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SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
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Public Works and Government Services Canada - Pacific Region
800 Burrard Street, Room 219
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Vancouver
British C
V6Z 0B9

Title - Sujet Concrete Wharf Repairs	
Solicitation No. - N° de l'invitation F1700-150940/A	**Amendment No. - N° modif.** 001
Client Reference No. - N° de référence du client	**Date** 2016-02-02
GETS Reference No. - N° de référence de SEAG PW-$PWY-019-7728	
File No. - N° de dossier PWY-5-38353 (019)	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2016-02-12**	**Time Zone** **Fuseau horaire** Pacific Standard Time PST
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Ngan, Ken (PWY)	**Buyer Id - Id de l'acheteur** pwy019
Telephone No. - N° de téléphone (604) 658-2755 ( )	**FAX No. - N° de FAX** (604) 775-6633
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:** DFO - Institute of Ocean Sciences Wharf - Patricia Bay, BC	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
Vendor/Firm Name and Address **Raison sociale et adresse du fournisseur/de l'entrepreneur** **Telephone No. - N° de téléphone** **Facsimile No. - N° de télécopieur**	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) **Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)** **Signature** **Date**	

Canada

Solicitation No. - N° de l'invitation	Amd. No. - N° de la modif.	Buyer ID - Id de l'acheteur
F1700-150940/A	001	pwy019
Client Ref. No. - N° de réf. du client	File No. - N° du dossier	CCC No./N° CCC - FMS No/ N° VME
	pwy-5-38353	

Les documents français seront disponibles sur demande.

Please find following Addendum #1.

All other terms and conditions remain unchanged.

GENERAL

The following changes / clarifications in the tender documents are effective immediately. This Addendum will form part of the Contract Documents.

SPECIFICATIONS

1. Section – 01 35 43 – Environmental Procedures

   Add Part 1.9.3:

   Prepare an Environmental Control of Operations Plan and submit to Departmental Representative for approval. This plan is to show how the Contractor plans to set up their containment to ensure no harmful materials enter the marine environment. Typically this involves a description and simple drawings.

2. Section – 01 11 05 – Marine General Instructions

   Add part 1.17.14.2:

   A certified biologist to be retained for removal and relocations of marine life. Payment for services will be by change order based on actual services rendered.

APPENDICES

1. Appendix F

   Add attached: *Institute of Ocean Sciences Wharf Structure – Diving Inspection Report, November 2015*

CLARIFICATIONS

Questions Received by PWGSC to January 28, 2016

1. *In regards to the bulk anodes and cathodic protection of the steel elements, I do not see any detail in the drawings, is this a design build for the cathodic protection?*

   a) **There are no details provided. Refer to Section 26 42 20, Part 1.6.3 for shop drawing requirements.**

   b) **This is a design and build portion of the contract. As required in Section 26 42 20 Clause 1.9.2 "Design system under direct supervision of a corrosion Engineer experienced in design of this work and certified by National Association of Corrosion Engineers and licensed at the place of work. Submit proof of designer certification".**

2. *Is each element to have its own anode or will there be anode beds connected through the test stations?*

   It is expected that each element will require one or more anodes, however, if anode beds can be shown to provide adequate protection, they may be used. Final determination to be by Corrosion Engineer per Section 26 42 20, Part 1.9.2.

3. *What is currently in place for cathodic protection of these elements?*

   There is currently no cathodic protection. The steel elements are either galvanized or were coated. The galvanizing is consumed and/or failing in many areas.

   Refer to the attached dive report from GOAL Engineering Ltd. for additional information.

4. Regarding the Notice for Proposed Procurement for Concrete Wharf Repairs (F1700-150940/A), our firm would like to confirm whether or not there is a requirement for environmental monitoring on this project. Please advise if environmental monitoring will be a requirement for this work, at your earliest convenience

Yes, environmental monitoring will be a requirement for this work on key aspects and work which have effects on the environment such as concrete placement work, concrete cleaning and preparation work, etc. The environmental monitoring will be done by PWGSC

END OF ADDENDUM #1

GOAL ENGINEERING LTD.

Consulting Engineers
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Victoria, B.C. V8Z 3B8
Tel: (250) 744-3992 Fax: (250) 744-3983
www.goalengineering.com

26 Nov 2015
Project No. GE15010.1

Wedler Engineering LLP
#211 – 2459 Cousins Avenue
Courtenay, BC,
V9N 3N6

Attn: Sam Rogers EIT
Project Engineer

Re: Institute of Ocean Sciences Wharf Structure
Diving Inspection Report.

1.0 Introduction

An investigation has been completed to assess the present condition of the Main wharf located at the Institute of Ocean Sciences in Sidney, British Columbia. The investigation was performed February 2015 by Greg Ovstaas, P.Eng. Craig Appelman, P.Eng, Dave Walkling EIT and Andrew Thompson AScT. of Goal Engineering Ltd. The results of that investigation are presented in our report of 29 April 2015. This current report presents the results of additional below water inspection work carried out with the help of South Coast Diving Ltd. in November 2015.

2.0 Background Information

The wharf was originally constructed in the mid 1970's and has been upgraded and repaired at various times over the past 25 years. Following is a list of known upgrading work and the approximate years they occurred:-

1. 1975 – Original Construction
2. 1989 – Shotcrete Repairs of the concrete bents.
3. 2003 – Seismic Retrofit.
4. 2004 – Fendering upgrade.

3.0 Diving Inspection Objective

The recent field work completed February 2015, has identified the areas of current deterioration requiring refurbishment to include the joints between the precast elements, the cleat attachments and areas of concrete where reinforcement corrosion has initiated. This diving inspection provides much more information on the condition of the various elements below water – in particular those elements added in the 2003 seismic retrofit and the 2004 Fendering upgrade.

4.0 Observations

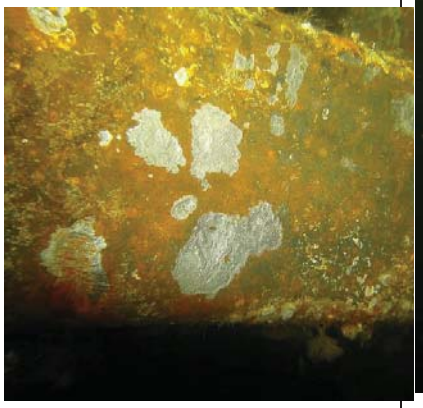
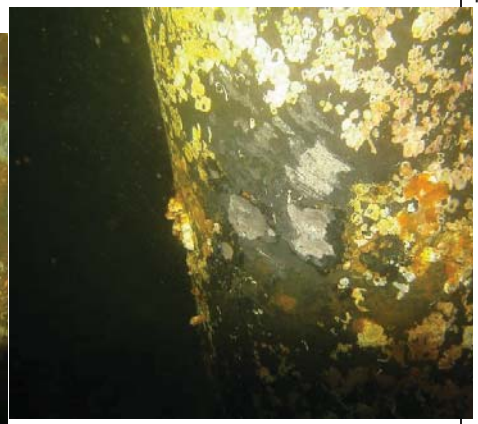
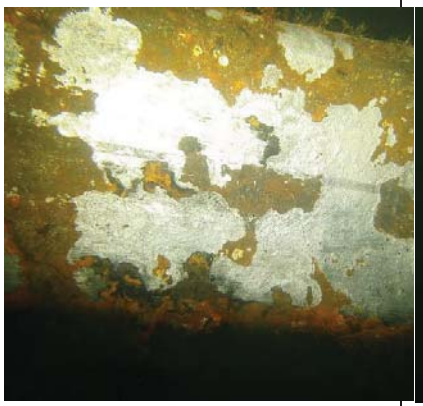
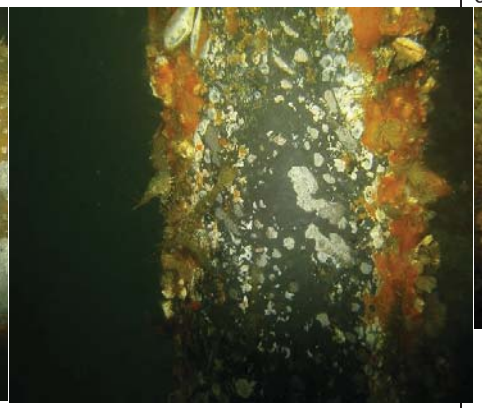
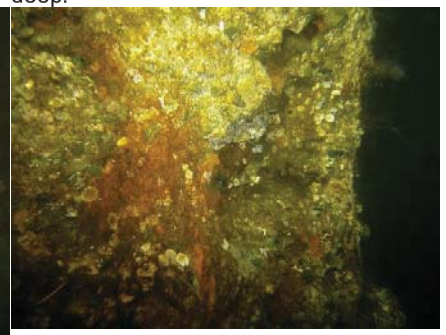
The diving inspection was performed with the assistance of Pat Thompson of South Coast Diving Ltd. On Nov 4 2015, the identified areas (see attached drawing) were cleaned to remove the marine growth. The diving inspection took place on Nov 6 2015.

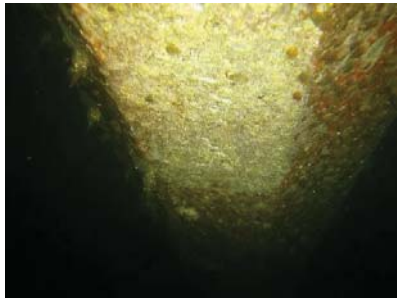
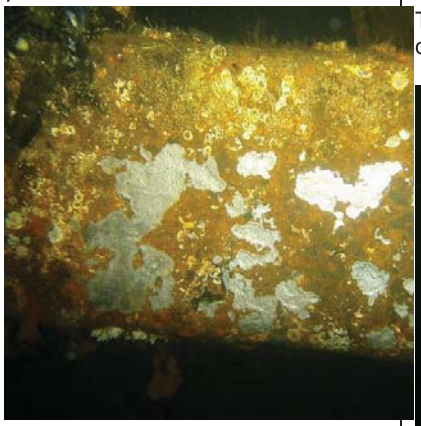
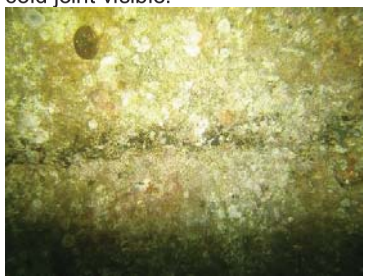
The results of the diving inspection are detailed in the following Table 1.

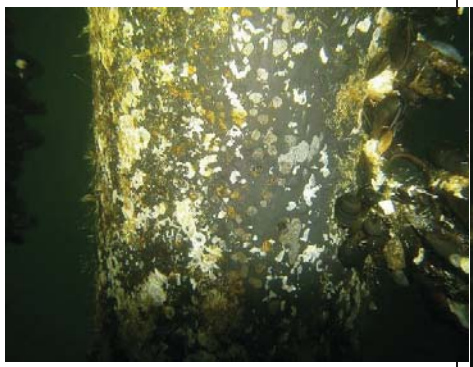
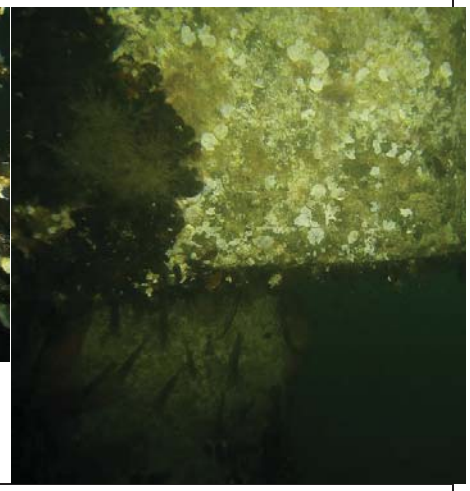
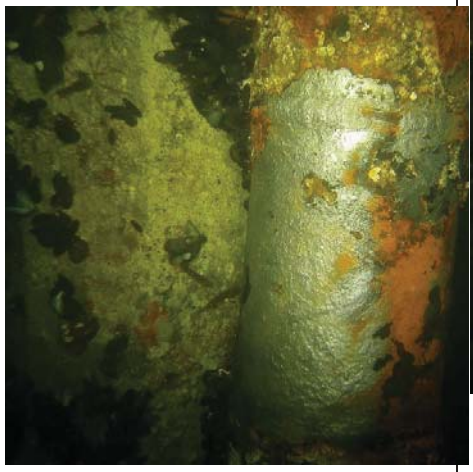
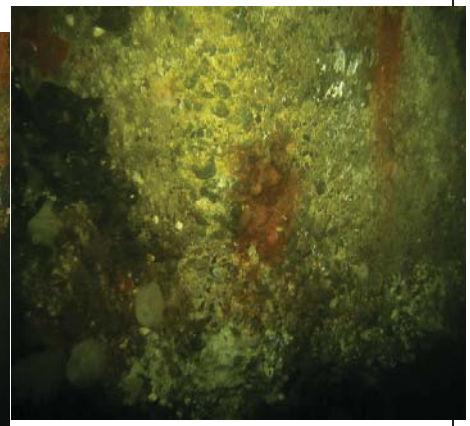
As shown there are five major observations:

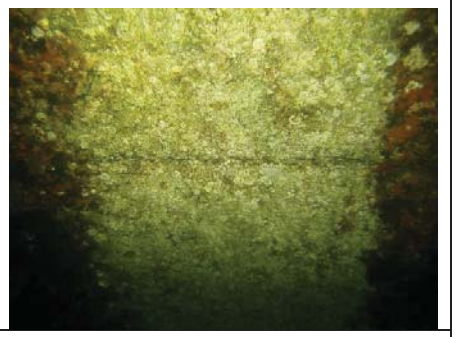
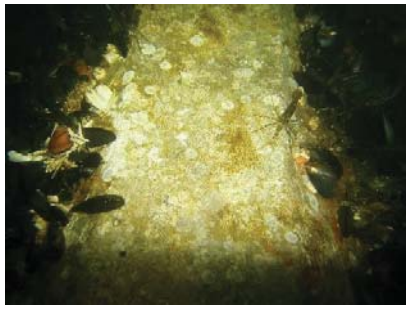
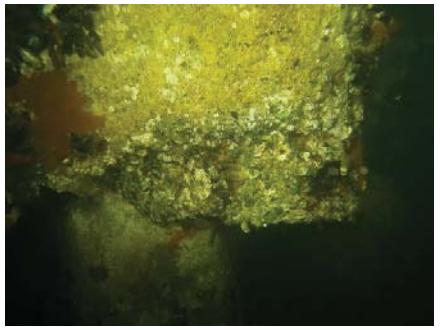
1. The coating on the tension anchors is failing and corrosion pitting has commenced. Typically the pitting appears to be a maximum of 3 mm. The large pit observed on the anchor at Bent 9 is likely the result of physical damage since it is unlikely that corrosion could progress that rapidly.
2. There is significant corrosion occurring on the camels - which is clearly visible above water. This suggests that the coating is failing at these locations and requires remedial action be implemented both on the camels and on the piles to which some are attached.
3. The Galvanized coating on the fender bracing members has for the most part been consumed and remedial action is required to retard further corrosion.
4. The condition of the concrete Octagonal piles is satisfactory. No significant damage was observed. However from additional chloride testing it is evident that the chloride concentrations are extremely high and there is concern that corrosion of the reinforcement may be imminent. Remedial work in the form of anode jackets installation is recommended.
5. The condition of the concrete columns varies from minor erosion to significant rebar corrosion damage, however for the most part the surface condition appears satisfactory. Similar o the Octagonal piles, however, the chloride concentrations are extremely high and remedial work is recommended to reduce the potential for future corrosion damage.

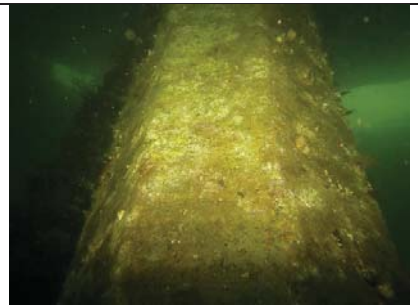
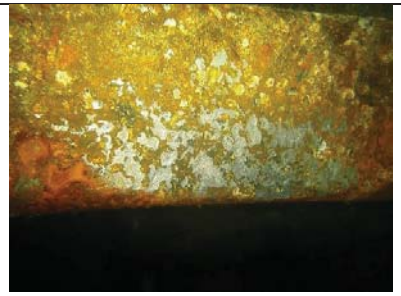
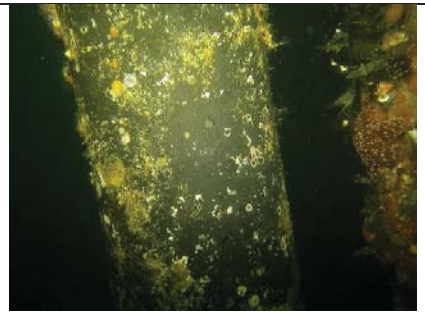
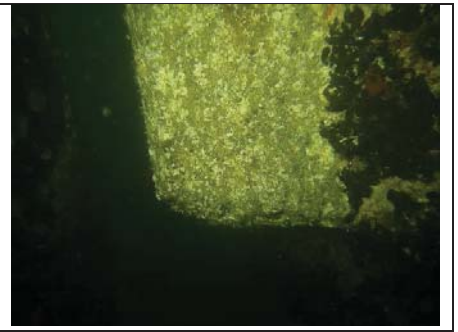
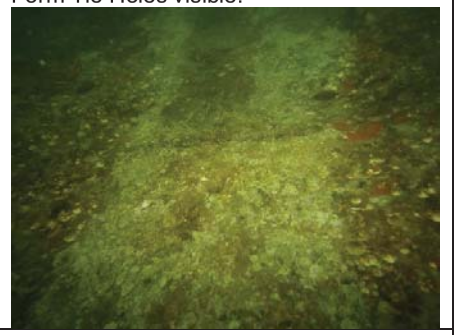
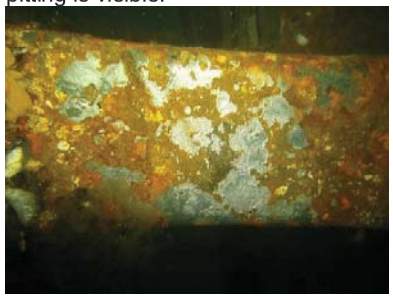
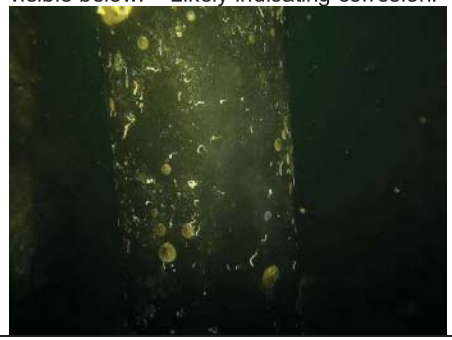
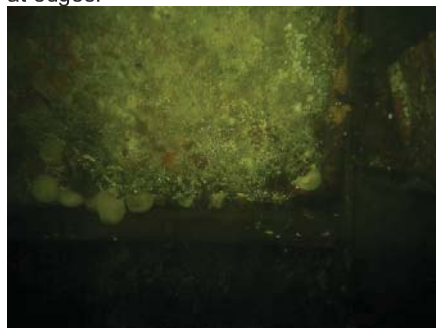
Table 1. Diving Inspection Observations

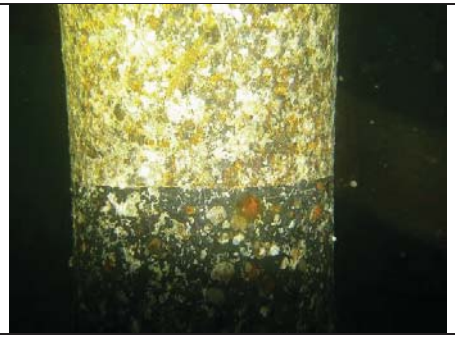
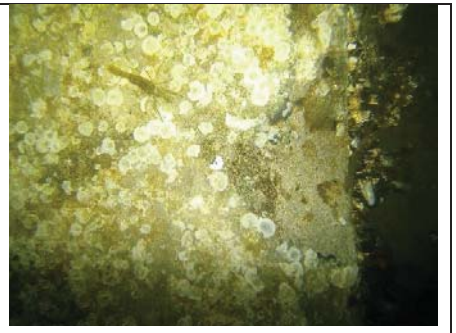
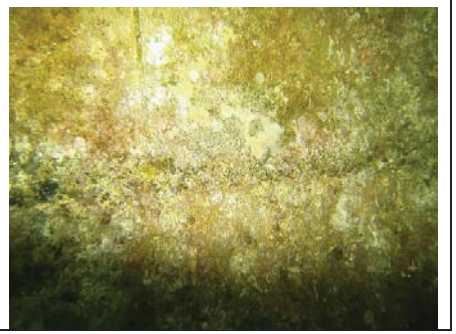
Bent No.	Octagonal Pile	Diagonal Brace	Tension Anchor	Column or Crib
3 Approach Pier	Concrete OK. No photo available	Galvanizing is consumed. Pitting depth is approx. 3 mm. 	Coating has failed. Pitting is visible. 	Minimal spalling at base. No photo available.
6 Approach pier	Concrete OK 	Possible Exposed steel 	Coating is damaged 	Spalling at SW corner 75 to 100 mm deep. 

9 Approach Pier	Concrete OK. Some surface damage at 5 m above mudline 	Surface Pitting ~ 3 mm deep . 	Large Pit near base of anchor ~ 10 mm deep x 80 mm wide The Pit may be the result of physical damage. 	Delamination in corner by UHMW panel above water. Note also the corrosion that has initiated in the Camel Locator Pole. 
12 to 13 crib Pier 1	NA	NA	NA	Concrete OK – Old form tie holes and cold joint visible. 

17 Pier 1	Concrete condition OK. 	Not present at this bent	Blistering and damage visible in coating. 	Concrete Column condition OK. 
23 Pier 1	Some possible surface erosion – minor. 	Not Present at this Bent	Severe damage to coating and visible pitting in steel. Note also erosion on surface of octagonal pile 	Corrosion staining and erosion on concrete surface. 

24 to 25 crib	NA	NA	NA	Concrete Condition OK – minor bug holes. 
C Cross pier	Concrete Condition OK 	Galvanizing appears to be consumed and pitting visible. 	Significant coating damage. Visible pitting. 	Concrete damage at base. 
E Cross pier	Concrete Condition OK.	Galvanizing appears consumed. Some surface pitting.	Coating condition reasonable, but some bubbling. Visible.	Concrete Condition OK but some erosion at edges.

				
12 to 13 inshore crib Pier 2	NA	NA	NA	Form Tie Holes visible. 
14 Pier 2	Concrete Condition OK 	Galvanizing appears consumed and pitting is visible. 	Coating is still complete but bubbling visible below. – Likely indicating corrosion. 	Concrete condition OK but some erosion at edges. 
20 Pier 2	Concrete Condition OK.	Galvanizing appears consumed. Pitting visible.	Pipe only appears to be partially coated and coating is damaged.	Some damage to column corner. Old repair is visible.

				
21 to 23 Crib Pier 2	NA	NA	NA	Concrete condition OK. Form tie holes visible. Minor erosion at cold joints. 

4.0 Proposed Remedial Work

The diving inspection has provided valuable information on the condition of the various elements that support and protect the wharf. It is clear that the steel elements are to date more affected by corrosion than the concrete elements. It is noted that the concrete elements were previously remediated circa 1989 by chipping and patching the damage visible at that time. Presently we have proposed the installation of anode jackets on the various concrete elements. This to passivate the concrete reinforcement and extend the projected life of the elements.

Based on the observations from this diving inspection, it is now also recommended that Bulk Anodes be installed on the various steel elements including the following.

- The tension anchors
- The Fender bracing,
- The camels
- The camel piles

It is estimated that 150 bulk anodes, with masses of 45 kg each, will be required to passivate the various elements. We have estimated with help from South Coast Diving that the installed cost for these anodes is approximately $600 each. Therefore the total costs is $90,000.00.

These are rough costs only. The bulk anode system must be designed by an experienced designer and accurate budgets determined. It is recommended that the cathodic protection of these steel elements be implemented sooner rather than later as corrosion has initiated and if no action is taken soon there may be physical damage that must be repaired. Currently, the only visible damage that requires repair is the hole in the tension anchor at Bent 9.

I trust this information is sufficient. Please call if you have any questions.

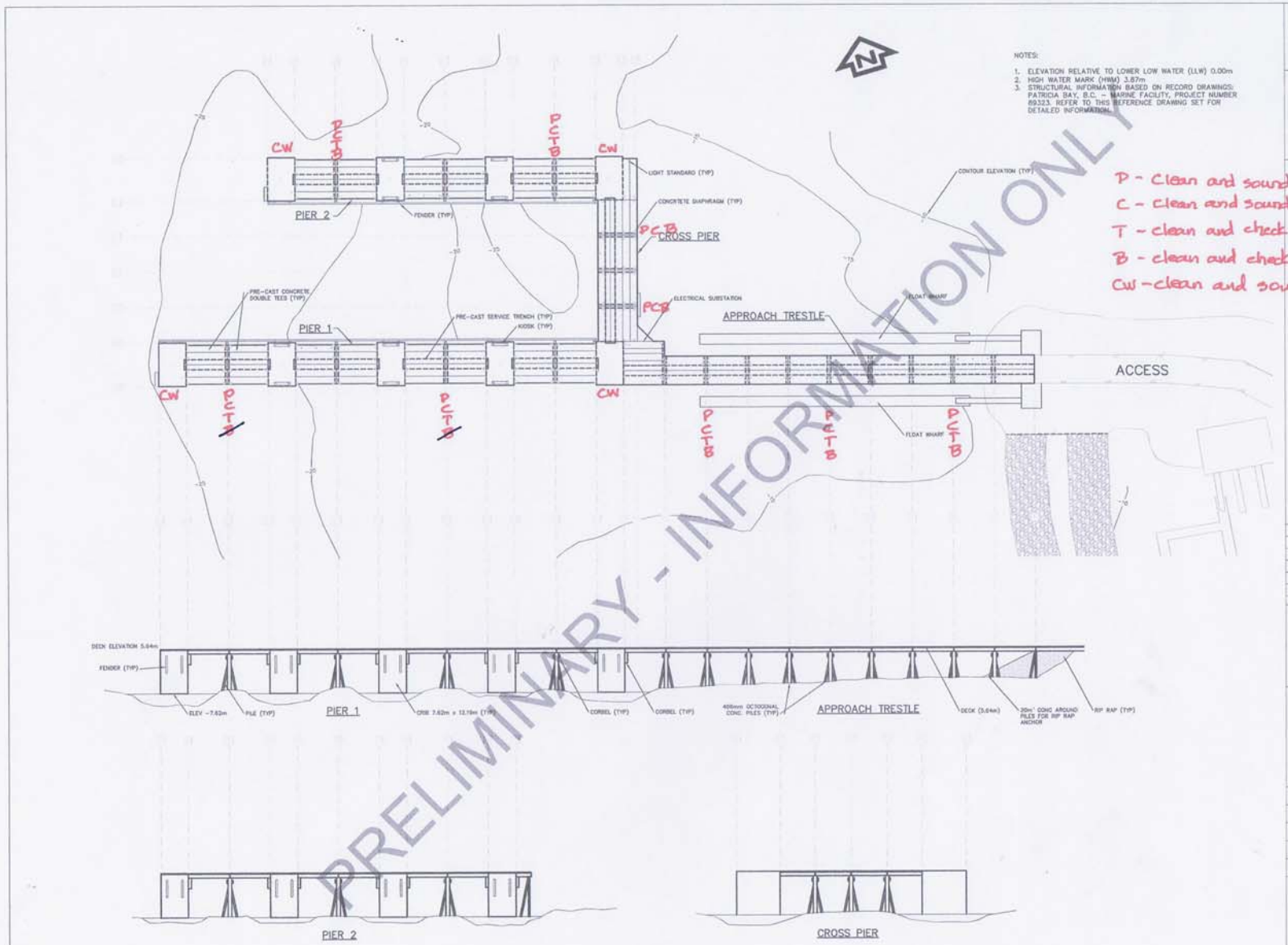
Sincerely
Per: Goal Engineering Ltd.

Prepared by:

Greg Ovstaas, P.Eng.
Senior Materials Engineer

Reviewed by:

Craig Appelman, P.Eng.
Branch Manager



P - Clean and sound concrete Pile.
C - Clean and sound concrete column.
T - clean and check coating on tension anchor.
B - clean and check galvanizing on bracing
CW - clean and sound concrete crib wall.

REAL PROPERTY SERVICES
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DEPARTMENT OF FISHERIES AND OCEANS

200 - 401 BURRARD STREET
VANCOUVER, BC

DFO CONCRETE WHARF REPAIRS
INSTITUTE OF OCEAN SCIENCES

WEDLER ENGINEERING L.L.P.

SSR

TJG

MICHAEL LIANG, P.ENG

WHARF - GENERAL ARRANGEMENT

R.??????.001 | C2 | 0