial Performance of the Work* in Article A-1.3 of Article A-1 THE WORK of the Agreement Between Owner and Contractor (the *"Substantial Performance Date"*), the *Contractor* shall pay to the *Owner* liquidated damages calculated as $2,000 for each calendar day that *Substantial Performance of the Work* extends beyond the *Substantial Performance Date.*

It is expressly agreed that it may be difficult to calculate the damages which would result from the *Contractor's* failure to attain *Substantial Performance of the Work* by the *Substantial Performance Date*, and the parties agree that the liquidated damages payable under this section 13.1.1 are not intended to be a penalty but rather represent the parties' best estimate of the damages the Owner is likely to suffer as a result of the Contractor's failure to attain *Substantial Performance of the Work* by the *Substantial Performance Date*, and the delay to the *Owner* resulting from that failure.

13.1.2 In the event that the *Consultant* reasonably determines that the *Contractor* is not progressing in accordance with the *Schedule* with the result that the *Contractor* will not achieve *Substantial Performance of the Work* by the *Substantial Performance Date*, the *Owner* may commence to hold back amounts from payments due to the *Contractor* totaling an amount sufficient to cover the *Consultant's* estimate of liquidated damages that may be payable pursuant to paragraph 13.1.1. In the event that the *Owner* holds back more than is owed pursuant to paragraph 13.1.1, it shall forthwith pay such excess to the *Contractor.*

13.1.3 The *Owner* may deduct any amount due under this paragraph from any monies that may be due or payable to the *Contractor* on any account whatsoever. The liquidated damages payable under this paragraph are in addition to and without prejudice to any other remedy, action or other right that may be available to the *Owner* as a result of the Contractor's failure to attain *Substantial Performance of the Work* by the *Substantial Performance Date."*

GC 13.2 BONUS FOR EARLY COMPLETION

13.2.1 If the *Contractor* attains *Substantial Performance of the Work* before the date stipulated for attaining *Substantial Performance of the Work* in Article A-1.3 of Article A-1 THE WORK of the Agreement Between Owner and Contractor (the *"Substantial Performance Date"*), the *Owner* shall pay to the *Contractor* a performance bonus in accordance with the following:

.1 If the *Contractor* attains *Substantial Performance of the Work* at least 28 days before *July 15, 2019*, the *Owner* shall pay a bonus to the *Contractor* of $112,000; or

.2 If the *Contractor* attains *Substantial Performance of the Work* at least 14 days before *July 15, 2019*, the *Owner* shall pay a bonus to the *Contractor* of $56,000.

END OF SECTION

APPENDIX B – SUBMISSION FORM

1. Proponent Information

Please fill out the following form, naming one person to be the Proponent's contact for the RFP process and for any clarifications or communication that might be necessary.	
Full Legal Name of Proponent:	
Any Other Relevant Name under which Proponent Carries on Business:	
Street Address:	
City, Province/State:	
Postal Code:	
Phone Number:	
Fax Number:	
Company Website (if any):	
Proponent Contact Name and Title:	
Proponent Contact Phone:	
Proponent Contact Fax:	
Proponent Contact Email:	

- ❑ I acknowledge that the above company does have a valid City of White Rock Business License or British Columbia Professional License/Permit to Practice.

- ❑ I acknowledge that the above company does not have a City of White Rock Business License and understands the procedure in obtaining a valid license that must accompany the signed award letter.

The awarded vendor must provide a copy of their City of White Rock Business License with the signed award letter.

All related information on obtaining a Business License can be found here:

www.whiterockcity.ca/333/Business-Licences

2. Offer

The Proponent has carefully examined the RFP Documents and has a clear and comprehensive knowledge of the Work required under the RFP. By submitting a Proposal, the Proponent agrees and consents to the terms, conditions and provisions of the RFP, including the Form of Contract, and offers to provide the Work in accordance therewith at the rates set out in its Proposal.

3. Schedules

This Submission Form includes the following schedules completed by the Proponent which are attached to and form part of this Submission Form:

Schedule A: Proponent's Experience, Reputation and Qualifications

Schedule B: Proponent's Work Plan and Methodology

Schedule C: Proponent's Work Schedule

Schedule D: Proponent's Pricing for Work

Schedule E: Proponent's Pricing for Additions and Deletions

The Proponent confirms that it has factored all of the provisions of this RFP, including insurance and indemnity requirements, into its pricing assumptions and calculations.

4. Addenda

The Proponent is deemed to have read and accepted all addenda issued by the City prior to the Deadline for Issuing Addenda. The onus is on Proponents to make any necessary amendments to their Proposals based on the addenda. The Proponent is requested to confirm that it has received all addenda by listing the addenda numbers, or if no addenda were issued by writing the word "None", on the following line: _____. Proponents who fail to complete this section will be deemed to have received all posted addenda.

5. No Prohibited Conduct

The Proponent declares that it has not engaged in any conduct prohibited by this RFP.

6. Conflict of Interest

Proponents must declare all potential Conflicts of Interest, as defined in section 3.4.1 of the RFP. This includes disclosing the names and all pertinent details of all individuals (employees, advisers, or individuals acting in any other capacity) who (a) participated in the preparation of the Proposal; **AND** (b) were elected officials or employees of the City within twelve (12) months prior to the Submission Deadline.

If the box below is left blank, the Proponent will be deemed to declare that (a) there was no Conflict of Interest in preparing its Proposal; and (b) there is no foreseeable Conflict of Interest in performing the contractual obligations contemplated in the RFP.

Otherwise, if the statement below applies, check the box.

- ❑ The Proponent declares that (a) there was no Conflict of Interest in preparing its Proposal; and (b) there is no foreseeable Conflict of Interest in performing the contractual obligations contemplated in this RFP.

- ❑ The Proponent declares that there is an actual or potential Conflict of Interest relating to the preparation of its Proposal, and/or the Proponent foresees an actual or potential Conflict of Interest in performing the contractual obligations contemplated in the RFP.

If the Proponent declares an actual or potential Conflict of Interest by marking the box above, the Proponent must set out below details of the actual or potential Conflict of Interest:

_____

_____

_____

_____

7. Disclosure of Information

The Proponent hereby agrees that any information provided in this Proposal, even if it is identified as being supplied in confidence, may be disclosed where required by law or by order of a court or tribunal. The Proponent hereby consents to the disclosure, on a confidential basis, of this Proposal by the City to the advisers retained by the City to advise or assist with the RFP process, including with respect to the evaluation this Proposal.

The following individuals, as employees, advisers, or in any other capacity (a) participated in the preparation of our Proposal; **AND** (b) were elected officials or employees of the City and have ceased that employment within twelve (12) months prior to the Submission Deadline:

Name of Individual:
Job Classification:
Department:
Last Date of Employment with the City:
Name of Last Supervisor:
Brief Description of Individual's Job Functions:
Brief Description of Nature of Individual's Participation in the Preparation of the Proposal:

(Repeat above for each identified individual)

The Proponent agrees that, upon request, the Proponent shall provide the City with additional information about each individual identified above in the form prescribed by the City.

8. Proposal Irrevocable

The Proponent agrees that its tender shall be irrevocable for a period of 60 days following the Submission Deadline.

9. Execution of Contract

The Proponent agrees that in the event its Proposal is selected by the City, in whole or in part, the Proponent will finalize and execute the Contract in the form set out in Section 1.3 of this RFP and in accordance with the terms of this RFP.

Signature of Witness	Signature of Proponent Representative
Name of Witness	Name of Proponent Representative
	Title of Proponent Representative
	Date
	I have the authority to bind the Proponent.

Schedule A: Proponent's Experience, Reputation and Qualifications

Proponents should provide the following information in the space provided and/or by attaching additional pages, if necessary:

A) Proponent Profile

Proponent profile, including full legal name, form of business organization (e.g. corporation, sole proprietorship, etc.), length of time in business, number of employees, and a brief description of Proponent's current business:

_____
_____
_____
_____
_____
_____
_____
_____
_____

B) Qualifications and Experience

Details of Proponent's ability and expertise that will allow Proponent to satisfactorily provide the Work, including a description of relevant past experience with similar contracts (including references, contract value, and date of performance). Proponent should detail at least three (3) projects it has completed in the past three (3) years that it considers is substantially similar to the Work required under this RFP:

_____
_____
_____
_____
_____
_____
_____
_____
_____

C) Key Personnel

Key personnel of the Proponent who will be responsible for the Work, together with a description of their respective responsibilities and related experience:

1) Name: _____

Responsibilities:

_____

_____

Experience:

_____

2) Name:

Responsibilities:

Experience:

3) Name: _____

Responsibilities:

Experience:

4) Name: _____

Responsibilities:

Experience:

5) Name: _____

Responsibilities:

Experience:

6) Name: _____

Responsibilities:

Experience:

_____

D) Subcontractors (if any)

Subcontractors that the Proponent intends to use for performance of the Work, including a description of the portion of the Work proposed to be subcontracted and the subcontractor's relevant experience:

1) Subcontractor Name:

_____

Responsibilities:

_____

_____

Experience:

_____

2) Subcontractor Name:

_____

Responsibilities:

_____

_____

Experience:

_____

3) Subcontractor Name:

_____

Responsibilities:

_____

_____

Experience:

_____

4) Subcontractor Name:

_____

Responsibilities:

_____

_____

Experience:

_____

5) Subcontractor Name:

_____

Responsibilities:

_____

_____

Experience:

_____

6) Subcontractor Name:

_____

Responsibilities:

_____

_____

Experience:

_____

E) Financial History

Details of Proponent's financial strength including copies audited financial statements for past three years, details of any ongoing or recent bankruptcy/insolvency proceedings in past three years and details of other contracts that have terms that would overlap with the Contract:

_____
_____
_____
_____
_____
_____
_____
_____
_____

F) References

Details of Proponent's references:

1) Reference Name:

_____

Reference address, phone number and email address:

_____

_____

Reference's employer and position within employer:

_____

Reference's relationship to Proponent and basis for reference:

_____

_____

_____

Experience:

_____

2) Reference Name:

_____

Reference address, phone number and email address:

_____

_____

Reference's employer and position within employer:

_____

Reference's relationship to Proponent and basis for reference:

_____

_____

_____

3) Reference Name:

_____

Reference address, phone number and email address:

_____

_____

Reference's employer and position within employer:

_____

Reference's relationship to Proponent and basis for reference:

_____

_____

Schedule B: Work Plan and Methodology

Proponents should provide the following information in the space provided and/or by attaching additional pages, if necessary:

A) A brief narrative that illustrates the Proponent's understanding of the Municipality's requirements for the performance of the Work:

B) A description of the general approach and methodology the Proponent would take in performing and managing the Work:

C) Any suggested amendments to the Work as described in the RFP that the Proponent suggests would be of benefit to the Municipality in terms of value for money, cost savings, environmental benefits, technological benefits, or other benefits:

D) Proponent's proposals to minimize neighbourhood and community disruptions and nuisances in carrying out Work:

E) Proponent's proposals to ensure compliance with all applicable environmental laws and regulations:

F) Proponent's proposals to address any archaeological issues arising from the Work:

Schedule C: Work Schedule

Proponents should provide the following information in the space provided and/or by attaching additional pages, if necessary:

Work Description	Target Date
Start Date	
Completion Date	

Schedule D: Pricing for Work

Proponents should provide their estimated pricing for the Work in the table below. If a Proponent wishes to provide an alternative pricing structure for the Work, the Proponent may describe the alternative structure, including how it would benefit the Municipality, in an attached page.

(a) Proponents should provide the information requested below.

(b) Rates must be provided in Canadian funds, inclusive of all applicable duties and taxes except for Goods and Services Tax ("GST"), which should be itemized separately.

(c) Rates quoted by the Proponent must be all-inclusive and must include all labour and material costs, all freight and carriage costs, all insurance costs, all costs of delivery to the City, all costs of installation and set-up, including any pre-delivery inspection charges, and all other overhead, including any fees or other charges required by law.

1	**Mobilization/Demobilization**				
1.1	Mobilization	1	L.S.		
1.2	Demobilization	1	L.S.		
1.3	Non-destructive testing	1	L.S.		
2	**Survey and As-Builts**				
2.1	Baseline Survey	1	L.S.		
2.2	Construction and As-Built Surveys	1	L.S.		
3	**Demolition**				
3.1	Demolition of Timber Pier Structure	1	L.S.		
4	**Steel Pipe Piles**				
4.1	Fabricate and supply steel pipe piles	2,043	lin.m.		
4.2	Install steel pipe piles	66	ea.		
5	**Precast Concrete Components**				
5.1	Supply precast concrete pile caps	21	ea.		
5.2	Install precast concrete pile caps	21	ea.		

5.3	Supply precast concrete slabs	22	ea.		
5.4	Install precast concrete slabs	22	ea.		
6	**Timber Components**				
6.1	Supply timber stringers	88	ea.		
6.2	Install timber stringers	88	ea.		
6.3	Supply timber decking	469	sq.m.		
6.4	Install timber decking	469	sq.m.		
6.5	Supply timber handrails	192	lin.m.		
6.6	Install timber handrails	192	lin.m.		
6.7	Supply timber bullrails	192	lin.m.		
6.8	Install timber bullrails	192	lin.m.		
7	**Utilities**				
7.1	Supply and install 150 diameter watermain	1	l.s.		
8	**Timber Repairs**				
8.1	Timber modifications	1	l.s.		
8.2	Replace Timber Piles	15	ea.		
8.3	Replace Timber Pilecaps	1	ea.		
8.4	Replace Cross Bracing	8	ea.		
8.5	Install Steel clamps	4	ea.		
8.6	Realign pile and install straps	1	ea.		

SCHEDULE E: Unit Prices for Additions and Deletions

The following Unit Prices shall be used to determine the value of authorized changes in the Work in accordance with the General and Supplementary Conditions. The Unit Prices listed for additions apply to performing additional work during the time scheduled for performance of similar work already included in the Bid Price and will increase the Contract Price. Unit Prices for deletions will decrease the Contract Price. Unit Prices do NOT include GST.

Item	Description	Unit	Unit Price ($)	
			Addition	Deletion
1	Fabricate, Supply and Install Steel Pipe Piles	lin.m.		
2	Supply and Install Concrete Pile Cap	ea.		
3	Supply and Install Concrete Slab	ea.		
4	Supply and Install 140 x 343 x 4876 long timber deck planks (new sections)	ea.		
5	Supply and Install 38 x 286 x 4876 timber deck planks (existing sections)	ea.		
6	Supply and Install 140 x 140 x 4572 long timber stringers (new sections)	ea.		
7	Supply and Install 89 x 292 x 4572 long timber stringers (existing sections)	ea.		
8	Supply and Install 140 x 292 x 4572 timber edge stringers (existing sections)	ea.		
9	Supply and install handrails	lin.m.		
10	Supply and install 140 x 191 timber bullrails	lin.m		

APPENDIX C – WORK SPECIFICATIONS

Work Specifications for:
White Rock Pier Reconstruction
Marine Construction Contract
- REV. B –

February 27, 2019

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

WESTMAR ADVISORS

WHITE ROCK City by the Sea!

REVISION STATUS					
REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D.Leonard	V.Ramadhas	M.Cowdell

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

DIVISION 00
Procurement and Contracting Requirements

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 00 01 10
Table of Contents

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D.Leonard	V.Ramadhas	M.Cowdell

Table of Contents

***** END OF SECTION *****

SECTION 00 01 15
List of Drawing Sheets

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

Drawing Number	Title	Revision
1180031-00-0100	Cover Sheet and Drawing List	P2
1180031-00-0101	Design Criteria and General Notes	P2
1180031-00-0102	Existing Site Plan	P2
1180031-00-0103	Demolition Plan	P2
1180031-00-0104	General Arrangement – Plan	P2
1180031-00-0105	General Arrangement – Sections	P2
1180031-00-0110	Pile Plan	P2
1180031-00-0111	Pile List and Details	P2
1180031-00-0112	Precast Pilecap Plan	P2
1180031-00-0113	Precast Pilecap Details	P2
1180031-00-0114	Precast Slab Plan	P2
1180031-00-0115	Precast Slab Details	P2
1180031-00-0116	Timber Decking and Handrails	P2
1180031-00-0150	Utilities and Services – General Arrangement and Details	P2
1180031-00-0200	Timber Repairs – Plan	P2
1180031-00-0201	Timber Repairs – Details	P2

***** END OF SECTION *****

DIVISION 01
General Requirements

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 01 11 00
Summary of Work

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 PLACE OF THE WORK

.1 The Place of the Work is located at 15322 White Rock Promenade in the City of White Rock, BC.

2 CONTRACT METHOD

.1 The Work will be performed as a stipulated price Contract in accordance with the Contract Documents and paid for with measurement in accordance with Section 01 29 13 - Measurement and Payment.

3 SCOPE OF WORK

3.1 General

.1 The list of Work covered by Contract Documents given in Clause 3.2 is presented for the purpose of complementing or clarifying the Drawings, Specifications, and other Contract Documents, but shall not constitute a complete list of the Work of this Contract.

.2 Comply fully with the provisions of the Contract Documents.

.3 The Contractor shall accept the Site in its prevailing condition at the time of commencement of Work.

.4 Primary access to the Site shall be via the White Rock Promenade and the parking lots to the west of the Museum.

.5 Submit to the Consultant a list of temporary buildings that the Contractor intends to bring onto the Site. Select locations on the Site that minimize the need for relocation during the Work. Any relocation of buildings or materials laydown that is required is considered incidental to the Work and no separate measurement or payment will be made. The Contractor may make his own arrangements for suitable space for temporary buildings, offices, and laydown on neighbouring properties.

.6 Provide a fully serviced, clean, and secure office trailer for the exclusive use of the Consultant. The trailer shall include two desks, three chairs, one full size Drawing table, sufficient reserve space for conducting small meetings, power, high-speed internet service, and one phone line with telephone. Such facilities shall be provided within two weeks of award and shall be maintained until substantial completion of the Project.

.7 Provide suitable facilities for holding weekly update, coordination, and safety meetings.

.8 No temporary construction power will be available at the Site. Contractor to provide temporary power as required.

.9 Establish all lines and grades required to set out the Work. The Contractor shall locate all other reference points and lines, and take necessary action to prevent their destruction. All dimensions noted on the Drawings shall be field verified prior to commencement of the Work.

.10 Maintain sufficient stocks of materials near the Site at all times to meet the demands of the construction schedule and milestones with a reasonable reserve to compensate for changes in the Work or changes in the construction program.

.11 Supply all construction tools and consumables required to complete the Work of this Contract.

.12 Supply and erect temporary barriers around the working area of the Site as required for safety and the protection of operating equipment.

.13 Maintain the Site security with a view to protection of the public.

.14 Maintain the existing roads and road surfaces, such as the Promenade, at the Place of the Work in a safe and sound condition during the period of the Contract including making good and repairing any damage arising from the Work performed under this Contract.

.15 Maintain cleanliness at the Place of the Work. All debris shall be moved daily into containers. Remove debris that could in any way interfere with neighbouring operations.

.16 Allow for personal vehicles to be parked off-Site. No parking of personal vehicles shall be allowed on the Site.

.17 For technical Specifications not included in the documents, Master Municipal Specifications shall apply.

3.2 Work Covered by Contract Documents

.1 The Work includes but is not necessarily limited to the following:

.1 Demolition:

.1 Removal and off-site disposal of treated timber components of the Pier that cannot be re-used. If the White Rock Museum decides to retain a representative number of timber planks, the contractor shall hand over these planks to the Museum.

.2 Removal and off-site disposal of electrical wiring, conduit, steel watermain, and other components of the existing Pier that cannot be re-used.

.2 Site Survey:

.1 Establish baseline survey on Site.

.2 Survey layout of existing piles for purpose of developing layout of new permanent steel pipe piles.

.3 Survey all Site services, including registered and unregistered outfall to avoid any damage.

.3 Steel Pipe Piles:

.1 Supply and fabrication of steel pipe piles including:

.1 Transportation.

.2 Splicing.

.3 Installation of Mid-Plate.

.4 Application of coating (if required).

.5 Testing of welds and coating.

.2 Driving of steel pipe piles, including provision of pile driving records.

.3 Pile Driving Analyser testing.

.4 Temporary staying of piles.

.5 Cutting Off and Finishing Piles:

.1 Pile cut off.

.2 Supply and installation of shear rings.

.3 Repairs to coating damage.

.4 Concrete Deck:

.1 Provision of falsework and formwork for precast concrete pile cap.

.2 Preparation of pile top grouting.

.3 Supply and installation of precast concrete pile caps.

.4 Supply and installation of precast reinforced concrete deck slabs complete with timber decking, handrails, conduit, and water piping.

.5 Supply and installation of anchor rods and hardware to connect precast deck panels to pile caps.

.6 Supply and installation of remaining decking, handrail, conduit couplers, and water piping couplers between deck panels.

.7 Testing of concrete.

.5 Timber Repairs and Modifications:

.1 Timber Pile Replacements:

.1 Supply of timber piles.

.2 Transportation of timber piles.

.3 Driving of timber piles, including provision of pile driving records.

.4 Cutting Off and Finishing Piles with aluminum caps.

.2 Timber Repairs:

.1 Supply and install timber bracing members and pile caps identified for replacement.

.3 Timber Modifications:

.1 At the ends of the new reconstructed portions of the Pier, supply and install where necessary, but re-use where practical, the timber stringers, decking, and handrails to connect to new concrete deck structure.

3.4 Work by Others

.1 The following Work is being completed by other Contractors:

.1 There is an ongoing construction project at the land end of the Pier at Memorial Park.

.2 There is a separate contract to add shoreline protection around the conduits that are projecting out from the beach offshore of the abutment for the Pier.

.3 Installation of electrical and communication cables and lighting posts/arches will be by others.

.4 Refurbishing benches currently located on the Pier will be by others.

3.5 Coordination with Others

.1 Coordinate all operations and cooperate fully with other Contractors at the Place of the Work.

.2 Fulfill the duties of prime Contractor under the WorkSafe BC regulations as noted below during construction. Specifically undertake responsibility for managing overall Site safety in regards to interfaces between Contractor activities, protecting the public from worksite activities, and emergency situation coordination.

.3 Be respectful of the Memorial Park Contractor's Work.

.4 Coordinate activities with the BNSF railway company. Provide flagging and safety procedures as required for crossing rail tracks. Advise the Consultant immediately, if there are problems contacting the rail company or the rail company is providing undue limitations in crossing access.

.5 Maintain any rail crossings used for construction in a safe and serviceable condition at all times, suitable for pedestrian use.

***** END OF SECTION *****

SECTION 01 29 13
Measurement and Payment

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 MEASUREMENT, GENERAL

.1 All items of Work listed in the Schedule of Unit Prices and the Schedule of Additional Unit Prices for Additions and Deletions will be measured by the Contractor with copies of the Contractor's calculations submitted to the Consultant for review prior to the Contractor's application for progress payment of each item of Work.

.2 Methods of measurement and computation to determine quantities of materials furnished and Work performed under the Contract will be as described herein unless otherwise specified in the relevant individual sections. The SI system of units shall be used for weights, measurements, and computations unless noted otherwise.

.3 When a complete structure or structural unit or piece of equipment is specified as the unit of measurement, the unit shall include all necessary fittings and accessories.

.4 No measurement will be made for:

.1 Work performed or materials placed outside of the lines indicated on the Drawings or established by the Consultant.

.2 Materials wasted, used, or disposed of in a manner not called for under the Contract.

.3 Materials rejected after installation that are found not to conform to the provisions of the Contract.

.4 Hauling and disposing of rejected materials.

.5 Materials remaining on hand after completion of the Work.

.6 Excavation, grading, and placement of material excavated on Site and then incorporated into the Work.

2 PAYMENT, GENERAL

.1 Payment for unit price Work acceptably completed under the Contract will be made in accordance with the provisions of the Contract for the various items of Work appearing in Schedule D: Pricing for Work .

.2 Any Work called for in the Specifications or indicated on the Drawings, or which is necessary for the completion of the Work, and which is not specifically listed as a separate item in Schedule D: Pricing for Work, shall be deemed incidental to the Work and no separate payment will be made for such Work. The cost of such Work shall be included in the unit prices for the items of Work appearing in Schedule D: Pricing for Work.

.3 Quantities, where stated in Schedule D: Pricing for Work, are approximate and are given for the purpose of providing uniform basis for the comparison of Bids. Changes in the unit rates shall not be made except as permitted in the Form of Contract.

.4 The Owner reserves the right to delete items in their entirety, without changing the unit rates of any other items. Unit rate items shall therefore be complete and independent of other items.

3 LENGTH, AREA, AND VOLUME MEASUREMENTS

.1 Unless otherwise specified, measurements will be made horizontally and/or vertically. Measurements will be to the neat lines indicated on the Drawings or as altered by the Consultant to suit field conditions or in accordance with approved Change Orders.

.2 Quantities of concrete shall be measured based on the out-to-out dimensions of the concrete as indicated on the Drawings. Volume reduction from concrete displaced by the reinforcing steel and other inserts shall not be measured.

4 DESCRIPTION OF ITEMS IN SCHEDULE OF UNIT RATES

.1 The unit prices stated in Schedule D: Pricing for Work shall be full compensation for furnishing all labour, materials, and equipment required to complete the scope of Work in accordance with the Drawings and Specifications.

.2 The unit rates in Schedule D: Pricing for Work shall be used to measure any changes made between the tender Specifications/Drawings and construction Specifications/Drawings and any field changes instructions for quantities, dimensions, weights, and gradations that are changed, added, or deleted as a result of the progress of design.

.3 The following is a description of the items appearing in Schedule D: Pricing for Work. The intent of this description is to clarify the main components included in each item and not to provide a comprehensive list of all the Work required to complete the item in accordance with the Drawings and Specifications.

.4 General:

.1 "Mobilization" shall be paid for as a lump sum for mobilizing all personnel, material and equipment and provision of all construction facilities and controls required for the Work and bonds and insurance.

.2 "Demobilization" shall be paid for as a lump sum for demobilizing all personnel, construction equipment, material and facilities, and cleaning up the Site of all Contractor's debris to the satisfaction of the Consultant.

.5 Survey and As-Builts:

.1 "Site Survey" shall be paid for as a lump sum for providing all labour, equipment, and materials required to survey the Site prior to commencement of the Work and at construction phases described in the Contract Documents. Survey spacing shall be less than or equal to 5.0 m, unless noted otherwise, and shall include all points necessary to clearly define the Site surface.

.2 "As-Builts" shall be paid for as a lump sum for providing all labour, equipment, and materials required to survey the Site upon completion of the Work, recording changes from the construction drawings using redline mark-ups and providing to Consultant for development of record drawings.

.6 Demolition:

.1 "Demolish Timber Pier Structure" shall be paid for as a lump sum for the removal and off-site disposal of all components and remnants of the existing Pier structure including the treated timber deck structure, timber piles, and all miscellaneous materials, equipment, and structures on the deck.

.7 Steel Pipe Piles:

.1 "Fabricate and Supply Steel Pipe Piles" shall be paid for as unit sum for the fabrication and supply of steel pipe piles in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.2 "Install Steel Pipe Piles" shall be paid for as unit sum for the installation of steel pipe piles in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.8 Precast Concrete Components:

.1 "Supply Precast Concrete Pilecaps" shall be paid for as unit sum for the supply of precast concrete pile caps including cast-in inserts, fasteners and hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.2 "Install Precast Concrete Pilecaps" shall be paid for as unit sum for the installation of precast concrete pile caps including cast-in inserts, fasteners and hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.3 "Supply Precast Concrete slabs" shall be paid for as unit sum for the supply of precast concrete slabs including cast-in inserts, fasteners and hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.4 "Install Precast Concrete slabs" shall be paid for as unit sum for the installation of precast concrete slabs including cast-in inserts, fasteners and hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.8 Timber Components:

.1 "Supply timber stringers" shall be paid for as unit sum for the supply of timber stringers including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.2 "Install timber stringers" shall be paid for as unit sum for the installation of timber stringers including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.3 "Supply timber decking" shall be paid for as unit sum for the supply of timber decking including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.4 "Install timber decking" shall be paid for as unit sum for the installation of timber decking including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.5 "Supply timber handrails" shall be paid for as unit sum for the supply of timber handrails including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.6 "Install timber handrails" shall be paid for as unit sum for the installation of timber handrails including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.5 "Supply timber guardrails" shall be paid for as unit sum for the supply of timber guardrails including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.6 "Install timber guardrails" shall be paid for as unit sum for the installation of timber guardrails including securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.9 Utilities:

.1 "Supply and install 150 diameter watermain" shall be paid for as a lump sum for the supply and installation of a 150 diameter watermain along the new section of the Pier including connections to existing sections, connecting hardware and pipe supports in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.10 Timber Repairs:

.1 "Timber Modifications" shall be paid as a lump sum for the supply and installation of a timber transition deck, including securing hardware and removal and disposal of any existing timbers, at each end of new sections of reconstructed Pier in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.2 "Replace Pile" shall be paid as a unit sum for the supply and installation of new treated timber pile, including securing hardware, and removal and disposal of existing pile in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.3 "Replace Pile Cap" shall be paid as a unit sum for the supply and installation of new treated timber pile cap, including securing hardware, and removal and disposal of existing pile cap in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.4 "Replace Cross Bracing" shall be paid as a unit sum for the supply and installation of new treated timber cross bracing, including securing hardware, and removal and disposal of existing cross bracing in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.5 "Install Steel Clamps" shall be paid as a unit sum for the supply and installation of three new galvanized steel clamps per pile, including new securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

.6 "Realign pile and install Straps" shall be paid as a unit sum for the realignment of the existing pile, supply and installation of new galvanized steel flat bar straps, including new securing hardware in accordance with the Drawings, Specifications and Contract Documents and shall include any incidental material, equipment and labour required to carry out the aforementioned items of work.

***** END OF SECTION *****

SECTION 01 31 13
Project Coordination

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 COORDINATION

.1 Assume full responsibility for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of Work under the Contract Documents. If conflicts arise, refer the matter to the Consultant for his decision.

.2 Examine the construction Drawings and Specifications, and the Work of all other Contractors which may affect the performance of the Work. Report to the Consultant immediately, any defects or incomplete Work which may affect proper execution of the Work. Commencement of Work constitutes acceptance of surfaces and conditions except as to latent defects not apparent at the time of commencement and all claims waived against the Owner.

.3 Inform the Consultant and other parties concerned prior to performing Work which attaches to or affects Work of other Contractors, utilities, or the Owner.

.4 Ensure cooperation with Subcontractors so that Work is carried out expeditiously and satisfactorily until completion, and cooperate and coordinate the Work with other Contractors.

.5 Maintain existing exits and provide safe means of egress from all parts of the Work area at all times.

.6 Coordinate Work with the Consultant and other Contractors who will be working on the Site.

.7 Refer to Section 01 11 00 - Summary of Work for the designation of the Prime Contractor in the event that multiple Contractors are on the Site and other coordination related responsibilities.

2 SITE ORGANIZATION

.1 Upon notification of Contract award, appoint key personnel to supervise and direct the Work on-Site and to be available to accept instructions from the Consultant. The Owner reserves the right to remove any personnel from the Site if the performance of such personnel concerned is detrimental to the performance of the Work.

.2 Determine and review manpower requirements on a regular basis with the Consultant. Ensure that sufficient numbers of each class and type of trade are available when required to carry out the Work.

3 CUTTING AND PATCHING

.1 Coordinate the execution of the Work with other Contractors to the satisfaction of the Consultant as required for the satisfactory and expeditious completion of the Work ensuring the most efficient arrangement of elements and equipment in the available space.

.2 Executing cutting, fitting, or patching of Work which may be required to:

- .1 Make several parts fit correctly.
- .2 Uncover Work to provide for installation of ill-timed Work.
- .3 Remove and replace defective Work.
- .4 Remove and replace Work not conforming to Specifications.
- .5 Remove samples of installed Work as specified for testing.
- .6 Install specified Work in existing construction.

.3 In addition to Contract requirements, upon written instructions of the Consultant:

- .1 Uncover Work for inspection by the Consultant.
- .2 Remove samples of installed material for testing.
- .3 Remove Work to provide for alteration of existing Work.
- .4 Provide form, templates, anchors, sleeve inserts, and accessories required to be fixed to or inserted in the Work of other Contractors together with clear and precise Drawings and instructions. Check for correct installation as the Work proceeds.
- .5 Pay for the cost of extra Work and make up time required as a result of failure to provide necessary coordination information or items to be fixed or built-in in adequate time or for Work wrongly installed.
- .6 Ensure safety of new and/or existing Work when cutting or carrying out alterations to any part of the Work.
- .7 Do not cut or alter Work performed under separate Contract without the Consultant's permission.
- .8 Submit written notice to the Consultant, requesting approval to proceed with cutting, designating the time to allow for observation.
- .9 Provide shoring, bracing, supports, or other means of protection as required to maintain structural integrity of the Work.
- .10 Restore Work which has been cut or removed, install new materials to provide complete Work in accordance with Specifications.

4 SCHEDULING

.1 Contractor shall schedule its operations to avoid any delays to the Work of other Contractors.

.2 Contractors will cooperate fully with other Contractors and obtain their approval for any operations which could impede or prevent their Work from continuing as requested. In the event of any conflicts which cannot be resolved by the parties concerned, the decision of the Consultant will be final. In general, that Work that is most critical to completing the Project on schedule will have priority.

.3 Refer to Section 01 11 00 - Summary of Work for the scheduling commitments of zones of the Work for the marine Contractor.

***** END OF SECTION *****

SECTION 01 31 19
Project Meetings

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 PRE-CONSTRUCTION MEETING

.1 After notification of Contract award, the Consultant will arrange and conduct a pre-construction meeting to be attended by authorized representatives of the Contractor and major Subcontractors. The Consultant will advise all other interested parties whose coordination is required during construction and request their attendance.

.2 Topic for discussion will include methods and means by which full cooperation and coordination of all participants can be achieved during construction.

.3 The Consultant may document responsibilities and necessary activities of participants as discussed and distribute copies to each participant.

2 PROGRESS MEETINGS

.1 The Consultant will conduct, chair, and document weekly progress meetings throughout the construction period and will inform all parties concerned in advance of starting time and venue of proposed meeting. The Contractor shall make representative(s) available for meetings as required. In general, meetings will be held at the Site in suitable facilities provided by the Contractor.

.2 Topic for discussion will include construction schedule, Contractor's forecast Work, and equipment and methods. If the Work schedule is deemed to be slipping, the Contractor shall be prepared to discuss his methods to bring the Work back on and maintain the schedule.

.3 Ensure responsible persons attend who have the required authority to commit the Contractor to solutions agreed upon at the meeting. Assign the same person(s) to attend such meetings throughout the construction period. The Consultant shall endeavour to make expeditious technical decisions should such issues develop. However, the design of the Work covers numerous technical fields and immediate responses are not always possible.

.4 Subcontractors, material Suppliers, and others may be invited with approval of the Consultant to attend meetings in which their aspects of the Work are involved. The relations between such participants and discussions relative to, are not the responsibility of the Consultant and do not form part of the meeting's content.

.5 Inform the Consultant in advance of meetings regarding all items to be added to the agenda.

.6 The Consultant will distribute copies of the minutes of the meetings to all participants accordingly.

3 SAFETY MEETINGS

.1 For the period of time limited to when there are multiple Contractors working on the Site, the Contractor will undertake responsibility for managing overall Site safety and conduct safety meetings as required to inform workers and representatives of the Owner and the Consultant of the Site safety rules and regulations.

***** END OF SECTION *****

SECTION 01 33 00
Submittal Procedures

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

.1 Be responsible for the following:

.1 Verification of field measurements, field construction criteria, catalogue numbers, and similar data.

.2 Coordinate each submittal with requirements of the Work and the Contract Documents. Individual submittal will not be reviewed until all related information is available.

.3 Errors and omissions in submittal. The Consultant's review of submittal does not relieve this responsibility.

.4 Notify the Consultant in writing at the time of Bid submission, of any deviation in submittal from requirements of the Contract Documents.

.2 Deliver submittals as required by the Specifications well in advance of schedule dates or fabrication, manufacture, erection, and installation to provide adequate time for reviews, securing necessary approvals, possible revisions and re-submittals, placing orders, securing delivery, and to avoid construction delays. Allow a minimum of ten Working Days for Consultant's review of each submittal.

.3 Accompany each submittal with a letter of transmittal containing all pertinent information required for identification and checking of transmittals including date of submission, Project name, Contractor's name and contact information, contact person's name and position, and subject identification such as colour, finish, material type, trade name, and texture.

.4 When submittals are resubmitted for any reason, transmit under a new letter of transmittal.

.5 Do not carry out Work until submittals have been reviewed by the Consultant. Work adjacent to or impacted by the submittal shall not proceed until the Consultant review of the submittal is complete and has been returned to the Contractor.

.6 Provide the Consultant with advanced notice for inspections.

.7 Contractor is responsible for the distribution of submittals reviewed by the Consultant to all trades necessary to complete the Work. Contractor shall maintain an up-to-date file of all submissions and revisions on Site at all times.

.8 Shop Drawings, Product data, samples, and mock-ups shall be submitted in SI metric units. Where items or information are not in SI metric units, provide converted values in brackets adjacent to imperial units.

.9 Contractor to revise submittals as indicated by the Consultant's written mark-ups or comments and resubmit as required. Fabrication, selection or purchase of components described in the submittal prior to review by the Consultant is at the Contractor's own risk.

2 SAMPLES

.1 Before delivery of materials to the Site, submit samples of materials as required by sections of the Specifications or as requested by the Consultant.

.2 Label samples as to origin and intended use in the Work and in accordance with the requirements in each section of the Specifications.

.3 Samples must represent physical examples to illustrate materials, equipment, or workmanship, and to establish standards by which completed Work is judged.

.4 Ensure samples are of sufficient size and quantity, if not already specified, to illustrate:

.1 The quality and functional characteristics of Product or material, with integrally related parts and attachment.

.2 Full range of colours available.

.3 After acceptance, samples may be used in construction of the Project.

.4 Submit number of samples as specified in each section of the Specifications.

3 TEST REPORTS AND CERTIFICATES

.1 Clearly show on each certification the name and location of the Work, name and address of Contractor, quantity and date of shipment, and delivery and name of manufacturing or fabricating company. Ensure certificates are signed by an authorized representative of the manufacturing or fabricating company.

.2 Submit two copies of all test reports submitted with certificates of compliance showing date or dates of testing, the specified requirements for which the testing was performed, and results of the test or tests.

.3 Provide certificates and test results, fully identifiable with the items, stating that requirements have been met for items conforming to special materials or testing requirements or designed or manufactured in accordance with special codes.

4 SCHEDULE OF WORK

.1 Submit proposed schedule of Work in accordance with the following requirements.

.2 Update schedule on a weekly basis and submit for review by the Consultant on the first day of every month unless otherwise directed by the Consultant.

.3 Coordinate each revised schedule of Work with schedules of Subcontractors and the Consultant.

.4 Adjust the schedules of Work as required by the Consultant in order to expedite the Work to meet the completion date.

.5 Obtain approval by the Consultant of each revised schedule of Work prior to proceeding with the Work.

5 RECORD DRAWINGS

.1 After award of Contract, the Consultant will prepare a set of reproducible Drawings for purpose of maintaining record Drawings. Accurately and neatly record deviations from the Contract Documents caused by Site conditions and changes ordered by the Consultant.

.2 Record locations of concealed components of municipal, mechanical and electrical services discovered or located during the course of the Work.

.3 Identify Drawings as "as-built copy". Maintain in new condition and make a copy to submit to the Consultant for review on a monthly basis.

.4 On completion of the Work and prior to final inspection, submit record Drawings to the Consultant.

6 CERTIFICATION OF TRADESMEN

.1 Provide certificates, at the request of the Consultant, to establish qualifications of personnel employed on the Work where such certification is required by authorities having jurisdiction, by the Consultant or by the Contract Documents.

7 PHOTOGRAPHS AND PUBLICITY

.1 Prohibit photographs and publicity of any kind unless prior approval of the Owner is obtained.

8 WARRANTIES AND GUARANTEES

.1 Submit warranties and guarantees as requested in sections of the Specifications showing title and address of Contract, guarantee commencement date, and duration of guarantee.

.2 Clearly indicate what is being guaranteed and what remedial action is to be taken under guarantee.

.3 Ensure guarantee bears the signature and seal of Contractor.

9 PROCEDURES

.1 Review by Consultant of Contractor's technical methods, procedures, installation, and erection sequences, is for general concept only and in no way relieves or mitigates the Contractor's obligation for the safe execution and completion of the Work in accordance with the Specifications and Drawings and all applicable codes and ordinances.

10 TAXES

.1 The Contractor shall submit details of the amount of taxes applicable to the Work if so requested by the Consultant.

11 BREAKDOWN OF COSTS

.1 Furnish to the Consultant, upon request, a detailed breakdown of costs for those portions of the Work requested from time to time by the Consultant.

***** END OF SECTION *****

SECTION 01 33 20
Shop Drawings, Product Data, Material Testing, and Samples

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Description of Work

.1 This section specifies requirements for Contractor submissions of the following to Consultant for review:

.1 Shop Drawings.

.2 Product data.

.3 Samples and mock-ups.

.4 Material testing reports.

.2 Additional specific requirements for submissions are specified in individual sections.

1.2 Submittal Requirements

.1 All submissions of Project components, Products, samples, etc. shall be clearly marked with the following information:

.1 Date of submission.

.2 Project title and number.

.3 Name, address, telephone, e-mail address, contact person of the following:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 In addition to the above information, the Contractor shall indicate via stamp on transmittal (if submittal is a Product), Shop Drawing, or Product information sheet, their corporate name, address, and telephone number signed by Contractors authorized representative certifying approval of submissions, verification of field measurements, and compliance with Contract Documents. Submittals which do not contain this information will be returned without being examined and shall be rejected.

.2 Shop Drawings shall include, but are not limited to, the following information:

.1 Fabrication details.

.2 Layout showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent Work.

.11 Materials.

.12 Finishes.

.3 Should the Contractor feel it is necessary to deviate from the details to fully meet the intended requirements of the Project, they are to provide written documentation and rationale for the deviation to the Consultant at the time of submission.

2 SHOP DRAWINGS

.1 Shop Drawings are defined as original Drawings, or modified standard Drawings, catalogue information, illustrations, schedules, performance charts, brochures, and other Product data provided by the Contractor, to illustrate details of portions of Work, which are specific to Project requirements.

.2 Adjustments made on Shop Drawings by the Consultant are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Consultant. Do not proceed with Work until such time a Change Order has been issued.

.3 Cross reference Shop Drawing information to applicable portions of Contract Documents.

3 SAMPLES

.1 Samples include but are not limited to examples of materials, Products, equipment, hardware, etc. that clearly illustrate the quality, finishes, and workmanship indicated in the Contract Documents.

.2 Unless otherwise noted on the Contract Documents, the Contractor shall submit two samples of each element.

.3 Unless otherwise indicated in the Contract Documents, samples are to be delivered prepaid to the Consultant's business address or Site office.

.4 Where colour, pattern, or texture is a criterion, submit full range of samples.

.5 Comments made by the Consultant regarding the sample review are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Consultant. Do not proceed with Work until such time a Change Order has been issued.

.6 Reviewed samples will become standard of workmanship and material against which installed Work will be compared.

4 MOCK-UPS

.1 A mock-up is a field-erected example of Work complete with specified materials and workmanship.

.2 Mock-ups are to be erected on Site in a location where they can remain for the duration of the Contract. Coordinate location of the mock-up(s) with the Consultant.

.3 Adjustments made to mock-ups by the Consultant are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Consultant. Do not proceed with Work until such time a Change Order has been issued.

.4 Reviewed mock-ups will become standards of workmanship and material against which installed Work will be compared.

.5 Mock-ups shall not become part of the completed Work without written approval from the Consultant.

5 SHOP DRAWING, MOCK-UP, AND SAMPLE REVIEW

.1 The review of Shop Drawings, mock-ups, and samples by the Consultant is for the sole purpose of ascertaining conformance with the general concept. This review shall not mean that the Consultant approves the detailed design inherent in the Shop Drawings, responsibility for which shall remain with the Contractor, and such review shall not relieve the Contractor of responsibility for requirements of the construction and Contract Documents. Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job Site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the Work of all sub-trades.

6 MATERIAL TESTING AND INSPECTIONS

.1 The Contractor, at no cost to the Owner and as part of their Work, shall coordinate the performance of all inspections and material testing and approvals required by this Contract. Should the test require a representative sample or repair of as constructed area as a result of testing, the Contractor at no cost to the Owner will undertake the selection and delivery of samples to the testing agency and carry out repairs to constructed Work as required by the Consultant. Unless otherwise noted, all tests performed by an independent testing agency will be paid for by the Contractor.

.2 Prior to the start of Work, the Contractor shall provide the Consultant with a schedule outlining the required tests and inspections, and indicate the dates or frequency of testing or inspections to ensure that they are fully coordinated with the requirements of the Contract Documents.

.3 The Contractor shall provide certificate of inspections and test results to the Consultant via e-mail noting within the body of the e-mail whether the tests or inspections conform to the requirements of the Contract Documents.

.4 Should the Contractor cover Work to be tested or inspected prior to carrying out required testing or inspections, then the Consultant has the right to request at no cost to the Owner to have the Work in question be uncovered and tested. Following positive test results or inspection, the Work in question is to be reinstated at no cost to the Owner as per the Contract Documents.

.5 Should the inspection or test results indicate that the Work by the Contractor do not meet the requirements of the Contract Documents, the Consultant has the right to request at no cost to the Owner that the Work be demolished or removed from the Site, replaced, or re-executed in accordance with the Contract Documents and retested or inspected to ensure conformance with the Contract Documents.

***** END OF SECTION *****

SECTION 01 35 43
Environmental Procedures

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This Section covers performance-based environmental standards to be met by the Contractor for the Work.

1.2 References

.1 Environmental protection practices to comply with the following acts, regulations, and guidelines, as applicable:

.1 Environment Management Act; Ministry of Environment.

.2 Fisheries Act; Fisheries and Oceans Canada.

.3 Land Development Guidelines for the Protection of Aquatic Habitat (1992); Fisheries and Oceans Canada and Ministry of Environment.

.4 Occupational Health & Safety Regulation; WorkSafeBC.

.5 Waste Management Act; Ministry of Environment.

.6 Best Management Practices for Pile Driving and Related Operations – BC Marine and Pile Driving Contractors Association.

.7 Wildlife Act, Ministry of Environment.

.8 Environmental Protection Practices by City of White Rock.

1.3 Submittals

.1 Action Submittals:

.1 Environmental Protection Plan (EPP), including spill prevention and emergency response plan.

.2 Informational Submittals:

.1 Details of incidents, non-compliance, and non-conformance events with the associated corrective action(s) within one working day of the observation of the incident or event.

.2 On a weekly basis, provide a written update to Consultant demonstrating that the Contractor is complying with the reviewed EPP, detailing all incidents, non-compliance, and non-conformance events, and associated corrective actions.

1.4 Permits

.1 Permits and/or authorizations for the handling, storage, transport and/or disposal of materials, including but not limited to sediment and water, for the Work are the responsibility of the Contractor.

.2 Owner has submitted a Request for Review to Fisheries and Oceans Canada under the *Fisheries Act*.

.3 Owner has determined that a permit or approval is not required under the *Navigation Protection Act*.

.4 Owner will obtain any permits required under the BC *Heritage Conservation Act*.

1.6 Environmental Manager

.1 The Owner has retained a qualified Environmental Manager to ensure that environmentally sound construction practices are followed, to monitor the impacts of construction on the environment, and to ensure that permit requirements are met.

.2 The Environmental Manager's duties include:

.1 Defining sensitive areas.

.2 Providing construction guidelines.

.3 Recommending and developing appropriate mitigation measures.

.4 Liaising with the Contractor, the Consultant, and government agencies.

.5 Preparing environmental documentation for the Owner and government agencies, including report on all environmental measures that are required and being undertaken at the Work Site.

.6 Routine inspections of construction activities and practices and throughout in-water activities.

.7 Reviewing the spill prevention and emergency response plan.

.8 Emergency spill response and facilitating subsequent cleanup activities.

.9 Incident investigation and reporting.

.10 Stopping Work if it appears that permit or approval conditions are not being followed.

1.7 Environmental Protection Plan

.1 The Environmental Protection Plan will be prepared by the Contractor. The plan will include, where appropriate, site specific strategies to deal with the following matters:

.1 A description of the environmental management responsibilities of the Work.

.2 A description and an organization chart of the Contractor's and external agencies organizational lines of reporting and communication.

.3 A list of the environmental precautions, actions, and mitigation measures that are applicable to the implementation of the Work and how the Contractor will implement these items in the Work.

.4 Details of site-situated Contractor's Equipment.

.5 Liquid storage, fueling and equipment operation and maintenance plan and procedures.

.6 Hazardous materials handling procedures.

.7 Concrete installation procedures.

.8 Spill prevention and emergency response planning.

.9 Solid wastes handling procedures, including dust suppression.

.10 Erosion and sediment control.

.11 Noise and vibration mitigation, including mitigations for piling activities.

.12 Work Site inspection and reporting.

.13 Archaeological chance find procedure.

.2 The EPP will be submitted to the Environmental Manager and Consultant for review and approval.

1.5 Contractor's Responsibility

.1 Undertake the Work in strict compliance with the conditions contained in the appropriate acts, authorization permits, licenses, and approvals. Do not perform, omit, or permit, any act or thing which contravenes the requirements of this Section, or contravenes applicable legislation, regulations and/or bylaws, or which causes, or has the potential to cause, environmental damage.

.2 In the event of a discrepancy between any of the requirements of this Section, and the provisions of any legislation, regulations, or municipal bylaws, the provisions of existing laws, regulations and bylaws must prevail.

.3 Prepare the Environmental Protection Plan that demonstrates that the requirements of the Contract will be met and includes prevention and response measures for spills and other emergency events.

.4 Should any of the Contractor's activities contravene the requirements of the Contract Documents. report the incident to the Environmental Manager and the Consultant. The Environmental Manager or Consultant may issue a stop Work order directing the immediate cessation of such activities. The Consultant may itself undertake remedial measures, or may

order the Contractor to do so, as deemed necessary. The costs of any work stoppages, and/or remedial works thus undertaken, must be paid by the Contractor.

.5 Notify the Consultant, in writing within 60 minutes, upon the discovery of any hazardous conditions within or immediately adjacent to the Work Site. The Contractor must take suitable precautions to prevent injury to persons, and damage to the environment or property, until the hazardous conditions are remedied or removed by the responsible party.

2 EXECUTION

2.1 Environmental Monitoring and Supervision

.1 The Consultant or Environmental Manager may direct the Contractor to immediately suspend Work if the results of environmental monitoring indicate that Work is contravening the Environmental Protection Plan, and/or the terms and conditions of permits, licenses, and approvals, including, but not limited to:

.1 The release of deleterious substances into the environment.

.2 Activities which appear to be an infraction of any environmental regulations or requirements.

.3 Physical degradation of the environment.

.4 Imminent risk of any such events.

.2 If the Work is suspended, Work shall not resume without the prior approval of the Consultant or Environmental Manager. Approval may be conditional upon demonstrations to the satisfaction of the Environmental Manager, and all authorities having jurisdiction, that the Contractor has taken appropriate steps, and instituted sufficient safeguards, to prevent a repeat of such incidents. The Contractor will not be entitled to additional time or monetary compensation for suspension delays.

.3 Environmental monitoring and inspection by, or on behalf of, the Owner does not relieve the Contractor of its sole responsibility for the performance of the work in accordance with the terms of the Contract and the terms and conditions of permits, licenses, and approval.

2.2 Air Quality and Dust Control

.1 Control fugitive dust and other airborne emissions generated from the operation and movement of vehicles and machinery, and from the handling and stockpiling of soils and other construction materials in laydown areas.

.2 When performing demolition, cleaning, or other site preparation Work, utilize dust collection and filtration equipment (e.g., vacuum filter bags).

.3 Cover or wet down all friable materials to prevent blowing dust and debris.

.4 When watering roads to control dust, appropriate silt control measures must be employed to ensure silt laden water does not enter the storm sewers or watercourses.

.5 Burning of refuse or other construction waste materials is strictly prohibited.

.6 Properly maintain all equipment to reduce gaseous pollutant emissions.

2.3 Drainage and Sediment Control

.1 Control, collect, treat and discharge to the sanitary sewer system all dewatering, storm, and process water within on-land construction work areas.

.2 The methods of control, handling, and disposal of erosion, sediment and water are to be by whatever means are necessary and in conformance with this Section to obtain satisfactory working conditions and maintain the progress of the Work.

.3 Handle and dispose all sediment, construction and excavation wastes, or other substances deleterious to aquatic life to prevent their entry into the ocean.

2.4 Environmentally Harmful Products

.1 Store and handle fuels, oils, bitumen, cement, paints, solvents, cleaners, used fuel and oil filters, and other Work materials that may be environmentally harmful, in a way to eliminate leakage and spillage, and to allow containment and recovery in the event of a spill.

.2 Should the Work involve the storage, handling, or use of any environmentally harmful products, or should hazardous wastes be generated, or be likely to be generated, by the use of such products, include relevant details thereof in the Environmental Protection Plan. The terms “environmentally harmful products” and “hazardous wastes” are collectively referred to as “hazardous materials” hereinafter.

.3 The disposal of hazardous wastes to be governed by the Environmental Management Act, the Special Waste Material Regulation thereto, and any other relevant regulation to the Act.

.4 Environmentally harmful products not in use, or earmarked for use, and/or hazardous materials, must be removed promptly from the Work Site by the Contractor.

.5 The Contractor is not permitted to place petroleum storage containers on the Work Site, neither underground nor above ground. The contractor may store petroleum required for the Project on work barges provided proper containment, spill supplies, and fuel handling procedures are in place.

.6 All refueling shall take place >30m from water to the greatest extent possible. In circumstances where this is not possible (i.e. refueling of barge-based cranes), refueling activities must be isolated from receiving environment by use of drips trays and spill pads while fueling.

3.5 Solid Non-Hazardous Waste

.1 Dispose of demolition, land clearing, and construction waste in accordance with the intent of the provincial Environmental Management Act, and with the applicable bylaw requirements.

.2 Do not dump or burn garbage or any other waste associated with the Work. Should garbage or Work-related waste be dumped, within 60 minutes act to clean up and remove the waste material to an approved location. The costs of the clean-up and removal of garbage and dumped materials to be paid by the Contractor.

.3 The work site must be kept in a clean and orderly state. All waste materials shall be placed promptly in bins or similar. No waste shall enter the water or placed in the intertidal area.

3.6 Spill Prevention and Emergency Response Planning

.1 Undertake regular scheduled inspections of all hazardous materials, and equipment containing hazardous materials, for signs of leakage. During such inspections, ensure that all personal protective clothing and equipment, and other emergency response items, are in place and in good working order.

.2 The Contractor shall have a written Work Site emergency response plan appropriate to the scale of the proposed construction activities. The plan to include:

.1 The probability and severity of an adverse effect to health, property, or the environment, of a spill of sewage, chlorinated water, or hazardous materials, used, handled, or stored on the Work Site.

.2 Spill/release notification and alerting procedures.

.3 Spill containment, recovery, and clean-up procedures.

.4 On-site spill/release clean-up materials, equipment, and locations.

.5 Names and telephone numbers of persons and organizations that may be contacted in the event of a potential environmental incident.

.3 The emergency response plan to be available for inspection by the Consultant and regulatory agency personnel and be posted at conspicuous locations throughout the Work Site.

.4 All equipment operating within work areas below the High-Water Mark shall utilize readily biodegradable and non-toxic lubricants and hydraulic oils, unless specifically consented by the Environmental Manager.

.5 Maintain a readily available supply of suitable spill prevention and emergency response equipment on the Work Site at all times in effective working condition and ensure that personnel are adequately trained in its use to deal with environmental emergency situations.

.6 In the event of an environmental emergency, notify the Environmental Monitor and the Consultant within 60 minutes. If the environmental emergency is a spill to land of a hazardous material in quantities equal to or greater than those listed in the Spill Reporting Regulation under the Environmental Management Act, immediately notify the Provincial Emergency Response Program (PEP) at 1-800-663-3456. Spills of any hazardous material, or any other material, which could be deleterious to fish, must be reported to Environment Canada at 604-666-6100.

.7 Submit written incident reports to the Environmental Monitor and the Consultant within 24 hours of any environmental incident or spill/release. The incident report to identify the reporting organization, date, time, location, hazardous materials involved, source and persons or organizations notified. In addition, the report must describe how the spill or release occurred, remedial action taken or planned, and actions necessary to prevent recurrence.

3.7 Sedimentation and Water Handling

.1 Silts and fine materials introduced into water systems can have adverse effects to the aquatic environment. Suspend operations if there is evidence that site water is entering the storm drains or natural drainages, or if surface street runoff surrounding the Work Site is entering the storm drainage system.

.2 Should water quality criteria (Canadian Council of Ministers for the Environment and BC Water Quality Guidelines) for turbidity be exceeded, construction will be stopped until the situation is rectified to the satisfaction of the Environmental Manager.

.3 Underwater noise from in-water pile driving must not exceed 30kPa @1m from the pile. A marine mammal exclusion zone will be established by the Environmental Manager to a maximum distance of 150 m, if the noise produced during pile driving exceeds 160 dB. Pile driving will be suspended if a marine mammal enters the exclusion zone. Hydrophone monitoring will be required at the onset of piling to determine levels of piling noise generated.

.4 Vibratory pile driving should be used whenever possible. If impact pile driving is required, it must be performed out-of-water.

3.8 Sensitive Areas

.1 Contractor shall provide flagging to limit access and impact to sensitive areas prior to commencement the Work, as defined by the Environmental Manager.

3.9 Navigation

.1 Contractor shall submit a Notice to Shipping prior to construction.

.2 Contractor will comply with all regulatory requirements relating to navigation, including the marking and lighting of Works.

***** END OF SECTION *****

SECTION 01 41 00
Regulatory Requirements

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

.1 Throughout the Specification (Divisions 01 through 35), references are made to codes and standards to establish minimum acceptable standards of materials and workmanship.

.2 Perform Work in accordance with the latest published edition at the date of submission of the Bid unless otherwise stated.

.3 Provide materials and workmanship which meet or exceed the specifically named codes or standard.

2 CODES, REGULATIONS, AND BYLAWS

.1 All Work to be executed in accordance with the British Columbia Building Code and all applicable codes, laws, and regulations of the national, provincial, and municipal building codes, and other Acts, Regulations and Codes pertinent to Place of the Work.

.2 Give all requisite notices in connection with this Work to the proper authorities necessary for the construction and completion of the Work on land or in the water, and deliver to the Consultant all certificates for any branch of the Work for which such certificates may be required in connection with the Contract.

.3 Comply with all municipal bylaws, including in relation to noise. The City of White Rock will not issue a variance to the noise bylaw relating to the hours of construction for the Work.

The Contractor must prepare and deliver notices to all residents, building owners, and occupiers of property within 0.5 km of the construction Site to notify them of the hours of construction. The notice should include a description of the Work being undertaken and a contact person and telephone number that residents may contact their concerns. Best industry practices must be undertaken to minimize excessive noise, particularly during early morning and evening hours.

.4 Comply with all Federal and Provincial Acts, Regulations and Codes of Practice so that the Work does not adversely affect the environment of all streams, rivers, lakes, and other bodies of water within the scope of the Contract.

.5 Refer to Section 01 35 43 Environmental Procedures for applicable environmental regulations.

3 ARCHAEOLOGICAL

.1 The Owner has retained a professional archeologist and chance-find procedures that define the steps that will be taken in the event that any archeological sites or artefacts are discovered will be prepared. The professional archeologist and Indigenous representatives will be onsite during construction to provide oversight and guidance to the Contractor.

4 TRADEMARKS AND LABELS

.1 Keep intact all trademarks and labels as required by authorities having jurisdiction to enable identification of materials and equipment.

***** END OF SECTION *****

SECTION 01 45 00
Quality Control

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 TESTING AND INSPECTION

.1 Unless specified otherwise in individual sections, all testing and inspection shall be carried out by qualified independent testing and inspection agencies approved by the Consultant, and paid for by the Contractor.

.2 Implement a quality control plan to continuously monitor quality of all aspects of the Work. Assign one individual to be responsible for implementation of the quality control plan for the duration of the Work.

2 INSPECTION AND TESTING BY CONSULTANT

.1 Give timely notice requesting inspection if Work is designated by the Specification or bylaw for special tests, inspections, or approvals by the Consultant or governing authority.

.2 The Consultant may order any part of the Work to be examined if such Work is suspected to be not in accordance with the Contract. If, upon examination such Work is found not in accordance with the Contract Documents, correct such Work and pay the cost of examination and correction.

.3 Inspection and testing by the Consultant or the appointed inspector shall not relax the Contractor's responsibility to execute the Work in accordance with the Contract.

.4 If defects are revealed during inspection and/or testing, the Consultant or the appointed inspector may perform additional inspection and/or testing to ascertain the full degree of the defect. Correct defects and irregularities as directed by the Consultant at no cost to the authority. Pay costs for retesting and re-inspection.

3 REJECTED WORK

.1 Remove defective Work, whether the result of poor workmanship, use of defective Products, or damage, and whether incorporated in the Work or not, which has been rejected by the Consultant as failing to conform to the Contract. Replace or re-execute in accordance with the Contract.

.2 If, in the opinion of the Contractor, it is not expedient to correct defective Work or Work not performed in accordance with the Contract, provide a detailed Non-Conformance Report complete with a proposed solution to the Consultant for evaluation. If, in the opinion of the Consultant, it is not expedient to correct defective Work or Work not performed in accordance with the Contract, the Owner may deduct from the Contract Price the difference in value between the Work performed and that called for by the Contract, the amount of which shall be determined by the Consultant, after due consultation with the Contractor and the Owner.

4 REPORTS

.1 Submit two copies of inspection and test reports promptly to the Consultant.

.2 Submit two copies of material test certificates as may be requested or as required in individual Specification sections.

***** END OF SECTION *****

SECTION 01 52 00
Construction Facilities

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

.1 Refer also to Section 01 11 00 - Summary of Work, for specific requirements associated with construction facilities and temporary control.

.2 Provide temporary facilities and services required for construction of the Work and as required by the jurisdictional authorities.

.3 Obtain approval of the Consultant for location, appearance, and arrangement of temporary facilities and services.

.4 Ensure facilities are kept clean. Paint, improve, or replace as directed by the Consultant.

.5 On completion of the Work, remove all temporary utilities, buildings, facilities, and foundations, and any debris resulting from such Work.

.6 Restore areas used for temporary facilities and leave it in a condition satisfactory to the Consultant.

.7 Provide and maintain all temporary facilities and services required to accomplish the Work in accordance with the construction schedule.

.8 Submit to the Consultant a list of temporary buildings that the Contractor intends to bring to the Place of the Work.

1.1 Documents Required

.1 Maintain at Contractor's Work area, one copy each of the following:

.1 Contract Documents

.2 Contract Drawings

.3 Copy of Approved Construction Schedule

.4 Specifications

.5 Addenda

.6 Reviewed Shop Drawings

.7 Change Orders

.8 Field Work Orders

.9 Field Memos

.10 Other Modifications to Contract

.11 Field Test Reports

.12 Letters of Environmental Approval

2 TEMPORARY UTILITIES

2.1 Power and Lights

.1 Provide lighting and power facilities as required for the execution of the Work, in accordance with rules and regulations of the Canadian Electrical Code, and the local authority having jurisdiction.

.2 Whenever any part of the Work is required to be performed at night, Contractor shall provide and maintain, from sunset to sunrise, such lights on or about the Works as the Consultant deems necessary for the proper observation of the Works and performance of the Work; but, in any event, in compliance with any applicable laws and regulations.

2.2 Water Supply

.1 The Contractor shall pay for all costs associated with installing temporary water service to the construction area.

.2 Connect to water supply source and provide a water distribution system on and to Work for all construction purposes.

.3 Prohibit wastage of water.

2.3 Sanitary Facilities

.1 Sanitary facilities for workforce are not available at the Site. The Contractor shall provide portable facilities as required.

.2 Maintain facilities in proper sanitary condition.

2.4 Compressed Air

.1 Provide compressed air as required for construction purposes.

3 FIELD OFFICES AND SHEDS

3.1 Site Offices and Storage Facilities

.1 The Contractor shall provide his own field office that shall be suitable to hold weekly Project meetings. The City of White Rock has allocated an area in the parking lot west of the White Rock Museum for placing construction facilities.

.2 Provide covered Work areas and storage facilities required to protect equipment and materials from weather. Provide storage sheds with security locks to protect materials, equipment, and tools from pilferage and weather.

.3 The Contractor shall provide a separate lockable field office for the Consultant's exclusive use. The office shall be clean, in new condition and shall be furnished as described in Section 01 11 00 - Summary of Work.

4 WORK AREAS AND ACCESS

4.1 Work Areas

.1 Work areas available within the Site limits will be assigned by the Consultant.

.2 The Consultant may at his discretion, allocate other areas for Work during specific periods.

.3 Work areas may be restricted or Work rescheduled to avoid interference with other Work at the Site.

.4 Maintain the worksite in a neat, orderly condition during construction to the satisfaction of the Consultant.

.5 Dispose of debris and surplus materials off-Site on a daily basis.

4.2 Access

.1 Confine construction operations within limits of the designated working areas. Access to and egress from working areas are subject to approval and direction of the Consultant.

.2 Avoid obstructing access routes. Do not clutter with temporary storage, equipment, or debris, those areas where Work has been completed, particularly areas where other Contractors may be working. Maintain access to all areas served by existing access routes.

.3 Loading and unloading of barges or supply vessels will only be carried out with the prior permission of the Harbour Master.

5 CONSTRUCTION AIDS

5.1 Enclosures

.1 Include temporary enclosures for the Work as required to protect it in its entirety or any part of it, against elements, to maintain environmental conditions required for Work within the enclosure, and to prevent damage to materials and equipment stored within.

.2 Provide enclosures to withstand wind pressures required for the building by authorities having jurisdiction.

.3 Erect enclosures to permit complete access for installation of Work during the time enclosures remain in place.

.4 Take precautions to ensure that shoring, Construction Equipment, materials, or any operations, or forces of nature which apply loads to any part of the Work shall not damage the Work.

6 EXISTING SERVICES AND WORKS

6.1 Existing Services

.1 The Contractor shall be responsible for obtaining information concerning services, whether below, upon, or above the ground, and for the repair of damage to services caused by the Work of this Contract. Obtain approval of the Owner for methods of protecting services.

.2 Before commencing Work, complete a BC OneCall to notify facility Owners in the vicinity of the Site.

.3 Before commencing Work, establish location and extent of service lines in area of Work and notify the Consultant of findings.

.4 Where unknown services are encountered, immediately advise the Consultant and confirm findings in writing.

.5 Record locations of maintained, re-routed, and abandoned service lines.

6.2 Existing Works

.1 All existing Works, property, and facilities (public and private) in or adjacent to the construction area shall be adequately protected by the Contractor from damage or loss of any kind and/or interruption of services at all times.

.2 All monitoring wells identified by the Consultant shall be protected from damage or loss. If monitoring wells are damaged, the Consultant shall be notified immediately. The Contractor will be responsible for proper decommissioning and replacement costs if monitoring wells are damaged.

.4 All costs connected with the supply and installation adequate protection Works to existing structures and their removal, when no longer required, shall be borne by the Contractor as part of his agreement.

.5 Any damage to the above mentioned existing Work or loss resulting from the Contractor's operations and/or his failure to provide and install adequate protection for these Works shall be his responsibility alone and he shall immediately repair or replace such damage or make good such loss at his own expense to the satisfaction of the Consultant.

7 SECURITY

.1 Be responsible for security of the Work at the Site, from time of commencement at the Place of the Work until the Work is completed and accepted by the Consultant.

.2 Be responsible for materials, tools, and equipment provided for the Work and protect them from damage, theft, atmospheric corrosion, fire, sabotage, and other foreseeable hazards.

.3 Be responsible for the security of own tools and equipment.

.4 Maintain security at all times in the event that construction is shut down due to off shifts, holidays, strikes, or lock-outs.

.5 Provide the Consultant with unrestricted access to the Site through provision of keys.

8 FIRST AID

.1 Provide an adequately equipped first aid station in accordance with WorkSafe BC and other authorities having jurisdiction.

.2 Place employees in charge of first aid who are familiar with first aid procedures and are certified to practice in the Place of the Work.

.3 Ensure at least one such employee is available at the Place of the Work during the performance of Work.

9 CONSTRUCTION SAFETY

.1 Appoint a responsible person familiar with legislated requirements for construction safety. Be familiar with such safety requirements as well as the Owner's safety requirements and ensure that they are enforced.

.2 For the period of time limited to when there are multiple Contractors working on the Site, the Contractor will undertake responsibility for managing overall Site safety and ensure that:

.1 The activities of employers, workers, and other persons at the workplace relating to occupational health and safety are coordinated.

.2 Everything that is reasonably practicable is done to establish and maintain a system or process that will ensure compliance with the legislated requirements for construction safety in respect of the workplace.

.3 Inform the Owner immediately of accidents or potential hazards and be responsible for giving the required notice of accidents to government authorities as required by law.

.4 Be responsible for general safety and conduct of employees and ensure that:

.1 Equipment is operated and maintained only by qualified persons having adequate training and experience.

.2 Employees do not trespass beyond boundaries established for Work of this Contract unless required to do so in pursuance of Work of this Contract.

.3 All protective personal safety equipment is worn or used in keeping with the hazards of Work being carried out and as required by Occupational Health and Safety Division safety policies and procedures. As a minimum, all personnel shall wear CSA approved safety boots, hard hats, eye protection goggles and high-visibility vests while on Site.

.4 Employees shall wear safety hats of the same colour and different from that of others engaged on the Project.

.5 Ensure employees are familiar with safety rules and regulations on the Site.

.5 Remove snow and ice as necessary for safe and adequate performance of the Work.

.6 Provide suitable barricades around all excavations, openings, and other potentially dangerous areas, and remove the barricades when they are no longer necessary.

.7 Provide adequate lighting at all excavations, openings, and other potentially dangerous areas during the hours of darkness.

.8 Pay all costs for providing watching personnel, barriers, fences, warning signs, and audible alarms for the protection of persons and property during performance of the Work.

.9 Indemnify the Owner from any and all loss or damage sustained by reason of the Contractor's failure to maintain proper barriers or watching.

10 FIRE PROTECTION

.1 Prohibit open fires on the Site. Remove waste at regular intervals and when directed. Take precautions to avoid fire by spontaneous combustion. Prohibit smoking in areas where flammable materials are in use or stored. Post "NO SMOKING" signs prominently in such areas and see that they are strictly obeyed. Comply with fire regulations of the Owner and of the authorities having jurisdiction.

.2 Be responsible for fire protection within areas of Work. Provide and maintain in good working order, sufficient firefighting equipment for this purpose including, but not limited to, fire extinguishers, asbestos blankets, and portable fire pumps. Obtain approval of the Owner for the type, capacity, location, and storage of the fighting equipment.

.3 Assign workers to fire watch while welding, metal cutting, or soldering is in progress and longer where necessary, especially after quitting times, etc. If necessary, use asbestos blankets to protect adjacent areas. Provide appropriate fire extinguishers immediately at hand.

.4 Familiarize employees with proper use of firefighting equipment.

11 WEATHER

.1 No Work shall be undertaken by the Contractor when, in the opinion of the Consultant, the weather is unsuitable or unfavourable for a particular class of Work.

12 DANGEROUS OR FLAMMABLE MATERIALS

.1 Contractors shall ensure at all times and at all locations under his control within this Contract that explosive materials, fuels, and all other dangerous or flammable materials are stored, covered, and protected in a manner recognized as standard practices for the particular materials and fluids, but, in any event, in accordance with any applicable laws or regulations.

13 ACCESS ROADS AND PARKING AREAS

.1 Refer to Section 01 11 00 - Summary of Work.

.2 Parking space is limited at the Site and Contractor's vehicles shall be parked only in areas available to the general public. Contractor shall be responsible for any parking tolls incurred.

***** END OF SECTION *****

SECTION 01 60 10
Materials and Equipment

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

.1 Ensure uniform pattern and quality of new materials and equipment throughout the job, bearing approval labels of authorities having jurisdiction.

.2 Material and equipment shall be on hand well in advance of being required.

.3 Use Products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

.4 Handle and install manufactured articles, materials, and equipment in strict accordance with manufacturer's instructions unless otherwise specified.

.5 Remove from the Place of the Work, materials or equipment condemned by the Consultant as not approved for use. Provide and install suitable replacement materials.

.6 Provide all labour and equipment to unload, transport, and store at the Place of the Work any Owner supplied materials and equipment.

2 HANDLING AND STORAGE

.1 Carefully offload equipment and materials and place in storage until ready for installation.

.2 Use the storage area as designated by the Consultant.

.3 Use the equipment and techniques for offloading and handling suited to the type of equipment and materials being handled.

.4 Follow any special handling instructions applicable to the equipment and materials.

.5 Store packaged materials undamaged, in their original wrappings or containers with the manufacturer's labels and seals intact.

.6 Remove crating and packing only to the extent necessary to permit inspection of the contents and replace after inspection.

.7 Provide heated indoor storage for electronic and pneumatic controls and instrumentation, electrical items, and other items or materials which could be damaged by damp or cold.

.8 Store large electrical items, which cannot be placed indoors because of their weight or bulk, outdoors on raised pedestals. Provide electrical power for plug-in of motor heaters to protect from adverse weather conditions.

.9 Store and confine materials and equipment in accordance with the laws, ordinances, and regulations applicable to the storage of such materials and equipment.

.10 Store equipment and materials not requiring indoor storage, outdoors subject to the following provisions:

.1 Protect against weather conditions which may be detrimental to the equipment and materials.

.2 Provide adequate supports to prevent the equipment and materials from coming into contact with the ground and arrange such supports as to prevent dimensional distortion of the equipment and materials.

.3 Ensure special external surface finishes, sealing faces and edges, or parts having close dimensional tolerances are covered or provided with additional protection as may be required to prevent damage.

.4 Seal openings to prevent ingress of dirt.

.5 Maintain adequate ventilation to prevent condensation of moisture on equipment and materials.

.11 Make good damages resulting from improper handling or storage, to the manufacturer's standard, at no cost to the Owner and subject to final acceptance by the Consultant.

3 PROTECTION

.1 Protect all equipment and materials from damage during handling and installation.

.2 Provide waterproofing covers, tarpaulins, temporary walkways, and any other suitable method of protection during and after installation.

.3 Repair or replace damaged Work caused by failure to provide suitable protection at no cost to the Owner.

4 IDENTIFICATION OF MATERIALS AND EQUIPMENT

.1 Clearly identify equipment and materials as to the manufacturer and class of quality, with the manufacturer's name or logo and sufficient information such as quality, standards of design and manufacturer, dimensional classification, catalogue or serial numbers to establish identity of the item in relation to the Contract Documents.

.2 Ensure equipment and materials are clearly identified in the manufacturer's, Supplier's, and fabricator's shops and yards should it be necessary to protect the Owner's property in the event of bankruptcy.

5 PRODUCT OPTIONS

.1 For Products specified only by reference standards, select any Product meeting these standards in accordance with the manufacturer's printed literature.

.2 For Products specified by naming several Products or manufacturers, select any Product and manufacturer named.

.3 For Products specified by naming one or more Products, but indicating the option of selecting equivalent Products by stating "or equal" after specified Product, submit a request, for any Product not specifically named, as outlined in this section.

.4 For Products specified by naming only one Product and the manufacturer, there is no option and substitution will not be allowed.

6 SUBSTITUTIONS

.1 Where the Specifications include an "or equal" clause, substitutions will be considered by the Consultant providing:

.1 The materials or Products specified are no longer available.

.2 The materials or Products proposed are considered by the Consultant as "equivalent" to those specified and will result in a credit to the Contract Price.

.3 The materials or Products proposed are considered by the Consultant as superior to those specified and will not result in a change to the Contract Price.

.2 Substitutions may be proposed under the following conditions:

.1 Investigate the proposed substitutions and complete data substantiating the proposed substitution as submitted is in accordance with the Specifications.

.2 Submit all data relating to changes in construction schedule and relation to other Work.

.3 State what effect, if any, the proposed substitution will have on the Contract Price.

.4 Give at least the same guarantee for the substitution as for the Product originally specified.

.5 Coordinate the installation of the accepted substitution into the Work, assume full responsibility when substitutions affect other Work and make such changes as may

be required to complete the Work, including changes to Drawings, at no extra cost to the Owner.

.6 All claims are waived for additional costs related to the substitution which consequently become apparent.

.3 Substitutions to methods or processes described in the Specifications or Drawings, may be proposed for the consideration of the Owner. Ensure such substitutions are in accordance with the following requirements:

.1 Clearly indicate how the proposed substitutions would be advantageous to the Owner or in the opinion of the Contractor would improve the operation of the installation.

.2 Be responsible for substitutions to methods or processes concerning such Work and ensure that the warranty covering all parts of the Work will not be affected.

.3 Defray the cost of all changes in the Work of other Contractors, necessitated by the substituted methods or processes, if accepted.

.4 The substituted methods or processes fit into space allotted for the specified methods or processes. Make any Drawing changes required for the substitution at no cost to the Owner.

.4 Substitutions will not be considered if:

.1 They are indicated or implied on Shop Drawings or Product data without formal request.

.2 Acceptance will require substantial revisions of the Specification and Drawings.

.5 Do not substitute materials or methods into the Work unless such substitutions have been specifically approved for the Work, by the Consultant.

.6 The Contract Price will be adjusted accordingly to any and all credits arising from the substitutions mentioned above.

***** END OF SECTION *****

SECTION 01 71 23
Field Engineering

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Requirements Include

.1 Execute, and assume responsibility for, complete field engineering survey services to establish and confirm location of the Work. All surveying is considered to be incidental to the Work and will be paid as a lump sum.

.2 Provide access to benchmarks and baselines for the Consultant.

1.2 Qualifications of Surveyor

.1 Qualified land surveyor, registered in British Columbia and acceptable to the Consultant.

.2 Submit name and address of surveyor to the Consultant.

1.3 Setting out the Work

.1 Prior to commencing Work, locate all existing utilities and outfalls. Notify the Consultant immediately of any discrepancies or unanticipated conditions that may affect the Work.

.2 The Contractor shall establish the baseline (or lines) and benchmarks suitable for laying out the Work. The Contractor shall maintain the monuments thereafter. Each benchmark that establishes the baseline shall have two reference points that shall be located so that they are not disturbed by the Contractor. The proposed location of the baseline and reference points shall be approved by the Consultant prior to establishing. Responsibility for accuracy of the established line and points lies with the Contractor. The line and points shall always be available to the Consultant for checking. Such checking by the Consultant shall not relieve the Contractor with respect to the accuracy of these lines and points.

.3 The Contractor shall be responsible for accurately setting out the Work from the benchmark(s) or reference line(s) and take necessary action to prevent their destruction. Verify figures shown on the Drawings and assume responsibility for any error resulting from failure to exercise such precaution. Be responsible for the alignment, elevations, and dimensions of all parts of the Work and their mutual agreement.

.4 If, at any time an error appears or arises in the position of levels, grades, dimensions, or alignment of parts of the Work, rectify such error to the satisfaction of the Consultant, at no cost to the Owner. Checking of the position of levels, grades, dimensions, or alignment of parts of the Work by the Consultant does not relieve the Contractor of his responsibility for the correctness thereof.

.5 Provide the Consultant with reasonable assistance which may be required at any time in checking the Work.

1.4 Documentation

.1 Maintain a complete, accurate log of control and survey Work as it progresses.

.2 Provide the survey layout information to the Consultant.

.3 On request of the Consultant, submit documentation to verify accuracy of field engineering Work.

1.5 Construction Tolerances

.1 Construction tolerances for the Works are detailed in the Specifications and referenced standards. The Contractor is reminded that it is imperative to adhere to these tolerances which will be strictly enforced to ensure the Works meet the required.

***** END OF SECTION *****

SECTION 01 77 00
Closeout Procedures

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 FINAL CLEANING

.1 Remove waste Products and debris from Site, other than that resulting from the Work of the Owner, other Contractors or their employees, and leave the Work clean and suitable for occupancy by the Owner before attainment of Substantial Performance of the Work. Remove Products, tools, construction machinery, and equipment not required for the performance of the remaining Work.

.2 Prior to application for the final certificate for payment, remove Products, tools, construction machinery and equipment, and waste Products and debris, other than that resulting from the Work of the Owner, other Contractors, or their employees.

.3 Inspect finishes, fittings, and equipment and ensure specified workmanship and operation.

.4 Broom clean and wash exterior walks, steps, and surfaces. Remove dirt and other disfigurations from exterior surfaces. Sweep and wash clean Site paved areas.

2 DOCUMENTS

.1 Submit as-built Drawings as specified in the Section 01 33 20.

.2 Collect and assemble documents executed by Subcontractors, Suppliers, and manufacturers. Submit material prior to applying for the final certificate for payment. For equipment put into use with the Owner's permission during construction, submit within ten days after start-up. For items of Work delayed materially beyond date of Substantial Performance of the Work, provide updated submittals within ten days after acceptance, listing date of acceptance as start of warranty period.

.3 Provide warranties and bonds fully executed and notarized.

.4 Execute transition of performance bond and labour and materials payment bond to warranty period requirements.

.5 Submit a final statement of accounting giving total adjusted Contract Price, previous payments, and monies remaining due.

.6 The Consultant will issue a final Change Order reflecting approved adjustments to Contract Price not previously made.

3 PROJECT COMMISSIONING

.1 Expedite and complete correction of deficiencies and defects identified by the Consultant.

4 INSPECTION/TAKEOVER PROCEDURES

.1 Prior to applying for certificate of Substantial Performance of the Work, carefully inspect the Work and ensure it is complete, that major and minor construction deficiencies are complete and defects are corrected. Notify the Consultant in writing, of satisfactory completion of the Work and request an inspection.

.2 Correct all deficiencies and defects noted during the Consultant's inspection.

.3 When the Consultant considers deficiencies and defects have been corrected and it appears requirements of Contract have been performed, make application for certificate of Substantial Performance of the Work.

***** END OF SECTION *****

DIVISION 02
Existing Conditions

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 02 41 00
Demolition

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section describes the requirements for carrying out demolition of the existing timber Pier structures.

1.2 Related Sections

.1 Section 01 71 23 Field Engineering

1.3 Safety

.1 Observe all safety requirements in accordance with the WorkSafe BC and Labour Canada.

.2 Unless otherwise specified, carry out demolition Work in accordance with all applicable codes and standards.

1.4 Protection

.1 Take all precautions necessary to protect all services, equipment, and structures adjacent to the Work. Any damage to existing services, equipment, and structures will immediately be reported to the Consultant and will be repaired or replaced at the discretion of the Consultant at no expense to the Owner.

.2 Inspect the Site and review utilities information. Be aware of all restrictions, including but not limited to access, overhead clearances, and underground utilities such as the new submarine conduit that is now being installed in the beach to bypass the missing sections of the Pier.

2 EXECUTION

2.1 General

.1 Demolish only the items specified on the construction Drawings or in the Specifications. Any demolition of items not specified will be reinstated at the Contractor's expense.

.2 Where existing Works are to be removed, they shall be totally removed and disposed of to the satisfaction of the Consultant.

.3 Carry out demolition in accordance with the construction schedule as approved by the Consultant.

.4 Provide suitable containment measures to collect demolition debris and avoid debris from falling onto the beach or into the ocean.

.5 Provide a floating containment boom to collect any debris that accidentally falls into the ocean. Collect such debris continuously. Use oil absorbent booms to treat any sheen from treated timber.

2.2 Demolition of Timber Pier Structure

.1 Prior to demolishing the collapsed portions of the Pier that still remain at the Site, confirm the position and orientation of the existing bents (pile caps and piles). The limits of demolition may be adjusted to suit at the direction of the Consultant.

.2 Remove and dispose of treated timber deck (including all miscellaneous materials, equipment, and structures that are on the deck) to the limits shown on the Drawings and as directed by the Consultant.

.3 Provide clean saw-cut lines between the sections of the deck that are to remain and the sections that are to be demolished. Treat all cuts, breaks, and abrasions on the surfaces of creosote timber that is to remain with two separate coats of hot creosote oil in accordance with CSA O80 for marine exposure. All exposed cuts shall be trimmed neat, square, flush, and without saw/blade marks with the intent to maintain a high quality finished appearance. Repair poorly cut edges to the satisfaction of the Consultant.

.4 Take care to protect the existing Pier structure that is to remain against damage from falling debris and other causes. Any damage to the structure shall be repaired at the expense of the Contractor.

.5 Survey the position and alignment of all existing timber piles, prior to removal. Provide survey data to the Consultant for review.

.6 Timber piles to be removed shall be extracted or made safe at least 1 m below the existing beach elevation if piles break during extraction. Making safe means horizontally cutting the top of the remaining piles without any remaining vertical sharp edges or projections. Any depressions that develop during extraction of piles will be backfilled with clean sand.

2.3 Remediation of Remaining Timber Pier Structure

.1 Remove and dispose of all components and remnants of the existing Pier structure within the limits shown on the Drawings and as directed by the Consultant.

.2 Take care to protect the existing Pier structure that is to remain against damage from falling debris and other causes. Any damage to the structure shall be repaired at the expense of the Contractor.

.3 Survey the position and alignment of all existing timber piles, prior to removal. Provide survey data to the Consultant for review.

.4 Timber piles to be removed shall be extracted or made safe at least 1 m below the existing beach elevation if piles break during extraction. Making safe means horizontally cutting the top of the remaining piles without any remaining vertical sharp edges or projections. Any depressions that develop during extraction of piles will be backfilled with clean sand.

.5 Remove and dispose of/recycle timber including metal connectors and brackets in accordance with appropriate solid waste management regulations/practices in BC.

3 CLEAN-UP

.1 Clean-up the Site and dispose of all demolished materials and equipment off-site in authorized and legal dumpsites.

.2 Obtain all necessary permits and permission from the governing regulatory authorities to dispose of the demolished equipment or materials.

4 TEMPORARY WORKS

.1 All temporary Works design associated with demolition Work will be done by the Contractor.

***** END OF SECTION *****

DIVISION 03
Concrete

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 03 20 00
Concrete Reinforcing

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Related Sections

.1	Section 03 30 00	Cast-in-Place Concrete
.2	Section 03 40 00	Precast Concrete

1.2 References

.1	CSA A23.1	Concrete Materials and Methods of Concrete Construction
.2	CSA A23.3	Design of Concrete Structures for Buildings
.3	CSA A23.4	Precast Concrete—Materials and Construction
.4	CSA G30.3	Cold-Drawn Steel Wire for Concrete Reinforcement
.5	CSA G30.5	Welded Steel Wire Fabric for Concrete Reinforcement
.6	CSA G30.14	Deformed Steel Wire for Concrete Reinforcement
.7	CSA G30.15	Welded Deformed Steel Wire Fabric for Concrete Reinforcement
.8	CAN/CSA-G30.18	Billet-Steel Bars for Concrete Reinforcement
.9	CAN/CSA-G40.21	Structural Quality Steels
.10	CSA W186	Welding of Reinforcing Bars in Reinforced Concrete Construction
.11	ACI 315	Details and Detailing of Concrete Reinforcement

1.3 Submittals

.1 Submit Shop Drawings for reinforcement of cast-in-place concrete in accordance with Section 03 30 00. Submit Shop Drawings for precast concrete units in accordance with Section 03 40 00.

.2 Shop Drawings consist of bar bending details, lists, and placing Drawings.

.3 On placing Drawings, indicate sizes, spacing, quantities, weight, and locations of reinforcement, couplers, and splices, with identifying code marks to permit correct placement without reference to construction Drawings. Indicate sizes, spacing, and locations of chairs, spacers, and hangers. Prepare Drawings in accordance with ACI 315.

.4 Submit manufacturer's Product literature and test data for mechanical couplers to be incorporated in the Work.

1.4 Quality Control Submittals

.1 Submit a certified copy of each mill test report for all reinforcing steel supplied, showing physical and chemical analyses, a minimum of four weeks prior to commencing fabrication.

.2 Inform the Consultant of proposed source(s) of Products to be supplied.

1.5 Delivery, Storage, and Handling

.1 Ship reinforcing steel in bundles with identifying tags or markings. Take necessary precautions to maintain identification after the bundles are broken.

.2 Store reinforcing steel above ground on platforms, skids, or racks, and protect from prolonged exposure to weather.

.3 Ship prestressing steel accompanied by test certificates and identification.

.4 Store prestressing steel with identifying tags and protect from corrosion due to humidity, contamination, or electrolytic action.

2 PRODUCTS

2.1 Materials

.1 Reinforcing Steel: billet-steel deformed bars to CAN/CSA-G30.18 Grade 400R, unless bearing identifying marks indicating size and grade.

.2 Cold-Drawn Steel Wire Ties: to CSA G30.3.

.3 Deformed Steel Wire: to CSA G30.14.

.4 Welded Steel Wire Fabric: to CSA G30.5.

.5 Welded Deformed Steel Wire Fabric: to CSA G30.15.

.6 Plain Round Bars: to CAN/CSA-G40.21.

.7 Weldable Reinforcing Steel: to Grade 400W.

2.2 Accessories

.1 Chairs, Bolsters, Bar Supports, Spacers: to CSA A23.1. Support devices contacting surfaces to be exposed to earth or weather shall be non-corroding.

.2 Mechanical Couplers: capable of developing 125% of the tensile strength of the coupled reinforcing steel, as proven by laboratory tests, Bar-Lock (MBT) couplers, sizes as indicated.

.3 Use non-corroding, non-conductive bar supports and coated tie wire with epoxy-coated reinforcing bars.

3 EXECUTION

3.1 Fabrication

.1 Fabricate reinforcing in accordance with CAN/CSA A23.1, Clause 12.

.2 Design and detail lap lengths and bar development lengths to CAN/CSA-A23.3 unless otherwise indicated.

.3 Obtain the Consultant's approval for locations of reinforcement splices other than shown on the construction Drawings.

.4 Where indicated, weld reinforcement in accordance with CAN/CSA W186.

.5 Verify as-built foundation dimensions and elevations at the Site before cutting and bending reinforcement for foundations, grade beams, and pedestals.

3.2 Placing of Reinforcement

.1 Place reinforcing steel as indicated on reviewed placing Drawings and in accordance with CAN/CSA A23.1 and A23.4. Ensure materials, before being placed, are free of loose scaly rust, dirt, oil, paint, or other bond-breaking coating.

.2 Prior to placing concrete, obtain the Consultant's approval of reinforcing steel and position.

.3 Provide minimum concrete cover for reinforcement in accordance with CAN/CSA A23.1 Clause 6.6.6 unless indicated otherwise on the construction Drawings.

3.3 Field Bending

.1 Do not field bend reinforcement except where indicated or authorized by the Consultant.

.2 When field bending is authorized, bend without heat, applying a slow and steady pressure. Ensure that applicable bend radii are achieved to avoid developing cracks or splits.

.3 Replace bars which develop cracks or splits.

3.4 Tolerances

.1 Tolerances for placing reinforcing steel shall be in accordance with CAN/CSA A23.1 Clause 6.6.8.

***** END OF SECTION *****

SECTION 03 30 00
Cast-in-Place Concrete

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section describes the requirements for all cast-in-place concrete to be furnished and installed in the Work.

1.2 Related Sections

.1 Section 03 20 00 Concrete Reinforcing

.2 Section 03 60 00 Grouting

1.3 References

.1	CSA-A23.1	Concrete Materials and Methods of Concrete Construction (Including Notes and Appendices in the Standard)
.2	CSA-A23.2	Methods of Test for Concrete
.3	CSA-A23.5	Supplementary Cementing Materials
.4	CSA-A3000	Cementitious Materials Compendium
.5	CSA-S269.3	Concrete Formwork
.6	ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
.7	ASTM C403/ C403M	Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
.8	ASTM C494/ C494M	Standard Specification for Chemical Admixtures for Concrete
.9	ASTM C1017/ C1017M	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
.10	ASTM C1202	Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
.11	ACI 305R/306R	Hot/Cold Weather Concreting
.12	ACI 309R	Guide for Consolidation of Concrete

.13 Additional material and testing standards listed in Clause 2 of CAN/CSA-A23.1.

1.4 Definitions

.1 "Permeability" referred to in this section shall mean chloride permeability of concrete when tested using ASTM C1202 procedures at 56 days of moist curing.

1.5 Submittals

.1 Submit for review and approval notification of the proposed independent testing agency.

.2 Submit concrete mix designs to the Consultant for review 14 days prior to placement. The submittal shall include complete details of mix proportions.

.3 Submit copies of all test results directly to the Consultant from the testing agency for review. Test results shall be submitted on the day the tests are completed. Submission of test results will not relieve the Contractor from his obligation to interpret the test results and make necessary corrections or adjustments to his construction procedures or mix designs.

.4 At least four weeks prior to commencing the Work of this section, submit a statement from the concrete Supplier identifying the proposed source of aggregate and certifying that the proposed aggregate/cement combination will not produce deleterious expansion due to alkali-aggregate reaction. The statement shall reference and accompany recent test results for samples taken from the same source as is proposed for this Work that substantiate the statement.

.5 Submit to the Consultant for review, details of falsework for supporting the concrete formwork and precast placement and pour sequences, at least 14 days prior to installation of any falsework. Such review by the Consultant is for general conformance to the design of the structures, and shall in no way relieve the Contractor of his responsibilities with respect to design of such falsework.

1.6 Quality Control Submittals

.1 Provide certification that Construction Equipment and materials, including aggregates to be used in concrete, comply with requirements of CAN/CSA-A23.1.

.2 Submit test results based on trial mixes showing that concrete mix designs will produce concrete meeting the requirements of this section and that strength will comply with CSA-A23.1, Clause 4.4.6.

.3 Submit manufacturer's datasheets and printed instructions for joint sealant, primer, and other materials proposed for use in the Work.

1.7 Quality Control

.1 Perform all concrete Work in accordance with the requirements of CAN/CSA A23.1.

.2 Concrete inspection and testing shall be carried out by a qualified independent agency approved by the Consultant. Cost of testing will be considered incidental to the Work of this section and paid without measurement.

.3 The Owner may conduct quality assurance testing on random batches. Provide access to concrete for taking such samples.

2 PRODUCTS

2.1 Concrete Materials

.1 Portland Cement: Type GU (10) portland cement to CSA-A3000 but with tricalcium aluminate (C3A) content between 4.0% and 8.0%, and total alkali content not greater than 0.60% sodium oxide equivalent.

.2 Supplementary Cementing Materials: Type F or CI fly ash and Type SF silica fume to CAN/CSA-A23.5.

.3 Water: to CAN/CSA-A23.1.

.4 Aggregates: to CAN/CSA-A23.1, normal density.

.5 Air Entraining Admixtures: to ASTM C260.

.6 Chemical Admixtures: to ASTM C494. Consultant to approve type and use of accelerating or set retarding admixtures during cold and hot weather placing.

.7 Super Plasticizing Admixtures: to ASTM C1017.

2.2 Formwork Materials

.1 Formwork materials shall meet the requirements of CAN/CSA-S269.3 and this section.

.2 Contact surfaces or lining of formwork shall be suitably smooth to provide finished concrete surfaces meeting the requirements of this section.

.3 Form Ties: threaded internal disconnecting type, leaving no holes larger than 25 mm diameter in concrete surface.

.4 Form Release Agent: non-staining chemically active release agent, compatible with form material which will prevent adherence of concrete to forms.

2.3 Other Materials

.1 Embedments and Inserts: to Section 05 50 00 – Metal Fabrications.

.2 Joint Sealant: multi-component polyurethane base elastomeric sealant, chemical cure, to CGSB 19-24-M90 Type 1, Class B, with Shore A hardness 40±5 and 25±5 for self-levelling and non-sag, respectively, suitable for joint movement of ±50%. Sikaflex 2C SL for horizontal joints and Sikaflex 2C NS for vertical joints, or approved equal.

.3 Primer for Joint Sealant: as recommended by sealant manufacturer.

.4 Pre-Moulded Joint Filler: resilient bituminous impregnated fibreboard to ASTM D1751. Sternson Flexcell or approved equal. Sponge rubber to ASTM D1752, Type I, flexible grade. Self-expanding cork to ASTM, Type II or III.

.5 Bonding Agent: styrene butadiene emulsion polymer, 48% solids. Target polymer bonding agent or approved equal.

2.4 Concrete Mixes

.1 Mix No. 1: select concrete mix proportions in accordance with CAN/CSA-A23.1 Alternative 1 to give the following properties for reinforced cast-in-place concrete:

.1 Cement: portland cement, Type GU (10).

.2 Fly Ash: minimum 20% by mass of total cementing materials.

.3 Silica Fume: minimum of 5% of the total cementing material. Silica fume may be deleted for second stage pile caps.

.4 Minimum Compressive Strength at 28 Days: 45 MPa.

.5 Maximum Water/Cementing Materials Ratio: 0.40.

.6 Exposure Class: C-1.

.7 Nominal Maximum Size of Coarse Aggregate: 20 mm.

.8 Minimum Course Aggregate Content: 60% of total aggregate.

.9 Slump Before Addition of Super Plasticizer: 65 mm ±20 mm.

.10 Slump After Addition of Super Plasticizer: 100 mm ±30 mm.

.11 Air Content: 5% to 8%. Spacing factor to comply with CAN/CSA A23.1, Clauses 4.3.3.2 and 4.3.3.3.

.12 Super Plasticizing Admixture: to ASTM C1017.

.13 Permeability: maximum 1,500 coulombs at 56 days.

.2 The concentration of corrosion-inducing chemicals from all sources in the concrete mix, expressed as a percentage of the mass of the total cementitious materials, shall not exceed the following limits when tested according to the noted methods:

.1 Chlorides: 0.06% (ASTM D512)

.2 Fluorides: 0.06% (ASTM D1179)

.3 Sulphites: 0.08% (ASTM D1339)

.4 Nitrates: 0.10% (ASTM D3867)

.3 Do not change concrete mix without prior approval of the Consultant. Should change in material source be proposed, new mix design to be approved by the Consultant.

2.5 Concrete Production

.1 Measure, batch, and mix concrete in accordance with CAN/CSA-A23.1, Clause 5.2.

.2 Before unloading concrete at the Site, furnish the Consultant with a delivery ticket for each batch of concrete in accordance with CAN/CSA-A23.1, Clause 5.2.4.5.

3 EXECUTION

3.1 General

.1 Prior to placing concrete, ensure that all reinforcing and other items to be embedded in concrete are in place, properly oriented, located, and secured. Verify that concrete may be placed to the lines and elevations shown on the construction Drawings with all required clearances and cover for reinforcement. Ensure that forms are clean and absolutely all debris has been removed.

.2 Obtain the Consultant's approval before placing concrete. Provide 24 hours notice prior to placing of concrete.

.3 Prior to placing concrete, obtain the Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather.

.4 Maintain accurate records of poured concrete items to indicate date, location of pour, quantity, air temperature, and any Contractor's test samples taken.

3.2 Formwork

.1 Construct and erect formwork in accordance with CAN/CSA-S269.3.

.2 Assemble forms to produce finished concrete conforming to shape, dimensions, locations, and levels indicated within tolerances required by CAN/CSA-A23.1, Clause 6.4.

.3 Construct forms with temporary ports or openings at the bottom of units deeper than 1 m to facilitate cleaning and inspection.

.4 Align form joints and make watertight. Use minimum number of form joints.

.5 Clean formwork in accordance with CAN/CSA-A23.1 before placing concrete.

.6 Leave formwork in place for following minimum periods of time after placing concrete:

.1 Five days for sides of walls.

.2 Seven days for soffits of slabs. Earlier formwork removal will be permitted if high early strength concrete mixes are used with the approval of the Consultant.

.3 Not withstanding the foregoing, formwork may be removed when the strength has attained 70% of the minimum compressive strength at 28 days.

3.3 Preparation

.1 Check locations and sizes of sleeves and openings shown on the construction Drawings.

.2 Set sleeves, anchor bolts, and other inserts and openings as indicated or specified elsewhere. Sleeves and openings greater than 100 mm by 100 mm not indicated on construction Drawings must be approved by the Consultant.

.3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of all modifications from the Consultant before placing of concrete. This shall be considered as incidental to the Work and at no cost to the Owner.

3.4 Placing of Concrete - General

.1 Handle, deposit, and consolidate concrete in accordance with CAN/CSA-A23.1, Clause 7.2 and ACI A309R. Take care not to disturb forms or reinforcing steel when depositing and consolidating concrete.

.2 Ensure that spare internal vibrators and external form vibrators are on hand during placing of concrete.

.3 Unless specified otherwise, where fresh concrete will be placed against hardened concrete, bond the fresh concrete to the hardened concrete in accordance with CAN/CSA A23.1, Clause 7.2.2.

3.5 Construction Joints

.1 Make construction joints in accordance with CAN/CSA-A23.1, Clause 7.3.1.

.2 Locate construction joints as approved by the Consultant.

3.6 Joint Sealant

.1 Install joint sealant in accordance with the manufacturer's printed instructions.

3.7 Finishing Unformed Surfaces

.1 Top surfaces of concrete which will ultimately receive additional concrete:

.1 The surface may contain shear keys, reinforcing steel, anchor bolts, or other embedments as indicated on the construction Drawings.

.2 Screed the surface across the forms so that the resulting surface will have no irregularities, except shear keys, greater than the maximum size aggregate.

.3 Prior to placing additional concrete, clean the surface of laitance, dirt, excess water, and other deleterious material using hydromilling. Do not use hydromilling until sufficient time has elapsed to prevent loosening of the top aggregate.

.2 Top Surface of Exposed Exterior Concrete:

.1 Initial Finishing: immediately after placing concrete, screed the surface to the indicated grade and Work the surface with a bull float, or with a darby and highway straight edge, in accordance with CAN/CSA-A23.1, Clause 7.5.3. Complete initial finishing before any bleeding or free water is present on the concrete surface.

.2 Begin final finishing operations after the bleed water has disappeared and the concrete has stiffened sufficiently to prevent the working of excess mortar to the surface. Do not add water to facilitate finishing. Carry out final finishing operations in accordance with CAN/CSA-A23.1, Clause 7.5.4.

.3 Unless noted otherwise, exterior surfaces shall receive a float finish.

.3 Finished surfaces shall conform to the slopes specified on the construction Drawings.

3.8 Finishing Formed Surfaces

.1 Finish formed surfaces in accordance with CAN/CSA-A23.1, Clause 7.7, and as specified below.

.2 Formed surfaces which may ultimately serve as forms for additional concrete pour or which will remain unexposed:

.1 The surface may contain shear keys, reinforcing steel, anchor bolts, or other embedments as indicated on the construction Drawings.

.2 Repair rock pockets in excess of 4 mm deep for surfaces exposed to the public when in operation and 20 mm deep where it will not be exposed and fill all tie holes. Remove fins and ridges from concrete surfaces. Pay particular attention to exposed surfaces to provide high quality finish.

.3 Ensure that chamfer strips are securely and accurately positioned to provide a neat finished edge at all locations. Clean up edges to the satisfaction of the Consultant to ensure appearance meets the Project intent.

.4 Clean the surface of laitance, dirt, excess water, and other deleterious material prior to applying waterproofing treatment or placing additional concrete.

3.9 Curing and Protection

.1 Cure and protect concrete in accordance with CAN/CSA-A23.1, Clause 7.4 and as specified below.

.2 Leave forms in place and moist cure top surface for a minimum of seven days.

.3 Cure exposed surfaces of slabs by the application of wetted burlap immediately after completion of finishing operations. Maintain burlap in a saturated condition using soaker hoses wrapped in burlap and installed on top of the slab surface. When the daily mean ambient temperature is above 5 deg. Celsius, curing shall be continuous for a minimum of seven days and for the additional time necessary to attain 70% of the specified 28 day compressive strength.

.4 Curing membranes will not be accepted as a substitute for moist curing.

.5 When the air temperature is at or above 27 deg. Celsius, or when there is a probability of its rising to 27 deg. Celsius during the placing period (as forecast by the nearest official meteorological office), conform also to the requirements of ACI 305R - Hot Weather Concreting.

.6 When the air temperature is at or below 5 deg. Celsius, or when there is a probability of its falling below 5 deg. Celsius within 24 hours of placing (as forecast by the nearest official meteorological office), conform also to the requirements of ACI 306R - Cold Weather Concreting.

3.10 Tolerances

.1 Tolerances for concrete Work as built shall conform to CAN/CSA-A23.1, Clause 6.4 unless indicated otherwise.

.2 Finish tolerances for concrete topping shall meet the requirements for the conventional (non-slip) Class B surface of CAN/CSA-A23.1, Clause 7.5.1, Table 22.

.3 The flatness of the topping surface will be determined by the straightedge method as outlined in CAN/CSA-A23.1, Clause 7.5.1.2.

3.11 Field Quality Control

.1 Inspection and testing of concrete and concrete materials in accordance with CAN/CSA-A23.1 will be carried out by an independent testing laboratory approved by the Consultant and paid for by the Contractor.

.2 Testing shall be carried out in accordance with CAN/CSA-A23.1, however, as a minimum, the following testing shall be carried out:

.1 One "test" per batch of any mix.

.2 One "test" per day of concrete placement regardless of the total quantity placed that day.

.3 A "test" shall consist of a temperature test, slump test, an air entrainment test, and samples collected for compression testing.

.3 Pumped concrete will be sampled both at the truck discharge and at the point of final placement to determine if any changes in the slump, air content, or other significant mix characteristics occur. The concrete at the forms shall meet all the requirements of this section.

.4 Additional test cylinders shall be taken during cold weather concreting. Cure cylinders on job Site under same conditions as concrete which they represent.

.5 Inspect the finishing of all formed surfaces immediately after stripping forms. Provide the Consultant with a report within 24 hours of stripping, covering non-conformance observed and proposed repairs. Obtain the approval of the Consultant for any repairs required before commencing repairs.

***** END OF SECTION *****

SECTION 03 40 00
Precast Concrete

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section includes the requirements for manufacture and installation of precast concrete units.

1.2 Related Sections

.1 Section 03 20 00 Concrete Reinforcing

.2 Section 03 30 00 Cast-in-Place Concrete

.3 Section 03 60 00 Grouting

.4 Section 05 50 00 Metal Fabrications

1.3 References

.1	CSA-A23.1	Concrete Materials and Methods of Concrete Construction (Including Notes and Appendices in the Standard)
.2	CSA-A23.2	Methods of Test for Concrete
.3	CSA-A23.4	Precast Concrete—Materials and Construction
.4	CSA A251	Qualification Code for Architectural and Structural Precast Concrete Products
.5	ASTM C1017/ C1017M	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
.6	ASTM C1202	Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration

.7 Additional material and testing standards listed in Clause 2 of CAN/CSA-A23.1.

1.4 Definitions

.1 "Permeability" referred to in this section shall mean chloride permeability of concrete when tested using ASTM C1202 procedures at 56 days of moist curing.

1.5 Submittals

.1 Submit Shop Drawings in accordance with Section 01 33 00 - Submittal Procedures, CSA A23.4, and CSA A23.3. Shop Drawings shall include setting, erection, layout, and production Drawings, and shall indicate the following:

.1 Positioning of all individual precast concrete units.

.2 Location of all hardware cast into, fastened to, or otherwise associated with precast units.

.3 Details of reinforcement, openings, sleeves, and inserts.

.4 Surface finishes.

.5 Methods of handling and erection including lift locations and embedded lifting hardware. Include the proposed method of preparing and repairing lift hardware recesses as applicable.

.6 Bearing pads.

.2 Each Drawing or procedure document submitted shall bear the stamp and signature of a qualified Professional Engineer registered in the Province of British Columbia.

.3 Submit concrete mix designs and test results based on trial mixes showing that concrete mix designs will produce concrete meeting the requirements of this section. The submittal shall include complete details of mix proportions.

.4 At least four weeks prior to commencing the Work of this section, submit a statement from the concrete Supplier identifying the proposed source of aggregate and certifying that the proposed aggregate/cement combination will not produce deleterious expansion due to alkali-aggregate reaction. The statement shall reference and accompany recent test results from samples taken from the same source as is proposed for this Work that substantiate the statement.

.5 Submit test results of precastor's internal quality assurance program as requested by the Consultant.

.6 At least 14 days before construction commences, submit for review a copy of the Supplier's Quality Management System, which shall generally conform with ISO 9000:2000, or other similar Quality Management Systems.

1.6 Qualifications

.1 Manufacturers of precast concrete elements shall be certified by CSA as meeting requirements of CSA A251 for Category PC Products.

1.7 Quality Control Submittals

.1 Provide certification that Construction Equipment and materials, including aggregates to be used in concrete, comply with requirements of CAN/CSA-A23.1.

.2 Submit test results based on trial mixes showing that concrete mix designs will produce concrete meeting the requirements of this section and that strength will comply with CSA-A23.1, Clause 4.4.6.

.3 Submit manufacturer's datasheets and printed instructions for joint sealant, primer, and other materials proposed for use in the Work.

1.8 Quality Control

.1 Perform all concrete Work in accordance with the requirements of CAN/CSA A23.1.

.2 Concrete inspection and testing shall be carried out by a qualified independent agency approved by the Consultant. Cost of testing will be considered incidental to the Work of this section and paid without measurement.

.3 The Owner may conduct quality assurance testing on random batches. Provide access to concrete for taking such samples.

2 PRODUCTS

2.1 Concrete Materials

.1 Portland Cement: Type GU (10) portland cement to CSA-A3000 but with tricalcium aluminate (C3A) content between 4.0% and 8.0%, and total alkali content not greater than 0.60% sodium oxide equivalent.

.2 Supplementary Cementing Materials: Type F or CI fly ash and Type SF silica fume to CAN/CSA-A23.5.

.3 Water: to CAN/CSA-A23.1.

.4 Aggregates: to CAN/CSA-A23.1, normal density.

.5 Air Entraining Admixtures: to ASTM C260.

.6 Chemical Admixtures: to ASTM C494. Consultant to approve type and use of accelerating or set retarding admixtures during cold and hot weather placing.

.7 Super Plasticizing Admixtures: to ASTM C1017.

2.2 Formwork Materials

.1 Formwork materials shall meet the requirements of CAN/CSA-S269.3 and this section.

.2 Contact surfaces or lining of formwork shall be suitably smooth to provide finished concrete surfaces meeting the requirements of this section.

.3 Form Ties: threaded internal disconnecting type, leaving no holes larger than 25 mm diameter in concrete surface.

.4 Form Release Agent: non-staining chemically active release agent, compatible with form material which will prevent adherence of concrete to forms.

2.3 Other Materials

.1 Embedments and Inserts: to Section 05 50 00 – Metal Fabrications.

.2 Joint Sealant: multi-component polyurethane base elastomeric sealant, chemical cure, to CGSB 19-24-M90 Type 1, Class B, with Shore A hardness 40±5 and 25±5 for self-levelling and non-sag, respectively, suitable for joint movement of ±50%. Sikaflex 2C SL for horizontal joints and Sikaflex 2C NS for vertical joints, or approved equal.

.3 Primer for Joint Sealant: as recommended by sealant manufacturer.

.4 Pre-Moulded Joint Filler: resilient bituminous impregnated fibreboard to ASTM D1751. Sternson Flexcell or approved equal. Sponge rubber to ASTM D1752, Type I, flexible grade. Self-expanding cork to ASTM, Type II or III.

.5 Bonding Agent: styrene butadiene emulsion polymer, 48% solids. Target polymer bonding agent or approved equal.

2.4 Concrete Mixes

.1 Mix No. 1: select concrete mix proportions in accordance with CAN/CSA-A23.1 Alternative 1 to give the following properties for reinforced cast-in-place concrete:

- .1 Cement: portland cement, Type GU (10).
- .2 Fly Ash: minimum 20% by mass of total cementing materials.
- .3 Silica Fume: minimum of 5% of the total cementing material. Silica fume may be deleted for second stage pile caps.
- .4 Minimum Compressive Strength at 28 Days: 45 MPa.
- .5 Maximum Water/Cementing Materials Ratio: 0.40.
- .6 Exposure Class: C-1.
- .7 Nominal Maximum Size of Coarse Aggregate: 20 mm.
- .8 Minimum Course Aggregate Content: 60% of total aggregate.
- .9 Slump Before Addition of Super Plasticizer: 65 mm ±20 mm.
- .10 Slump After Addition of Super Plasticizer: 100 mm ±30 mm.
- .11 Air Content: 5% to 8%. Spacing factor to comply with CAN/CSA A23.1, Clauses 4.3.3.2 and 4.3.3.3.
- .12 Super Plasticizing Admixture: to ASTM C1017.
- .13 Permeability: maximum 1,500 coulombs at 56 days.

.2 The concentration of corrosion-inducing chemicals from all sources in the concrete mix, expressed as a percentage of the mass of the total cementitious materials, shall not exceed the following limits when tested according to the noted methods:

.1 Chlorides: 0.06% (ASTM D512)

.2 Fluorides: 0.06% (ASTM D1179)

.3 Sulphites: 0.08% (ASTM D1339)

.4 Nitrates: 0.10% (ASTM D3867)

.3 Do not change concrete mix without prior approval of the Consultant. Should change in material source be proposed, new mix design to be approved by the Consultant.

2.5 Concrete Production

.1 Measure, batch, and mix concrete in accordance with CAN/CSA-A23.1, Clause 5.2.

.2 Before unloading concrete at the Site, furnish the Consultant with a delivery ticket for each batch of concrete in accordance with CAN/CSA-A23.1, Clause 5.2.4.5.

3 EXECUTION

3.1 General

.1 Prior to placing concrete, ensure that all reinforcing and other items to be embedded in concrete are in place, properly oriented, located, and secured. Verify that concrete may be placed to the lines and elevations shown on the construction Drawings with all required clearances and cover for reinforcement. Ensure that forms are clean and absolutely all debris has been removed.

.2 Obtain the Consultant's approval before placing concrete. Provide 24 hours notice prior to placing of concrete.

.3 Prior to placing concrete, obtain the Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather.

3.2 Manufacture

.1 Manufacture units in accordance with CSA-A23.1, CSA-A23.4, and CSA-A251. Manufacturing tolerance of precast elements shall be in accordance with CSA-A23.4 Clause 10.

.2 Fabricate steel embedments in accordance with Section 05 50 00 – Metal Fabrications. Install all embedded conduits, anchor inserts, and other items as indicated on the Drawings.

.3 Mark each precast unit, on part of unit which will not be exposed, with date cast and location identification corresponding to Shop Drawings.

3.3 Plant Finishing and Curing

.1 Unformed concrete surfaces shall be finished in accordance with CSA-A23.1 Clause 22 and as specified below:

.1 Top surfaces of all units shall receive a smooth trowel finish in accordance with CSA-A23.1.

.2 Finish formed surfaces of units to CSA-A23.4 Clause 24 - Standard Grade and as specified below:

.1 Voids deeper than 4 mm shall be patched in accordance with CSA A23.1, Clause 24.2.

.3 Cure precast units in accordance with CSA-A23.4 Clause 21. In addition, after removal of precast units from the forms, keep all surfaces continuously wet for seven days by application of soaker hoses or similar procedures approved by the Consultant. Curing membrane shall not be used as a substitute for moist curing.

3.4 Source Quality Control

.1 Provide the Consultant with certified copies of quality control tests related to this Project as specified in CSA-A23.4 and CSA A251.

.2 Cost of quality control tests shall be considered incidental to supply of precast concrete.

.3 Inspect the finishing of all formed surfaces immediately after stripping forms. Provide the Consultant with a report within 24 hours of stripping, covering non-conformances observed and proposed repairs. Obtain the approval of the Consultant for any repairs required before commencing repairs.

3.5 Handling

.1 Lifting locations and handling procedures shall be submitted to the Consultant for review and approval.

3.6 Installation

.1 Install precast units as indicated on the construction Drawings.

.2 Use suitable shims to support precast units while grout pad cures.

.3 Shims shall be placed to ensure a minimum 50 mm cover to the final exposed face of the grout.

.4 Precast units shall be placed taking into account the design loading of the support elements. Precast units shall not be temporarily stacked during erection, on other units without approval from the Consultant.

.5 Non-cumulative erection tolerances shall be in accordance with CSA-A23.4 Clause 10.

.6 Temporary lifting and handling devices cast into precast units shall be removed following erection. Embedded steel hardware used shall be burned off 25 mm below the surface of the concrete and patched with grout as directed by the Consultant.

.7 Ensure that the final precast level is maintained. The finished surface of the precast will in some cases receive a finishing that requires a level surface to receive, in some cases, a rigid architectural finish (e.g., timber sleepers and planks). Variations in elevation between adjacent precast elements shall be no more than 3 mm. Variations in elevation between ten adjacent precast elements shall be no more than 10 mm. Variations in the finished elevation over the entire structure shall be no more than 20 mm.

3.7 Protection

.1 Protect precast units from damage during transportation, storage, and installation.

.2 Protect installed units from damage, due to overload or other causes, during completion of the Work.

***** END OF SECTION *****

SECTION 03 60 00
Grouting

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section describes the requirements for grout for the following applications:

.1 Under steel baseplates.

.2 Under timber sleepers.

.3 Under the ends of precast deck panels.

.4 In the annulus between steel pipe piles and precast pile caps.

.5 Drilled in anchors.

1.2 Related Sections

.1	Section 03 30 00	Cast-in-Place Concrete
.2	Section 03 40 00	Precast Concrete
.3	Section 05 50 00	Metal Fabrications

1.3 References

.1	CSA-A23.1	Concrete Materials and Methods of Concrete Construction (Including Notes and Appendices in the Standard)
.2	CSA-A23.2	Methods of Test for Concrete

.3 Additional material and testing standards listed in Clause 1.5 of CSA-A23.1.

1.4 Submittals

.1 For each type of grout proposed for use in the Work, submit manufacturer's Product datasheets and printed instructions to the Consultant for review.

.2 Provide certification that grout will comply with the requirements of this section.

.3 Submit procedures for installing grout to the Consultant for review and approval. This shall include procedures for installation of temporary grout dam to ensure the grout does not project beyond the indicated grout bearing seat. Provide a procedure for removing any grout dam.

2 PRODUCTS

2.1 Cementitious Grout

.1 Grout shall comply with the requirements presented in the following table when mixed to a flowable consistency and tested according to the noted procedures.

Property	Test Procedure(1)	Requirement
Flow, seconds	CSA A23.2.1B	20 - 25
Plastic Expansion, %	CSA A23.2.1B	0.0 – 3.0
Bleeding, %	CSA A23.2.1B	≤ 1.0
Compressive Strength, MPa 24 hours 7 days	CSA A23.2.1B	 20 45
Boiled Absorption, 7 days, %	ASTM C642 on Cast Cubes	≤ 15.0
Height Change, %	ASTM C827	0.0 – 4.0
Freeze-Thaw Durability, %	ASTM C666 Procedure A	DF > 80

Notes: (1) Tests conducted with grout at temperature of placement.

.2 The following grouts are pre-approved:

.1 Five Star Grout

.2 Master Builders Masterflow 928, 713

.3 Target Machine Base Grout

.4 Sika Grout 2123

2.1 Epoxy Grout

.1 Two-component epoxy grout for bonding drilled in anchors and reinforcing bar to existing concrete shall be to ASTM C881. The following Product and/or approved equal is pre-approved.

.1 Hilti HIT RE 500

.2 Sikadur 31 Hi-Mod Gel

3 EXECUTION

3.1 Placing of Grout - General

.1 Grout under baseplates and in grout pockets using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

3.2 Field Quality Control

.1 Inspection and testing of grout and grout materials in accordance with CSA A23.1 will be carried out by an independent testing laboratory approved by the Consultant and paid for by the Contractor.

.2 Testing shall be carried out in accordance with CSA - A23.2, however, as a minimum the following testing shall be carried out:

.1 One strength test per day of grout placement for each type of grout placed.

***** END OF SECTION *****

DIVISION 05
Metals

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 05 50 00
Metal Fabrications

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 The Work of this section shall include, but shall not necessarily be limited to:

- .1 Metal portions of handrails and guardrails.
- .2 Metal edging and supports.
- .3 Metal fasteners, hangers, plates, and screens.
- .4 Decorative custom metal elements, pipes, members, shapes, and forms.
- .5 Galvanized metal, aluminum, weathering steel (Cor-ten), stainless steel.
- .6 Miscellaneous steel fabrications, inserts, and anchor bolts.

.2 Furnish all labour, materials, equipment, and services necessary for the supply and installation of miscellaneous metalwork as specified.

1.2 Related Sections

.1	Section 01 33 20	Shop Drawings, Product Data, Material Testing, and Samples
.2	Section 03 30 00	Cast-in-Place Concrete
.3	Section 03 40 00	Precast Concrete

1.3 References

.1	CSA W47.1-92	Certification of Companies for Fusion Welding of Steel Structures
.2	CSA W48	Series Welding Materials
.3	CSA W59-M1989	Welded Steel Construction (Metal Arc Welding)
.4	CAN/CSA-G40.21-M92	Structural Quality Steels
.5	CAN/CSA-G164-M92	Hot-Dip Galvanizing of Irregularly Shaped Articles
.6	ASTM A53-88a	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
.7	ASTM A307-89	Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
.8	ASTM A325/A325M	Specification for High-Strength Bolts for Structural Steel Joints

1.4 Quality Assurance

.1 All Work in this section is to be performed by a Contractor experienced in metal fabrication and erection, including cutting, bending, forming, welding, and finishing.

.2 Fabricators of welded construction shall be certified by the Canadian Welding Bureau in accordance with CSA W47.1.

.3 Workmanship for exposed Work to be of the highest quality for metalwork.

1.5 Product Delivery, Storage, and Handling Protection

.1 The Contractor shall be responsible for the protection of all steelwork during fabrication, shipping, storage, and erection.

.2 Work of this section that has been damaged shall be repaired, or at the discretion of the Consultant, replaced at no cost to the Owner.

.3 All metal items delivered to the Site shall have identification tags that provide sufficient information for identification and fixing.

.4 The Contractor shall ensure that all deliveries of metal components to the Site are done in a manner that permits the most efficient and economical performance of the Work of this section.

1.6 Submittals

.1 Submit Shop Drawings in accordance with Section 01 33 00 and 01 33 20. Shop Drawings shall show complete details necessary for fabrication and erection of the component parts of the structure, including location, type, size, and extent of all welds. Splices not shown on the Shop Drawings will not be accepted.

.2 Shop Drawings of items designed by the Contractor shall bear the seal of a qualified Professional Engineer registered in the Province of British Columbia.

.3 The review of the Shop Drawings by the Consultant constitutes a general review of the methods only and will not include approval of dimensions, figures, or quantities. The Contractor is responsible for structural design, correct fabrication, and proper alignment of all items.

.4 Submit a schedule of shop fabrication to the Consultant prior to the start of Work of this section.

.5 Prepare Shop Drawings under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of British Columbia, who will

take responsibility for fabrication and erection of metal fabrications and ornamental metal assemblies meeting all applicable codes.

.6 Submit Letters of Assurance in accordance with the requirements and format of the authority having jurisdiction:

.1 Shop Drawing Stage: submit a Letter of Assurance of Professional Design and Commitment for Field Review and "Summary of Design and Field Review".

.2 After Completion of Field Reviews: submit a Letter of Assurance of Professional Field Review and Compliance.

.7 Prior to commencing the Work of this section, if required by the Owner and the Consultant, submit two certified copies of mill reports covering chemical and physical properties of steel to be used in the Work.

1.7 Quality Control

.1 Welding practice and qualifications of fabricators shall conform to CSA W47.1 and W59.

.2 Welding inspection of the Work of this section shall be carried out by a qualified independent agency approved by the Consultant and paid for by the Contractor in accordance with W59 Clause 7.

.3 Welds to be 100% visually inspected and spot magnetic particle or ultrasonic testing on 10% of weld length or for a series of several shorter and similar welds testing may be performed on 10% of the number of such similar welds.

1.8 Field Measurements

.1 Verify dimensions of existing structures which would affect the Work of this section prior to commencing fabrication.

2 PRODUCTS

2.1 Materials

.1 All metal components shall be new unless otherwise indicated and be of sizes and shapes listed on Contract Drawings.

.2	Structural Steel Plates and Bars:	CSA-G40.21, Grade 300W.
.3	Seamless Hollow Sections:	CSA-G40.21, Type 350W, Type C.
.4	Steel Pipe:	Schedule 40, ASTM A53, Type E, Grade B.
.5	Aluminum:	6063-T5 alloy free from defects in strength,

			appearance, and durability. Baked enamel or anodized finish as noted on Drawings.
.6	Galvanizing:		hot-dipped galvanizing with Zinc Coating, CSA G164.
.7	Galvanized Metal Primer:		GGSB 1-GP-198M.
.8	Stainless Steel:		
	.1	Plate:	ASTM A167, Type 304.
	.2	Bars Stock:	ASTM A276, Type 304.
	.3	Tubing:	ASTM A554, Grade MT 304.
	.4	Pipe:	ASTM A312, Grade TP 304.
.9	Structural Bolts, Nuts, and Washers:		ASTM A325M Type 1 plain.
.10	Bolts for Anchor Bolts, Unless Noted Otherwise:		ASTM A307 galvanized

.11 Anchors Installed into Hardened Concrete, Unless Noted Otherwise: Hilti HIT RE500 adhesive anchors, standard embedment Type 316 stainless.

.12 Miscellaneous Framing Clips, Brackets, Plates, Backing, Trim, Channel: to CSA-G40.21 Grade 300W, as detailed or sized to suit and engineered to meet load requirements.

2.2 Corrosion Protection

.1 Unless noted otherwise, all metal fabrications including embedded concrete hardware, anchor bolts, connection bolts, and any other items as indicated on the construction Drawings, shall be hot-dip galvanized after fabrication in accordance with CAN/CSA G164. Minimum thickness of zinc 110 microns.

3 EXECUTION

3.1 Inspection

.1 Examine all surfaces and details to which the Work of this section is to be applied and ensure that all conditions are suitable to provide a complete installation conforming to industry standards.

.2 Examine surfaces and conditions prior to installation of any items. Report any defects or discrepancies to the Consultant prior to the start of Work. Commencement of Work implies acceptance of surfaces and conditions.

3.2 Fabrication

.1 Fabricate all Work in strict accordance with standards indicated, true to lines and forms indicated on Contract Document and reviewed Shop Drawings:

.1 Fabrication to CSA S16.1

.2 Welding to CSA W59, by welders qualified in accordance with CSA W47.1.

.2 Shaped members shall be fabricated with well-defined curves, sharp lines, angles, and rises. Curved Work shall be true to radii indicated. Members shall be true, straight, square, and free from warping or other defects.

.3 Curved or brake formed Work shall be evenly sprung.

.4 Exposed surfaces shall be smooth with all fastenings and connections hidden where possible.

.5 Shearing and punching shall leave clean, true lines and surfaces.

.6 Drill or punch all holes required for the attachment of Work of this section or by other trades.

.7 All joints in any members shall be closely fitted and machined. Where possible, fit and shop assemble Work. Fit and shop assemble in largest practical sections for delivery to the Site.

.8 Weld all permanent connections. Grind smooth all exposed welds, sharp edges, angles, and corners. Ensure all welds are continuous for each joint and free from pits and holes.

.9 Unless otherwise indicated, all hollow structural sections shall be closed airtight with end plates sealed with continuous welds.

.10 Unless otherwise indicated on Drawings, grind smooth sharp edges, angles, and corners.

.11 Where screws are indicated, use shake-proof, flat head screws countersunk flush with finish surface unless otherwise noted.

.12 Unless otherwise indicated on Drawings, bolted Work shall be carefully tightened with threads or bolts nicked to prevent subsequent loosening.

.13 Contractor to ensure full assembly of welded elements prior to application of powder coating. Field welding of powder coat finished elements is not acceptable.

3.3 Shop Preparation and Priming

.1 Clean surfaces to be field welded; do not paint.

3.4 Installation

.1 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.2 Anchor all items securely to supporting members. Anchoring methods shall be as indicated on Shop Drawings.

.3 Execute all metalwork in a thorough and workman like manner according to best shop practices to the standards indicated.

.4 Material cut from stock shall be sheared or parted straight and de-burred. Where cuts are burned, grind off clean and true to line.

.5 Surfaces to be welded shall be free of loose scale, rust, paint, or other foreign matter. Where weld material is deposited in two or more layers, each layer is to be cleaned before the next layer is deposited. Care shall be taken to minimize stresses due to heat expansion, contraction, and distortion by using approved methods and proper sequence in welding. Carry out field welding in such a manner as to prevent damage to adjacent surfaces.

.6 Exposed welding or welding to fitted surfaces to be ground smooth and finished to the best possible visible appearance.

.7 Where screws are indicated, use shake-proof, flat head screws countersunk flush with finish surface unless otherwise noted.

.8 Install or provide to allied trade angles, brackets and/or anchoring elements as indicated on approved Shop Drawings.

.9 Where indicated on Contract Drawings, core and set in grout anchors, posts, and supports. Ensure all embed items are true to line, grade, and plumb as required.

.10 Anchor Work of this section as indicated or approved by the Owner and the Consultant. Install Hilti anchors in strict accordance with the manufacturer's instructions.

.11 Make field connections using high strength bolts, welding, or as shown on the construction Drawings.

.12 At completion of installation, touch-up connections, welds, and burned or damaged surfaces with approved compatible zinc-rich primer.

.13 Replace any material or fabrication which is found to be defective or not in accordance with the construction Drawings and Specifications, at no cost to the Owner.

3.5 Metal Finish

.1 Touch-up rivets, field welds, bolts, and burnt or scratched surfaces with approved cold galvanizing application.

.2 At the discretion of the Consultant and at no cost to the Owner, remove and replace scratched or otherwise damaged elements.

3.6 Clean Up

.1 As a requirement for Substantial Performance of Work, all Work of this section shall be thoroughly cleaned of foreign material including but not limited to grime, oil, grease, and dust.

.2 Remove all debris as a result of Work from this section and dispose of off Site in approved dumpsite.

***** END OF SECTION *****

DIVISION 06
Wood, Plastics, and Composites

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 06 13 00
Heavy Timber Construction

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section describes the requirements for sawn timber and timber connections:

.1 Replacement timber piles.

.2 Replacement timber braces, corbels, pile caps, stringers, and decking.

.3 Timber sleepers.

.4 Heavy timber decking.

.5 Timber components of handrails.

1.2 Related Sections

.1 Section 01 33 20 Shop Drawings, Product Data, Material Testing, and Samples

.2 Section 05 50 00 Metal Fabrications

1.3 References

.1 British Columbia Building Code

.2 CAN/CSA-O86 Engineering Design in Wood (Limit States Design)

.3 CAN/CSA-O80 Wood Preservation

.4 ASTM A307 Carbon Steel Bolts and Studs

.5 CSA G40.21 Structural Quality Steel

.6 CSA G164 Hot-Dip Galvanizing of Irregularly Shaped Articles

.7 CSA O56 Round Wood Piles

.8 CSA O121 Douglas Fir Plywood

.9 CSA B111 Wire Nails, Spikes and Staples

.10 CSA B34 Miscellaneous Bolts and Screws

.11 NLGA Standard Grading Rules for Canadian Lumber

1.4 Quality Assurance

.1 Lumber grades shall conform to the requirements of the NLGA Standard Grading Rules.

.2 All timber Work shall be in accordance with CAN/CSA-O86.

.3 Preservation treatment, inspection, and retreatment shall be in accordance with CSA Standard O80.

1.5 Product Delivery, Storage, and Handling Protection

.1 The Contractor shall be responsible for the protection of all timber components during fabrication, shipping, storage, and erection.

.2 Work of this section that has been damaged shall be repaired, or at the discretion of the Consultant, replaced at no cost to the Owner.

.3 All timber items delivered to the Site shall have identification tags that provide sufficient information for identification and fixing.

.4 The Contractor shall ensure that all deliveries of timber components to the Site are done in a manner that permits the most efficient and economical performance of the Work of this section.

1.6 Submittals

.1 Submit documents verifying timber grades, finished outside dimensions, and treatment chemistry.

1.8 Field Measurements

.1 Verify dimensions of existing structures which would affect the Work of this section prior to cutting timber components.

2 PRODUCTS

2.1 Sawn Timber

.1 All sawn timber shall be Coast Douglas Fir, Select Structural grade, and unless specified otherwise, shall be properly air-dried and seasoned, containing not more than 20% moisture.

.2 Lumber grades shall conform to the requirements of the NLGA Standard Grading Rules for Canadian Lumber, latest revision.

.3 Unless indicated on the Contract Drawings, field cuts to new timbers shall not be permitted except with the written permission of the Consultant. Replace those new timbers that are field cut without the permission of the Consultant.

.4 All materials shall be dressed as indicated on the construction Drawings. Exposed surfaces and corners of Handrails, planks and bullrails shall be sanded and have eased edges.

.5 All shims for filling gaps shall be sawn timber, not plywood.

2.2 Timber Piling

.1 All timber piling shall be Douglas-Fir and be in accordance with CSA O56.

.2 Piles shall be clean peeled with a maximum butt diameter of 300 mm (#12). Piles shall have a uniform taper between butt and tip.

2.3 Surface Treatments

.1 Preservative treatment, inspection, and retreatment shall be in accordance with CSA Standard O80 and "Best Management Practices for the Use of Treated Wood in Aquatic Environments". Piles shall be clean peeled with a maximum butt diameter of 300 mm (#12). Piles shall have a uniform taper between butt and tip.

.2 Cedar timbers shall be stained with two coats of Broda Pro-tec-tor SLT NOWF, or approved equivalent (colour TBD).

.3 All Douglas-Fir timber members, except handrails, planks and bullrails, shall be given an ACZA salt preservative treatment in accordance with O80 for salt water exposure, use category 4.2.

.4 Handrails, planks and bullrails shall be give an ACZA salt preservative treatment in accordance with O80 for park application.

.5 Incise all treated timber 75 mm and over before treatment.

2.4 Connections

.1 Bolts, nuts, and washers through timber shall conform to ASTM A307.

.2 Drift pins shall conform to CSA G40.21 Grade 260W.

.3 All spikes, nails, and staples to conform to CSA B111.

.4 All lag screws to conform to CSA B34.

.5 Hot-dip galvanize all miscellaneous metal and fasteners in accordance with CSA G164 unless noted otherwise.

.6 Unless noted otherwise, use plate washers under heads and nuts of all bolts bearing on timber.

3 EXECUTION

3.1 Workmanship

.1 All structural timber used in the Work shall be carefully and accurately placed in accordance with the construction Drawings. Joints shall be carefully cut to ensure even and uniform bearing on supporting members.

3.2 Handling of Treated Timber

.1 Handle treated timber carefully to avoid breaking the treated surface. Avoid bruising or breaking of wood fibres.

.2 Do not use cant hooks and rafting dogs on timbers. Drive no spikes into timbers except to tack the timbers in their final position; if spikes are so used they shall be fully driven and left in.

.3 Treat cuts, breaks, and abrasions on surfaces of salt treated timbers with two separate coats of salt preservative treatment. Treat bolt holes through salt treated timbers with two coats of salt concentrate and dip the bolts in salt concentrate before installation.

.4 Unless specifically noted on the construction Drawings, do not cut treated timbers to facilitate fitting after treatment.

3.3 Timber Connections

.1 New bolt holes in timber shall be bored to provide a driving fit. Hole sizes for lag screws are to be as given in CSA Standard No. O86.

.2 Unless specified otherwise, place connecting bolts, pins, or spikes in the centre of the timbers and not less than seven times the fastener diameter from the end of the timber.

.3 Completely fill all unused bolt holes, nail holes, or drift holes in timbers which are removed and reinstalled, with mastic.

.4 Unless noted otherwise, the size of plate washers used shall be as follows:

Bolt Diameter	Thickness	Plate Size
M20	10 mm	100 by 100
M24	12 mm	125 by 125
M30	12 mm	150 by 150

***** END OF SECTION *****

DIVISION 09
Finishes

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 09 97 19
Coating Systems for Steel

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
A	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section of the Specifications forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

.2 This section describes the requirements for coating of structural and miscellaneous steel as indicated on the Drawings and herein specified.

.3 Provide all materials, labour, equipment, and services necessary to complete all coating of structural and miscellaneous steel as indicated on the Drawings and herein specified.

1.2 Related Sections

.1 Section 05 50 00 Metal Fabrications

.2 Section 09 97 20 Coating Systems for Steel Pipe Piles

1.3 References

.1 Carry out all surface preparation and coatings applications in accordance with the most current edition of the following standards except where specified otherwise:

.1 SSPC Standards Steel Structures Painting Council - Painting Manual Volumes I & II

.2 CAN/CSA-S16.1 Limit States Design of Steel Structures

1.4 Delivery, Storage and Handling

.1 Deliver all materials to the area of application in factory-sealed containers, clearly indicating the paint manufacturer's name, type, colour, identification number, expiry date and instructions for mixing and thinning as necessary.

.2 Submit the coating manufacturers' datasheet with each shipment of material to the application area.

.3 Adhere to all applicable safety regulations and manufacturer's recommendations in storing, mixing and handling coatings Products. Provide adequate mechanical ventilation to all areas in which coating Products are mixed, applied or handled.

1.5 Alternatives

.1 Do not make substitutions for coating materials and procedures specified unless specifically approved in writing by the Consultant.

.2 Alternative coating systems to those specified may be proposed by the Contractor. Details of any alternative coating system proposed shall be submitted to the Consultant for approval.

2 PRODUCTS

2.1 Materials

.1 Use premium quality coatings and coating systems supplied by national brand name manufacturers. Do not use materials after the expiry date as marked on the container.

.2 Only coatings and coating systems approved by the Consultant shall be used.

.3 Obtain all coating materials from a single manufacturer and ensure that all Products used are fully compatible within each coating system.

.4 Use only Products which are readily available from manufacturers' stock and which, as far as can reasonably be foreseen, will be available for future repairs and re-coatings.

.5 Joint sealants shall be compatible with the coating system.

2.2 Coating Systems

.1 Apply coating systems in accordance with the following:

.1 Surface Preparation:

.1 Abrasive blast clean to SSPC-SP6.

.2 If oxidation occurs between blasting and application, the surface must be re-blasted.

.3 Surface defects to be ground, filled, or treated in the appropriate manner approved by the Consultant.

.4 A surface profile of 1.5 mils to 2 mils is required.

.2 Provide the following coating system:

Coat	Description	Dry Film Thickness
Primer	Organic zinc rich epoxy primer.	3
Stripe Coat	Surface tolerant high-build epoxy.	Apply to all edges, welds and bolted connections.
Mid Coat	Surface tolerant high-build epoxy.	8
Top Coat	Urethane.	3
Total		**14**

.3 The following Products have been pre-approved:

Coat	International	ICI Devoe	Carboline
Primer	Interzinc 52	Catha Coat 313	Carbozinc 859
Mid Coat	Interseal 670 HS	Bar Rust 231	Carboguard 890
Top Coat	Interthane 990	Devthane 379	Carbothane 133 HB

.4 Touch Up:

.1 Immediately prior to repairing damaged or unpainted surfaces, and before the specified surface preparation is carried out, all grease, oil, dirt and foreign matter shall be removed and cleaned to SSPC-SP3, wire brush clean.

.2 Edges of sound remaining paint on the surface shall be feathered by sanding/grinding prior to painting.

.3 The minimum coating requirements for spot coating repairs shall be as follows:

.1 No Corrosion, Primer Exposed:

.1 Apply mid coat and top coat to restore specified film thickness.

.2 No Corrosion, Primer Damaged:

.1 Apply primer coat, mid coat and top coat to the specified film thickness.

.3 Rusted Areas:

.1 Clean to the original standard of surface cleanliness. Prepare surface to SSPC-SP6, apply primer coat, mid coat and top coat to the specified film thickness.

.5 Coating Colours:

Item	Coating Colour(1)
All fabricated steelwork.	Black

Notes: (1) Provide paint colour chips to the Owner for final paint colour selection.

3 EXECUTION

3.1 Preparation

.1 Inspect the Work prior to carrying out coating application and report any deficiencies or defects to the Consultant.

.2 Remove all weld, burning, or cutting splatter, ensure that welds are free from significant porosity or defects and grind smooth all sharp edges and irregularities as required to provide a smooth uniformly profiled surface to receive coatings.

.3 Perform all Work in strict accordance with the Specifications and the coating manufacturer's current Product datasheets. Ensure that all Work is performed in a safe and workmanlike manner. All phases of the Work shall be available to the Consultant or his representative for observation or inspection at any time.

.4 Prepare all surfaces to be coated in a workmanlike manner with the objective of obtaining a clean, dry and properly prepared substrate, as detailed below and in accordance with the coating manufacturer's current datasheets.

.5 Clean all surfaces to be coated and remove all rust, scale, dirt, or other foreign matters. Remove grease and oil by washing with solvents to SSPC-SP1.

.6 Power wire brush all weld areas to SSPC-SP3 and remove harmful electrode deposits by scrubbing with a 5% phosphoric acid solution to SSPC-SP1.

.7 Abrasive blast all steel surfaces to completely remove all mill scale, rust and other foreign matter to SSPC Standard SP6. The anchor pattern blasted into the surface shall not be in excess of one third of the total coating (dry film) thickness to be applied.

.8 Do not blast clean more steel than can be prime coated on the same day.

.9 Maintain all coating equipment in good working order. Equipment shall be comparable to that described in the coating manufacturer's most recent datasheet. Thoroughly clean and inspect equipment daily. Regularly replace worn spray nozzles, tips, etc. Use oil and water separators on all air lines.

3.2 Coating Application

.1 Store all coating materials in areas with ambient temperatures within the range specified by the paint manufacturer's current datasheet. Thoroughly mix all coating materials before use and allow drying agents to “sweat in” for the period specified by the manufacturer after mixing and prior to application.

.2 Adhere to manufacturer’s recommendations and all applicable safety regulation in the mixing, handling, application and curing of coating materials.

.3 Refer to the coating manufacturer's most recent printed datasheet to determine necessary information in surface preparation (i.e., to determine anchor pattern depth). Such instructions are deemed part of this Specification.

.4 Apply all coatings under shop conditions using qualified experienced applicators and knowledgeable field supervisors. Shop shall preferably be equipped with temperature and humidity control as required to obtain proper application conditions in accordance with the manufacturer's recommendations. If it is proposed that coatings are to be applied in a shop without temperature and humidity control, the Contractor shall provide the Consultant with records of temperature and humidity taken at least once an hour during the Work.

.5 Spray apply the paint/coating by airless spray equipment, with a minimum pressure ratio of 28/1.

.6 Do not apply coatings when the air temperature or surface temperature of the steel is outside the range of the coating manufacturer's current datasheet. Do not apply coating to wet or damp surfaces or within 3 deg. C of the dew point, except in accordance with information supplied by the coating manufacturer.

.7 Mask any area to be field welded before coating. After field welding, clean surface as specified before coating welded area.

.8 Spray apply coating materials to the specified thicknesses using even controlled movements of the spray gun to obtain a uniform coating thickness free from runs, sags, pinholes, holidays, shadowing or other defects. Spray apply coatings in strict accordance with the manufacturer's recommendations.

.9 Prime coat all cleaned metal as specified, after being inspected, and within eight hours of cleaning, to prevent new rusting or oxidation of cleaned surfaces. If more than one day passes between subsequent coats, prepare these contaminated areas by either brush off blast, or steam cleaning.

.10 Dry time between coats shall be as per the coating manufacturer's current datasheets. Schedule cleaning and coating so that dust, over spray and other contaminants from the coating process will not fall on wet, newly coated surfaces.

.11 Provide adequate curing time and temperature in shops where steelwork or equipment is being painted so that a minimum of damage to the coating is incurred in handling, shipping and erection. Protect coated steel from over spray and drift due to adjacent coating operations.

.12 Permit each coat to completely dry before application of the next coat. If any coated surface becomes damaged or contaminated during curing, clean the area and prepare and recoat to these Specifications.

.13 Do not proceed with the next step in the coating system sequence (i.e., surface preparation, priming, tie coat, top coat) until the previous Work has been inspected and approved.

.14 Carry out repair Work to defects, omissions, shipping and erection damage in such a manner so as to produce a uniform continuous coating equal to, or better than, the original coating.

3.3 Handling

.1 Handle surfaces that have been coated to the above Specifications using the following:

.1 Use clamps, slings or sorting hooks but no wire rope chokers for handling steel after the prime coat has been applied.

.2 After the finish coat has been applied, use only nylon ropes or rubber covered slings for handling steel, both in the fabricator's shop, during loading or shipment and during unloading and erection. No bare steel cables or strapping will be permitted.

.3 After paint has been applied, take special precautions in handling and shipping to prevent damage to the coating. For shipment, strap smaller members into bundles. Use wood softeners to prevent all metal to metal contact between pieces. Load and secure the steel to prevent movement while in transit. Use wood softeners also when stacking steel for storage and provide wood blocking between the steel and the ground surface.

3.4 Field Touch Up

.1 Touch up and repair all abrasions, cuts, scuffs, and other defects in coatings and field coat all connections including bolts, welds, anchor bolts and all uncoated areas as required to provide a complete, continuous integral coating system on all steel surfaces in accordance with these Specifications.

.2 Touch up and repair of field coatings shall be as specified in Clause 2.2 and in accordance with the manufacturer’s recommendations. Submit description of materials and repair procedures proposed prior to commencing the Work.

.3 Carry out field coating repairs only when air temperature and relative humidity are within paint manufacturers permissible range and will reasonably remain so during film drying time.

.4 Protect adjacent Work of the trades by masking or using protective sheets as required during field coating operations.

.5 Touch up areas shall be inspected by the Contractor's coating inspector before, during, and after touch up to confirm compliance with the Specifications.

3.5 Control of Over Spray

.1 Implement strict program to control and eliminate over spray and drift of paint onto surfaces and equipment specified to remain unpainted.

.2 Designate key person on-Site to monitor paint over spray during the Project and to ensure that adequate protection is installed.

.3 Mask or cover all surfaces and equipment with protective sheeting not specified to receive field touch up and repair coatings.

.4 Closely monitor prevailing wind intensities and direction to assess effect on paint drift. Suspend operations during conditions where paint drift cannot be adequately controlled.

.5 Erect large, clearly visible signs within a 200 ft radius of painting operations advising of painting operations in progress.

.6 Take all practical precautions to minimize over spray during coating operations. Use equipment and procedures designed to minimize over spray. Apply coatings by brush where size of member being coated would result in excessive over spray beyond coated surface.

3.6 Cleaning

.1 Clean all coated surfaces of scuffs, dirt or foreign material prior to completion of the Work.

.2 Do not attempt solvent cleaning of any surfaces without written consent of the Consultant and compatibility test of solvent.

4 QUALITY CONTROL

4.1 General

.1 Establish and implement a program of quality control. Carry out all coatings inspection to the minimum level specified in Clause 4.2 - Inspection.

.2 All Work specified under this Contract is subject to inspection at any time by independent inspectors implementing the Owner's quality assurance program.

4.2 Inspection

.1 Employ qualified and NACE certified coating inspectors acceptable to the Consultant to continuously inspect the Work and prepare daily inspection and progress reports. All reports shall be submitted weekly to the Consultant. These reports shall be submitted for both shop and Site applied coatings.

.2 The Contractor's inspectors shall clearly define on the inspection reports the areas inspected. The inspection reports shall be written so that they clearly relate to identifiable surfaces (i.e., structural steel part numbers). The Contractor's inspectors shall recommend any corrective remedy for a problem and indicate the corrective action to be taken by the Contractor.

.3 Inspect all cleaned surfaces prior to the application of coating. Tests to be performed and equipment required are as follows:

.1 Sling Psychrometer: use to determine percent of relative humidity and dew point temperature.

.2 Surface Temperature Gauge: use in conjunction with the sling psychrometer to determine temperature of substrates prior to coating.

.3 Elcometer Surface Profile Gauge: use to measure in mils the profile depth, from peaks to valleys, of abrasive blasted surfaces.

.4 Wet Film Thickness: a film gauge of steel or aluminium, calibrated to read in mils the film thickness of a wet coating. When using this gauge, divide the desired dry film thickness by the volume solids of the coating as expressed in a decimal (taking into account the amount of thinning done) to yield the necessary wet film thickness.

.5 Dry Film Thickness: use an Elcometer Paint Inspector, Microtest or similar approved gauge to measure the thickness to the nearest mil. It must be accompanied by a set of standard shims against which it can be calibrated at least once per week in standard job Site conditions. Use SSPC-PA2 73T or ASTM D1186 53 as method for measurement.

.4 Inspect newly coated surfaces when the coating has thoroughly dried and immediately after the coated member has been removed from the paint shop for storage or shipment. The coated surfaces will be considered with respect to lack of uniformity, continuity and soundness and may be rejected if any of the following defects are apparent, and the Consultant, in his judgement, believes the coating performance and life may be impaired by these conditions:

.1 Runs, sags, holidays, pinholes or shadowing caused by insufficient application methods.

.2 Evidence of poor coverage at plate edges, lap joints, crevices, pockets, corners.

.3 Damage to shop coat due to handling before the coating is sufficiently cured, or other contributory cause.

.5 Check compliance with governing Specifications during the course of application of the coating system.

.6 Check surface preparation using pictorial standards per SSPC-Vis-67T and actual samples sealed in plastic supplied by SSPC.

.7 If any of the areas covered in the reports are contrary to the Specifications or are found to be in error, repair or recoat defective areas.

.8 Make good all coated surfaces rejected by the Consultant. Small affected areas may be touched up; large affected areas or where insufficient dry film thickness has been attained shall involve the application of another complete shop coat at the Contractor's expense.

***** END OF SECTION *****

SECTION 09 97 20
Coating Systems for Steel Pipe Piles

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section describes the requirements for cleaning and painting steel pipe piles.

.2 This section of the Specifications forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

.3 Provide all materials, labour, equipment, and services necessary to complete all cleaning and painting of steel pipe piles.

1.2 Related Sections

.1 Section 09 97 19 Coating Systems for Steel

.2 Section 31 62 00 Pile Installation

.3 Section 31 62 16 Steel Piles

1.3 References

.1 Except as noted within this Specification, all painting shall conform to the latest revision of the documents listed below:

.1	ASTM	American Society for Testing and Materials
.2	NBFU	National Board and Fire Underwriters
.3	NFPA	National Fire Protection Association
.4	OSHA	Occupational Safety and Health Administration
.5	SSPC	Steel Structures Painting Council

.2 The manufacturer's Specification covering surface preparation, paint and protective coating materials, and application of the various painting and painting systems to be applied shall become part of these Specifications and shall be followed in detail.

1.4 Quality Assurance

.1 Coating shall be performed by a firm experienced in the application of the specified coating system.

.2 The Contractor shall appoint and pay for an independent testing and inspection agency to perform testing and inspection of the painting Work. The testing agency shall be approved by the Consultant. The testing agency shall inspect the painting to ensure the correct procedures according to these Specifications and the paint manufacturer's recommendations are being followed. Paint thickness tests shall be carried out to ensure the correct coating thicknesses. Tests shall be at random locations and shall consist of a minimum of three locations on each pile.

.3 The test results shall be submitted to the Consultant for review.

.4 If the tests reveal unsatisfactory paint coating, the pile shall be repainted at no expense to the Owner.

1.5 Delivery, Storage and Handling

.1 Deliver all materials to the area of application in factory-sealed containers, clearly indicating the paint manufacturer's name, type, colour, identification number, expiry date and instructions for mixing and thinning as necessary.

.2 Submit the coating manufacturers' datasheet with each shipment of material to the application area.

.3 Adhere to all applicable safety regulations and manufacturer's recommendations in storing, mixing and handling coatings Products. Provide adequate mechanical ventilation to all areas in which coating Products are mixed, applied or handled.

1.5 Alternatives

.1 Do not make substitutions for coating materials and procedures specified unless specifically approved in writing by the Consultant.

.2 Alternative coating systems to those specified may be proposed by the Contractor. Details of any alternative coating system proposed shall be submitted to the Consultant for approval.

2 PRODUCTS

2.1 Materials

.1 Use premium quality coatings and coating systems supplied by national brand name manufacturers. Do not use materials after the expiry date as marked on the container.

.2 Only coatings and coating systems approved by the Consultant shall be used.

.3 Obtain all coating materials from a single manufacturer and ensure that all Products used are fully compatible within each coating system.

.4 Use only Products which are readily available from manufacturers' stock and which, as far as can reasonably be foreseen, will be available for future repairs and re-coatings.

2.2 Coating Systems for Piles

.1 Apply coating systems in accordance with the following:

.1 Surface Preparation:

.1 Abrasive blast clean to SSPC-SP6.

.2 If oxidation occurs between blasting and application, the surface must be re-blasted.

.3 Surface defects to be ground, filled, or treated in the appropriate manner approved by the Consultant.

.4 A surface profile of 1.5 mils to 2 mils is required.

.2 Provide the following coating system:

Coat	Description	Dry Film Thickness
Coat 1	Surface tolerant high-build epoxy.	10-12 mils
Coat 2	Surface tolerant high-build epoxy.	10-12 mils
Field Touch-Up	To Restore Specified Film Thickness	---
Total		**20 mils minimum**

.3 The following Products have been pre-approved:

.1 International Interseal 670 HS

.2 ICI Devoe Bar Rust 231

.3 Carboline Carboguard 890

.4 Touch Up:

.1 Immediately prior to repairing damaged or unpainted surfaces, and before the specified surface preparation is carried out, all grease, oil, dirt and foreign matter shall be removed and cleaned to SSPC-SP3, wire brush clean.

.2 Edges of sound remaining paint on the surface shall be feathered by sanding/grinding prior to painting.

.3 The minimum coating requirements for spot coating repairs shall be as follows:

.1 No Corrosion, Primer Exposed:

.1 Apply mid coat and top coat to restore specified film thickness.

.2 No Corrosion, Primer Damaged:

.1 Apply primer coat, mid coat and top coat to the specified film thickness.

.3 Rusted Areas:

.1 Clean to the original standard of surface cleanliness. Prepare surface to SSPC-SP6, apply primer coat, mid coat and top coat to the specified film thickness.

.5 Coating Colours:

Item	Coating Colour(1)
Piles	Black

Notes: (1) Provide paint colour chips to the Owner for final paint colour selection.

3 EXECUTION

3.1 Preparation

.1 Inspect the Work prior to carrying out coating application and report any deficiencies or defects to the Consultant.

.2 Remove all weld, burning, or cutting splatter, ensure that welds are free from significant porosity or defects and grind smooth all sharp edges and irregularities as required to provide a smooth uniformly profiled surface to receive coatings.

.3 Perform all Work in strict accordance with the Specifications and the coating manufacturer's current Product datasheets. Ensure that all Work is performed in a safe and workmanlike manner. All phases of the Work shall be available to the Consultant or his representative for observation or inspection at any time.

.4 Prepare all surfaces to be coated in a workmanlike manner with the objective of obtaining a clean, dry and properly prepared substrate, as detailed below and in accordance with the coating manufacturer's current datasheets.

.5 Clean all surfaces to be coated and remove all rust, scale, dirt, or other foreign matters. Remove grease and oil by washing with solvents to SSPC-SP1.

.6 Power wire brush all weld areas to SSPC-SP3 and remove harmful electrode deposits by scrubbing with a 5% phosphoric acid solution to SSPC-SP1.

.7 Abrasive blast all steel surfaces to completely remove all mill scale, rust and other foreign matter to SSPC Standard SP6. The anchor pattern blasted into the surface shall not be in excess of one third of the total coating (dry film) thickness to be applied.

.8 Do not blast clean more steel than can be prime coated on the same day.

.9 Maintain all coating equipment in good working order. Equipment shall be comparable to that described in the coating manufacturer's most recent datasheet. Thoroughly clean and inspect equipment daily. Regularly replace worn spray nozzles, tips, etc. Use oil and water separators on all air lines.

3.2 Coating Application

.1 Store all coating materials in areas with ambient temperatures within the range specified by the paint manufacturer's current datasheet. Thoroughly mix all coating materials before use and allow drying agents to “sweat in” for the period specified by the manufacturer after mixing and prior to application.

.2 Adhere to manufacturer’s recommendations and all applicable safety regulation in the mixing, handling, application and curing of coating materials.

.3 Refer to the coating manufacturer's most recent printed datasheet to determine necessary information in surface preparation (i.e., to determine anchor pattern depth). Such instructions are deemed part of this Specification.

.4 Apply all coatings under shop conditions using qualified experienced applicators and knowledgeable field supervisors. Shop shall preferably be equipped with temperature and humidity control as required to obtain proper application conditions in accordance with the manufacturer’s recommendations. If it is proposed that coatings are to be applied in a shop without temperature and humidity control, the Contractor shall provide the Consultant with records of temperature and humidity taken at least once an hour during the Work.

.5 Spray apply the paint/coating by airless spray equipment, with a minimum pressure ratio of 28/1.

.6 Do not apply coatings when the air temperature or surface temperature of the steel is outside the range of the coating manufacturer's current datasheet. Do not apply coating to wet or damp surfaces or within 3 deg. C of the dew point, except in accordance with information supplied by the coating manufacturer.

.7 Mask any area to be field welded before coating. After field welding, clean surface as specified before coating welded area.

.8 Spray apply coating materials to the specified thicknesses using even controlled movements of the spray gun to obtain a uniform coating thickness free from runs, sags, pinholes, holidays, shadowing or other defects. Spray apply coatings in strict accordance with the manufacturer’s recommendations.

.9 Prime coat all cleaned metal as specified, after being inspected, and within eight hours of cleaning, to prevent new rusting or oxidation of cleaned surfaces. If more than one day passes between subsequent coats, prepare these contaminated areas by either brush off blast, or steam cleaning.

.10 Dry time between coats shall be as per the coating manufacturer's current datasheets. Schedule cleaning and coating so that dust, over spray and other contaminants from the coating process will not fall on wet, newly coated surfaces.

.11 Provide adequate curing time and temperature in shops where steelwork or equipment is being painted so that a minimum of damage to the coating is incurred in handling, shipping and erection. Protect coated steel from over spray and drift due to adjacent coating operations.

.12 Permit each coat to completely dry before application of the next coat. If any coated surface becomes damaged or contaminated during curing, clean the area and prepare and recoat to these Specifications.

.13 Do not proceed with the next step in the coating system sequence (i.e., surface preparation, priming, tie coat, top coat) until the previous Work has been inspected and approved.

.14 Carry out repair Work to defects, omissions, shipping and erection damage in such a manner so as to produce a uniform continuous coating equal to, or better than, the original coating.

3.3 Handling

.1 After the finish coat has been applied, only nylon ropes or rubber covered slings may be used for handling steel either in the fabricators shop during loading or shipment or during unloading at the Site.

.2 After paint has been applied special precautions shall be taken in handling and shipping to prevent damage to the coating. Wood softeners shall be used to prevent all metal to metal contact between pieces. The steel shall be loaded and tied down to prevent movement while in transit. Wood softeners shall also be used when stacking steel for storage at the Site and wood blocking shall be provided between the steel and the ground surfaces.

3.4 Field Touch Up

.1 Touch up and repair all abrasions, cuts, scuffs, and other defects in coatings and field coat all uncoated areas as required to provide a complete, continuous integral coating system on all steel surfaces in accordance with these Specifications.

.2 Touch up and repair of field coatings shall be as specified in Clause 2.2 and in accordance with the manufacturer's recommendations. Submit description of materials and repair procedures proposed prior to commencing the Work.

.3 Carry out field coating repairs only when air temperature and relative humidity are within paint manufacturers permissible range and will reasonably remain so during film drying time.

.4 Protect adjacent Work of the trades by masking or using protective sheets as required during field coating operations.

.5 Touch up areas shall be inspected by the Contractor's coating inspector before, during, and after touch up to confirm compliance with the Specifications.

3.5 Control of Over Spray

.1 Implement strict program to control and eliminate over spray and drift of paint onto surfaces and equipment specified to remain unpainted.

.2 Designate key person on-Site to monitor paint over spray during the Project and to ensure that adequate protection is installed.

.3 Mask or cover all surfaces and equipment with protective sheeting not specified to receive field touch up and repair coatings.

.4 Closely monitor prevailing wind intensities and direction to assess effect on paint drift. Suspend operations during conditions where paint drift cannot be adequately controlled.

.5 Erect large, clearly visible signs within a 200 ft radius of painting operations advising of painting operations in progress.

.6 Take all practical precautions to minimize over spray during coating operations. Use equipment and procedures designed to minimize over spray. Apply coatings by brush where size of member being coated would result in excessive over spray beyond coated surface.

3.6 Cleaning

.1 Clean all coated surfaces of scuffs, dirt or foreign material prior to completion of the Work.

.2 Do not attempt solvent cleaning of any surfaces without written consent of the Consultant and compatibility test of solvent.

4 QUALITY CONTROL

4.1 General

.1 Establish and implement a program of quality control. Carry out all coatings inspection to the minimum level specified in Clause 4.2 - Inspection.

.2 All Work specified under this Contract is subject to inspection at any time by independent inspectors implementing the Owner's quality assurance program.

4.2 Inspection

.1 Employ qualified and NACE certified coating inspectors acceptable to the Consultant to continuously inspect the Work and prepare daily inspection and progress reports. All reports shall be submitted weekly to the Consultant. These reports shall be submitted for both shop and Site applied coatings.

.2 The Contractor's inspectors shall clearly define on the inspection reports the areas inspected. The inspection reports shall be written so that they clearly relate to identifiable surfaces (i.e., structural steel part numbers). The Contractor's inspectors shall recommend any corrective remedy for a problem and indicate the corrective action to be taken by the Contractor.

.3 Inspect all cleaned surfaces prior to the application of coating. Tests to be performed and equipment required are as follows:

.1 Sling Psychrometer: use to determine percent of relative humidity and dew point temperature.

.2 Surface Temperature Gauge: use in conjunction with the sling psychrometer to determine temperature of substrates prior to coating.

.3 Elcometer Surface Profile Gauge: use to measure in mils the profile depth, from peaks to valleys, of abrasive blasted surfaces.

.4 Wet Film Thickness: a film gauge of steel or aluminium, calibrated to read in mils the film thickness of a wet coating. When using this gauge, divide the desired dry film thickness by the volume solids of the coating as expressed in a decimal (taking into account the amount of thinning done) to yield the necessary wet film thickness.

.5 Dry Film Thickness: use an Elcometer Paint Inspector, Microtest or similar approved gauge to measure the thickness to the nearest mil. It must be accompanied by a set of standard shims against which it can be calibrated at least once per week in standard job Site conditions. Use SSPC-PA2 73T or ASTM D1186 53 as method for measurement.

.4 Inspect newly coated surfaces when the coating has thoroughly dried and immediately after the coated member has been removed from the paint shop for storage or shipment. The coated surfaces will be considered with respect to lack of uniformity, continuity and soundness and may be rejected if any of the following defects are apparent, and the Consultant, in his judgement, believes the coating performance and life may be impaired by these conditions:

.1 Runs, sags, holidays, pinholes or shadowing caused by insufficient application methods.

.2 Evidence of poor coverage at plate edges, lap joints, crevices, pockets, corners.

.3 Damage to shop coat due to handling before the coating is sufficiently cured, or other contributory cause.

.5 Check compliance with governing Specifications during the course of application of the coating system.

.6 Check surface preparation using pictorial standards per SSPC-Vis-67T and actual samples sealed in plastic supplied by SSPC.

.7 If any of the areas covered in the reports are contrary to the Specifications or are found to be in error, repair or recoat defective areas.

.8 Make good all coated surfaces rejected by the Consultant. Small affected areas may be touched up; large affected areas or where insufficient dry film thickness has been attained shall involve the application of another complete shop coat at the Contractor's expense.

***** END OF SECTION *****

DIVISION 31
Earthwork

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

SECTION 31 62 00
Pile Installation

REVISION STATUS					
REV	**DATE**	**DESCRIPTION**	**ORIGINATED BY**	**REVIEWED BY**	**APPROVED BY**
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section describes the requirements for installation of piles.

1.2 Scope of Work

.1 Install steel pipe piles and timber piles in areas shown on the Drawings to achieve the design loads as confirmed on site by the Consultant.

1.3 Related Sections

.1 Section 05 50 00 Metal Fabrications

.2 Section 31 62 16 Steel Piles

.3 Section 31 62 19 Timber Piles

1.4 Protection

.1 Take all necessary precautions, including the provision of suitable screening fences or barriers to protect public, existing structures, facilities, and services from damage due to the pile installation and associated Works.

.2 Complete pile driving in conformance with Best Management Practices for Pile Driving and Related Operations—BC Marine and Pile Driving Contractors Association (BCMPDCA) and City of White Rock Noise By-Laws.

1.5 Review of Information by Contractor

.1 The Contractor shall review all information pertinent to the Work, visit the Site and carry out all necessary examinations, and shall make independent interpretations of all available information regarding the requirements, limitations, and constraints of the Work and the conditions under which the Work will be performed.

.2 The Contractor shall promptly notify the Consultant of any ambiguity, inconsistency, or error in the Contract Documents.

1.6 Permits

.1 The Contractor is responsible for the supply of electricity and water for the performance of all Work, necessary for, or incidental to, the pile installation and associated Works in accordance with this Specification and the Drawings.

1.7 Health and Safety

.1 The Contractor is responsible for the safety of Contractor's personnel and the protection of health of such personnel from hazards associated with the Work covered herein.

1.8 Submittals

.1 Submit details of proposed pile driving equipment, methods, and schedules to Consultant for review a minimum of 14 days prior to mobilization of pile driving equipment.

1.9 Quality Control Submittals

.1 Provide the Consultant with copies of pile driving records at the end of each day of pile driving.

.2 Provide the Consultant with survey data to confirm that piles have not moved during driving of adjacent piles.

1.10 Drawings

.1 The Drawings show the general layout of piles that are to be installed by the Contractor. Finalized layout of piles will be provided to the Contractor prior to the start of pile driving.

.2 Finalized pile layout will include adjustments in the pile location to reduce conflicts with existing structures.

1.11 Records and As-Built Drawings

.1 The Contractor shall maintain at the Site the following records and update these daily for each pile installed:

.1 Identification and location with respect to the Project coordinate system.

.2 Type and make of hammer, stroke, and related energy.

.3 Other driving equipment including cushion block type and thickness, etc.

.4 Pile size, length pitched in the leads and splice lengths, location of pile.

.5 Date and time of completion.

.6 Initial and final position and alignment along with the change in position and alignment for the completed pile.

.7 Elevation of ground surface immediately before and after completion of pile installation.

.8 Drive resistance in terms of blow counts per each 0.3 m of penetration for entire length of pile and for each 25 mm of the final 0.15 m of penetration.

.9 Impact rate at least every 5 m of penetration including at final set.

.10 Elevation of the pile tip and the final set achieved.

.11 Length of the soil plug inside the pile at various stages of pile driving (e.g., during splicing).

.12 Any special measures adopted including clean-out and depth of soil plug at the start and finish of clean-out.

.13 Any unusual conditions encountered and methods employed for dealing with them.

.2 The above records and any results of monitoring programs shall be submitted to the Consultant on a daily basis. The Contractor shall prepare and provide the Consultant with "as-built" Drawings indicating the final locations of the piles.

2 EXECUTION

2.1 General

.1 Provide a suitable air curtain (bubble curtain) system, if required by DFO permit, while driving piles in-water to limit overpressure to a level acceptable to the regulatory agencies. Design of the system shall be the responsibility of the Contractor but must adhere to BCMPDCA guidelines.

.2 Drive each steel pipe pile to achieve a minimum ultimate static capacity of 900 kN.

.3 Installation of each pile will be subject to the approval of the Consultant, who will be sole judge of acceptability of each pile with respect to final driving resistance, depth of penetration, or other criteria used to determine bearing capacity.

.4 Do not remove the pile driving rig(s) from the Site until the Consultant has approved the installation of all piles.

.5 See the related sections for the specific requirements for handling piles.

2.2 Equipment Requirements

.1 Use a pile driving hammer in accordance with geotechnical engineer's recommendations in Appendix 2 – Geotechnical Information

2.3 Preparation

.1 Protect public and construction personnel, adjacent structures, and Work of other Contractors from hazards attributable to pile driving operations.

.2 Exercise care when driving piles adjacent to existing structures to ensure no contact between pile and structure takes place.

.3 Use highly visible, contrasting colour of paint to clearly mark each pile with its number and its overall length. In addition, clearly mark each pile at intervals of 305 mm along its full length prior to driving. As a minimum, label every fifth mark with the appropriate value from pile tip. Remove pile markings after completion of installation and approval of a pile, where those markings can be seen from the water, from the beach, or from the Pier.

.4 Where coarse rock or riprap covers the ground surface at locations of piles to be installed, temporarily remove such rock to allow piles to be installed without damage. Reinstate such rock by carefully placing on the ground surface in a manner that will ensure that the stones are stable and will not damage the pile coating.

.5 Provide suitable measures to maintain noise levels to within limits imposed by the City of White Rock By-Laws.

2.4 Pile Driving

.1 Drive all piles continuously to final penetration. If driving is interrupted before final penetration is reached, do not take the record for final penetration until at least 0.305 m of penetration has been obtained after resumption of driving.

.2 Target pile set criteria will be provided by the Consultant following review and approval of the Contractor's equipment. Set criteria will vary based on hammer energy and efficiency, pile length, and ground conditions. Set criteria may be adjusted from time to time based on the localized ground conditions and general equipment performance.

.3 Ensure that the leads of the pile driving equipment do not exert lateral forces on the piles during driving. No adjustment of a possible misalignment will be permitted during driving, except at the very initial stage.

.4 Hold piles securely and accurately in position while driving. Deliver hammer blows in direct axis of pile. Reinforce pile heads if necessary.

.5 Drive piles with an approved cushion block between the pile head and helmet. Replace cushion blocks when they become split, highly compressed, charred, or burnt.

.6 Sequence the driving of piles on sloping ground in a manner that minimizes the movement of piles after driving.

.7 Re-drive piles which heave during driving of adjacent piles.

.8 Support all piles laterally, to the satisfaction of the Consultant, to prevent damage to the piles until the falsework or pile caps provide adequate lateral support.

.9 If conditions are encountered which make it difficult to drive a pile in the location shown and to a depth consistent with the surrounding piles and to attain the required capacity, employ all reasonable means to advance the pile. Reasonable means include, but are not limited to, additional tip reinforcement, spudding, and the use of a churn drill, or other drilling techniques, alternating with driving.

.10 Unless otherwise directed by the Consultant, terminate any special installation techniques at least 3 m prior to reaching the estimated penetration and as required to achieve pile capacity. Complete installation using conventional methods.

2.5 Ground Vibrations

.1 Carry out ground vibration and air overpressure measurements during pile driving.

.2 Ground vibrations from pile driving not to exceed a peak particle velocity (PPV) of 12.5 mm/s in any structures.

2.6 Field Splices of Steel Piles

.1 Make field splices only when approved by the Consultant.

.2 Splice piles in accordance with Section 31 62 16 - Steel Piles.

2.7 Pile Cut-Off and Completion

.1 Cut-off and complete piles in accordance with the appropriate sections and as shown on the Drawings.

.2 Cut-off piles neatly and squarely at the elevations indicated on the construction Drawings. Provide sufficient length above the cut-off elevation so that any part damaged during driving is cut-off. Remove cut-off lengths from Site. At the discretion of the Consultant, cut-offs of reusable length shall be returned to the splicing yard for reuse in pile fabrication or left on Site for field splicing.

.3 Remove excess soil from inside the pile to a minimum depth to allow the pile top plug to be cast. Clean the inside of the pile in accordance with Section 03 30 00 to ensure that all materials, deleterious to the bond between concrete and steel, are removed.

.4 Install shear rings on the outside of the piles as indicated on the Drawings. Repair damaged coating as noted below. Test shear ring welds as noted in Section 31 62 16.

.5 Remove loose and displaced material from around piles after completion of driving, and leave clean, solid surfaces to receive foundation concrete.

.6 Repair all damaged sections of pile coating as specified in Section 09 97 20 – Coating Systems for Steel Pipe Piles. Repairs completed below water shall be completed using a material suitable for application below water. Application below water shall be by personnel experienced with such application.

2.8 Tolerances

.1 Pile heads shall be within 50 mm of locations indicated but not more than 25 mm out of tolerance between three piles in a single bent. It is acceptable to use winches to pull pile head together to bring into tolerance.

.2 Piles shall not be more than 1/150 of length out of alignment.

.3 Tolerances listed above shall be met after all piles are driven.

.4 At the discretion of the Consultant, tolerances may be relaxed on a case-by-case basis.

2.9 Damaged or Defective Piles

.1 The integrity of the piles shall remain at all times the responsibility of the Contractor. Should any pile be damaged by overdriving or by pile installation techniques or other causes including attempting to pass an obstruction, or be out of position as a result of improper survey or driving practice, drive an extra pile or piles in its place as directed by the Consultant. No extra compensation will be made for removing and replacing piles, driving extra piles, or other Work made necessary through rejection of a defective or damaged pile. The cost of supplying such extra piles shall be borne by the Contractor.

.2 If, in the judgement of the Consultant, the Contractor is unable to properly complete installation of any pile by resorting to the reasonable methods described above, the Consultant may order an additional pile or piles to be installed. Piles abandoned or installed out of place or alignment because of obstructions, as determined by the Consultant, will be paid for as completed piles. Such abandoned piles may be removed if required by the Consultant and their removal paid for in accordance with the provisions of the Contract.

2.10 Pile Driving Quality Control

.1 Refer to Clause 1.9.

.2 Record elevations and position of adjacent piles during driving of each pile.

***** END OF SECTION *****

SECTION 31 62 16
Steel Piles

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
A	Feb 27, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section describes the requirements for the fabrication of steel pipe piles, including welding, inspection, and testing.

1.2 Related Sections

.1 Section 05 50 00 Metal Fabrications

.2 Section 31 62 00 Pile Installation

1.3 References

.1	CAN/CSA-G40.21-M92	Structural Quality Steels
.2	CSA W47.1-92	Certification of Companies for Fusion Welding of Steel Structures
.3	CSA W48 Series	Welding Materials
.4	CSA W59-M1989	Welded Steel Construction (Metal Arc Welding)
.5	CSA W178.1-1990	Certification of Welding Inspection Organizations
.6	CSA W178.2-1990	Certification of Welding Inspectors
.7	CAN/CSA-Z245.1-M95	Steel Line Pipe
.8	ASTM D1143-81(1987)	Standard Test Method for Piles Under Static Axial Compressive Load
.9	ASTM D3689-90	Standard Test Method for Piles Under Static Axial Tensile Load

1.4 Submittals

.1 Submit full details of proposed pile splices, welding procedures, and electrodes, with Drawings and schedules as may be necessary, to the Consultant for review at least seven days prior to the start of fabrication. Provide adequate information to demonstrate that the metallurgy of the weld metal will match the metallurgy of the base metal.

.2 Submit pile schedule, indicating splice locations (shop and field) and proposed lengths of pipe (coated and uncoated) to be used to fabricate piles to the Consultant for review at least seven days prior to start of fabrication.

.3 Submit details of procedures/methods to avoid damaging the pile coating during shipping, handling and installing the piles, as well as during general construction activities of the Work.

.4 Submit design details for the pile tip as specified below.

.5 Submit to the Consultant certified copies of mill reports, analysis, and tests covering chemical and physical properties of pipe.

.6 Submit to the Consultant test reports and analyses covering the application of pipe coating.

1.5 Quality Control Submittals

.1 Provide the Consultant with two copies of test reports on fabrication welds.

.2 Submit to the Consultant mill certificates for pile driving shoes.

1.6 Quality Control

.1 Welding practice and qualifications of fabricators shall conform to CSA W47.1 and W59. Fabricator qualifications shall conform to CSA W47.1 Division 2.1.

.2 Welding inspections shall be carried out by a qualified independent agency approved by the Consultant in accordance with W59 Clause 7. In addition to visual inspection, radiographic testing will be required for welds as specified in Section 2.4. Cost of testing will be considered incidental to fabrication of pipe piles and paid for by the Contractor without measurement.

1.7 Delivery, Storage, and Handling

.1 Take special care to prevent damage to coated pipe piles.

.2 Use only nylon slings for handling of coated pipe piles. Do not use wire rope slings, or metal pry bars.

.3 Stack pipe piles for transportation or storage using suitable padding to prevent contact between pipes or between pipes and transport carrier. Support bottom tier of pipe piles on timber saddles covered with suitable padding material. Use only padded nylon straps or polyethylene rope to secure pipes piles during transportation.

.4 Store pipe piles above ground on wood supports or dunnage. Contact surfaces of supports or dunnage shall be smooth and covered with suitable padding material.

2 PRODUCTS

2.1 Steel Pipe

.1 Pipe:

.1 Steel pipe for piling conforms to CSA Z245.1, Grade 290, Category 1, or similar that has been inspected and approved by the Owner's testing agency.

.2 Manufacturing of Steel Pipe:

.1 Ends of all pipes shall be bevelled plain ends.

.2 In addition to the requirements of CSA Z245.1, manufactured pipe shall conform to the following tolerances:

.1 Axial Alignment: maximum deviation of the line of the pipe at any point along the length is not to exceed 3 mm when compared with a 3 m straight edge.

.2 Straightness: deviation from straight line over total length of manufactured pipe not to exceed 1/1,000 of pipe length.

.3 End Squareness: when any section is placed with its end in contact with a plane perpendicular to the pipe axis, no part of the circumference shall be more than 1.5 mm away from the plane.

.4 Matching Ends: root edges or root faces of pipes to be butt welded shall not differ by more than 3 mm.

2.2 Other Materials

.1 Rolled Steel for Backing Rings, Shear Rings, Steel Plate: to CAN/CSA-G40.21, Grade 300W.

.2 Welding Consumables: to CSA W48 series. The metallurgy of deposited weld metal shall match that of the base metal. Tensile strength of weld metal shall exceed tensile strength of base metal.

.3 Pile driving tips shall be cast steel inside cutting shoe, flush-outside type, Fitting No. 0-14001, as manufactured by Associated Pile & Fitting Corp., or approved equal, sized to fit the Project pipe.

2.3 Fabrication

.1 Prior to commencing splicing, the Consultant will furnish the Contractor with a pile list, indicating pile number/location, estimated tip elevation, coated length, and uncoated length. Based on this pile list, the Contractor shall submit, for approval, a pile fabrication schedule, indicating for each pile the locations of shop and/or field splices, and lengths of coated and uncoated pipe to be used. In support of pile fabrication, the Contractor shall complete spot

elevations over the Work area to ensure that there has not been any change in seabed elevation.

.2 Wherever possible, fabricate full length piles of coated and uncoated pipe to eliminate splicing during installation and to ensure uncoated sections of pipes are always fully embedded. Based on estimated tip elevation, the coated section of pipe shall have an allowance of at least 3 m penetration into the seabed. Where coated lengths must be cut to suit the required/desired final length of the pile, the cost for end preparation and coating preparation shall be considered incidental to the Work.

.3 Do welding in accordance with CSA W59 Clause 11. Use complete joint penetration welds to splice pipe pile lengths.

.4 Splice piles in a workshop or similar protected and equipped facility to ensure good quality splices. Manipulate lengths to be joined in jigs so that only down hand welding is employed.

.5 Ensure good alignment (1 in 1,000) of spliced parts and use the minimum number of welds. Do not use pipe segments less than 2 m long for pile fabrication.

.6 Use a backing ring for all welded splices of pipe piles. Tack weld backing ring to the inside of one section.

.7 Stagger the longitudinal welds of pile lengths to be joined 90 degrees.

.8 Do not weld until the end preparation of pipe sections has been inspected and approved by the independent inspection agency.

.9 Tolerances:

.1 Axial Alignment: maximum deviation of the line of the pile at the splices not to exceed 3 mm when compared with a 3 m straightedge.

.2 Straightness: deviation from straight line over total length of fabricated pile not to exceed 1/1,000 of pile length.

.3 End Squareness: when any pile section is placed with its end in contact with a plane perpendicular to the pile axis, no part of the circumference shall be more than 1.5 mm away from the plane.

.4 Matching of Ends: root edges or root faces of lengths of piles that are to be butt welded shall not differ by more than 3 mm. Set up pile lengths so that the differences in dimensions are matched as evenly as possible.

.10 Install pipe tip cutting shoes in accordance with the manufacturer's recommendations for installation.

2.4 Fabrication Quality Control

.1 All joint preparation and completed welds shall be visually inspected for conformance with the requirements of CSA W59 Clause 11.

.2 In addition, full length of all pipe pile welded splices shall be inspected by means of radiographic testing in accordance with CSA W59 Clause 7 and shall be considered acceptable if they meet the acceptance criteria of CSA W59 Clause 11 for welds subject to tensile stress.

.3 All pile tip detail welds shall be visually inspected and 10% of welds shall be tested by magnetic particle for conformance with the requirements of CSA W59 Clause 11.

.4 Remove and replace portions of welds not meeting the acceptance criteria. Re-inspect repaired welds.

.5 Splicing may also be inspected and/or tested by an inspector appointed by the Owner at the Owner's expense. Such additional inspection and/or testing will not augment or replace the Contractor's quality control nor relieve him of his contractual responsibility.

.6 If the Consultant's inspection of a weld should indicate poor alignment of the pipe, insufficient penetration of the weld, lack of fusion, slag inclusion, porosity, or otherwise fail to meet the requirements of this section, take the necessary corrective measures to provide a full-strength weld to the satisfaction of the Consultant. The cost of correcting defective welds and retesting shall be borne by the Contractor.

3 EXECUTION

3.1 General

.1 Drive piles in accordance with Section 31 62 00 - Pile Installation.

***** END OF SECTION *****

SECTION 31 62 19
Timber Piles

REVISION STATUS

REV	DATE	DESCRIPTION	ORIGINATED BY	REVIEWED BY	APPROVED BY
A	Feb 15, 2019	Issued for Client Review	D. Leonard	V. Ramadhas	M. Cowdell
B	Feb 15, 2019	Issued for Tender	D. Leonard	V. Ramadhas	M. Cowdell

1 GENERAL

1.1 Summary

.1 This section of the Specifications forms part of the Contract Documents and is to be read, interpreted, and coordinated with all other parts.

.2 This section describes the requirements for installation of treated timber piles to replace damaged existing timber piles at the Site away from the collapsed sections of the Pier.

1.2 Related Sections

.1 Section 06 13 00 Heavy Timber Construction

1.3 References

.1	CSA B111-1974	Wire Nails, Spikes and Staples
.2	CAN/CSA-G164-M92	Hot Dip Galvanizing of Irregularly Shaped Articles
.3	CAN/CSA-O56-M79	Round Wood Piles
.4	CAN/CSA-O80 Series-08	Wood Preservation
.5	CAN/CSA-O86-01	Engineering Design in Wood
.6	ANSI/ASME B18.2.1	Square and Hex Bolts and Screws

1.4 Submittals

.1 Submit details of proposed pile driving hammer to the Consultant for review.

1.5 Quality Assurance

.1 Lumber grades shall conform to the requirements of the NLGA Standard Grading Rules for Canadian Lumber.

.2 All timber Work shall be in accordance with CAN/CSA-O86.

.3 Preservation treatment, inspection and re-treatment shall be in accordance with CAN/CSA-O80.

1.6 Waste Management and Disposal

.1 Separate waste materials for reuse and recycling.

.2 Do not dispose of preservative treated wood through incineration.

.3 Do not dispose of preservative treated wood with other materials destined for recycling or reuse.

.4 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill as approved by the Consultant.

.5 Dispose of unused wood preservative material at official hazardous material collections site.

.6 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in other location where they will pose health or environmental hazard.

1.7 Delivery, Storage, and Handling

.1 Store piles horizontally, evenly supported, and open-piled to permit air circulation when stored for prolonged periods.

.2 When handling long piles, provide support at sufficient number of points to prevent damage due to excessive bending.

.3 Handle treated piles with hemp, sisal, manila, or rope slings or other approved means of support that will not damage the pile surface.

.4 Carefully handle treated piles to avoid breaking the treated surface. Avoid bruising or breaking of wood fibres.

.5 Cant hooks and rafting dogs may be used only in the end 1.5 m of piles. Do not drive spikes into the piles below the higher high water level.

.6 Treat cuts, breaks, or abrasions on surfaces of treated piles, bolt holes, and field cuts with three separate coats of salt preservative treatment in accordance with CSA O80 for marine exposure.

.7 Bolts shall be dipped in salt preservative treatment prior to installation.

.8 Where timber piles have to be cut for plate washers, the cut surface shall be treated with three coats of salt preservative treatment and a further coat of mastic before washers are placed.

1.8 Field Measurements

.1 Verify dimensions of existing timber piles in order to match size of new timber pile replacement sections to that of existing piles. Confirm sizes of existing timber piles with Consultant.

.2 Confirm top elevation of competent timber pile with Consultant.

2 PRODUCTS

2.1 Timber Piles

.1 Timber Piles:

.1 Timber Piles shall conform to:

1. Coast Douglas fir to CSA 056 clean peeled piles with minimum 25 mm sapwood. Minimum size 30 (#12) with tip diameter related to length as indicated in Table A1 of CSA O56.
2. Ammoniacal Copper Zinc Arsenate (ACZA) treatment in accordance with CSA O80 for saltwater marine exposure Use Category 5A and the "Best Management Practices for the use of Treated Wood in Aquatic Environments".
3. Incise all treated timber 75 mm and over before treatment.

2.2 Connections

.1 Plate washers shall be used under the heads and nuts of all bolts against timber piles. Size shall be:

Bolt Diameter	Thickness	Plate Size
3/4 in. (19 diameter)	3/8 in. (10 mm)	4 in. by 4 in. (100 mm by 100 mm)
7/8 in. (M22)	3/8 in. (10 mm)	4 in. by 4 in. (100 mm by 100 mm)
1 in. (M24)	2 in. (12 mm)	5 in. by 5 in. (125 mm by 125 m)
1 1/8 in. (M27)	2 in (12 mm)	6 in. by 6 in. (150 mm by 150 mm)
1 1/4 in. (32 diameter)	2 in. (12 mm)	6 in. by 6 in. (150 mm by 150 mm)

.2 Plate washers against piles shall be curved, 6.5 in. (165 mm) radius.

.3 All bolts through timber piles shall meet the requirements of ASTM-A325 Type 1 Plain.

.4 All miscellaneous metal, bolts, nuts, washers, spikes, and nails shall be hot-dip galvanized.

.5 All plate, including plate washers, shall conform to CSA G40.21 Grade 300W. Drift pins may conform to CSA G40.21 Grade 260W.

2.3 Equipment

.1 Use an air, diesel, or drop hammer approved by the Consultant. Hammer shall have a rated energy between 25 and 30 kilojoules (18,500 and 22,000 foot pounds).

3 EXECUTION

3.1 Workmanship

.1 All structural timber used in the Work shall be carefully and accurately placed in accordance with the Drawings. Joints shall be carefully cut to ensure even and uniform bearing on supporting members.

3.2 Handling of Treated Timber

.1 Carefully handle treated timber to avoid breaking the treated surface. Avoid bruising or breaking of wood fibres.

.2 Do not use cant hooks and rafting dogs on timbers. Drive no spikes into timbers except to tack the timbers in their final position; if spikes are so used, they shall be fully driven and left in.

.3 Treat cuts, breaks, and abrasions on surfaces of salt treated timbers with two separate coats of salt preservative treatment. Treat bolt holes through salt treated timbers with two coats of salt concentrate and dip the bolts in salt concentrate before installation.

.4 Countersunk holes in ACZA timbers shall be treated with two separate coats of salt preservative treatment and holes shall be filled with mastic after bolts are placed.

.5 Unless specifically noted on the Drawings, do not cut treated timbers to facilitate fitting after treatment.

.6 Prior to use in the Work, all ACZA timber to be installed below high water shall be aged for at least 45 days following treatment.

.7 Field cuts to existing timbers shall be as directed by the Consultant. Treat field cuts as directed by the Consultant.

3.3 Timber Connections

.1 New bolt holes in timber shall be bored to provide a driving fit. Hole sizes for lag screws are to be as given in CSA O86.

.2 Completely fill all unused bolt holes and nail holes with mastic.

3.4 Installation

.1 The Contractor is to ensure that loading conditions at pile replacement locations are adequate to support pile driving operations. Make provision for access and support of equipment during the performance of the Work.

.2 All damaged piles will be pulled. Pile stubs broken off at the mudline are not acceptable.

.3 Drive bearing piles to a minimum depth of penetration of 7.5 m below mudline and drive to a final set of five blows per 25 mm. When bedrock is encountered, drive each pile to practical refusal. Do not over-drive to cause damage to the pile.

.4 Drive timber piles such that they are not broken or split. Before driving, freshen the ends of the piles and snip (chamfer) the edge of the heads of the piles. If driving is hard, use steel tension bands or wire mesh to prevent the head from splitting; also, use 20 mm thick plywood discs, of equal diameter to the pile tip on the underside of the pile tip. Secure discs to pile tips with 75 mm to 100 mm long spiral nails before driving.

.5 Any pile which is split or otherwise damaged below the cut-off elevation or which is driven out of position or out of plumb, so that in the opinion of the Consultant it is unfit for the use for which it is intended, shall be removed and replaced with a sound pile, at the Contractor's expense.

.6 After driving, the piles shall be cut off at the elevation shown on the Drawings.

3.5 Treatment of Pile Tops

.1 Treat ends of all timber pile replacement sections and cut ends of existing piles with two separate, liberally brushed coats of salt preservative treatment . Allow sufficient interval between applications to permit total absorption of salt preservative treatment .

.2 In addition, cover the tops of all timber pile replacement sections with a sheet of 22 gauge annealed corrosion-resistant aluminium cut 150 mm larger than the diameter of the pile top. Crimp and turn down the overhanging edges and secure to pile top with eight aluminum roofing nails. The sheet shall not be cut to facilitate fitting.

3.4 Tolerances

.1 Pile heads to be within 75 mm of the plan locations indicated.

.2 Piles not to be more than 2% of length off vertical alignment.

3.5 Field Measurement

.1 Maintain accurate records of driving for each pile, including type and make of hammer, stroke or related driving energy; pile size, gross length, net length, and penetration position; the number of blows per metre for the entire length of pile and number of blows per 25 mm for the last 127 mm; and, any other pertinent information such as interruption of continuous driving, and pile damage.

.2 Provide Consultant with three copies of records.

***** END OF SECTION *****

Appendix 1
Geotechnical Information

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

Memorandum

Date:	February 19, 2019	**Reference No.:**	VAN-00251161-A0
To:	Daniel Leonard, P. Eng.	dleonard@westmaradvisors.com	
Cc:	Vignesh Ramadhas, P.Eng.	vramadhas@westmaradvisors.com	
From:	Ujjal Chakraborty, M.A.Sc., P.Eng	ujjal.chakraborty@exp.com	
Project Name:	White Rock Pier Repair		
Subject:	Pile Foundation Recommendations		

INTRODUCTION

EXP Services Inc. (EXP) has prepared this Memo in general accordance with EXP's proposal dated January 18, 2019. Purpose of the memo is to provide information for pile foundation design and construction recommendations. A detail design report will be provided at a later date.

SITE EXPLORATION:

A 38.0.75m deep Cone Penetration Test, designated as CPT19-01 was conducted on January 23, 2019 at the location shown on the Test Hole Location Plan Figure 1. The CPT was completed on the bench during low tide.

In general, the test hole information indicates the following subsurface soil conditions, in the order of increasing depth:

Soil Unit	Depth to Top of Layer	Thickness	Description
A	Surface	6.5m	Compact Sand, trace silt
B1	6.5m	8.5	**Silty Clay/Clayey Silt** Undrained shear strength varied from about 25 to 45 kPa
B2	15m	23	**Silty Clay/Clayey Silt, thin occasional sand layer** Undrained shear strength varied from about 60 to 85 kPa
C	38.1		**Possible Till-Like**

CPT met refusal at 38.1m

FOUNDATION DESIGN RECOMMENDATIONS:

Based on drawing SK – 103 by Westmar Advisors, 356mm diameter open-ended steel piles with 12.7mm wall thickness were considered in the design. Following ULS loads were provided:

- ULS static = 302.5 kN
- ULS seismic = 352.5 kN

Due to the limited number of piles, resistance factor of 0.4 and 0.9 for static and seismic conditions are considered appropriate for this project. The unfactored ultimate geotechnical demand on the proposed pile would be 756kN and 391kN, respectively, resulting in pile length in the range of 23m to 25m.

COMMENTS/ RECOMMENDATIONS:

Based on the observed subsoil conditions as noted above, following recommendations should be considered in the design and construction of the proposed pile foundation:

- 356mm diameter open-ended steel pipe pile with 12.7mm thick wall will be required to have 23 to 25m embedment from the existing grade to meet the structural demand;
- Drop hammers with approximate 4000 to 5000lb weight are deemed sufficient to install the proposed piles. Larger hammers maybe used, subject to geotechnical engineer approval;
- A WEAP analysis will be conducted upon the hammer selection during the construction stage and a set criterion will be provided before starting the pile driving;
- Vibratory hammers are not acceptable for pile installation;
- Full time geotechnical supervision will be required during pile installation;
- Pile installation should be done from a barge.

We trust the information provided in this memorandum meets with your immediate requirements. If you have any questions or require further information, please contact the undersigned.

Sincerely,

EXP Services Inc.

Reviewed by:

Ujjal Chakraborty, M.A.Sc., P.Eng
Geotechnical Lead.

Kai-Sing Hui, P.Eng
Manager - Geotechnical Discipline

Attachments:
Interpretation & Use of study and Report
Test hole Location Plan
Cone Penetration Test Results

KEY MAP

N.T.S. MAP No.: 92G/02 SCALE: N.T.S.

EXP Services Inc.
275–3001 Wayburne Drive
Burnaby, BC V5G 4W3
Telephone: 604–874–1245
Fax: 604–874–2358
www.exp.com

DFTR. PDL	REVISIONS	CLIENT	TITLE:
DSGN.	No. / DESCRIPTION / DATE	WESTMAR ADVISORS INC.	TESTHOLE LOCATION PLAN
CHK. UC		PROJECT WHITE ROCK PIER - EMERGENCY INSPECTION WHITE ROCK, B.C.	
		PROJECT NO. VAN-00251161-A0	DATE 2019-02-04 / SCALE: 1:2000 / DWG NO. FIGURE 1

INTERPRETATION & USE OF STUDY AND REPORT

1. STANDARD OF CARE

This study and Report have been prepared in accordance with generally accepted engineering consulting practices in this area. No other warranty, expressed or implied, is made. Engineering studies and reports do not include environmental consulting unless specifically stated in the engineering report.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report which is of a summary nature and is not intended to stand alone without reference to the instructions given to us by the Client, communications between us and the Client, and to any other reports, writings, proposals or documents prepared by us for the Client relative to the specific site described herein, all of which constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF THE REPORT

The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose that were described to us by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alteration to or variation from any of the said descriptions provided to us unless we are specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT OUR WRITTEN CONSENT. WE WILL CONSENT TO ANY REASONABLE REQUEST BY THE CLIENT TO APPROVE THE USE OF THIS REPORT BY OTHER PARTIES AS “APPROVED USERS”. The contents of the Report remain our copyright property and we authorise only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of the Report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make the Report, or any portion thereof, available to any party without our written permission. Any use which a third party makes of the Report, or any portion of the Report, are the sole responsibility of such third parties. We accept no responsibility for damages suffered by any third party resulting from unauthorised use of the Report.

5. INTERPRETATION OF THE REPORT

a. Nature and Exactness of Descriptions: Classification and identification of soils, rocks, geological units, contaminant materials, building envelopment assessments, and engineering estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations, or building envelope descriptions, utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarising such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b. Reliance on Provided information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

c. To avoid misunderstandings, EXP Services Inc. (EXP) should be retained to work with the other design professionals to explain relevant engineering findings and to review their plans, drawings, and specifications relative to engineering issues pertaining to consulting services provided by EXP. Further, EXP should be retained to provide field reviews during the construction, consistent with building codes guidelines and generally accepted practices. Where applicable, the field services recommended for the project are the minimum necessary to ascertain that the Contractor’s work is being carried out in general conformity with EXP’s recommendations. Any reduction from the level of services normally recommended will result in EXP providing qualified opinions regarding adequacy of the work.

6.0 ALTERNATE REPORT FORMAT

When EXP submits both electronic file and hard copies of reports, drawings and other documents and deliverables (EXP’s instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by EXP shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by EXP shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of EXP’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EXP. The Client warrants that EXP’s instruments of professional service will be used only and exactly as submitted by EXP.

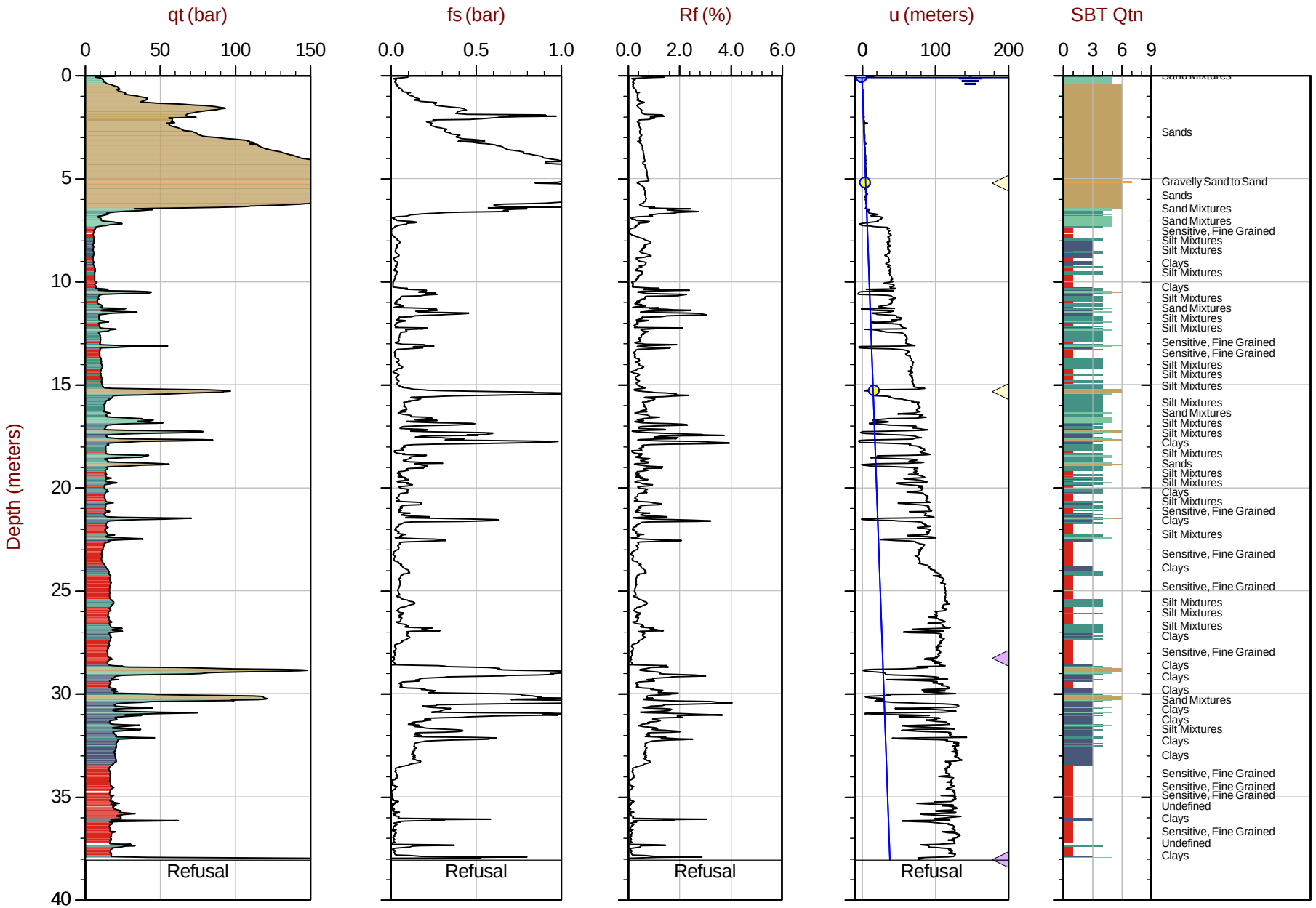
The Client recognizes and agrees that electronic files submitted by EXP have been prepared and submitted using specific software and hardware systems. EXP makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

CONETEC

EXP Services Inc.

Job No: 19-02006
Date: 2019-01-23 23:19
Site: White Rock, BC

Sounding: CPT19-01
Cone: 181:T1500F15U500



Max Depth: 38.075 m / 124.92 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 19-02006_CP01.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM 10 N N: 5429608 m E: 514207 m
Sheet No: 1 of 1

Overplot Item: Ueq, Assumed Ueq, Dissipation, Ueq achieved, Dissipation, Ueq not achieved, Dissipation, Ueq assumed, Hydrostatic Line

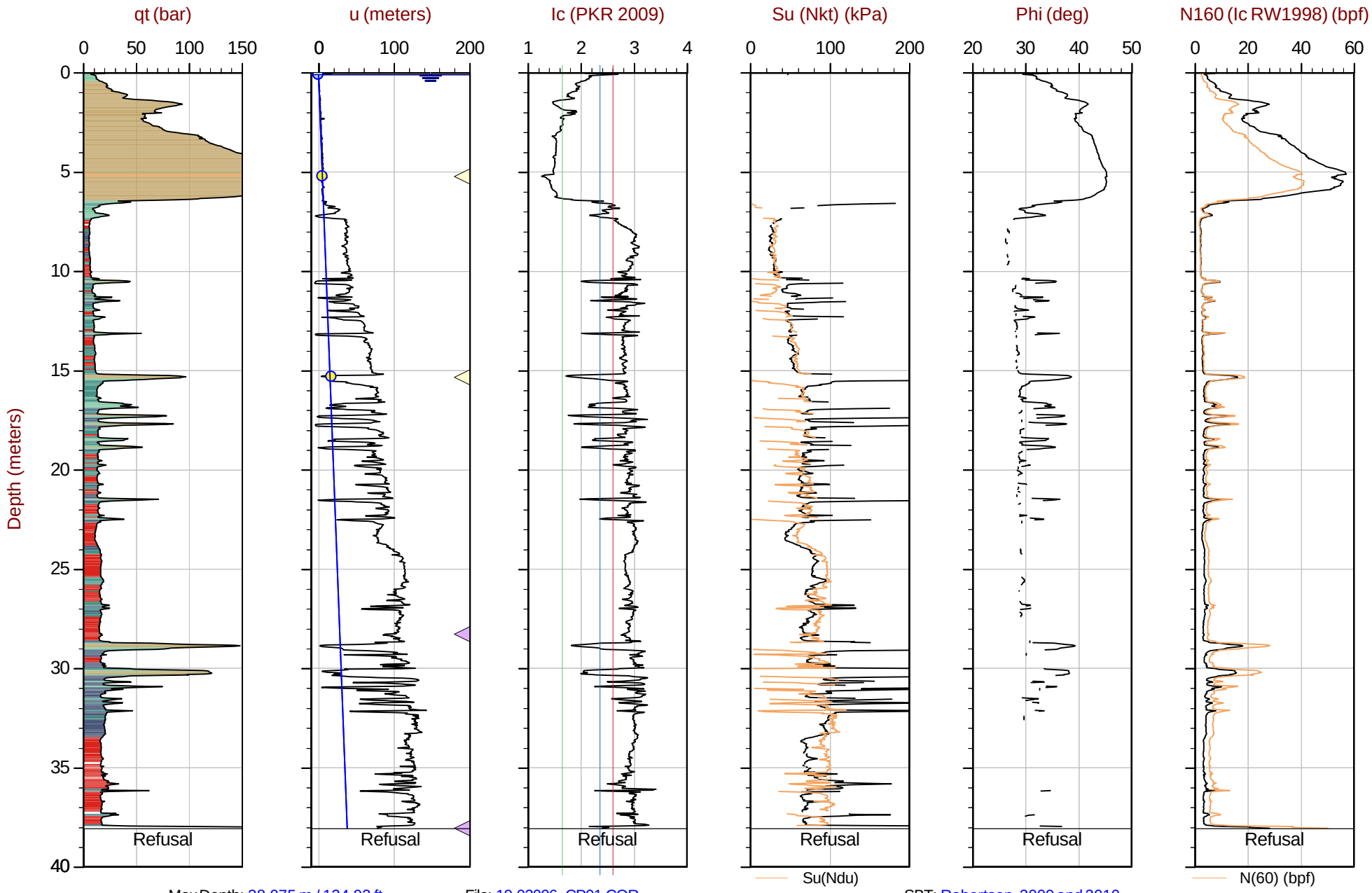
The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

EXP Services Inc.

Job No: 19-02006
Date: 2019-01-23 23:19
Site: White Rock, BC

Sounding: CPT19-01
Cone: 181:T1500F15U500



Max Depth: 38.075 m / 124.92 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 19-02006_CP01.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 15.0 / 9.0

SBT: Robertson, 2009 and 2010
Coords: UTM 10 N N: 5429608m E: 514207m
Sheet No: 1 of 1

Overplot Item: Ueq, Assumed Ueq, Dissipation, Ueq achieved, Dissipation, Ueq not achieved, Dissipation, Ueq assumed, Hydrostatic Line

The reported coordinates were acquired from consumer grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Appendix 2
Permitting Letter of Advice (to come)

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

Appendix 3
Drawings

Tel +1 604 770 4787 351 Bewicke Avenue North Vancouver, BC Canada V7M 3E9

WHITE ROCK PIER RECONSTRUCTION

DRAWING LIST

DRAWING NO.	DESCRIPTION
1180031–00–0100	COVER SHEET AND DRAWING LIST
1180031–00–0101	DESIGN CRITERIA AND GENERAL NOTES
1180031–00–0102	EXISTING SITE PLAN
1180031–00–0103	DEMOLITION PLAN
1180031–00–0104	GENERAL ARRANGEMENT – PLAN
1180031–00–0105	GENERAL ARRANGEMENT – SECTIONS
1180031–00–0110	PILE PLAN
1180031–00–0111	PILE LIST AND DETAILS
1180031–00–0112	PRECAST PILE CAP PLAN
1180031–00–0113	PRECAST PILE CAP DETAILS
1180031–00–0114	PRECAST SLAB PLAN
1180031–00–0115	PRECAST SLAB DETAILS
1180031–00–0116	TIMBER DECKING AND HANDRAILS
1180031–00–0150	UTILITIES AND SERVICES – GENERAL ARRANGEMENT AND DETAILS
1180031–00–0200	TIMBER REPAIRS – PLAN
1180031–00–0201	TIMBER REPAIRS – DETAILS

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 7:12pm

Filename: C:\Jarelco\Engineering\Westmar\2019\1180031-WhiteRockPierReconstruction\1180031-00-0100.dwg – 00-0100
Last Saved: Feb. 25/19 7:12pm Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

ISSUE / REVISIONS

MGR

CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

TITLE: COVER SHEET AND DRAWING LIST

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
NONE	1180031	00–0100	P2

DESIGN CRITERIA:

1.0 DESIGN STANDARDS:

DESIGN OF THE WHITE ROCK PIER RECONSTRUCTION IS IN ACCORDANCE THE FOLLOWING CODES AND STANDARDS:

–BRITISH COLUMBIA BUILDING CODE 2018
–CSA A23.3–14: DESIGN OF CONCRETE STRUCTURES
–CSA S16–16: DESIGN OF STEEL STRUCTURES
–CSA O86.1–14: ENGINEERING DESIGN IN WOOD
–CSA W59–13: WELDED STEEL CONSTRUCTION (METAL ARC WELDING)
–CAN/CSA S6–14: CANADIAN HIGHWAY BRIDGE DESIGN CODE
–CANADIAN FOUNDATION ENGINEERING MANUAL 2006

2.0 DESIGN SERVICE LIFE

2.1 A DESIGN LIFE OF 50 YEARS IS USED IN ESTABLISHING DURABILITY CRITERIA FOR THE WHITE ROCK PIER RECONSTRUCTION. THE DESIGN LIFE IS SUBJECT TO PERIODIC INSPECTION AND MAINTENANCE OF THE STRUCTURE AS REQUIRED.

3.0 PROJECT DATUM AND TIDE ELEVATIONS

3.1 ALL ELEVATIONS ARE IN METERS AND REFERENCED TO HYDROGRAPHIC (TIDE AND CHART) DATUM.

3.2 TIDAL ELEVATIONS FOR WHITE ROCK AS PUBLISHED BY THE CANADIAN HYDROGRAPHIC SERVICE IS AS FOLLOWS:

HIGHER HIGH WATER LEVEL (LARGE TIDE):	4.6m
HIGHER HIGH WATER LEVEL (MEAN TIDE):	4.1m
MEAN WATER LEVEL (MWL):	2.8m
HIGHER HIGH WATER LEVEL (LARGE TIDE):	1.1m
HIGHER HIGH WATER LEVEL (MEAN TIDE):	0.0m

4.0 WIND

4.1 ONE HOUR–AVERAGE HOURLY WIND PRESSURES AND VELOCITIES AS PUBLISHED IN THE BC BUILDING CODE ARE AS FOLLOWS:

	1 IN 10 YEARS	1 IN 50 YEARS
ONE–HOUR WIND SPEED (M/S)	22.9	26.1
ONE–HOUR WIND PRESSURE (KPA))	0.34	0.44

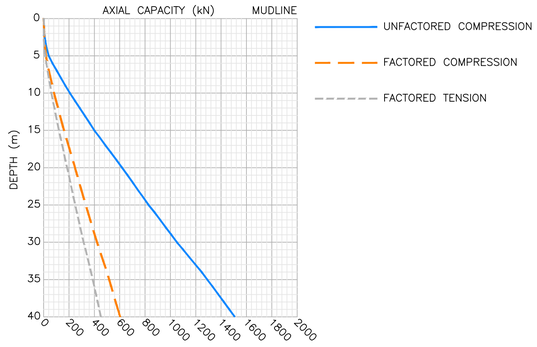
5.0 SNOW

5.1 SNOW LOADS FOR WHITE ROCK AS PUBLISHED IN THE BC BUILDING CODE ARE AS FOLLOWS:
Ss: 2.0 KPA
Sr: 0.2 KPA

5.0 GEOTECHNICAL CONDITIONS

5.1 THE DESIGN OF THE PILE FOUNDATIONS IS BASED ON THE RECOMMENDATIONS BY EXP SERVICES INC.

5.2 ALLOWABLE PILE CAPACITIES FOR 356 DIAMETER OPEN ENDED STEEL PIPE PILES ARE AS SHOWN IN THE CHART BELOW:



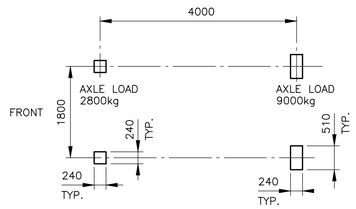
6.0 DESIGN LOADS

6.1 DEAD LOAD
THE DEAD LOAD INCLUDES THE WEIGHT OF ALL MATERIALS OF CONSTRUCTION.

6.2 LIVE LOAD

UNIFORMLY DISTRIBUTED LIVE LOAD DUE TO ASSEMBLY: 4.8 KPA

VEHICLE LOAD – AMBULANCE:



GENERAL NOTES:

1.0 GENERAL

1.1 DETAILED REQUIREMENTS FOR MATERIALS, FABRICATION AND INSTALLATION ARE DESCRIBED IN THE CONTRACT DOCUMENTS. FOR CONVENIENCE, CERTAIN EXTRACTS ARE REPRODUCED BELOW. ANY DISCREPENCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSULTANT IMMEDIATELY.

1.2 ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

1.3 THE DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES INDICATED ON THE DRAWINGS ARE BASED ON REFERENCE INFORMATION. THESE DIMENSIONS AND ELEVATIONS ARE THEREFORE SUBJECT TO VARIATIONS. THE CONTACTOR SHALL FIELD VERIFY CRITICAL DIMENSIONS PRIOR TO FABRICATION OR PROCUREMENT OF MATERIAL.

1.4 ITEMS THAT ARE INCIDENTAL TO THE WORK SUCH AS BUT NOT LIMITED TO TEMPORARY REMOVAL AND REINSTATEMENT OF HARDWARE, TIMBER, WATERMAINS, ELECTRICAL CONDUITS AND OTHER MISCELLANEOUS ITEMS SHALL BE INCLUDED IN THE CONTRACTOR'S PRICING.

1.5 ALL SECURING HARDWARE REQUIRED TO BE REMOVED TO ALLOW FOR INSTALLATION OF THE WORK SHALL BE REINSTATED AS ORIGINAL, UNLESS NOTED OTHERWISE OR AS APPROVED BY THE CONSULTANT.

1.6 THE STRUCTURES DEPICTED ON THE DRAWINGS ARE BASED ON ORIGINAL CONSTRUCTION DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE IF ANY MODIFICATIONS THAT HAVE BEEN MADE TO THE ORIGINAL STRUCTURES WILL MAKE INSTALLATION MORE DIFFICULT THAN SHOWN. CONTRACTOR SHALL SEEK APPROVAL FROM THE CONSULTANT PRIOR TO PROCEEDING WITH ANY WORK CONSIDERED BY THE CONTRACTOR TO BE MORE DIFFICULT AS A RESULT OF MODIFICATIONS FOUND ON SITE BUT NOT SHOWN ON THE DRAWINGS. NO COMPENSATION SHALL BE GIVEN FOR FAILURE TO DO SO.

2.0 DEMOLITION AND CLEAN UP

2.1 TAKE ALL NECESSARY PRECAUTIONS TO CONTAIN THE DEMOLITION WITHIN THE LIMITS DESIGNATED. THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE TO EXISTING STRUTCURES.

2.2 ANY DAMAGE INCURRED IN THE EXECUTION OF THE WORK TO ANY PART OF THE PROPERTY OR STRUCTURE NOT SPECIFICALLY DESIGNATED FOR DEMOLITION SHALL BE REPAIRED, REPLACED AND/OR RECONSTRUCTED BY THE CONTRACTOR.

2.3 REMOVE AND DISPOSE OF ALL DEMOLISHED MATERIAL OFF SITE IN ACCORDANCE WITH ALL MUNICIPAL, PROVINCIAL AND FEDERAL REGULATIONS.

2.4 UPON COMPLETION OF THE WORK, REMOVE ALL DEBRIS AND SURPLUS MATERIAL FROM SITE. LEAVE THE WORK AREA IN A CLEAN AND NEAT CONDITION TO THE SATISFACTION OF THE CONSULTANT.

3.0 STEEL PIPE PILES

3.1 FABRICATE AND SUPPLY PILES AS SHOWN ON THE DRAWINGS USING STEEL PIPE CONFORMING TO CSA Z245.1 GRADE 290, SUPPLIED BY THE CITY.

3.2 ALL PIPE SPLICES SHALL BE FULL PENETRATION WELDS IN ACCORDANCE WITH THE SPECIFICATIONS.

3.3 PAINT AND TOUCH UP PILES IN ACCORDANCE WITH THE SPECIFICATIONS.

3.4 PILES SHALL BE DRIVEN TO THE MINIMUM EMBEDMENTS INDICATED AND THE FINAL SET SPECIFIED BY THE GEOTECHNICAL CONSULTANT. ENSURE PILES ARE NOT OVERDRIVEN CAUSING DAMAGE TO THE PILE ENDS.

4.0 CONCRETE REINFORCING

4.1 REINFORCING STEEL SHALL BE BILLET STEEL DEFORMED BARS CONFORMING TO CAN/CSA G30.1 B, GRADE 400W.

4.2 NO MORE THAN 50% OF THE LONGITUDINAL REINFORCING IN THE PILE CAPS AND SLABS SHALL BE SPLICED AT THE SAME LOCATION. ADJACENT BARS SHALL NOT BE SPLICED AT THE SAME LOCATION.

4.3 MINIMUM LAP LENGTH FOR ANY REINFORCING SPLICES SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

BAR SIZE	BARS OTHER THAN TOP BARS	TOP BARS*
10M	400mm	500mm
15M	500mm	650mm
20M	700mm	850mm
25M	1100mm	1300mm

*TOP BARS ARE DEFINED AS BARS WITH AT LEAST 300mm OF CONCRETE CAST BELOW.

4.4 REINFORCEMENT ABREVIATIONS:
H2E –HOOK 2 ENDS, STANDARD HOOK
H2E450 –HOOK 2 ENDS, 450 LONG HOOK
H1E –HOOK 1 END, STANDARD HOOK
H1E450 –HOOK 1 END, 450 LONG HOOK

5.0 CONCRETE

5.1 CONCRETE MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO CAN/CSA A23.1

5.2 CONCRETE SHALL BE EXPOSURE CLASS C–1 AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 45 MPA AT 28 DAYS, UNLESS NOTED OTHERWISE.

5.3 GROUT SHALL BE CEMENTITIOUS NON–SHRINK GROUT WITH MINIMUM COMPRESSIVE STRENGTH OF 50 MPA AT 7 DAYS UNLESS NOTED OTHERWISE. SUBMIT PROPOSED PRODUCT FOR APPROVAL BY THE CONSULTANT.

5.4 CLEAR COVER TO REINFORCING STEEL SHALL BE AS FOLLOWS:

UNDERSIDE OF CONCRETE ELEMENTS: 75mm
ALL OTHER SURFACES: 50mm

5.5 PROVIDE 25mm CHAMFERS ALONG ALL EXPOSED EDGES AND 25mm FILLETS AT RE–ENTRANT CORNERS UNLESS OTHERWISE NOTED.

6.0 STRUCTURAL STEEL

6.1 FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16

6.2 STRUCTURAL STEEL (PIPE NOT INCLUDED) SHALL CONFORM TO CAN/CSA G40.21 WITH THE FOLLOWING GRADES, UNLESS NOTED OTHERWISE ON THE DRAWINGS:

ROLLED SECTIONS AND PLATE: 300W

6.3 STRUCTURAL STEEL PIPES SHALL CONFORM TO CSA 2245.1 GRADE 290, AS SHOWN ON THE DRAWINGS.

6.4 MISCELLANEOUS PIPE FOR METAL FABRICATIONS SHALL CONFORM TO ASTM 53, GRADE B.

6.5 WELDING SHALL BE IN ACCORDANCE WITH CAN/CSA W59.

6.6 WELDING ELECTRODES SHALL BE GRADE E49XX (E70XX).

6.7 UNLESS NOTED OTHERWISE, MIMIMUM WELD SHALL BE 6mm FILLET WELD. ALL WELDS SHALL BE SEAL WELDS.

6.8 ALL STRUCTURAL STEEL SHALL BE COATED IN ACCORDANCE WITH THE SPECIFICATIONS. BOLTS, NUTS AND WASHERS SHALL BE HOT–DIP GALVANIZED AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A325, TYPE 1 OF NORTH AMERICAN OR EUROPEAN MANUFACTURE ONLY UNLESS NOTED OTHERWISE ON THE DRAWINGS.

6.9 BOLTS, NUTS, AND WASHERS THROUGH TIMBER SHALL CONFORM TO ASTM A307, GRADE A.

6.10 LAG SCREWS SHALL CONFORM TO CSA B34.

6.11 DRIFT PINS SHALL CONFORM TO CSA G40.21 GRADE 260W.

6.12 ALL MISCELLANEOUS METAL AND FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123/A123M UNLESS NOTED OTHERWISE.

7.0 TIMBER

7.1 TIMBER SIZES INDICATED ON THE DRAWING ARE DRESSED SIZES, UNLESS NOTED OTHERWISE.

7.2 ALL SAWN LUMBER SHALL BE COAST DOUGLAS FIR SELECT STRUCTURAL GRADE, AND UNLESS SPECIFIED OTHERWISE, SHALL BE PROPERLY AIR–DRIED AND SEASONED, CONTAINING NOT MORE THAN 20% MOISTURE

7.3 ALL TIMBER, EXCEPT DECKING, GUARDRAILS AND HANDRAILS, SHALL BE GIVEN ACZA TREATMENT IN ACCORDANCE WITH O80, USE CATEGORY 4.2, UNLESS SPECIFIED OTHERWISE

7.4 DECKING, GUARDRAILS AND HANDRAILS, SHALL BE GIVEN PRESERVATIVE TREATMENT IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONNS.

7.5 ALL TIMBER SHALL BE CUT TO REQUIRED LENGTH PRIOR TO PRESERVATIVE TREATMENT, FIELD CUT TIMBER WILL BE REJECTED AND REPLACED AT THE CONTRACTOR'S EXPENSE UNLESS FIELD CUT HAS BEEN PRE–APPROVED BY THE CONSULTANT.

8.0 TIMBER PILES

8.1 TIMBER PILES SHALL BE COAST DOUGLAS FIR IN ACCORDANCE WITH CSA 056 CLEAN PEELED WITH MINIMUM 25mm SAPWOOD. MINIMUM SIZE 15.0m BY 30 (#12) WITH TIP DIAMETER RELATED TO LENGTH AS INDICATED IN TABLE A1 OF CSA 056.

8.2 PILES SHALL BE GIVEN ACZA TREATMENT IN ACCORDANCE WITH CSA O80 FOR SALT WATER MARINE EXPOSURE, USE CATEGORY 5A UNLESS NOTED OTHERWISE.

8.3 AFTER CUT–OFF, THE TOPS OF ALL TIMBER PILES SHALL BE TREATED WITH TWO COATS OF SALT PRESERVATIVE TREATMENT. IN ADDITION THE TOPS OF ALL PILES SHALL BE COVERED WITH A SHEET OF 22 GAUGE ANNEALED CORROSION RESISTANT ALUMINUM CUT 150mm LARGER THAN THE DIAMETER OF THE PILE TOP. THE OVERHANGING EDGES SHALL BE CRIMPED AND TURNED DOWN AND SECURED TO THE PILE WITH EIGHT ALUMINUM ROOFING NAILS. THE SHEET SHALL NOT BE CUT TO FACILITATE FITTING.

8.4 HANDLE ALL TREATED PILES WITH CARE TO AVOID BREAKING THROUGH THE TREATED SURFACE. TREAT ALL CUTS OR BREAKS WITH TWO COATS OF SALT PRESERVATIVE TREATMENT.

8.5 BAND HEADS OF PILES WITH STEEL OR WIRE MESH TO PREVENT SPLITTING DURING HARD DRIVING.

8.6 UPON COMPLETION OF WORK TREAT ALL CUTS OR BREAKS IN NEW TIMBER WITH TWO COATS OF SPECIFIED TREATMENT. CHECK THAT ALL BOLTS AND NUTS HAVE BEEN CORRECTLY TIGHTENED.

8.7 TREAT ALL NEW BOLT HOLES WITH TWO COATS OF SALT PRESERVATIVE TREATMENT.

8.8 COAT ALL NEW DAPS OR COUNTERBORES IN TIMBER OR PILES WITH CREOSOTE AND FILL WITH MASTIC.

8.9 USE PLATE WASHERS UNDER HEADS AND NUTS OF BOLTS AGAINST TIMBER.

Filename: E:\Varelco\Engineering\Westmar\2019\1180031–WhiteRockPierReconstruction\1180031–00–0101.dwg – 00–0101
Last Saved: Feb. 26/19 1:53pm Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	DEL	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	DEL	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 26/19 1:53pm

MGR

CLIENT: WHITE ROCK City by the Sea!

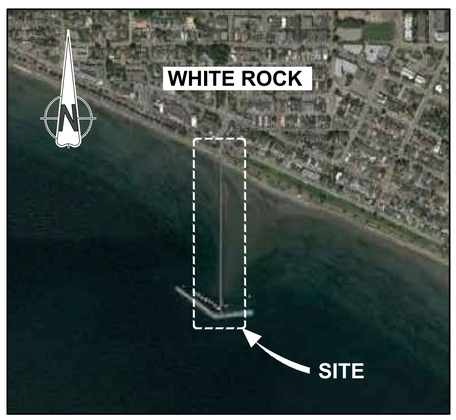
PROJECT: WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

TITLE: DESIGN CRITERIA AND GENERAL NOTES

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0101	P2

EXISTING SITE PLAN
1:750



KEY PLAN

m 0 10 20 30 40 m
1:750

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 7:13pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031-00-0101.
2. DIMENSIONS INDICATED WITH "*" ARE BASED ON REFERENCE INFORMATION AND SATELLITE IMAGERY.

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	DEL	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

MGR

CLIENT
WHITE ROCK
City by the Sea!

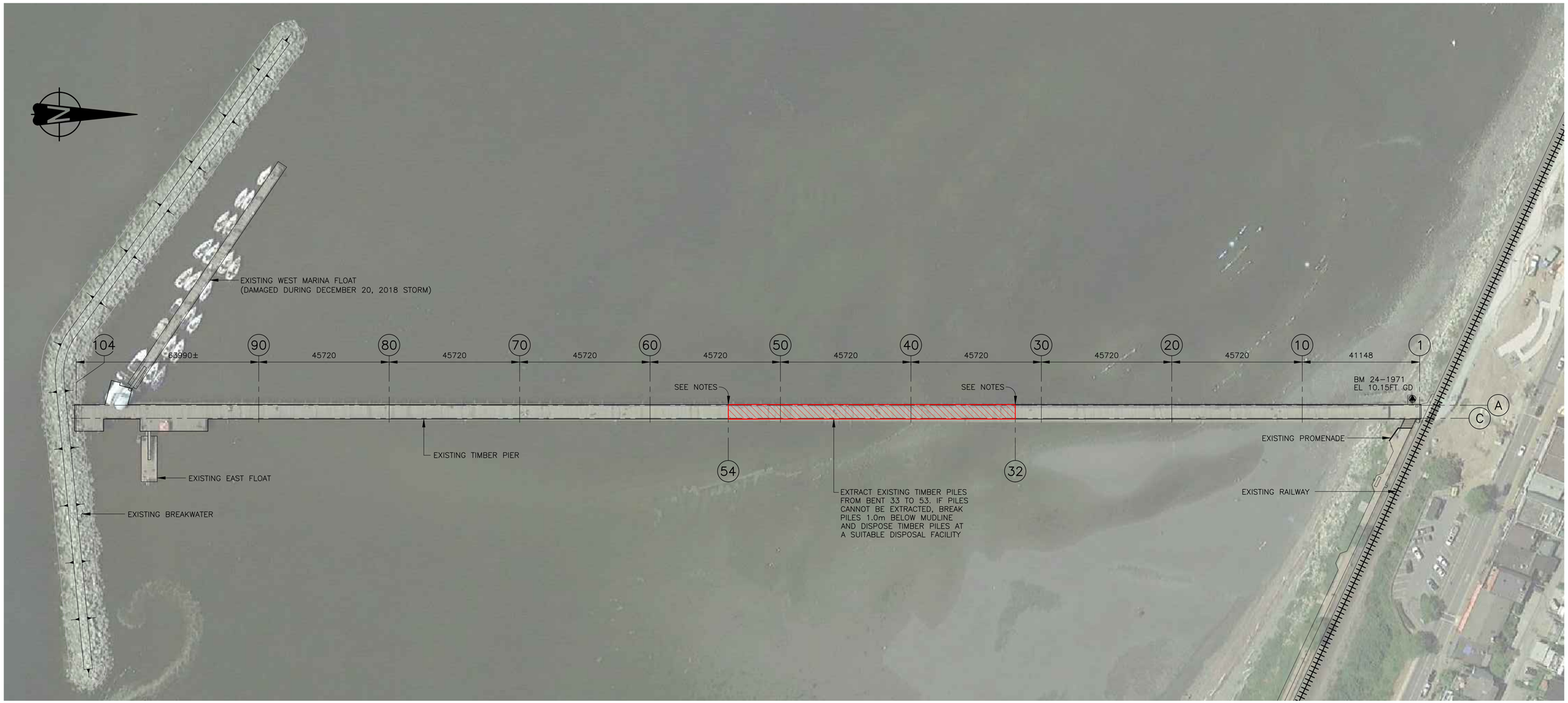
PROJECT
WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

TITLE
EXISTING SITE PLAN

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00-0102	P2

Filename: G:\Jarelco\Engineering\Westmar\2019\1180031-WhiteRockPierReconstruction\1180031-00-0102.dwg
Last Saved: Feb. 25/19 7:13pm Plotted: Feb. 26/19



DEMOLITION PLAN
1:750

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 7:15pm

LEGEND:

AREA OF DEMOLITION

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031-00-0101.
2. CUT EXISTING TIMBER DECK BETWEEN BENT NUMBERS 32 AND 54. DISPOSE TIMBER ELEMENTS AT SUITABLE DISPOSAL FACILITY.

m 0 10 20 30 40 m
1:750

Filename: G:\Jarelco\Engineering\Westmar\2019\1180031-WhiteRockPierReconstruction\1180031-00-0103.dwg — 00-0103
Last Saved: Feb. 25/19 7:15pm Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

MGR

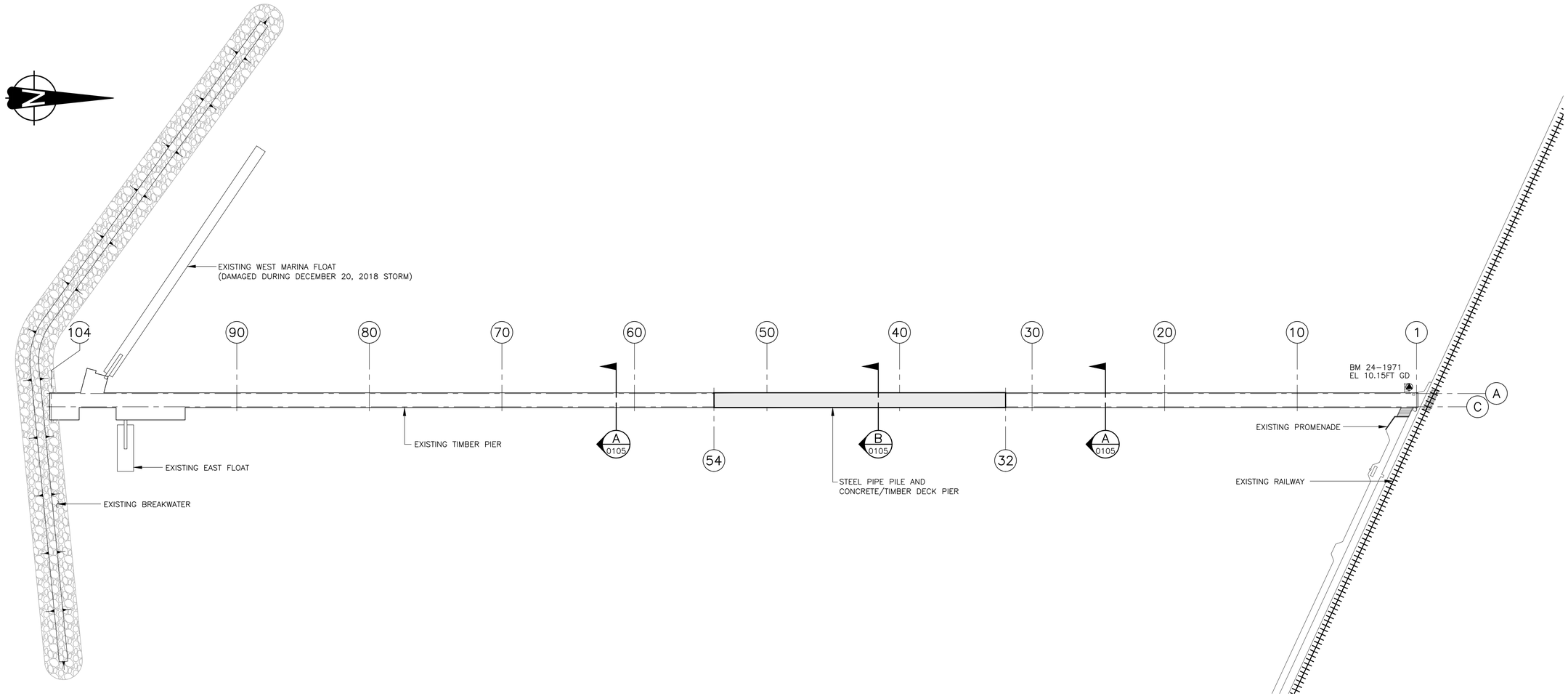
CLIENT
WHITE ROCK
City by the Sea!

PROJECT
WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

TITLE
DEMOLITION PLAN

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00-0103	P2



GENERAL ARRANGEMENT – PLAN
1:750

m 0 10 20 30 40 m
1:750

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 7:16pm

LEGEND:

AREA OF STEEL PIPE PILE AND CONCRETE/TIMBER DECK PIER

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031–00–0101.

Filename: G:\Jarelo\Engineering\Westmar\2019\1180031–WhiteRockPierReconstruction\1180031–00–0104.dwg – 00–0104
Last Saved: Feb. 25/19 7:16pm Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

MGR

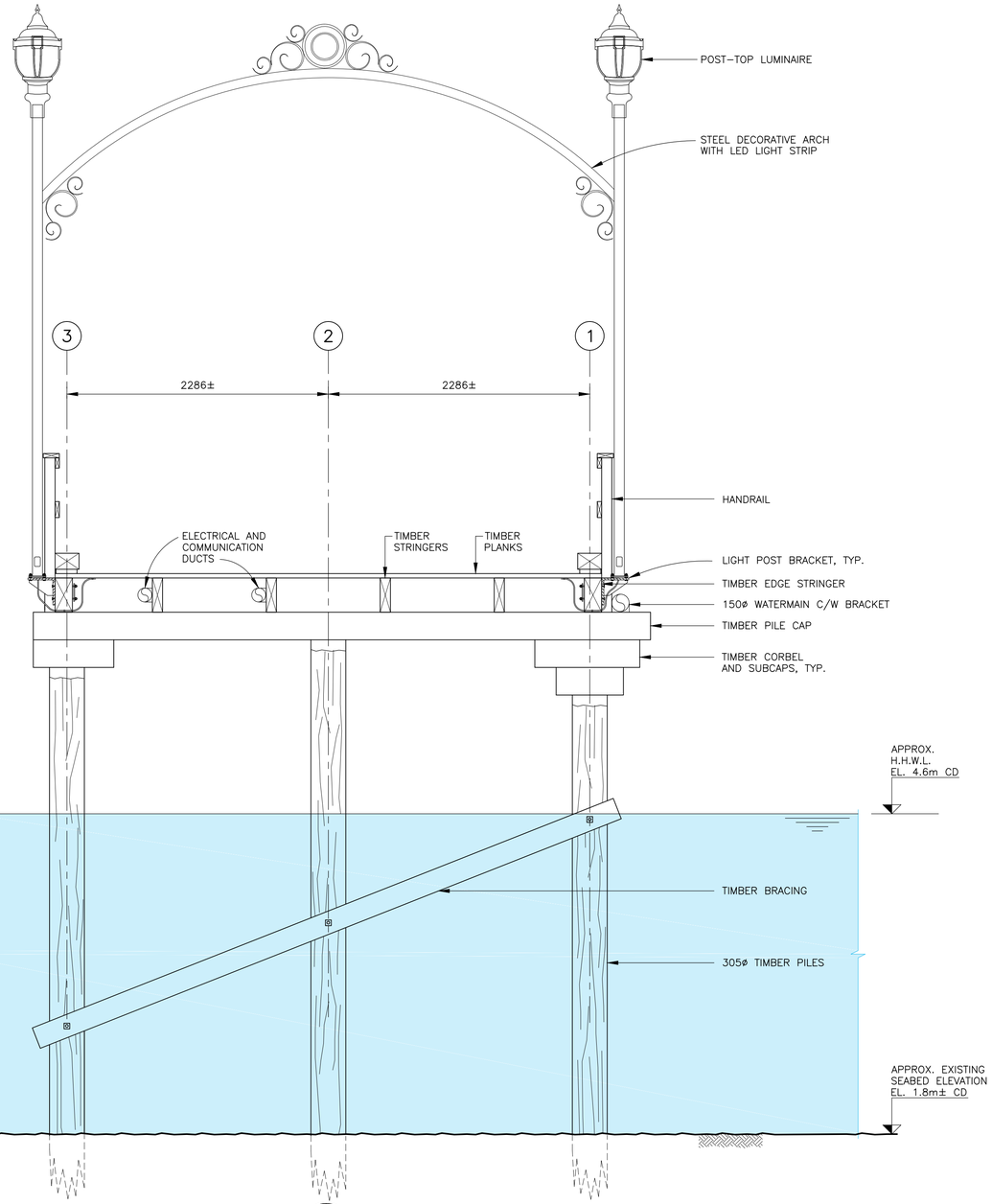
CLIENT
WHITE ROCK City by the Sea!

PROJECT
WHITE ROCK PIER RECONSTRUCTION

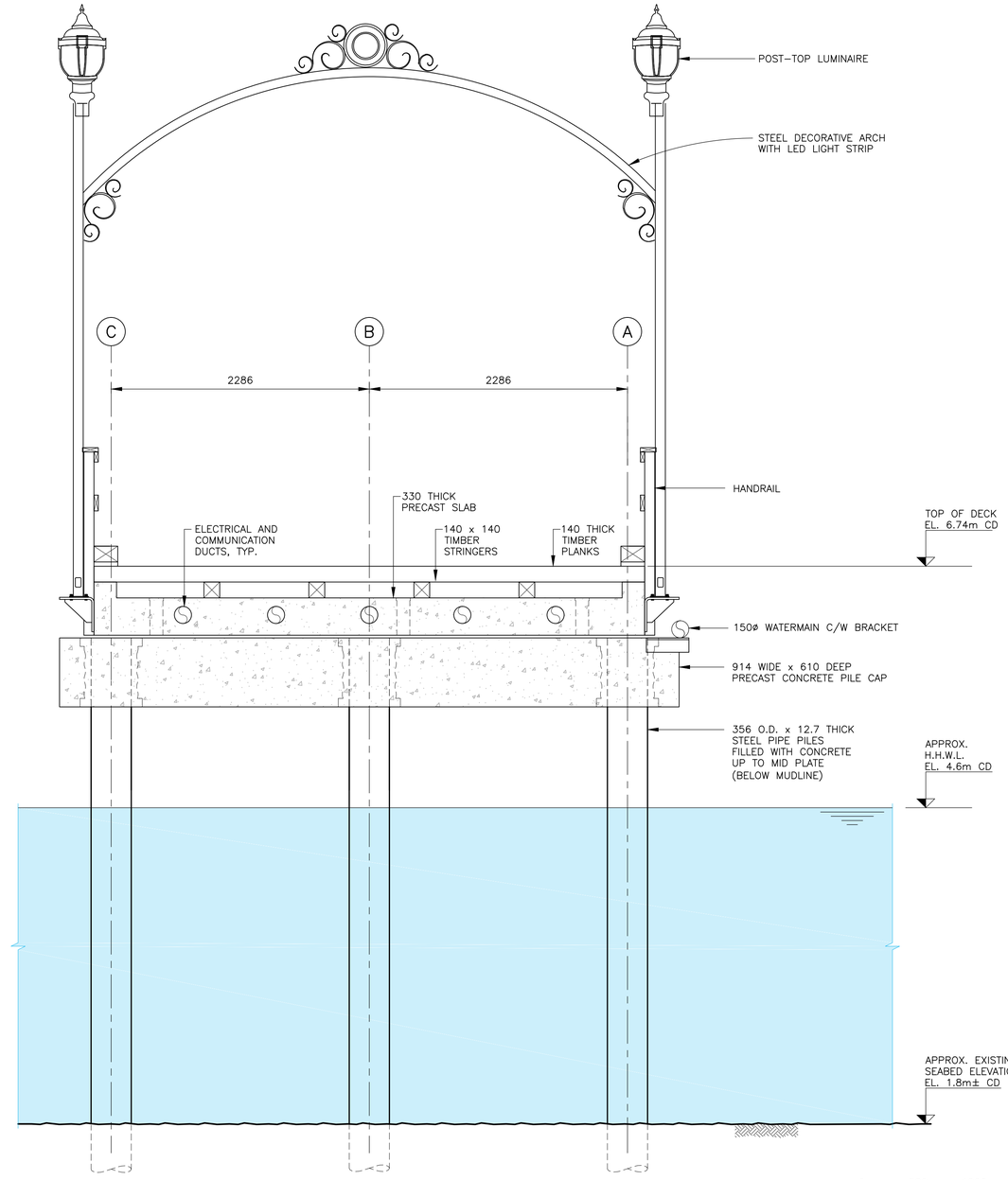
WESTMAR ADVISORS

TITLE
GENERAL ARRANGEMENT – PLAN

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0104	P2



SECTION A EXISTING TIMBER PIER (0104)
1:25



SECTION B STEEL PILE AND CONCRETE DECK PIER (0104)
1:25

mm 0 500 1000 1500 mm
1:25

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031–00–0101.

Filename: E:\Varelco\Engineering\Westmar\2019\1180031–WhiteRockPierReconstruction\1180031–00–0105.dwg – 00–0105
Last Saved: Feb. 26/19 8:40am Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 26/19 8:40am

MGR

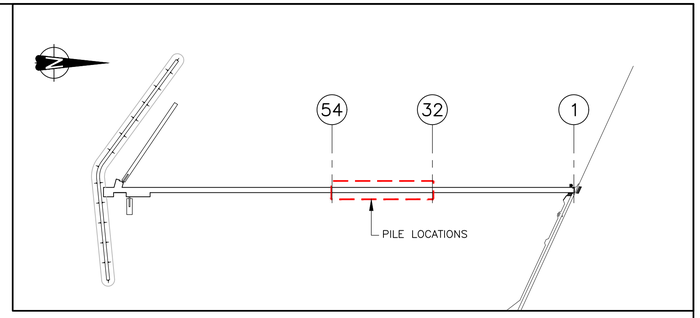
CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

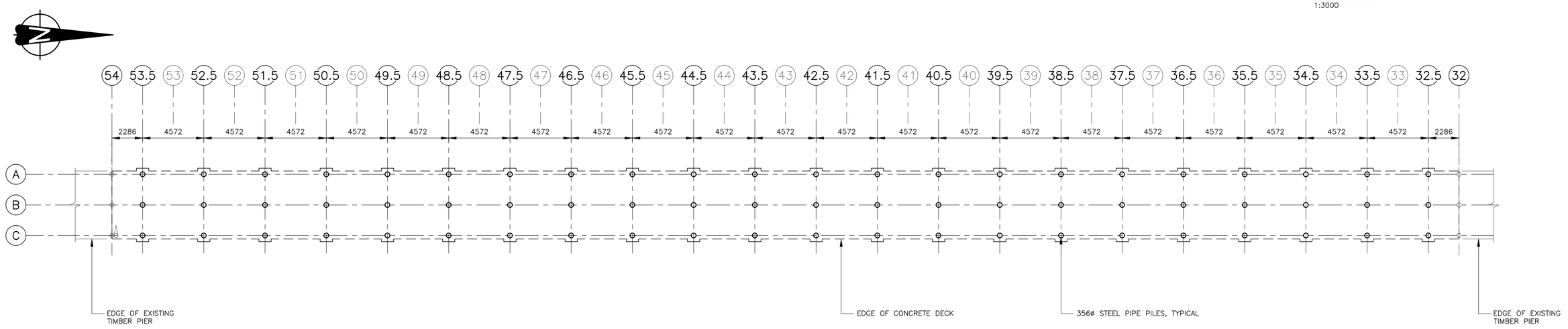
WESTMAR ADVISORS

TITLE: GENERAL ARRANGEMENT – SECTIONS

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0105	P2



KEY PLAN
1:3000



PILE PLAN
1:750

m 0 10 20 30 40 m
1:750

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 7:21pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031-00-0101.

Filename: G:\Jareto\Engineering\Westmar\2019\1180031-WhiteRockPierReconstruction\1180031-00-0110.dwg – 00-0110
Last Saved: Feb. 25/19 7:21pm Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

MGR

CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

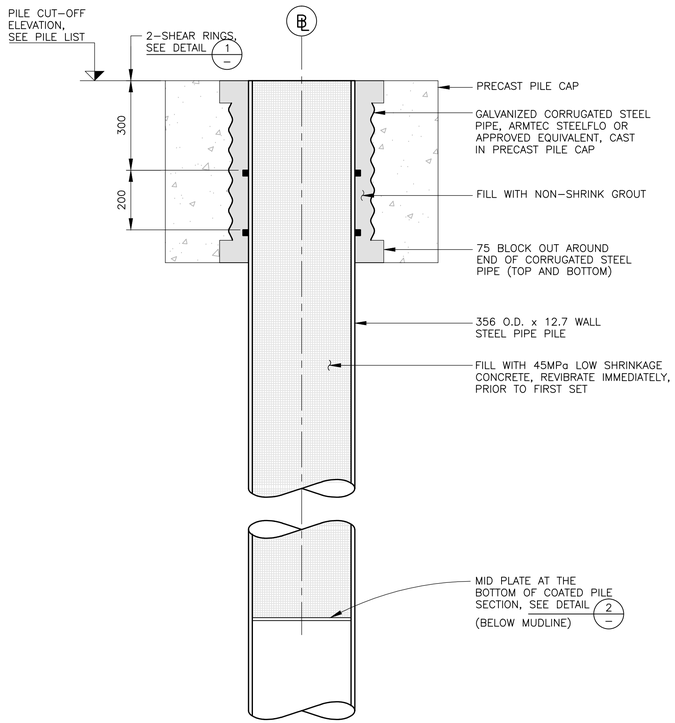
TITLE: PILE PLAN

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00-0110	P2

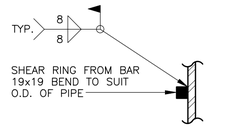
PILE LIST

PILE NUMBER	PILE SIZE (O.D. x WALL)	CUT–OFF * EL. (METRES)	ESTIMATED SEABED EL. (METRES)	ESTIMATED PILE TIP EL. (METRES)	ADDITIONAL ALLOWANCE (METRES)	MIN. COATED LENGTH (METRES)	ESTIMATED TOTAL LENGTH (METRES)	RECORD TIP EL. (METRES)	RECORD LENGTH EL. (METRES)
32.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
32.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
32.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
33.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
33.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
33.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
34.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
34.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
34.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
35.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
35.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
35.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
36.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
36.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
36.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
37.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
37.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
37.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
38.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
38.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
38.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
39.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
39.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
39.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
40.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
40.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
40.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
41.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
41.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
41.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
42.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
42.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
42.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
43.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
43.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
43.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
44.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
44.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
44.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
45.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
45.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
45.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
46.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
46.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
46.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
47.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
47.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
47.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
48.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
48.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
48.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
49.5–A	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
49.5–B	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
49.5–C	356 x 12.7	6.1	1.8	–23.2	1.7	8.0	31.0		
50.5–A	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
50.5–B	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
50.5–C	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
51.5–A	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
51.5–B	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
51.5–C	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
52.5–A	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
52.5–B	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
52.5–C	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
53.5–A	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
53.5–B	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		
53.5–C	356 x 12.7	6.1	1.5	–23.5	2.4	8.0	32.0		

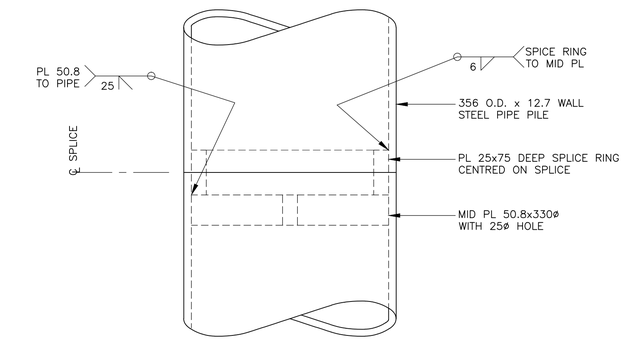
* PILE CUT–OFF ELEVATION TO BE ADJUSTED BY CONTRACTOR TO ENSURE NEW TOP OF DECK ELEVATION MATCHES EXISTING PIER TOP OF DECK ELEVATION.



PILE TO PILE CAP CONNECTION DETAIL
1:10



DETAIL 1/– SHEAR RING
1:5



DETAIL 2/–
1:5

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 26/19 8:42am

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031–00–0101.

Filename: E:\Varelco\Engineering\Westmar\2019\1180031–WhiteRockPierReconstruction\1180031–00–0111.dwg – 00–0111
Last Saved: Feb. 26/19 8:42am Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

MGR

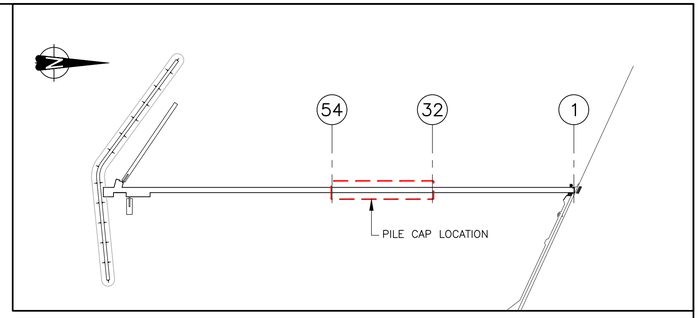
CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

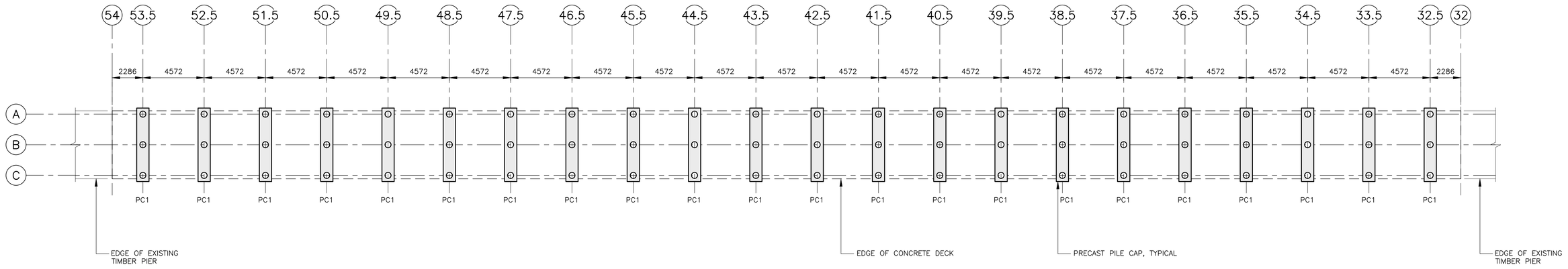
WESTMAR ADVISORS

TITLE: PILE LIST AND DETAILS

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0111	P2



KEY PLAN
1:3000



PRECAST PILE CAP PLAN
1:750

m 0 10 20 30 40 m
1:750

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 7:46pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031-00-0101.

Filename: C:\Jarelco\Engineering\Westmar\2019\1180031-WhiteRockPierReconstruction\1180031-00-0112.dwg – 00-0112
Last Saved: Feb. 25/19 7:46pm Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

MGR

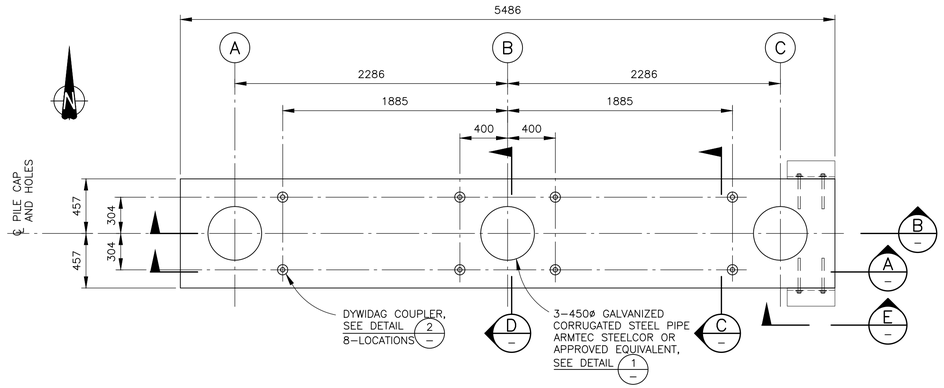
CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

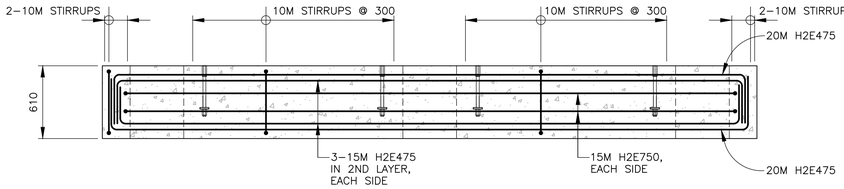
WESTMAR ADVISORS

TITLE: PRECAST PILE CAP PLAN

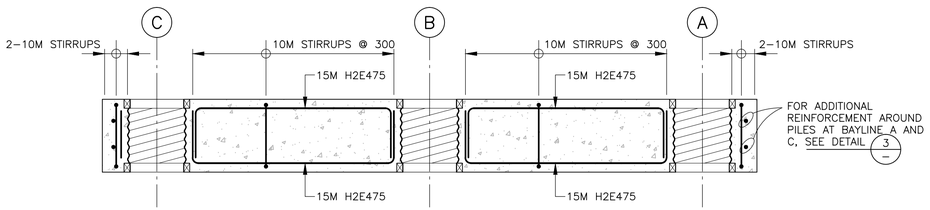
DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00-0112	P2



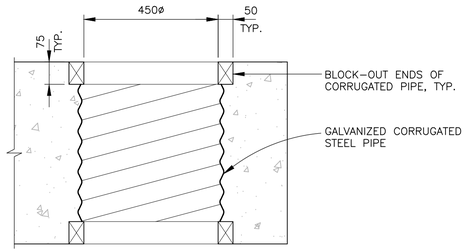
PLAN – PRECAST PILE CAP (PC1)
1:25



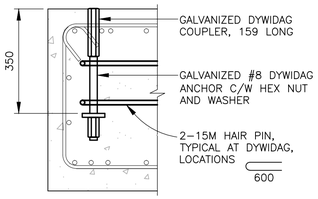
SECTION A
1:25



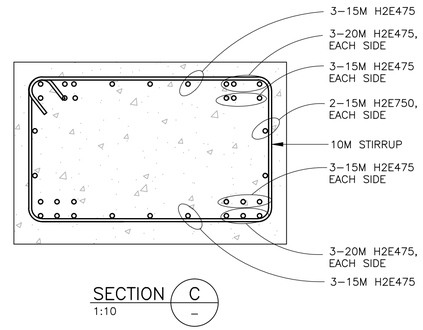
SECTION B
1:25



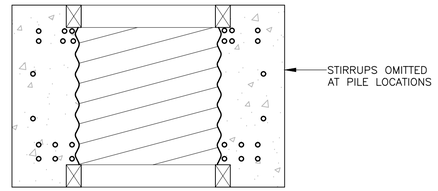
DETAIL 1
1:10



DETAIL 2
1:10

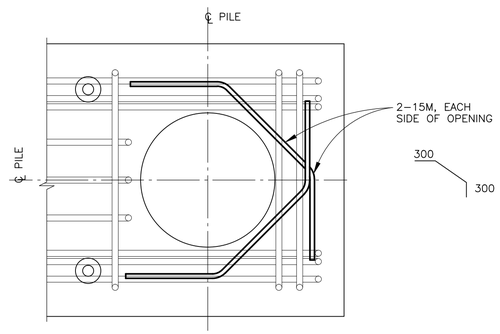


SECTION C
1:10

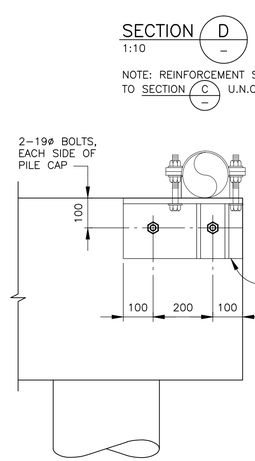


SECTION D
1:10

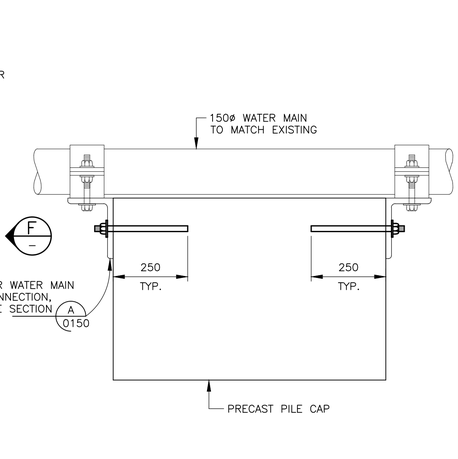
NOTE: REINFORCEMENT SIMILAR TO SECTION C U.N.O.



DETAIL 3
1:10



SECTION E
1:10



VIEW F
1:10

NOTE: WEST END OF PILE CAP ONLY

mm 0 100 200 300 400 500 mm

1:10

mm 0 500 1000 1500 mm

1:25

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 26/19 2:00pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031–00–0101.
2. CONTRACTOR TO CHECK PILE CAP FOR LIFTING AND HANDLING STRESSES. IF ADDITIONAL REINFORCEMENT IS REQUIRED, THIS SHALL BE DISCUSSED WITH THE CONSULTANT.

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

ISSUE / REVISIONS

MGR

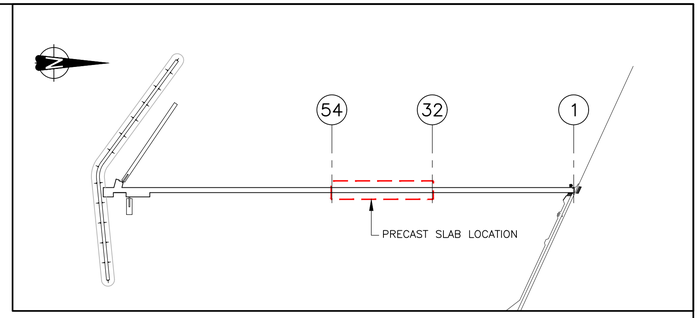
CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

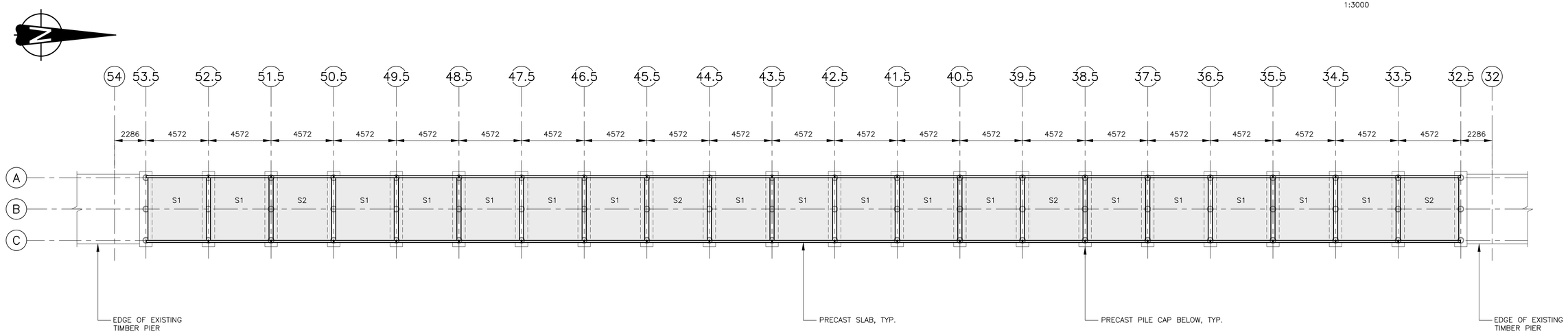
WESTMAR ADVISORS

TITLE: PRECAST PILE CAP DETAILS

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0113	P2



KEY PLAN
1:3000



PRECAST SLAB PLAN
1:750

m 0 10 20 30 40 m
1:750

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 9:20pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031-00-0101.

Filename: C:\Jarelco\Engineering\Westmar\2019\1180031-WhiteRockPierReconstruction\1180031-00-0114.dwg — 00-0114
Last Saved: Feb. 25/19 9:20pm Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D

ISSUE / REVISIONS

MGR

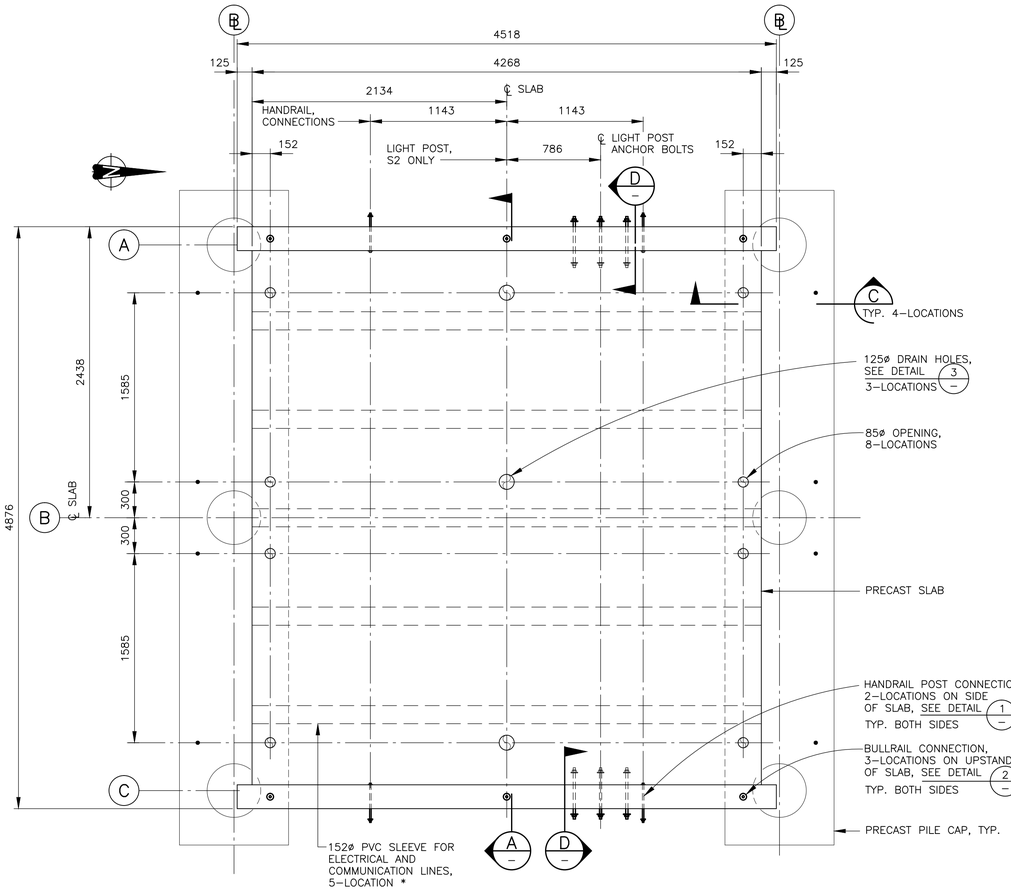
CLIENT
WHITE ROCK
City by the Sea!

PROJECT
WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

TITLE
PRECAST SLAB PLAN

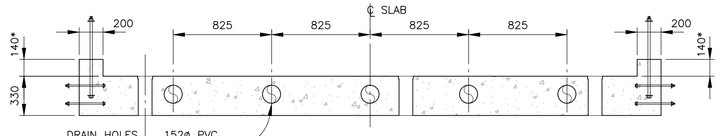
DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00-0114	P2



PLAN – PRECAST SLAB (S1 AND S2)

1:25

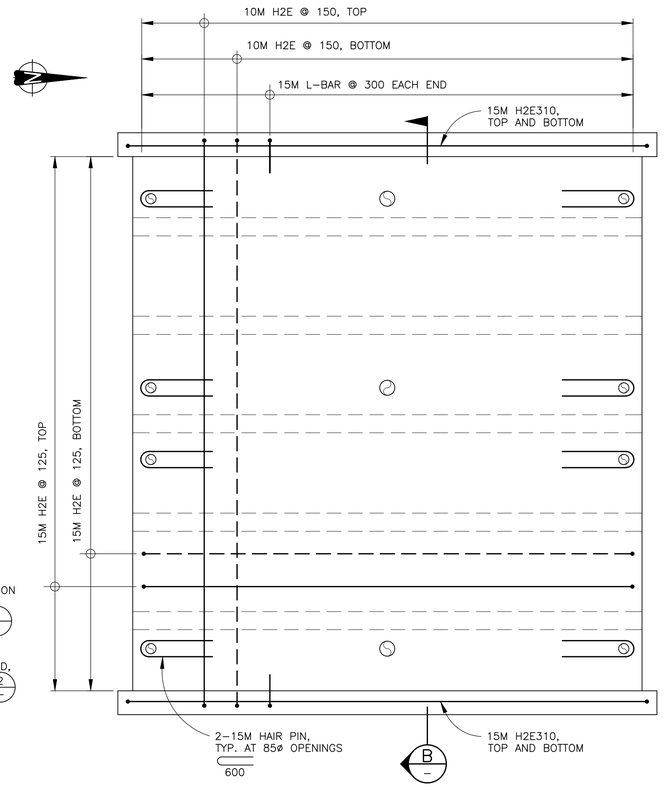
* EXTEND PVC SLEEVE 100 BEYOND ENDS OF PRECAST SLAB.



SECTION A

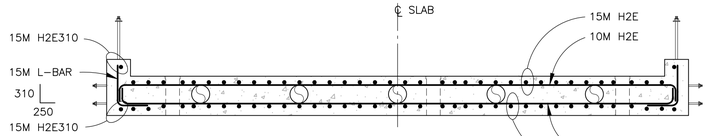
1:25

* HEIGHT OF UPSTAND TO MATCH ELEVATION OF TOP OF TIMBER STRINGERS.



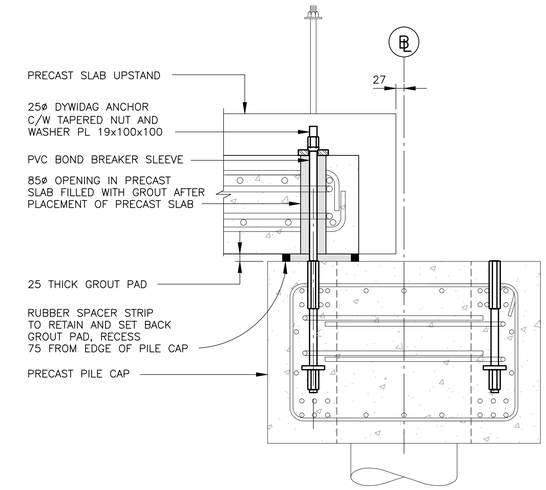
PLAN – REINFORCEMENT

1:25



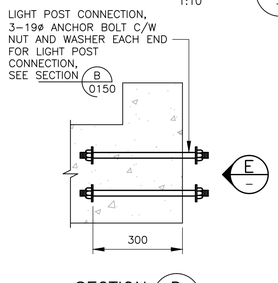
SECTION B

1:25



SECTION C SLAB TIE DOWN DETAIL

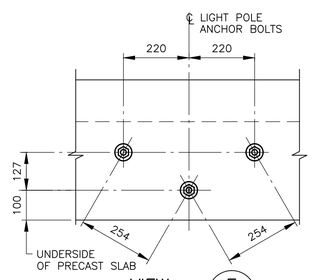
1:10



SECTION D

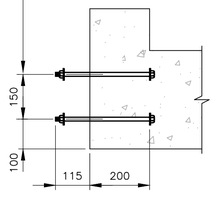
1:10

NOTE: S2 ONLY



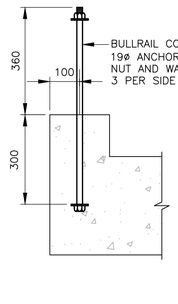
VIEW E

1:10



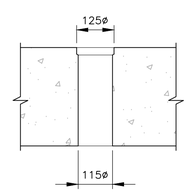
DETAIL 1

1:10



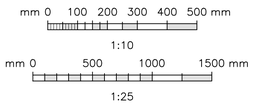
DETAIL 2

1:10



DETAIL 3 DRAIN

1:10



PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 26/19 2:15pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031–00–0101.
2. CONTRACTOR TO CHECK SLAB FOR LIFTING AND HANDLING STRESSES. IF ADDITIONAL REINFORCEMENT IS REQUIRED, THIS SHALL BE DISCUSSED WITH THE CONSULTANT.

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

MGR

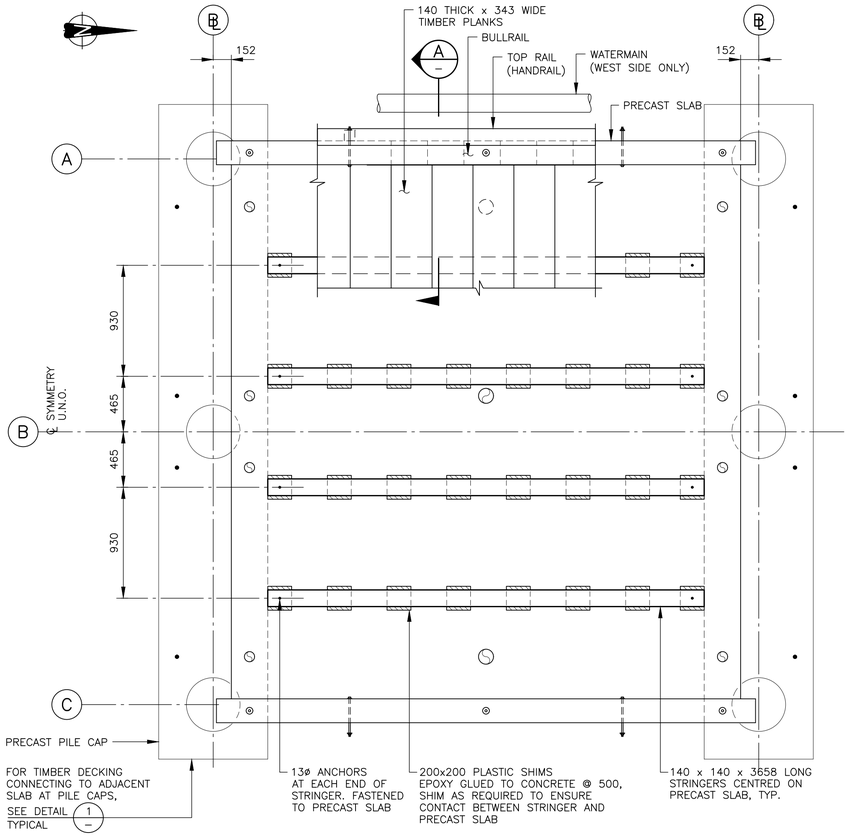
CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

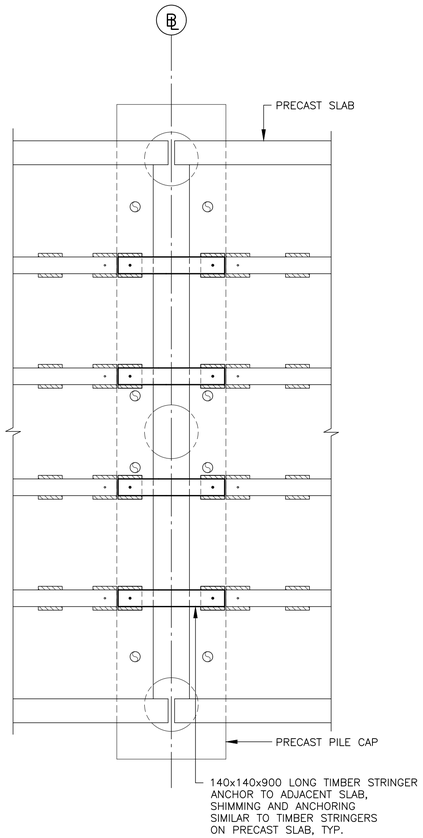
WESTMAR ADVISORS

TITLE: PRECAST SLAB DETAILS

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0115	P2

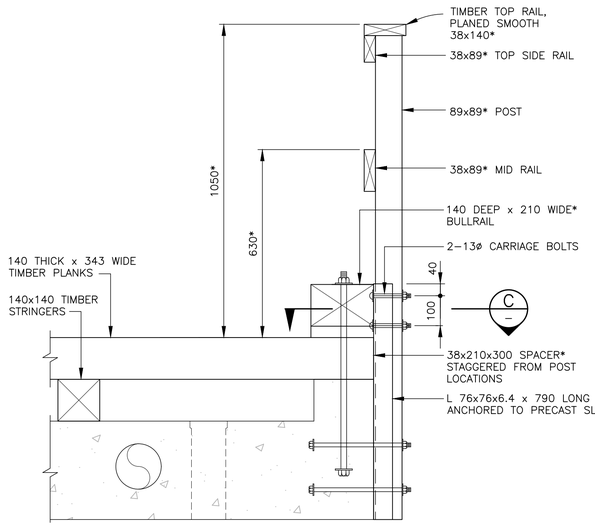


PLAN – TIMBER DECKING
1:25



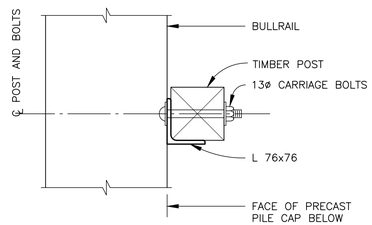
DETAIL 1
1:25

NOTE: CONNECT PVC SLEEVES BETWEEN ADJACENT SLABS USING PVC SLEEVES, RUBBER COUPLERS AND BANDING.

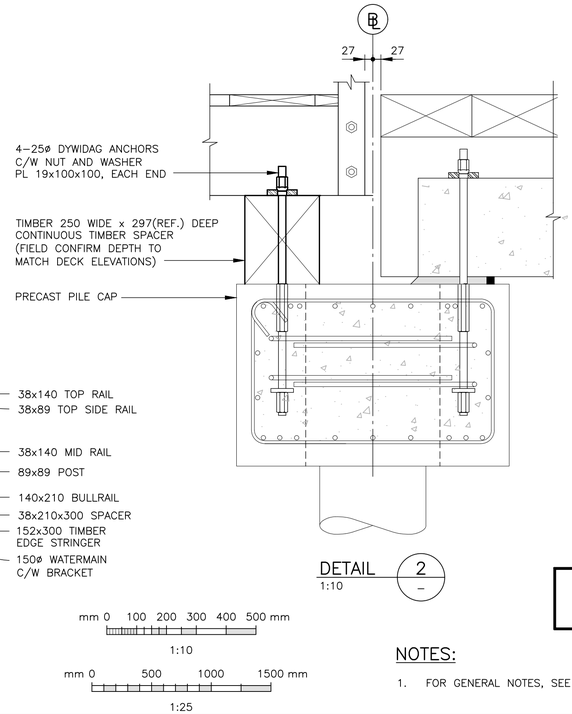


SECTION A HANDRAIL TO MATCH EXISTING
1:10

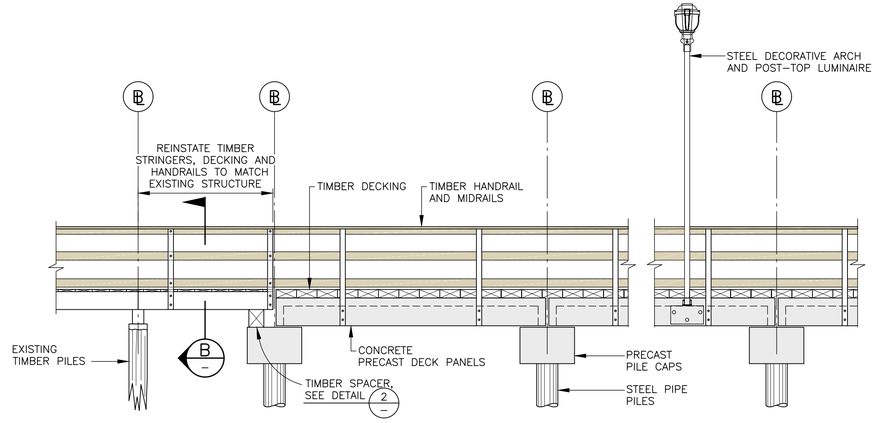
* NOTE: DIMENSIONS ARE BASED ON EXISTING HANDRAILS, CONTRACTOR TO FIELD CONFIRM SIZES TO MATCH.



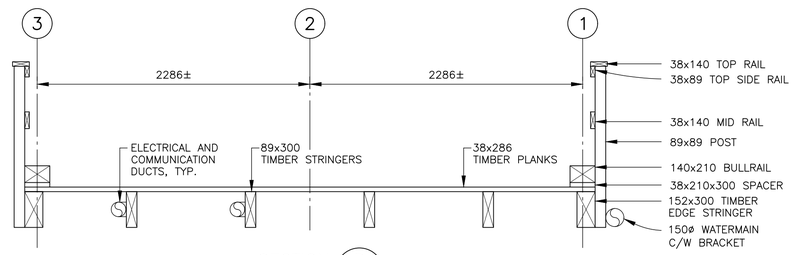
SECTION C
1:5



DETAIL 2
1:10



TYPICAL ELEVATION BETWEEN OLD AND NEW STRUCTURE
1:50



SECTION B
1:25

mm 0 100 200 300 400 500 mm
1:10

mm 0 500 1000 1500 mm
1:25

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 26/19 3:11pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031–00–0101.

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	DEL	DEL

ISSUE / REVISIONS

MGR

CLIENT: WHITE ROCK City by the Sea!

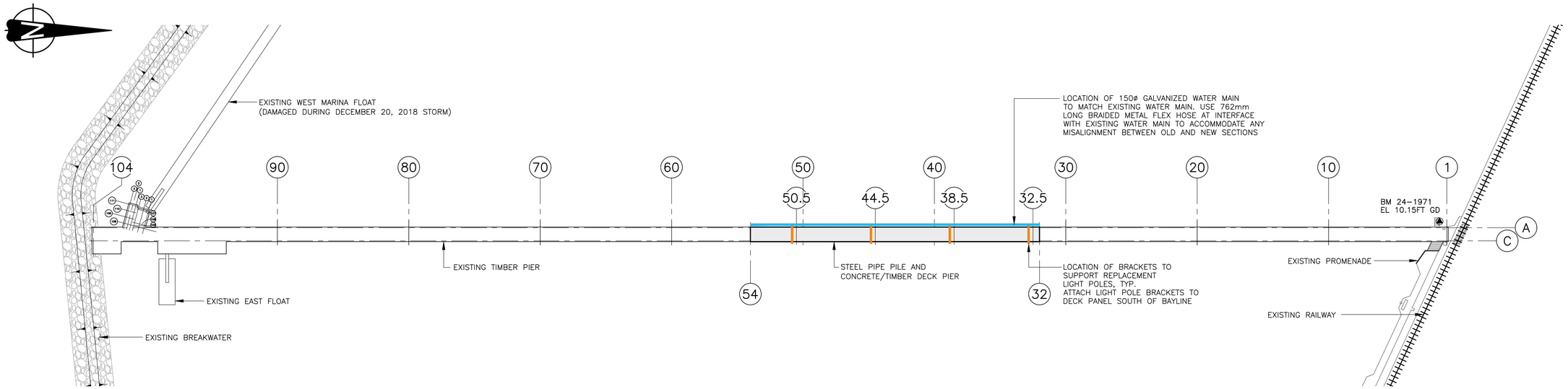
PROJECT: WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

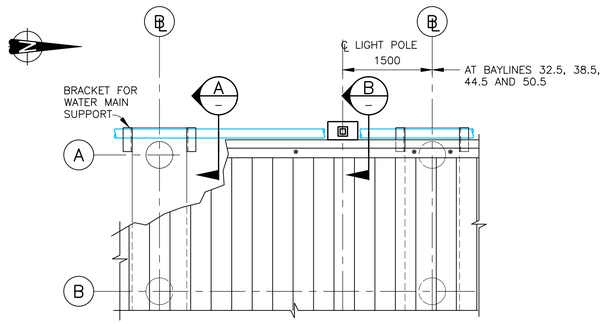
TITLE: TIMBER DECKING AND HANDRAILS

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0116	P2

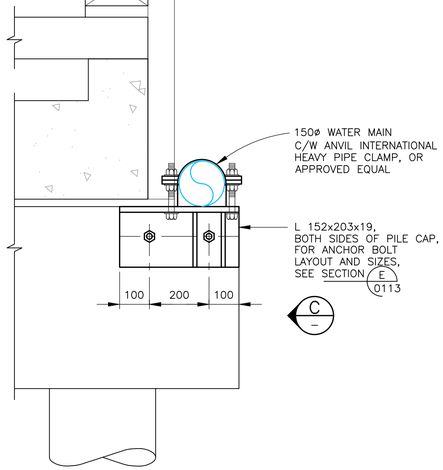
Filename: D:\Dareloc\Engineering\Westmar\2019\1180031–WhiteRockPierReconstruction\1180031–00–0116.dwg – Last Saved: Feb. 26/19 3:11pm Plotted: Feb. 26/19



UTILITIES GENERAL ARRANGEMENT – PLAN
1:750

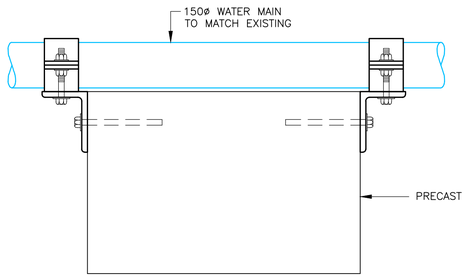


PART PLAN – DECK PANEL
1:50

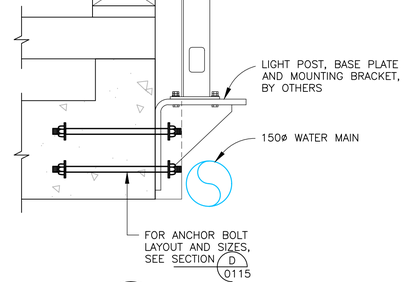


SECTION A – WATER MAIN CONNECTION
1:10

NOTE: WEST END OF PILE CAP ONLY.
TYPICAL EACH PILE CAP.



VIEW C
1:10



SECTION B – LIGHT POST CONNECTION
1:10

mm 0 100 200 300 400 500 mm
1:10

mm 0 500 1000 2500 mm
1:50

m 0 10 20 30 40 m
1:750

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 26/19 8:58am

LEGEND:
- AREA OF STEEL PILE AND CONCRETE DECK PIER
- LIGHT POLE AND SUPPORT BRACKET LOCATION
- 150ø WATER MAIN

NOTES:
1. FOR GENERAL NOTES, SEE DWG. 1180031-00-0101.
2. WATER MAIN TO BE EPOXY COATED INSIDE TO AWWA STANDARD.
3. ALL STEEL MATERIAL TO BE GALVANIZED AGAINST EXPOSURE.

Filename: E:\Jareico Engineering\Westmar\2019\1180031-WhiteRockPierReconstruction\1180031-00-0150.dwg - 00-0150
Last Saved: Feb. 26/19 8:58am Plotted: Feb. 26/19

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	RAY	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	RAY	DEL

ISSUE / REVISIONS

MGR

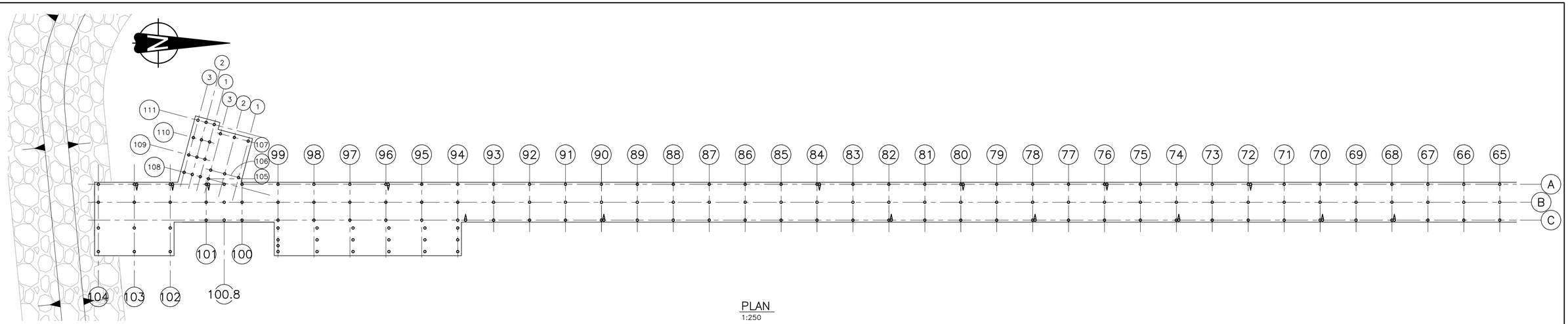
CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

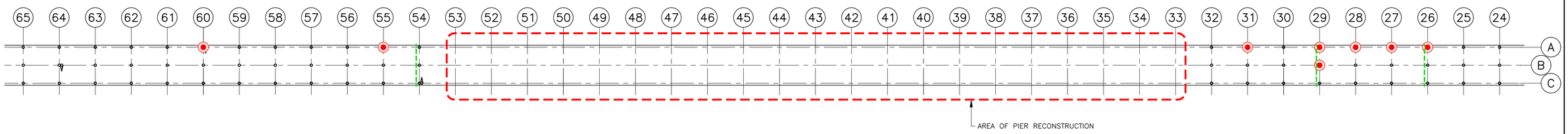
WESTMAR ADVISORS

TITLE: UTILITIES AND SERVICES GENERAL ARRANGEMENT AND DETAILS

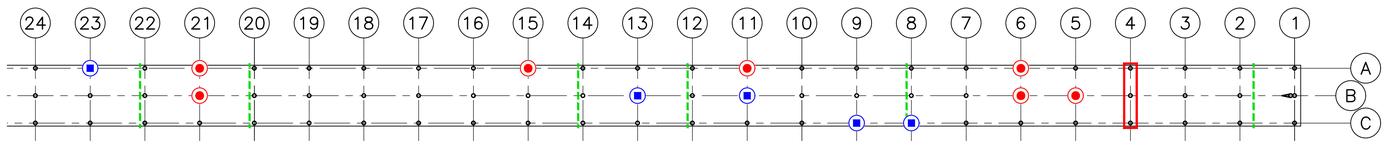
DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00-0150	P2



PLAN
1:250



PLAN
1:250



PLAN
1:250

PILE REPLACEMENT AND REPAIRS

BENT NO.	PILE	REQUIRED REPAIRS
5	B	REPLACE PILE
6	A	REPLACE PILE
	B	REPLACE PILE
8	C	INSTALL STEEL CLAMPS ON PILE
9	C	INSTALL STEEL CLAMPS ON PILE
11	A	REPLACE PILE
	B	INSTALL STEEL CLAMPS ON PILE
13	B	INSTALL STEEL CLAMPS ON PILE
15	A	REPLACE PILE
21	A	REPLACE PILE
	B	REPLACE PILE
23	A	REALIGN PILE AND ATTACH WITH STRAPS
26	A	REPLACE PILE
27	A	REPLACE PILE
28	A	REPLACE PILE
29	A	REPLACE PILE
	B	REPLACE PILE
31	A	REPLACE PILE
55	A	REPLACE PILE
60	A	REPLACE PILE

PILE CAP REPLACEMENT AND REPAIRS

BENT NO.	PILE	REQUIRED REPAIRS
4	C	REPLACE PILECAP

CROSS BRACE REPLACEMENT AND REPAIRS

BENT NO.	REQUIRED REPAIRS
8	REPLACE CROSS BRACE
12	REPLACE CROSS BRACE
14	REPLACE CROSS BRACE
20	REPLACE CROSS BRACE
22	REPLACE CROSS BRACE
26	REPLACE CROSS BRACE
29	REPLACE CROSS BRACE
54	REPLACE CROSS BRACE

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 8:02pm

m 0 5 10 15 m
1:250

LEGEND:

- REPLACE TIMBER PILE
- INSTALL STEEL CLAMPS
- REPLACE TIMBER PILE CAP
- REPLACE TIMBER CROSS BRACE

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031-00-0101.

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	DEL	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	DEL	DEL

ISSUE / REVISIONS

MGR

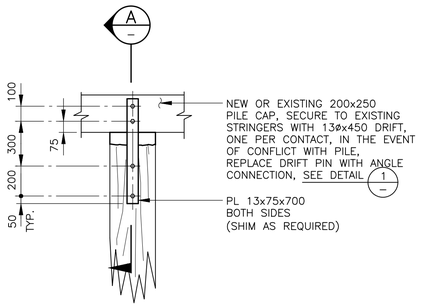
CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

TITLE: TIMBER REPAIRS PLAN

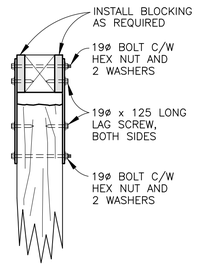
DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00-0200	P2



EXISTING PILE TO NEW CAP AND EXISTING CAP TO NEW PILE CONNECTION

1:20

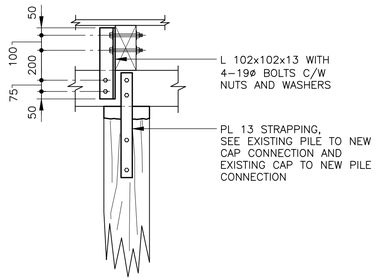
NOTE: STRINGERS AND DECKING NOT SHOWN FOR CLARITY.



SECTION A

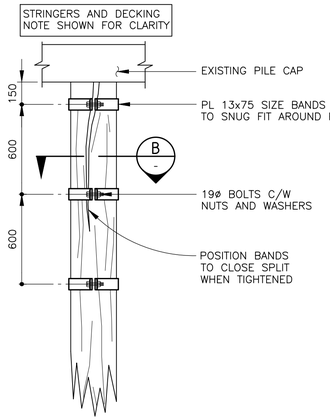
1:20

NOTE: STRINGERS AND DECKING NOT SHOWN FOR CLARITY.



DETAIL 1

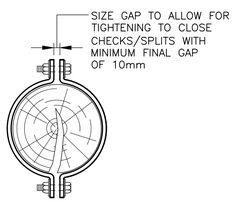
1:20



GALVANIZED STEEL CLAMP

1:20

NOTE: CONTRACTOR TO CONFIRM TRUE PILE DIAMETER PRIOR TO FABRICATION OF CLAMPS.



SECTION B

1:10

mm 0 500 1000 mm

1:20

mm 0 100 200 300 400 500 mm

1:10

PRELIMINARY
DO NOT USE FOR CONSTRUCTION
Last Saved: Feb. 25/19 8:02pm

NOTES:

1. FOR GENERAL NOTES, SEE DWG. 1180031–00–0101.

No.	DATE	DESCRIPTION	DRAWN	CHK'D	DESIGN	CHK'D	APP'D
P2	FEB27/19	ISSUED FOR TENDER	RM	–	VR	DEL	DEL
P1	FEB19/19	ISSUED FOR CLIENT REVIEW	RM	–	VR	DEL	DEL

ISSUE / REVISIONS

MGR

CLIENT: WHITE ROCK City by the Sea!

PROJECT: WHITE ROCK PIER RECONSTRUCTION

WESTMAR ADVISORS

TITLE: TIMBER REPAIRS DETAILS

DRAWING SCALE	PROJECT NUMBER	DRAWING NUMBER	REV.
SHOWN	1180031	00–0201	P2

Filename: C:\Jarelco\Engineering\Westmar\2019\1180031–WhiteRockPierReconstruction\1180031–00–0201.dwg – 00–0201
Last Saved: Feb. 25/19 8:02pm Plotted: Feb. 26/19