

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
Réception des soumissions - TPSGC / Bid  
Receiving - PWGSC  
1550, Avenue d'Estimauville  
1550, D'Estimauville Avenue  
Québec  
Québec  
G1J 0C7

**INVITATION TO TENDER**  
**APPEL D'OFFRES**

**Tender To: Public Works and Government Services  
Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Soumission aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici et sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

**Vendor/Firm Name and Address**  
Raison sociale et adresse du  
fournisseur/de l'entrepreneur

**Issuing Office - Bureau de distribution**  
TPSGC-PWGSC  
601-1550, Avenue d'Estimauville  
Québec  
Québec  
G1J 0C7

<b>Title - Sujet</b> Aménagement Harrington Harbour	
<b>Solicitation No. - N° de l'invitation</b> F3731-140142/A	<b>Date</b> 2014-11-13
<b>Client Reference No. - N° de référence du client</b> F3731-140142	<b>GETS Ref. No. - N° de réf. de SEAG</b> PW-\$QCM-008-16192
<b>File No. - N° de dossier</b> QCM-4-37205 (008)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2014-12-03</b>	
<b>Time Zone</b> Fuseau horaire Heure Normale du l'Est HNE	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Rochette, Jean	<b>Buyer Id - Id de l'acheteur</b> qcm008
<b>Telephone No. - N° de téléphone</b> (418) 649-2834 ( )	<b>FAX No. - N° de FAX</b> (418) 648-2209
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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

Solicitation No. - N° de l'invitation

F3731-140142/A

Client Ref. No. - N° de réf. du client

F3731-140142

Amd. No. - N° de la modif.

File No. - N° du dossier

QCM-4-37205

Buyer ID - Id de l'acheteur

qcm008

CCC No./N° CCC - FMS No/ N° VME

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No d'appel d'offres : F3731-140142/A  
No de projet : 716213

## INVITATION TO TENDER

**Title :** HARBOUR DEVELOPMENT – HARRINGTON HARBOUR, QC

### IMPORTANT NOTICE TO BIDDERS

Government of Canada moved its Government Electronic Tendering Service from MERX to [Buyandsell.gc.ca/tenders](http://Buyandsell.gc.ca/tenders).

Since June 1st 2013, Canada makes available Notices of Proposed Procurement (NPP), bid solicitations and related documents for download through the Government Electronic Tendering Service (GETS) at [Buyandsell.gc.ca/tenders](http://Buyandsell.gc.ca/tenders).

Canada is not responsible and will not assume any liabilities whatsoever for the information found on websites of third parties.

In the event an NPP, bid solicitation or related documentation would be amended, Canada will not be sending notifications. Canada will post all amendments using GETS. It is the sole responsibility of the Bidder to regularly consult GETS for the most up-to-date information.

Canada will not be liable for any oversight on the Bidder's part nor for notification services offered by a third party.

### LIMITATION OF LIABILITY

PWGSC is limiting the Contractor's first party liability for work in Low Rise, High Rise and Heritage Buildings. See changes to GC1.6 "Indemnification by the Contractor" of R2810D in the Supplementary Conditions.

### SUPPORT THE USE OF APPRENTICES

Through Canada's Economic Action Plan 2013, the Government of Canada proposes to support the employment of apprentices in federal construction and maintenance projects. Refer to SI11.

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### R2710T GENERAL INSTRUCTIONS - CONSTRUCTION SERVICES - BID SECURITY REQUIREMENTS (GI) (2014-09-25)

The following GI's are included by reference and are available at the following Web Site <https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

GI01	Integrity Provisions - Bid
GI02	Completion of Bid
GI03	Identity or Legal Capacity of the Bidder
GI04	Applicable Taxes
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Solicitation No – N° de l'invitation  
F3731-140142/A  
Client Ref No. – N° de réf. du client  
F3731-14-0142

Amd. No. – N° de la modif.  
File No. – N° du dossier  
QCM-4-37205

Buyer ID – id de l'acheteur  
qcm008

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BA03 The Offer  
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## **APPENDICES**

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Appendix 2 Complete List Of Each Individual Who Are Currently Directors And Or Owner Of The Bidder  
Appendix 3 Voluntary Certification To Support The Use Of Apprentices  
Appendix 4 Certificate Of Insurance  
Appendix 5 Voluntary Reports For Apprentices Employed During The Contract

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## SPECIAL INSTRUCTIONS TO BIDDERS (SI)

### SI01 INTEGRITY PROVISIONS - ASSOCIATED INFORMATION

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section GI01 Integrity Provisions - Bid of General Instructions – Construction Services – Bid Security Requirements, R2710T (2014-09-25). The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

### SI02 BID DOCUMENTS

1. The following are the bid documents:

- a. Invitation to Tender - Page 1;
- b. Special Instructions to Bidders;
- c. General Instructions - Construction Services - Bid Security Requirements R2710T (2014-09-25)
- d. Clauses & Conditions identified in “Contract Documents”;
- e. Drawings and Specifications;
- f. Bid and Acceptance Form and related Appendix(s); and
- g. Any amendment issued prior to solicitation closing.

Submission of a bid constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

2. General Instructions - Construction Services - Bid Security Requirements R2710T is incorporated by reference and is set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site: <https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

1.

### SI03 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to [jean.rochette@tpsgc-pwgsc.gc.ca](mailto:jean.rochette@tpsgc-pwgsc.gc.ca), the Contracting Officer named on the Invitation to Tender - Page 1 as early as possible within the solicitation period. Except for the approval of alternative materials as described in GI15 of R2710T, enquiries should be received no later than seven (7) calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may not result in an answer being provided.
2. To ensure consistency and quality of the information provided to Bidders, the Contracting Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.
3. All enquiries and other communications related to this bid sent throughout the solicitation period are to be directed ONLY to the Contracting Officer named on the Invitation to Tender - Page 1. Failure to comply with this requirement may result in the bid being declared non-responsive.

### SI04 SITE VISIT

Not applicable

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## **SI05 REVISION OF BID**

A bid may be revised by letter or facsimile in accordance with GI10 of R2710T. The facsimile number for receipt of revisions is (418) 648-2209.

## **SI06 BID RESULTS**

1. A public bid opening will be held in the office designated on the Front Page "Invitation to Tender" for the receipt of bids shortly after the time set for solicitation closing.
2. Following solicitation closing, bid results may be obtained by calling at No. (418) 649-2888.

## **SI07 INSUFFICIENT FUNDING**

In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may

- a. cancel the solicitation; or
- b. obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid; and/or
- c. negotiate a reduction in the bid price and/or scope of work of not more than 15% with the Bidder submitting the lowest compliant bid. Should an agreement satisfactory to Canada not be reached, Canada shall exercise option (a) or (b).

## **SI08 BID VALIDITY PERIOD**

1. Canada reserves the right to seek an extension to the bid validity period prescribed in BA04 of the Bid and Acceptance Form. Upon notification in writing from Canada, Bidders shall have the option to either accept or reject the proposed extension.
2. If the extension referred to in paragraph 1. of SI08 is accepted, in writing, by all those who submitted bids, then Canada shall continue immediately with the evaluation of the bids and its approvals processes.
3. If the extension referred to in paragraph 1. of SI08 is not accepted in writing by all those who submitted bids then Canada shall, at its sole discretion, either
  - a. continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or
  - b. cancel the invitation to tender.
4. The provisions expressed herein do not in any manner limit Canada's rights in law or under GI11 of R2710T.

## **SI09 CONSTRUCTION DOCUMENTS**

The successful Contractor will be provided with two paper copies of the sealed and signed drawings, the specifications and the amendments free of charge upon acceptance of the offer. Obtaining more copies shall be the responsibility of the Contractor including costs.

## SI10 SECURITY RELATED REQUIREMENTS

Not applicable

## SI11 PUBLIC WORKS AND GOVERNMENT SERVICES CANADA AND DEFENCE CONSTRUCTION CANADA APPRENTICE PROCUREMENT INITIATIVE

1. To encourage employers to participate in apprenticeship training, Contractors bidding on construction and maintenance contracts by Public Works and Government Services Canada (PWGSC) are being asked to sign a voluntary certification, signaling their commitment to hire and train apprentices.
2. Canada is facing skills shortages across various sectors and regions, especially in the skilled trades. Equipping Canadians with skills and training is a shared responsibility. In Economic Action Plan (EAP) 2013, the Government of Canada made a commitment to support the use of apprentices in federal construction and maintenance contracts. Contractors have an important role in supporting apprentices through hiring and training and are encouraged to certify that they are providing opportunities to apprentices as part of doing business with the Government of Canada.
3. Through the Economic Action Plan 2013 and support for training programs, the Government of Canada is encouraging apprenticeships and careers in the skilled trades. In addition, the government offers a tax credit to employers to encourage them to hire apprentices. Information on this tax measure administered by the Canada Revenue Agency can be found at: [www.cra-arc.gc.ca](http://www.cra-arc.gc.ca). Employers are also encouraged to find out what additional information and supports are available from their respective provincial or territorial jurisdiction.
4. Signed certifications (Appendix 3) will be used to better understand contractor use of apprentices on Government of Canada maintenance and construction contracts and may inform future policy and program development.
5. The Contractor hereby certifies the following:

In order to help meet demand for skilled trades people, the Contractor agrees to use, and require its subcontractors to use, reasonable commercial efforts to hire and train registered apprentices, to strive to fully utilize allowable apprenticeship ratios<sup>1</sup> and to respect any hiring requirements prescribed by provincial or territorial statutes

The Contractor hereby consents to this information being collected and held by PWGSC, and Employment and Social Development Canada to support work to gather data on the hiring and training of apprentices in federal construction and maintenance contracts.

To support this initiative, a voluntary certification signaling the Contractor's commitment to hire and train apprentices is available at Appendix 3.

If you accept fill out and sign Appendix 3

<sup>1</sup> *The journey-person-apprentice ratio is defined as the number of qualified/certified journeypersons that an employer must employ in a designated trade or occupation in order to be eligible to register an apprentice as determined by provincial/territorial (P/T) legislation, regulation, policy directive or by law issued by the responsible authority or agency.*

## SI12 WEB SITES

The connection to some of the Web sites in the solicitation documents is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

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Treasury Board Appendix L, Acceptable Bonding Companies  
<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494&section=text#appl>

Buy and Sell <https://www.achatsetventes-buyandsell.gc.ca>

Canadian economic sanctions <http://www.international.gc.ca/sanctions/index.aspx?lang=eng>

Contractor Performance Evaluation Report (Form PWGSC-TPSGC 2913)  
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913.pdf>

Bid Bond (form PWGSC-TPSGC 504) <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/504.pdf>

Performance Bond (form PWGSC-TPSGC 505) <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/505.pdf>

Labour and Material Payment Bond (form PWGWSC-TPSGC 506)  
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/506.pdf>

Standard Acquisition Clauses and Conditions (SACC) Manual  
<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

PWGSC, Industrial Security Services <http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html>

PWGSC, Code of Conduct and Certifications  
<http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/index-eng.html>

PWGSC Consent to a Criminal Record Verification (PWGSC-TPSGC 229)  
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/229.pdf>

Construction and Consultant Services Contract Administration Forms Real Property Contracting  
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>

## **SI13 FINANCIAL BID**

The total amount of the bid excludes taxes.

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## SUPPLEMENTARY CONDITIONS (SC)

### SC01 INSURANCE TERMS

#### 1) Insurance Contracts

- (a) The Contractor must, at the Contractor's expense, obtain and maintain insurance contracts in accordance with the requirements of the Certificate of Insurance. Coverage must be placed with an Insurer licensed to carry out business in Canada.
- (b) Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract. The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

#### 2) Period of Insurance

- (a) The policies required in the Certificate of Insurance must be in force from the date of contract award and be maintained throughout the duration of the Contract.
- (b) The Contractor must be responsible to provide and maintain coverage for Products/Completed Operations hazards on its Commercial General Liability insurance policy, for a period of six (6) years beyond the date of the Certificate of Substantial Performance.

#### 3) Proof of Insurance

- (a) Before commencement of the Work, and no later than thirty (30) days after acceptance of its bid, the Contractor must deposit with Canada a Certificate of Insurance on the form attached herein.
- (b) Upon request by Canada, the Contractor must provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the Certificate of Insurance.

#### 4) Insurance Proceeds

In the event of a claim, the Contractor must, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

#### 5) Deductible

The payment of monies up to the deductible amount made in satisfaction of a claim must be borne by the Contractor.

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## CONTRACT DOCUMENTS (CD)

1. The following are the contract documents:
  - a. Contract Page when signed by Canada;
  - b. Duly completed Bid and Acceptance Form and any Appendices attached thereto;
  - c. Drawings and Specifications;
  - d. General Conditions and clauses

GC1	General Provisions – Construction Services	R2810D	(2014-09-25);
GC2	Administration of the Contract	R2820D	(2014-09-25);
GC3	Execution and Control of the Work	R2830D	(2014-03-01);
GC4	Protective Measures	R2840D	(2008-05-12);
GC5	Terms of Payment	R2850D	(2014-06-26);
GC6	Delays and Changes in the Work	R2860D	(2013-04-25);
GC7	Default, Suspension or Termination of Contract	R2870D	(2008-05-12);
GC8	Dispute Resolution	R2880D	(2012-07-16);
GC9	Contract Security	R2890D	(2014-06-26);
GC10	Insurance	R2900D	(2008-05-12);
	Allowable Costs for Contract Changes Under GC6.4.1	R2950D	(2014-06-26);
	Supplementary Conditions		
  - e. Any amendment issued or any allowable bid revision received before the date and time set for solicitation
  - f. Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
  - g. Any amendment or variation of the contract documents that is made in accordance with the General Conditions.
2. The documents identified by title, number and date above are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:  
<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>
3. The language of the contract documents is the language of the Bid and Acceptance Form submitted.

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## BID AND ACCEPTANCE FORM (BA)

### BA01 IDENTIFICATION

Harbour development at Harrington Harbour, QC  
Solicitation No : F3731-140142/A  
Project No : 716213

### BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ PBN: \_\_\_\_\_

Email: \_\_\_\_\_

### BA03 THE OFFER

The Bidder offers to Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the **TOTAL BID AMOUNT INDICATED IN APPENDIX 1**.

### BA04 BID VALIDITY PERIOD

The bid shall not be withdrawn for a period of (sixty) [60] days following the date of solicitation closing.

### BA05 ACCEPTANCE AND CONTRACT

Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents identified in Contract Documents (CD).

### BA06 CONSTRUCTION TIME

The Contractor shall perform and complete the Work by May 30 2016.

### BA07 BID SECURITY

The Bidder is enclosing bid security with its bid in accordance with GI08 - Bid Security Requirements of R2710T - General Instructions - Construction Services - Bid Security Requirements.

### BA08 SIGNATURE

Name and title of person authorized to sign on behalf of Bidder (Type or print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## APPENDIX 1 - COMBINED PRICE FORM

- 1) The prices per unit shall govern in establishing the Total Extended Amount. Any arithmetical errors in this Appendix will be corrected by Canada.
- 2) Canada may reject the bid if any of the prices submitted do not reasonably reflect the cost of performing the part of the work to which that price applies.

### LUMP SUM

The Lump Sum Amount designates Work to which a Lump Sum Arrangement applies.

- (a) Work included in the Lump Sum Amount represents all work not included in the unit price table.

Item	Description	Firm Total Amount
1	Work Site Organization	\$
2	Excavation and Material Reuse	\$
6	Électricity	
6.1	Electricity and lighting	\$
6.2	Navigation light	\$
<b>TOTAL LUMP SUM AMOUNT (LSA)</b> Excluding GST and QST		\$

### UNIT PRICE TABLE

The Unit Price Table designates Work to which a Unit Price Arrangement applies.

- (a) Work included in each item is as described in the referenced specification section.
- (b) The Price per Unit shall not include any amounts for Work that is not included in that unit price Item.

Item	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity (EQ)	Price per Unit applicable taxe(s) extra (PU)	Extended amount (EQ x PU) applicable taxe(s) extra
3	Floating Docks System				
3.1	Wooden Floating Docks	unit	18	\$	\$
3.2	Gangway	unit	2	\$	\$
3.3	Concrete block for gangway	unit	2	\$	\$

4	Piling system				
4.1	Steel piles	unit	9	\$	\$
4.2	Anchor blocks and fastening system	unit	9	\$	\$
4.3	Fastening blocks for docks	unit	5	\$	\$
5	Breakwater				
5.1	Supply of stone for breakwater				
5.1.1	6 mt @ 10 mt	mt	4 110	\$	\$
5.1.2	5 mt @ 8 mt	mt	4 995	\$	\$
5.1.3	3 mt @ 5 mt	mt	3 250	\$	\$
5.1.4	Berm 1 mt @ 4 mt	mt	1 000	\$	\$
5.1.5	Filter stone	mt	6 110	\$	\$
5.1.6	Quarry-run	mt	13 135	\$	\$
5.2	Placement of stone for breakwater				
5.2.1	6 mt @ 10 mt	mt	4 110	\$	\$
5.2.2	5 mt @ 8 mt	mt	4 995	\$	\$
5.2.3	3 mt @ 5 mt	mt	3 250	\$	\$
5.2.4	Berm 1 mt @ 4 mt	mt	1 000	\$	\$
5.2.5	Filter stone	mt	6 110	\$	\$
5.2.6	Quarry-run	mt	13 135	\$	\$
<b>TOTAL EXTENDED AMOUNT (TEA)</b> Excluding GST and QST					\$

<b>TOTAL BID AMOUNT (LSA + TEA)</b> Excluding GST and QST		\$
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### APPENDIX 3 - VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

*Note; The contractor will be asked to fill out a report every six months as included a Annex C*

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Company Name: \_\_\_\_\_

Company Legal Name: \_\_\_\_\_

Solicitation Number: \_\_\_\_\_

Optional information to provide: \_\_\_\_\_

Number of apprentices planned to be working on this contract: \_\_\_\_\_

Trades of those apprentices:

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*A sample of the "Voluntary Reports for Apprentices Employed during the Contract" is provided at Annex C*

## APPENDIX 4 - CERTIFICATE OF INSURANCE



Travaux publics et  
 Services gouvernementaux  
 Canada

Public Works and  
 Government Services  
 Canada

Description and Location of Work	Contract No.
	Project No.

Name of Insurer, Broker or Agent	Address (No., Street)	City	Province	Postal Code
Name of Insured (Contractor)	Address (No., Street)	City	Province	Postal Code
Additional Insured <b><i>Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services</i></b>				

Type of Insurance	Insurer Name and Policy Number	Inception Date D / M / Y	Expiry Date D / M / Y	Limits of Liability		
				Per Occurrence	Annual General Aggregate	Completed Operations Aggregate
<b>Commercial General Liability</b>				\$	\$	\$
	<b>Umbrella/Excess Liability</b>			\$	\$	\$
<b>Builder's Risk / Installation Floater</b>				\$		

I certify that the above policies were issued by insurers in the course of their Insurance business in Canada, are currently in force and include the applicable insurance coverage's stated on page 2 of this Certificate of Insurance, including advance notice of cancellation / reduction in coverage.

Name of person authorized to sign on behalf of Insurer(s) (Officer, Agent, Broker)

Telephone number

Signature

Date D / M / Y

### General

The insurance policies required on page 1 of the Certificate of Insurance must be in force and must include the insurance coverage listed under the corresponding type of insurance on this page.

The policies must insure the Contractor and must include Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services as an additional Insured.

The insurance policies must be endorsed to provide Canada with not less than thirty (30) days notice in writing in advance of a cancellation of insurance or any reduction in coverage.

Without increasing the limit of liability, the policies must protect all insured parties to the full extent of coverage provided. Further, the policies must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

### Commercial General Liability

The insurance coverage provided must not be substantially less than that provided by the latest edition of IBC Form 2100.

The policy must either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:

- (a) Blasting.
- (b) Pile driving and caisson work.
- (c) Underpinning.
- (d) Removal or weakening of support of any structure or land whether such support be natural or otherwise if the work is performed by the insured contractor.

The policy must have the following minimum limits:

- (a) **\$5,000,000** Each Occurrence Limit;
- (b) **\$10,000,000** General Aggregate Limit per policy year if the policy contains a General Aggregate; and
- (c) **\$5,000,000** Products/Completed Operations Aggregate Limit.

Umbrella or excess liability insurance may be used to achieve the required limits.

### Builder's Risk / Installation Floater

The insurance coverage provided must not be less than that provided by the latest edition of IBC Forms 4042 and 4047.

The policy must permit use and occupancy of any of the projects, or any part thereof, where such use and occupancy is for the purposes for which a project is intended upon completion.

The policy may exclude or be endorsed to exclude coverage for loss or damage caused by asbestos, fungi or spores, cyber and terrorism.

The policy must have a limit that is **not less than the sum of the contract value** plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by Canada at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy must be changed to reflect the revised contract value.

The policy must provide that the proceeds thereof are payable to Canada or as Canada may direct in accordance with GC10.2, "Insurance Proceeds" (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2900D/2>).





**Fisheries and Oceans  
Canada**



**Small Craft Harbours**

**Harrington Harbour – North shore**

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**Harbour development**

**Project n° 716213**



**Specifications for bid - Structure**

**September 2014**



**Fisheries and Oceans  
Canada**



**Small Craft Harbours**

**Harrington Harbour – North shore**

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**Harbour development**

**Project n° 716213**



**Specifications for bid - Electricity**

**September 2014**

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**APPENDIX**

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PART 1- GENERAL

<u>1.1 RELATED SECTION</u>	.1	Section 01 56 00 - Temporary Barriers and Enclosures
<u>1.2 WORK COVERED BY CONTRACT DOCUMENTS</u>	.1	Work of this contract involves the development of a small fishing boat harbour in Harrington Harbour.
	.2	Work includes mainly, without limitation: .1 The construction of a breakwater. .2 Dredging of undersea sediments. .3 The construction and installation of an access to floating docks including two gangways and concrete blocks. .4 The supply and installation of steel piles anchored to concrete blocks. .5 The supply, transportation and installation of floating docks, and implementing their anchoring system. .6 Developing a parking area and wooden walkways. .7 A lighting system and electricity.
<u>1.3 CONTRACTOR'S USE OF THE PREMISES</u>	.1	Contractor's use of the premises is limited to such areas as required to carry out the work, including access.
	.2	Co-ordinate the use of premises as directed by the Departmental Representative.
	.3	<u>The space accessible and available to the Contractor is exclusively limited to areas of the work site as indicated on the drawings.</u> Should the Contractor wish to access and use other areas or properties adjacent to the work site, he shall make the appropriate arrangements with the owners involved and pay costs incurred. Copy of any such agreement shall be forwarded to the Departmental Representative.
	.4	There is no access route leading to the worksite. The materials required shall be shipped by marine transportation and transferred to the worksite by appropriate means.
	.5	At work completion, existing structures that were not the object of Work shall be in an improved or equivalent condition compared to initial state at the onset of construction.
<u>1.4 SUBGRADE CONDITIONS</u>	.1	Refer to the sediment characterization and environmental reports attached.
<u>1.5 RANGING OUT OF</u>	.1	Assume full responsibility for staking out the work and

THE PREMISES

perform the task to full extent as to location, lines and levels indicated.

- .2 Before work inception, the Contractor shall ascertain all measurements on location and notify Departmental Representative of any error or discrepancy.
- .3 Control (bench-mark) stations used for implementing the facilities are provided on the drawings.

1.6 METRIC UNITS

- .1 Units of the International Metric System (S.I.) are exclusively used in the plans and specifications of this project.

1.7 DOCUMENTS  
REQUIRED

- .1 Maintain at job site one copy of each of the following documents:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.
  - .5 List of Outstanding Shop Drawings.
  - .6 Change Orders.
  - .7 Other Modifications to Contract.
  - .8 Field Test Reports.
  - .9 Copy of Approved Work Schedule.
  - .10 Health and Safety Plan and Other Safety Related Documents.
  - .11 Other documents as specified.

1.8 PROJECT RECORD  
DOCUMENTS AND  
SAMPLES

- .1 Maintain at job site for Departmental Representative's perusal one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to Contract.
  - .5 Reviewed shop drawings, product data, and samples.
  - .6 Field test records.
  - .7 Inspection certificates.
  - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files & racks and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "Project Record" in neat, large, printed letters.

- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
  - .5 Keep record documents and samples available for inspection by Departmental Representative.
- 1.9 RECORDING ACTUAL SITE CONDITIONS
- .1 Record information on set of opaque drawings provided by Departmental Representative.
  - .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
  - .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
  - .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
    - .1 Measured horizontal and vertical locations of underground features, referenced to permanent surface improvements.
    - .2 Field changes of dimension and detail.
    - .3 Changes made following change orders.
    - .4 Details not on original Contract Drawings.
    - .5 References to related shop drawings and modifications.
  - .5 Specifications: mark each item to record actual construction, including:
    - .1 Manufacturer, trade name, and catalogue number of each product actually installed.
    - .2 Changes made following Addenda and change orders.
  - .6 Other Documents: retain and file manufacturer's certifications, inspection certifications, field test records.

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

- 3.1 NOT USED .1 Not used.

End of section

PART 1 – GENERAL

- |   |    |   |
|---|----|---|
| <u>1.1 ACCESS AND<br/>EGRESS</u>          | .1 | Design, construct and maintain temporary means of access to work site, including stairs, runways, ramps or ladders and scaffolding in accordance with relevant municipal, provincial and other regulations and ensure their maintenance.  |
| <u>1.2 USE OF SITE AND<br/>FACILITIES</u> | .1 | Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.  |
|   | .2 | Maintain existing services to building and provide for personnel and vehicle access.  |
|   | .3 | Where security is reduced by work provide other temporary means to maintain security of property and persons.   |
| <u>1.3 INTERFERENCE TO<br/>NAVIGATION</u> | .1 | The Contractor shall seek and obtain all required information concerning boat traffic in the bay and all activities in the construction area. Design and execute the work in such way as to prevent interfering with existing activities or limiting the access for residents by either land or sea.                          |
|   | .2 | The Contractor shall accurately and on regular basis report all travels (movement, relocation) of his floating equipment to the Canadian Coast Guard Marine Communications and traffic Services Centre (Québec City MCTS 418 648-7459). As well, he shall inform MCTS of all the construction periods start and finish times. |
|   | .3 | In addition, the Contractor shall report all travels of his floating equipment to the Departmental Representative to allow for the issuance of NTS (Notices to Shipping).   |
| <u>1.4 FLOATING<br/>EQUIPMENT</u>         | .1 | The Contractor shall provide equipment of sufficient size and capacity to undertake the Work as described in the plans and specifications, including excavation of existing materials, and transport and placement of salvaged and new materials indicated in the contract.   |
|   | .2 | All plant and equipment must be maintained in good and seaworthy condition throughout the duration of the Contract. Any required maintenance and repair work shall be completed promptly. By their dimensions, characteristics and draft, the equipment shall be appropriate to complete the work.                            |
-

- .3 Mark floating equipment with lights in accordance with the most stringent among the following regulations:
  - .1 International Rules of Road
  - .2 Collision Regulations
  - .3 Rules of Road for Great Lakes Basin.
- .4 Maintain radio watch on board.
- .5 Supply, place in position, moor and maintain all buoys/markers required to properly execute the work.
- .6 The Contractor shall supply, place in position, moor and maintain all buoys/markers required to properly execute the work. In the event that any of these buoys/markers sink or go adrift by chance or by accident, they shall be re-floated and/or recovered by the Contractor at its own expense to the satisfaction of the Departmental Representative. The Contractor shall assume responsibility for all accidents of any kind whatsoever due to the buoys/markers being improperly placed or insufficiently visible during the day or improperly lighted during the night or for any other reason.
- .7 Keep all signals and lights required to be installed on all dredging equipment required for the work in accordance with the Collision Regulations and the Navigation Safety Regulations. All equipment required for the work shall be properly identified and/or visible at all times.

1.5 SPECIAL REQUIREMENTS

- .1 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .2 Keep within limits of work and avenues of ingress and egress for which authorisations were delivered.

1.6 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.

PART 2 – PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 – EXECUTION

3.1 NOT USED

.1 Not Used.

End of section

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PART 1 - GENERAL

1.1 METHOD OF  
MEASUREMENT

- .1 Unless otherwise indicated, the provision of materials, labour, tooling, equipment, protection, transportation, administration costs, mark-up and financing, etc., required to execute the work of this contract are included in the following schedules.
- .2 The Contractor shall provide, no later than ten (10) days after notification of the Instruction to Proceed, the detailed breakdown of each item measured as an inclusive (global) unit.
- .3 Work measured using the global (inclusive) unit measurement method are the following:
  - .1 Item n° 1 - Site organisation : this item includes all the elements in Division 01 of the specifications. It includes any work indicated on the drawings and/or in the specifications for which there are no provisions elsewhere in the price schedule.
  - .2 Item n° 2 – Dredging and reuse of material :
    - .1 Mobilization and demobilization of dredging equipment will be accounted for in global item "Site Organization".
    - .2 Only materials excavated above subgrade plane as defined in section 35 20 23 (Dredging) and within indicated or specified side slopes should be dredged.
    - .3 Obstructions due to boulders : the removal of boulders as individually authorised by the Departmental Representative could be necessary to allow the installation of floating docks within the specified limits. Other methods could also be envisaged, such as deepening or displacement of boulders.
    - .4 The Contractor shall not be entitled to any additional compensation for delays due to bad weather or sediments movements or to any delay due to unauthorised dredging.
    - .5 Removal or accumulation of material by wave action will not be measured for payment.
    - .6 All excavated or dredged material must be used for the construction of the breakwater, as quarry-run or in the berm, as indicated in the plans.
    - .7 This item includes the reuse of dredged material in new breakwater.

No payment will be considered for the disposal of dredged material.

- .3 Item n° 6.1 - Electrical power and lighting: item includes all costs related to the supplies transport

- and installation of electrical and lighting work shown on the drawings and described in the specifications—including, without limitation—all controls, panels, posts, lamps, luminaires, wiring, concrete base, and anchorage.
- .4 Item n° 6.2 – Navigation light : this item includes all costs related to the supply, transport and installation of the navigation light and its foundation as described in the plans and specifications.
- .4 The measurement method used for the unit price items in the price schedule shall be as follows:
- .1 Item n° 3.1 – Timber floating docks:  
.1 This item is paid per unit incorporated in the work and includes all costs related to the supply, transportation and installation of floating docks, including the galvanized and stainless steel anchoring systems attached to the docks.  
.2 On a total of eighteen (18) docks, nine (9) anchoring systems to piles must be installed in addition to all dock-to-dock systems.
- .2 Item n° 3.2 – Gangway :  
.1 This item is paid per unit and includes all costs related to supply, transport and installation of gangway, and hardware and all accessories listed on plans and in the specifications to attach gangway to concrete blocks. Two (2) gangways are needed.  
.2 The wheeled winterization system for gangway is included in this item.
- .3 Item n° 3.3 - Concrete blocks for gangway :  
.1 This item is paid per unit and includes all costs related to supply transport and installation of concrete block for gangway, including reinforcing bars, guards and anchors to rock. Two (2) concrete blocks are needed.
- .4 Item n° 4.1 – Steel piles:  
.1 This item is paid per unit incorporated in the work and includes all costs related to the supply and of piles 508 mm X 16 mm, pile filler concrete and pile end plates at specified elevations and within specified tolerances as indicated and approved by the Departmental Representative.  
.2 This item includes the supply of anchoring steel plate to underwater concrete block and its welding to pile.

- .5 Item n° 4.2 : Anchors blocks and pile/block anchoring system :
- .1 This item is paid per unit and includes all costs related to supply, transport and installation of anchoring blocks, hardware and anchors of pile/blocks system.
- .2 This item includes the installation of pile to the anchor block within specified tolerances as indicated and approved by the Departmental Representative.
- .6 Item n° 4.3 – Fastening blocks for docks : this item is paid per unit and includes the supply transport and installation of blocks on the seabed for winterization of docks.
- .7 Item n° 5.1 - Stone supply for breakwater :
- .1 This item is measured per metric ton (MT). Unit prices for the different categories of stones include the production, weighing, and transportation of new stone incorporated in the works. Stones recovered from dredged materials in the wake of this project is not included in this item.
- .2 This item covers only such materials that are actually incorporated in the work as indicated on the drawings and in the specifications.
- .3 All quality control measures including material testing, filter stone and armour stone gradation testing, and verification surveys will be considered incidental to the work and shall be included in the unit prices.
- .4 There will be no compensation for delays caused by vessel traffic or the weather.
- .5 There will be no compensation for downtime.
- .6 Quarry run rock core, filter stone or armour stone that is washed out, removed, deteriorated by wave action or ice, or that is placed outside the limits indicated will not be measured.
- .7 Quarry stones shall be weighed on certified scales approved by the Departmental Representative. The certified scales shall be of the recording type and of the size required to weigh the stone and carrier used. The Contractor shall provide copies of weight tickets for all stone types to the Departmental Representative on a truck load basis. Weight tickets should indicate the weight, time and date of weighing and delivery. Dredged stone is measured as per article 2.3, Utilization of dredged materials (rock) in section 35 31 23.13 (Rubble mound breakwater).
- .8 In the unit price schedule, this item is to be broken down as follows:

- .1 6 tm @ 10 tm
- .2 5 tm @ 8 tm
- .3 3 tm @ 5 tm
- .4 Berm 1 tm @ 4 tm
- .5 Filter stone 0,5-0,8tm and 0,6-1tm
- .6 Quarry-run

.8 Item n° 5.2 - Placement of stone for breakwater :

.1 This item is measured per metric ton (MT). Unit prices for the different categories of stones include the placement of new stone incorporated in the works. Placement of stones recovered from dredged materials in the wake of this project is not included in this item.

.2 This item covers only such materials that are actually incorporated in the work as indicated on the drawings and in the specifications.

.3 There will be no compensation for delays caused by vessel traffic or the weather.

.4 There will be no compensation for downtime.

.5 Quarry run rock core, filter stone or armour stone that is washed out, removed, deteriorated by wave action or ice, or that is placed outside the limits indicated will not be measured.

.6 In the unit price schedule, this item is to be broken down as follows:

- .1 6 tm @ 10 tm
- .2 5 tm @ 8 tm
- .3 3 tm @ 5 tm
- .4 Berm 1 tm @ 4 tm
- .5 Filter stone 0,5-0,8tm and 0,6-1tm
- .6 Quarry-run

.9 Item n° 7 – ATV parking area:

.1 This item is measured per metric ton (MT) (for stone) or per linear meter (concrete border).

.2 Unit prices of each category of stone are to include the production, weighing, transportation and placement.

.3 This item covers only such materials that are actually incorporated in the work as indicated on the drawings and in the specifications and transported on site.

.4 Include in unit prices all quality control measures, including materials testing, granulometric tests on filter stone and armour stone, as well as the control surveys.

.5 There will be no compensation for downtime or weather. Unit price for MG-20 to include the supply of geotextile and its installation. To be considered is that the concrete border will eventually become a low concrete wall on the south edges of parking.

- .6 In the unit price schedule, this item is to be broken down as follows:
  - .1 Quarry-run
  - .2 MG 20 (including geotextile)
  - .3 Stone (150 mm - 400 mm).
  - .4 Concrete curb
  
- .10 Item n° 8 - Timber walkways :
  - .1 This item is paid per linear metre and includes all costs related to the supply transport and installation of the wooden sidewalks, including concrete bases and hardware
  - .2 This item covers only such materials that are actually incorporated in the work as indicated on the drawings and in the specifications.
  - .3 In the unit price schedule, this item is to be broken down as follows:
    - .1 Walkway 4 m width
    - .2 Walkway 2,4 m width.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 – EXECUTION

3.1 NOT USED

End of section

PART 1 - GENERAL

1.1 RELATED  
REQUIREMENTS  
SPECIFIED ELSEWHERE

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified elsewhere, under various sections.

1.2 APPOINTMENT AND  
PAYMENT

- .1 The Departmental Representative will appoint and pay for services of testing laboratory except as follows:  
.1 Inspections and testing required by laws, ordinances, rules, regulations or orders of public authorities.  
.2 Inspections and testing performed exclusively for Contractor's convenience.  
.3 Mill tests and certificates of compliance.  
.4 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.  
.5 Additional tests indicated below.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.3 CONTRACTOR'S  
RESPONSIBILITIES

- .1 Provide labour and facilities to:  
.1 provide access to Work for inspection and testing.  
.2 facilitate inspections and tests.  
.3 make good Work disturbed by inspection and test.  
.4 provide storages on site for laboratory's exclusive use to store equipment and cure test sample.
- .2 Notify the Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

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PART 1 - GENERAL

1.1 ADMINISTRATIVE

- .1 Project meetings will be held throughout the construction period.
- .2 The Departmental Representative will prepare the meeting agendas.
- .3 The Departmental Representative will provide a twenty (2) written notification to the participants concerned.
- .4 The Departmental Representative will provide a meeting room and will make the required arrangements to this end.
- .5 The Departmental Representative will preside at meetings.
- .6 The Departmental Representative will record the meeting proceedings, take note of all the questions raised and decisions taken, and enter any actions undertaken by the parties.
- .7 The Departmental Representative will make copies of the proceedings and provide the documents to participants and parties not in attendance alike within five (5) days after each meeting.
- .8 The Contractor's representative, subcontractors and suppliers attending a meeting shall be qualified to attend and be authorized to act on behalf of the party represented.

1.2 PRECONSTRUCTION  
MEETING

- .1 Within 15 days after the notification of the Instruction to Proceed, the Departmental Representative will schedule and organise a meeting of the parties involved in the contract to discuss administrative procedures and define the roles and responsibilities of all parties.
  - .2 The Departmental Representative, the Contractor, Public works procurement specialist and the work site supervisor shall attend this meeting.
  - .3 The Departmental Representative will establish time and location of meeting and notify parties concerned minimum ten (10) days before meeting.
-

- .4 Prior to signing the agreement, the Departmental Representative will insert into contact documents any and all mutually agreed upon contract modifications.
- .5 Meeting agendas to include:
  - .1 Designation of officials representing the parties involved in the project.
  - .2 Construction schedule: in accordance with Section 01 32 16.07, Construction Progress Schedules - Bar (GANTT) Chart.
  - .3 Submission of shop drawings, mock ups and product samples: in accordance with schedule provided in section 01 33 00, Submittal Procedures.
  - .4 Requirements for temporary facilities, signage, offices, storage sheds, utilities, fences: in accordance with section 01 52 00, Construction Facilities.
  - .5 Delivery schedule pertaining specified materials and equipment.
  - .6 Site safety, in accordance with section 01 56 00, Temporary Barriers and Enclosures.
  - .7 Proposed changes, change orders, procedures, required approvals, allowable mark-up, time extensions, overtime, and other administrative conditions.
  - .8 Project drawing records, in accordance with section 01 33 00, Submittal Procedures.
  - .9 Maintenance manuals, in accordance with section 01 78 00, Closeout Submittals.
  - .10 Take-over and acceptance procedures, and warranties, in accordance with section 01 78 00, Closeout Submittals.
  - .11 Monthly progress claims, administrative procedures, photographs, hold backs.
  - .12 Designation of inspection and testing agencies or firms.
  - .13 Insurance and transcript of policies.

### 1.3 PROGRESS MEETINGS

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- .1 The Departmental Representative will establish a monthly schedule of progress meetings to be held approximately throughout construction on site.
  - .2 The main subcontractors participating to the construction project will attend these meetings with the Departmental Representative and Consultant for surveillance.
  - .3 The Departmental Representative will notify each participant of the date of each meeting at least ten (10) days prior to meetings.
  - .4 Some meetings might be held by phone conference due to location of works and possible accessibility problems. The Department representative will decide, in time, and inform
-

parties at least 14 fourteen (14) days before planned meeting.

- .5 The Departmental Representative to record minutes of the progress meetings and circulate to attending parties and parties not in attendance within five (5) days after meeting.
- .6 Progress meetings agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which inhibit construction work flow and schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to recapture scheduling.
  - .7 Review of construction schedule.
  - .8 Review of progress schedule of successive work period.
  - .9 Review of submittals schedule: expedite submittal process as required.
  - .10 Preservation of quality standards.
  - .11 Review proposed changes for possible repercussions on construction schedule and completion dates.
  - .12 Other business.

PART 2 – PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

End of section

## PART 1 - GENERAL

### 1.1 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), taking into account any approved scope changes.
- .4 Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Durations: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plans: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major product (deliverable).
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to meet Project milestones. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Contractor to enable monitoring of project work in relation to established milestones or stages.

## 1.2 REQUIREMENTS

- .1 The Contractor shall undertake construction as soon as contract award is confirmed
- .2 Works shall be completed on May 30<sup>th</sup> 2016 at the latest.
- .3 On March 31<sup>st</sup> 2015, the stone production for the breakwater shall be well advanced approximately at 80%, steel piles should be acquired. Construction of floating docks could be started.
- .4 Ensure that planning and implementation schedule are workable with respect to contract duration.
- .5 Planning and scheduling shall provide action and results as required by the prescribed milestones and time frame.
- .6 Break down activities to shorter segments to allow for progress reporting.
- .7 The award of contract or the work inception date, the rate of progress, the issuance of the Interim Certificate and that of the Final Certificate are definite project steps or phases and are of essence of this contract.
- .8 The construction schedule and the bar (GANTT) diagram shall take into account the work restrictions described in section 01 35 43 (Environmental procedures).

## 1.3 SUBMITTALS

- .1 Submit to Departmental Representative within 15 working days of Award of Contract a first Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .2 Submit Project Schedule to Departmental Representative within 10 working days of receipt of acceptance of Master Plan.

## 1.4 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Where schedule is deemed impractical, revise and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

## 1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master

Plan.

- .2 The Contractor is responsible for the information required to prepare the construction project schedule. Provide Departmental Representative with the information concerning operations, work sequences, break down of work into activities, and duration of such activities.
  - .3 Construction schedules shall be submitted for review to the Departmental Representative who may require further information where the outlook seems unrealistic or concerning completion dates.
  - .4 Approval of the construction schedules by the Departmental Representative does not relieve Contractor of his obligation to perform the work as required in the contract documents. Acceptance of the Contractor's schedules by the Departmental Representative (DR) does not make the DR responsible for any cost overrun or calendar run-over resulting from delays in the calendar-dated schedules.
  - .5 The project schedule—construction schedules and updates—shall be submitted to the Departmental Representative for review along with each request for payment and is conditional to the processing of such request for payment.
  - .6 The Departmental Representative and the Contractor are to review jointly the updated project schedule at each progress meeting. The Contractor shall update the schedule with the modifications as discussed during progress meetings.
  - .7 Where target dates are not met, the Contractor shall take any of the following actions at no extra cost to the Departmental Representative: increase his workforce, increase working hours, or take any such action required to make up for the delays.
  - .8 The detailed project schedule shall include the steps that add up to the following activities:
    - .1 Contract award.
    - .2 Shop drawings, samples.
    - .3 Permits, authorisations.
    - .4 Mobilization.
    - .5 Excavation.
    - .6 Backfilling.
    - .7 Lighting.
    - .8 Electrical power.
    - .9 Testing and commissioning.
-

1.6 PROJECT SCHEDULE  
REPORTING

- .1 Update Project Schedule on a two-week basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of the updated Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact, and possible mitigation.

1.7 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

End of section

PART 1 - GENERAL

<u>1.1 RELATED SECTION</u>	.1	Section 01 45 00 – Quality Control
<u>1.2 ADMINISTRATIVE</u>	.1	Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
	.2	Do not proceed with Work affected by submittal until review is complete.
	.3	Present shop drawings, product data, samples and mock-ups in SI Metric units.
	.4	Where items are not fabricated in SI Metric units or information is not produced in SI Metric units converted values are acceptable.
	.5	Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
	.6	Notify the Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
	.7	Verify field measurements and affected adjacent Work are co-ordinated.
	.8	Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative review of submittals and Contractor shall submit complete and adequate documents.
	.9	Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review and Contractor shall submit documents to contract requirements.
	.10	Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS  
AND TECHNICAL DATA  
SHEETS

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Québec, Canada.
- .3 Shop drawings shall indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to the specifications and design package drawings.
- .4 Allow 10 days for Departmental Representative review of each submission.
- .5 Adjustments made on shop drawings by the Departmental Representative are not expected to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identifications and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .8 Submissions include:
  - .1 Preparation dates and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractors.
    - .2 Suppliers.
    - .3 Manufacturers.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

- .5 Details of appropriate portions of Work as applicable:
    - .1 Materials and details of fabrications.
    - .2 Layouts, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Performance characteristics.
    - .5 reference standards.
  
  - .9 After Departmental Representative's review, distribute copies of shop drawings and technical data sheets.
  
  - .10 Submit one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
  
  - .11 Submit one (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
  
  - .12 Submit one (1) electronic copy and two (2) hard copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
    - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accordance with specified requirements.
    - .2 Testing must have been within 3 years of date of contract award for project.
  
  - .13 Submit one (1) electronic copy and two (2) hard copies of certificates for requirements requested in specification Sections and as requested by the Departmental Representative.
    - .1 Statements printed on manufacturer's letterhead and signed by responsible official of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
    - .2 Certificates must be dated after award of project contract complete with project name.
  
  - .14 Submit one (1) electronic copy and two (2) hard copies of manufacturers instructions for requirements requested in specification Sections and as requested by the Departmental Representative.
    - .1 Material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety measures to be implemented.
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- .15 Submit one (1) electronic copy and two (2) hard copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by the Departmental Representative.
- .1 Report documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance of products, materials, equipment and systems with manufacturer's standards or instructions.
- .16 Submit one (1) electronic copy and two (2) hard copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by the Departmental Representative.
- .17 Delete information which not applicable to Work project.
- .18 Supplement standard information and provide details applicable to Work project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, shop drawings will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .20 The review of shop drawings by DFO is for sole purpose of ascertaining conformance with general concept borne in data therein indicated.
- .1 This review shall not mean that the Department approves detail design package inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or techniques of construction and installation and for co-ordination of Work of all trades.
- 1.4 PRODUCT SAMPLES
- .1 Submit for review samples in duplicate (2) as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative site office.
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	.3	Notify the Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
	.4	Where colour, pattern or texture is criterion, submit full range of samples.
	.5	Adjustments made on samples by Departmental Representative are not expected to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
	.6	Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
	.7	Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.
<u>1.5 MOCK-UPS</u>	.1	Erect mock-ups in accordance with 01 45 00 (Quality Control).
<u>1.6 CERTIFICATES AND TRANSCRIPTS</u>	.1	Immediately after award of Contract, submit required documents to relevant Workers' Compensation Board.
<u>PART 2 - PRODUCTS</u>		
<u>2.1 NOT USED</u>	.1	Not Used.
<u>PART 3 - EXECUTION</u>		
<u>3.1 NOT USED</u>	.1	Not Used.

End of section

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

- .1 This section governs the management of work site activities required to ensure that the health and safety of the public and work site personnel, including environmental protection, are at all times given precedence over project cost or schedule considerations.

### 1.2 REFERENCES

- .1 Canada Labour Code - Part II, Canadian Occupational Safety and Health Regulations.
- .2 Canadian Standards Association (CSA).
- .3 Workplace Hazardous Materials Information System (WHMIS)/health Canada.
  - .1 Material safety data sheet (MSDS).
- .4 Act Respecting Occupational Health and Safety, R.S.Q. Chapter S-2.1.
- .5 Construction Safety Code, S-2.1, r.6 [2001].
- .6 Canada Shipping Act, and Navigable Waters Protection Act.

### 1.3 SUBMITTALS

- .1 Submit the documents required according to section 01 33 00 (Submittal Procedures).
  - .2 Submit to Departmental Representative, to ASP Construction (Association paritaire en santé et sécurité du secteur de la construction) and to CSST the site-specific safety program, as outlined in article 1.8, at least thirty (30) days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work as planned. The Departmental Representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site. The Contractor shall make the required changes before work begins.
  - .3 Submit once per week to Departmental Representative the site inspection sheet, duly completed.
  - .4 Submit to Departmental Representative within 24 hours one (1) copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
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- .5 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
  - .6 Submit to Departmental Representative all material safety data sheets for controlled products to be used at the site at least three (3) days before they are to be used on the worksite.
  - .7 The Departmental Representative shall examine the health and safety plan prepared by the Contractor specifically for the worksite and shall provide the Contractor with observations within ten (10) of the receipt of the document. If needed, the Contractor shall revise his health and safety plan and resubmit no later than five (5) days after receipt of Departmental Representative observations.
  - .8 Review by Departmental Representative of Contractor's final health and safety plan for the worksite shall not be construed as an approval of such planning and in no way does it relieve the Contractor's overall responsibility for health and safety during construction.
  - .9 Submit to Departmental Representative copies of the training certificates required toward the application of the safety program, in particular:
    - .1 General construction site safety and health courses
    - .2 Safety officer certificates
    - .3 First aid in the workplace and cardiopulmonary resuscitation
    - .4 Work likely to release dust
    - .5 Lockout procedures
    - .6 Wearing and fitting of individual protective gear
    - .7 Safe handling of forklift truck
    - .8 Positioning work platform
    - .9 Work near water bodies with drowning hazard.
    - .10 Work involving third parties.
    - .11 Any other training called for by regulation or the safety program.
  - .10 Medical examinations: Where legislation, regulations, directions, specifications or a safety program require medical examinations, the Contractor shall:
    - .1 Prior to mobilization, submit to Departmental Representative certificates of medical examination for all concerned supervisory staff and employees concerned with the first paragraph of this article and who will be on duty when the site opens.
    - .2 Thereafter, submit without delay certificates of medical examination for any newcomers to the worksite and concerned with the first paragraph of this article.
  - .11 Emergency plan: The emergency plan, as defined in article 1.8.3, shall be submitted to Departmental Representative at the same time as the site-specific safety program.
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- .12 Notice of site opening: Notice of site opening shall be submitted to the *Commission de la santé et de la sécurité du travail* (CSST) with copy to the Departmental Representative before work begins. A copy of such notice shall be posted in full view at the site. At demobilization, a notice of site closing shall be submitted to CSST, with copy to Departmental Representative.
- .13 Work permits: the Contractor shall obtain all the municipal, provincial and federal permits that are required in the Contract. A copy of the permit application forms and of the permits actually delivered shall be submitted without delay to the Departmental Representative.
- .14 Engineering plans and certificates of compliance: the Contractor shall provide the CSST and the Departmental Representative with a copy of all plans and certificates of compliance signed and sealed by an engineer as required in the Construction Safety Code (S-2.1, r. 6) or by any other legislation or regulation or by any other clause in the specifications or in this contract. A copy of these documents must be on hand at the site at all times.
- .15 Certificate of compliance delivered by the CSST: The certificate of compliance is a document delivered by the CSST to certify that the Contractor is in good standing with the CSST, i.e., that he has paid out all the benefits concerning any given contract. This document must be provided to the Departmental Representative at work completion.

#### 1.4 RISK ASSESSMENT

- .1 The Contractor must identify all hazards inherent to each task carried out at the site.
  - .2 The Contractor shall plan and organize the work so as to foster hazard abatement at the source, or mutual protection, so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falls is required, workers shall use a safety harness to CAN/CSA- Z-259.10-M90 requirements. Safety belts shall not be used as protection against falls.
  - .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work at hand.
  - .4 All mechanical equipment shall be inspected before delivery to the site. Before using any mechanical equipment, submit to Departmental Representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or risk, the Departmental Representative may order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.
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## 1.5 MEETINGS

- .1 A Contractor's representative who has decisional ability must attend all meetings at which site safety and health issues are to be discussed.
- .2 The Contractor shall set up a safety committee, and convene meetings in accordance with the Construction Safety Code.

## 1.6 REGULATOR REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the Work.
- .2 Comply with specified standards and regulations to ensure safe operations at worksite areas contaminated with hazardous or toxic substances.
- .3 Regardless of the publication date of standards indicated in the construction safety code, always use the version that is applicable.

## 1.7 SITE-SPECIFIC CONDITIONS

- .1 At the site, the Contractor must take into account of the following conditions:
  - .1 Marine work with tidal amplitudes in the range of 2,2 metres and variable water depths to nearly 8 metres below hydrographic datum.
  - .2 Risks involved in the transshipment, handling and closing-in or collision of floating equipment; manual work in the vicinity of an operating hydraulic or cable shovel during dredging activities.
  - .3 Risks involved in the potential release of oil products at sea and with the operations undertaken to confine the spill.
  - .4 Work in remote locations where extensive hospital care services are not accessible by road.
  - .5 Site without passable roads, accessible only to all-terrain vehicles (ATV).
  - .6 All roads on the island are made of timber walkways.
  - .7 Work in and on the water: the site may also be subject to stirring of waves, winds, current and floating ice.
  - .8 Underwater excavation work, including with explosives (blasting).
  - .9 The protection of the structures as work progresses remains under the Contractor's exclusive responsibility for both the safety of workers and structural stability until final acceptance of Work.
  - .10 Work near live power lines.

## 1.8 SAFETY AND HEALTH MANAGEMENT

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- .1 Acknowledge and assume all the charges and obligations which customarily devolve upon a Principal Contractor under the terms of the Act Respecting Occupational Health and Safety (R.S.Q., chapter S-2.1) and the Construction Safety Code (S-2.1, r.6).
  - .2 Develop a site-specific safety program based on hazard identification and apply it from the start of project until close-out is completed. The safety program must take into account all the information appearing in article 1.7 and must be submitted to all parties concerned, in accordance with the provisions set forth in article 1.3. At minimum, the site-specific safety program shall include:
    - .1 Company safety and health policy;
    - .2 A description of the work, total costs, schedule and projected workforce curve;
    - .3 Flow chart of safety and health responsibility;
    - .4 The physical and material layout of the site;
    - .5 First-aid and first-line treatment standards;
    - .6 Identification of site-specific hazards;
    - .7 Identified to the tasks being carried out, including the preventive measures and the procedures for applying the latter;
    - .8 Training requirements;
    - .9 Procedures in case of accident/injury;
    - .10 Written commitment to comply with the prevention program, signed by all parties;
    - .11 A site inspection schedule based on the preventive measures.
  - .3 The Contractor shall draw up an effective emergency plan based on the characteristics and constraints of the site and its surroundings. Submit the emergency plan to all parties concerned, as required in article 1.3. The emergency plan shall include:
    - .1 Evacuation procedure;
    - .2 Identification of respondents (police, firefighters, ambulance services, etc.);
    - .3 Identification of persons in charge at the site;
    - .4 Identification of first-aid attendants;
    - .5 Training required for those responsible for applying the plan;
    - .6 Any other information needed, in the light of the site characteristics.
  - .4 All work involving drowning hazards shall comply with the following requirements:
    - .1 Comply with article 2.10.13, Safety Code for the construction industry.
-

- .2 Wear a life jacket or other buoyancy device to the following standard:
  - .1 Standard CAN/CGSB-65.7-M88 by the Canadian General Standards Board of Canada (CGSB) entitled Life preservers of inherently buoyant type, published in 1988.
  - .2 Or, pursuant to a limited number of exceptions, are accepted by Transport Canada.
- .5 Before work is undertaken, seek, obtain and convey to Departmental Representative a Letter of Compliance issued by Transport Canada for the approval of all water crafts : transport, rescue, inspection or other (ref.: Mr. Guy Rondeau, Transport Canada, 418 648-5334).
- .6 Ensure that a rescue boat is moored and afloat, and available for all work stations. Where the rescue boat is accessible from land, it may serve several work stations providing that the travel distance between each work station and the craft is less than 100 m.
- .7 Fit rescue craft with an engine powerful enough to make headway against the flow.
- .8 The rescue craft shall display such characteristics and the capacity to accommodate the persons likely to participate in the rescue operation.
- .9 Ensure that the rescue craft is available at all times for workers in case of emergency.
- .10 A qualified person shall be available to operate the emergency equipment.
- .11 Establish emergency procedures in writing and in which the following information is stated. Ensure that all workers concerned by such procedures have undergone the necessary training and information for the purpose of applying the procedures.
  - .1 A complete description of the procedures, including the responsibilities of the persons who are given access to the work area.
  - .2 The location of emergency equipment.

## 1.9 RESPONSIBILITIES

- .1 No matter the size of the construction site or the number of workers on the site, designate one (1) competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the site and likely to be affected by the work.

- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, federal and provincial regulations, applicable standards as well as the site-specific safety program, and comply without delay with any order or correction notice issued by the CSST (Commission de la santé et de la sécurité du travail).
- .3 Take all necessary measures to keep the site clean and tidy throughout the course of the work.

#### 1.10 COMMUNICATIONS AND POSTING

- .1 Make all necessary arrangements to ensure effective communication of safety and health information at the site. As they arrive on site, all workers must be informed of the site specific safety program and of their rights and obligations. The Contractor must insist on workers' right to refuse to perform work which they feel may threaten their own health, safety or physical integrity or that of other persons at the site. The Contractor shall keep and update a written record of all information transmitted and the signature of all workers who received the information.
- .2 The following information and documents must be posted in a location readily accessible to all workers:
  - .1 Notice of site opening;
  - .2 Identification of Principal Contractor;
  - .3 Company OSH policy
  - .4 Site-specific safety program;
  - .5 Emergency plan;
  - .6 Material safety data sheets (MSDS) for all hazardous material used at the site;
  - .7 Minutes of site committee meetings;
  - .8 Names of site committee representatives;
  - .9 Names of first-aid attendants;
  - .10 Action reports and correction notices issued by CSST.

#### 1.11 UNFORESEEN CIRCUMSTANCES

- .1 Whenever a source of danger, not defined in the specifications or unidentifiable during the preliminary site inspection, arises as a result of the work or in the course of activities, take appropriate temporary measures to protect the workers and the public and notify the Departmental Representative, both verbally and in writing. The Contractor shall then modify or update the site specific safety program in order to resume work in safe conditions.

1.12 WORKPLACE  
INSPECTION AND  
CORRECTION OF  
HAZARDOUS SITUATIONS

- .1 Proceed to workplace inspection complete the site inspection checklist at least once a week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental Representative, by the safety and health coordinator or during routine inspections.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct lapses and hazardous situations.
- .4 Work interruption: Give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order interruption/resuming of work when deemed necessary or desirable in the interest of safety and health. This person should always act so that the safety and health of the public and site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 Without limiting the scope of articles 1.8 and 1.10, the Departmental Representative may order cessation of work if, in his/her view, there exist hazards or threats to the safety or health of site workers or the public, or to the environment.

1.13 BLASTING

- .1 Blasting or other uses of explosives is not permitted.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used

End of section

**Part 1            General**

**1.1                SUBMITTALS**

- .1        Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

**1.2                PRIORITIES**

- .1        In addition to the requirements of this section, the Contractor must refer to mitigation measures and to particular requirements (period of exclusion or other) just as licenses (LPEN, LP, etc.) required in the Assessment of Environmental effects in Appendix. In case of a contradiction between specifications and the Assessment of Environmental effects or licence, the most constraining measure will be applied.

**1.3                FIRES**

- .1        Fires and burning of rubbish on site not permitted.

**1.4                DISPOSAL OF WASTES**

- .1        Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2        Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3        Grade and classify all dredged materials to manage their future utilisation in breakwater.
- .4        Avoid storing materials in large quantities and over long periods.
- .5        All necessary installations for the grading and classification of reusable materials must be planned out on work site and in a safe and predetermined area. Submit description of storage sites and obtain Departmental Representative's approval as well as the owners of site if applicable.
- .6        Contractor shall gradually dispose of non-reusable material from demolition off work site to an authorized site.
- .7        Contractor shall submit a copy of official authorization and permits prior to seek Departmental Representative's authorization to remove waste materials from work site.
- .8        Dispose of non reusable solid waste according to Québec's regulation and with Québec's Soil Protection and Rehabilitation of Contaminated Sites Policy.

**1.5                WORK ADJACENT TO WATERWAYS**

- .1        Do not use banks or waterway beds material for borrow. Only dredged materials identified in section 35 20 23 – Dredging can be reused in the new breakwater.
- .2        Identify limits of machinery circulation area.
- .3        Use clean and non-contaminated materials.
- .4        Do not dump construction material, waste or debris in waterways.
- .5        Cleaning of equipment in the water is prohibited.

- .6 Service and refuel vehicles at least 30 m from bank.
- .7 Do not store petroleum products or any other hazardous materials less than 30 m from bank.
- .8 If for some reasons certain equipment or hazardous products, implying hazardous material handling, should stay beneath 30 m from waterways, Contractor shall submit a contingency plan to the Departmental Representative and get it approved prior to beginning of work. The plan will provide, without being limited to, details as follows:
  - .1 Designated inner limits of work area for the use of operations;
  - .2 Handled or stored hazardous products (ex. diesel, waste oils, etc.);
  - .3 Containment methods used in order to limit contamination during maintenance and refuelling of equipments and vehicles (in case of oil leakage);
  - .4 The presence of emergency equipment in case of spill near supplying zone and maintenance area.
  - .5 The procedure for hazardous spill.
  - .6 A list of contacts in case of hazardous spill.
  - .7 If generators must be used, make sure that the fuel tank of each generator is with double walls and that it is installed on an impermeable floor with raised kerb to avoid any discharge.

## 1.6 POLLUTION CONTROL

- .1 Materials used shall be inert and exempt from contaminants.
- .2 Prevent fine materials and other extraneous materials from contaminating air and water beyond work site.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 Control emissions from equipment and plant to local authorities emission requirements.
- .5 Use machinery in good operating condition to avoid grease, oil or fuel leaks. Submerged equipment parts shall be clean and free of leaks.
- .6 Perform service and verifications before arrival at site. Ensure there are no fuel, oil or grease leaks, and silencer must be in good condition. Repair non-compliant equipment as rapidly as possible (noise or leaks).
- .7 Immediately recover any contaminant spill in the environment and dispose of it in accordance with applicable legislation.
- .8 Maintain absorbent materials on site at all times for rapid intervention in case of hazardous spill. Know how to use emergency equipment in case of accidental spill. Report any oil spill or other environmental incident to Departmental Representative and authorities having jurisdiction. Recover hydrocarbons and contaminated soil and dispose of in conformance with applicable legislation.
- .9 Submit emergency a specific plan related to hazardous spill, with a list of all contributors with their phone number, considering the remote location of worksite.
- .10 Keep on site suitable emergency equipments in case of an accidental spill and ensure the appropriate use of it.
- .11 Keep on site, near the work area and near the supplying zone established, an emergency spill response kit. The emergency spill response kit shall contain absorbent material in adequate quantities to remove petroleum from site.

- .12 In the event of a hydrocarbons spill or other hazardous material, the Contractor must advise Departmental Representative and authorities having jurisdiction mentioned in the emergency plan. Report immediately the situation to Environment Canada Emergency services (1-866-283-2333), Environment Emergency of Québec (1-866-694-5454) for an on land spills and to Canadian Coast Guard- Marine Accidental Spill Incidents (1-800-363-4735).
- .13 Wasted oils and other contaminated wastes shall be managed in compliance with effective regulation. This included storage at site, transportation and elimination.
- .14 Any hazardous waste generated on the work site will have to be conveyed to a well-authorized disposition site by MDDELCC.
- .15 Hazardous waste storage and transport will have to be done in accordance with the regulation in force in order not to contaminate the environment.
- .16 Prior to conveying hazardous waste from work site, the Contractor shall obtain the Departmental Representative authorization by showing a copy of all licenses obtained from the owners or hazardous waste disposal site authorities

#### **1.7 TRANSPORT OF MATERIALS**

- .1 Materials may be transported on public roads closer to construction site from Monday to Saturday unless notified otherwise by the authorities having jurisdiction. Transport is prohibited on Sundays and public holidays.
- .2 Materials may be transported through the city between 7:00 a.m. and 7:00 p.m. if applicable. Transport outside these hours is prohibited.
- .3 Ensure proper operation of trucks and boats and barges used. Any means of transport creating sound levels that Departmental Representative deems to exceed standards shall cease transporting materials or be repaired or modified to be made acceptable.
- .4 Contractor shall use adequate signalization and co-operate with municipality, Departmental Representative and other authorities having jurisdiction to minimize the impact of transportation on the daily lives of residents in area adjacent to construction site and on the island of Harrington Harbour.
- .5 Use a sheet to cover granular material during transportation.
- .6 Maintain the roads used in good condition at all times and take the necessary measures to ensure they can be safely used and crossed by other users.
- .7 Upon work completion, promptly restore the roads and natural shorelines to a condition that is at least equal to their original state (including vegetation).
- .8 Use clean equipment and machinery and in good working order. Machinery shall not leak fuel, oil or grease.

#### **1.8 PROTECTION OF THE AQUATIC ENVIRONMENT IN THE WORK AREA**

- .1 The work area should be clearly defined.
- .2 Ensure workers are informed of environmental and safety measures.
- .3 Do not store stone or debris from demolition on bank.
- .4 The Contractor shall minimize the work in aquatic environment and on bank. At anytime the heavy equipment will be allowed the move outside the work area.
- .5 For underwater works required, the Contractor must assure that all equipment pieces involved are free of contamination and of any oil leakage.

- .6 Land-based equipment storage shall be made in anytime above high tides level and as conditions described in section 1.5 – Work adjacent to waterways.
- .7 Employ a method for removing rocks that involves minimal contact between the sediments and machinery to avoid creating suspended matter. Notably, these rocks must be raised slowly and hoisted directly to the surface, taking care not to drag them on the seabed.
- .8 Carefully dispose of the materials on the bottom, especially for the furthest parts, in order to minimize the resuspension of suspended solids (SS); deposit rather than drop the rocks on the seabed.
- .9 Work shall be performed when the wave height is equal to or less than 1.5 m in order to minimize the resuspension of SS, as stable manoeuvring would become more difficult with bigger waves.
- .10 Keep navigation speed near the area to a minimum in order to minimize the ripple effect caused by passing boats on the sediment.
- .11 Ready mix and equipment for concrete transport and casting shall be washed at a minimum distance of 30 m from shore and in a location where water will not contaminate groundwater. If not possible residual waters shall be recuperated and brought out of site.
- .12 All concrete works shall be done so that concrete and all particles do not reach water.
- .13 Do not pour concrete waters in the natural waters.
- .14 When weather conditions deteriorate, work must be avoided to prevent the dispersion of material resuspended by the work;

## **1.9 PROTECTION OF WILDLIFE RESOURCES**

- .1 Ichtyofauna
  - .1 Ensure the respect of recommendations for the protection of water quality which will have the effect of minimizing the impact on marine life
  - .2 No marine work can be undertaken between June 15th and July 15th.
- .2 Birds
  - .1 Do not engage in potentially destructive on land activities for birds during key nesting periods (between May 15th and August 15th) .

## **1.10 PROTECTION OF LIFE QUALITY**

- .1 Safety
  - .1 To ensure safety while respecting the continuity of services, Contractor must secure the site and display adequate information and signage for workers and residents.

- .2 Contractor shall maintain site and surrounding area free of debris that could cause accidents.
  - .3 Contractor shall restrict access to the site to minimize the risk of accident.
  - .2 Tranquility
    - .1 Contractor shall carry out noisy work during normal working hours from Monday to Saturday, from 7 am to 19 pm, avoiding Sundays and holidays.
    - .2 Equipment in good condition and as quiet as possible should be used.
    - .3 Works should be conducted in a minimum timeframe so as to minimize the duration of the nuisance.
    - .4 Contractor must plan works so to reduce the sound effects on the environment and to comply with municipal regulations.
- 1.

**1.11 NOTICE TO SHIPPING**

- .1 Issue a Notice to Shipping regarding date and duration of work, in accordance with the Navigation Protection Act.
- .2 Set up and meet requirements of license emitted under the terms of the Navigation Protection Act

**1.12 WORK MONITORING**

- .1 Mitigation measures from the assessment report (appendix), which many are mentioned in the present section will be subject to constant monitoring on work site by a Departmental Representative.
- .2 The Department Representative will complete an environmental control data record of work site. This control data record will be given to Contractor on a weekly basis.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 REFERENCES AND CODES

- .1 Work shall meet applicable requirements of the latest edition of the standards of the Canadian Government Specifications Board (CGSB), the Canadian Standards Association (CSA), the National Building Code of Canada (NBC), the American Society for Testing and Materials (ASTM), the Canadian Standard Association (CSA), the American Concrete Institute (ACI), Cahier des charges et Devis généraux (CCDG) by the Ministère des Transports du Québec (MTQ), and other standards and codes herein referred to. Use the latest edition of amendments issued up to tender closing date. In case of conflict or discrepancy among applicable documents, the more stringent requirements shall apply.
- .2 Where conflict arises in the course of work, the strictest standards shall apply.
- .3 It should be understood at all times from the above that where this specification refers to standards, the latest issue is concerned regardless of indications herein.
- .4 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

### 1.2 LAWS, REGULATIONS AND DECREES

- .1 Contractor shall conform to all rights and privileges of others, and comply with all federal, provincial and municipal laws, regulations and decrees. The Contractor ensure that his employees, in law or in fact and his subcontractors abide by same.
- .2 Required permits and approvals shall be obtained by the Contractor before work is undertaken.

### 1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

1.4 PERMITS, FEES AND  
TAXES

- .1 Contractor shall give all notices, obtain and pay all fees and construction permits for the demolition and for construction, and for all other services, as required by the authorities having jurisdiction.
- .2 Contractor shall be responsible for all damage and costs resulting from default to obtain these fees and permits.
- .3 Contractor shall include in the total amount of his tender all applicable taxes, but will exclude the Federal tax for Goods and Services tax (GST) and the Québec Sales Tax (QST/TVQ).

PART 2 – PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

End of section

PART 1 - GENERAL

- |  |    |   |
|--|----|---|
| <u>1.1 INSPECTION</u>                              | .1 | Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.  |
|  | .2 | Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.  |
|  | .3 | If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.   |
|  | .4 | Departmental Representative may order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and reconstruction. |
| <u>1.2 INDEPENDENT TESTING/INSPECTION AGENCIES</u> | .1 | Independent Inspection/Testing Agencies will be hired by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.   |
|  | .2 | Employment of inspection/testing agencies does not relax Contractor's responsibility to perform Work in accordance with Contract Documents.   |
|  | .3 | Where defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.  |
| <u>1.3 ACCESS TO CONSTRUCTION WORK SITE</u>        | .1 | Allow inspection/testing agencies access to Work, and to off site manufacturing and fabrication plants.   |
|  | .2 | Co-operate to provide reasonable facilities for such access.  |
| <u>1.4 PROCEDURES</u>                              | .1 | Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.   |
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- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence in order to avoid delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.
- 1.5 REJECTED WORK
- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Where applicable, make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.
- 1.6 REPORTS
- .1 Submit four (4) copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.
- 1.7 TESTS AND MIX DESIGNS
- .1 Furnish requested test results and mix designs.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.
- 1.8 MILL TESTS
- .1 Submit mill test certificates as requested or required in specification Sections.
-

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)  
.1 CAN/CSA-S269.2-M1987, Access Scaffolding for Construction Purposes.  
.2 CAN/CSA-Z321, Signs and Symbols for the Occupational Environment.  
.3 CAN3-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Tests For Concrete.

1.2 ACCESS TO PROJECT SITE

1. Consider that all urban ways on Harrington island are timber walkways and that only ATV vehicles are in use.
2. New harbour is built in a bay with no existing berthing structure.
3. Transport Canada wharf is located on a southern bay of the island at an approximate distance of 1,2 km.
4. A slipway is present on the island of Harrington about 880 m south of worksite. This slipway belongs to the MPO and can be used for the project if fishermen are consulted prior to use and if it does not interfere with their activities. Contractor shall also obtain Department Representative's approval.
5. Before work inception, agree with authorities on the use of private streets and public roads to allow the transportation of equipment and materials required to carry out the work.  
.1 Repair on an ongoing basis any damage to public roads and private streets, bring them to original condition and pay costs.  
.2 Make provisions to remove the snow on public roads and private streets where such service is not provided by the authorities during the work period.  
.3 Before work inception, agree with authorities on any additional maintenance with respect to normal programme resulting from the use of public roads and private streets by Contractor's or sub-trade equipment and vehicles transporting materials or equipment.
- .6 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads.
- .7 Clean-up strips and roads travelled by Contractor's and sub-trade vehicles.

1.3 INSTALLATION AND

- .1 Prepare site plan indicating proposed location and

REMOVAL

dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide, implant or fit up construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.4 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, temporary stairs and equipment.

1.5 HOISTING

- .1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment.
- .2 Hoists and cranes to be operated by qualified operators.

1.6 SITE STORAGE/  
LOADING

- .1 Confine work and operations by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.8 OFFICES

- .1 Location of works might be a problem for efficient communication (phone, internet). Problems should be discussed with Department Representative within four (4) weeks after grant of contract.
- .2 Provide office heated to 22 degrees C, lighted 750 lux and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .3 Provide marked and fully stocked first-aid case in a readily available location.

- .4 Where necessary, subcontractors to provide their own offices. Direct location of these offices.
- .5 Departmental Representative's Site office.
  - .1 Provide temporary office for Departmental Representative.
  - .2 Inside dimensions minimum 5.0 m long x 3.5 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 4 50% opening windows and one lockable door.
  - .3 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature.
  - .4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood.
  - .5 Install electrical lighting system to provide min 750 lux using surface mounted, shielded commercial fixtures with 10% upward light component.
  - .6 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.
  - .7 The Contractor shall provide and install office furniture as follows: 2 desks 1500 mm x 900 mm with drawers, 2 revolving chairs, 4 chairs, 1 drawing laydown table, 1 stool, 1 drawing rack, 1 water cooler, 1 wall mounted display board minimum size 750 mm x 900 mm, 1 filing cabinet and coat hangers. Fit file cabinet with efficient lock, sturdy and not easily opened.
  - .8 The Contractor shall provide and pay for two (2) telephone lines with separate numbers and high-speed Internet service. Fit one telephone line with a speaker and answering machine. Fit the other line with automatic fax/answering machine.
  - .9 The Contractor shall pay the costs of electricity, local telephone service, fax service and Internet connection. The Departmental Representative will assume costs of long distance communications.
  - .10 Contractor to maintain in good condition a drinking water fountain, chemical toilet, power supply, telephone, fax, Internet connexion, ventilation system and lighting.
  - .11 Contractor to maintain [insure and maintain] [assurera et entretiendra] the road leading to departmental Representative's office on the work site throughout construction.
  - .12 Maintain in clean condition.
  - .13 Provide a safety fence around the work site offices in order to protect both the building and the personnel from construction hazards. As well, ensure safe access to work site offices throughout construction.
  - .14 Should the Contractor wish to use additional work areas adjoining the work site, he shall make arrangements

with the owners concerned and provide the Departmental Representative with copy of such agreements. Further, Contractor shall obtain Departmental Representative's authorisation with respect to location of work site offices relative to working areas and access routes.

.15 Work site offices to be installed before construction work is undertaken.

1.9 EQUIPMENT, TOOL  
AND MATERIALS  
STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

.3 Properties shall be left in conditions equal to or better than they were before Contractor's use of premises.

.4 Should the Contractor wish to use additional work areas adjoining the work site, he shall make arrangements with the owners concerned and provide the Departmental Representative with copy of such agreements.

1.10 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.11 CONSTRUCTION  
SIGNAGE

.1 Within four (4) weeks before first mobilization on site, provide a project identification sign and install as directed by the Departmental representative.

.2 Signboard to measure 2400 mm x 1200 mm in plywood with wood battens, ready to receive self adhesive film overlay supplied by Departmental Representative.

.3 At work completion, remove sign and dispose of as directed by the Departmental Representative.

.4 More details on drawing X-496 (Appendix).

.5 Other than posted notices, no other signage or poster may be installed on the work site without Departmental Representative's written authorisation.

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- .6 Signs and notices for safety and instruction in both official languages. Graphic symbols to CAN3-Z321.
- .7 Maintain approved signs and notices in good condition for duration of project, and remove from site on completion of project or earlier if directed by Departmental Representative.
- 1.12 PROTECTION AND MAINTENANCE OF TRAFFIC
- .1 Maintain and protect traffic on public roads during construction period.
- .2 Contractor's rolling stock used for hauling material and equipment to and from the work site shall interfere as little as possible with local traffic.
- .3 Verify adequacy of existing roads and allowable load limit on these roads. Select equipment according to such conditions. Contractor shall be responsible for repair of damage to roads caused by construction operations.
- .4 Dust control, abatement: adequate to ensure safe operation at all times.

1.13 CRAFT FOR USE BY  
DEPARTMENTAL  
REPRESENTATIVE

- .1 The Contractor shall provide a safe, seaworthy boat for use by the Departmental Representative, complete with minimum 25 horsepower motor, fuel, life vests and all other equipment required by Canadian Coast Guard regulations and port authority at Harrington Harbour. As well, provide a marine radio on board, compatible with marine radio system aboard Contractor's barges and/or with that of the supervision team.
- .2 The craft and marine radio shall be available to Departmental Representative at all times throughout the duration of the project.
- .3 The Contractor may use the boat for own purposes. However, the craft with operator is for the exclusive use of Departmental Representative.
- .4 In addition to the craft available to the Departmental Representative, provide upon request by Departmental Representative for such craft, any boatmen, operators, workers, and material forming part of the appropriate project equipment and crew as may be reasonably necessary to monitor Contractor's work and equipment.
- .5 Provide a second, safe power craft for situations where Departmental Representative's craft is unavailable for safety reasons. Refer to section 01 35 30, Health and safety.

1.14 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store recovered materials resulting from demolition activities.
- .4 Do not store new or salvaged material in construction facilities.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

PART 1 - GENERAL

1.1 INSTALLATION AND REMOVAL .1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.2 HOARDING

.1 In order to fence off the worksite, erect 1 800 mm high temporary fences in galvanised steel wire. Submit drawings showing clearly the location of fences during each phase or stage of construction activities. Fasten base plates using two 10M rebar stems sunk 610 mm into the ground or any other equivalent device approved by Department Representative. Add all bracing required to support loads the fence may be subject to. Coordinate location of fences with Departmental Representative.

.2 Install hinged fence gates to access work site. At work completion, dismantle and remove fencing and clean-up the area. Confer with Departmental Representative for locating the gates. Provide required gate posts to ensure gate stability. Provide latch assemblies with locks.

.3 Fences shall comply with CSST requirements (Commission de la santé et de la sécurité au travail).

1.3 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations and overhangs.

.2 Provide as required by governing authorities.

1.4 FIRE & EMERGENCY ROUTES

.1 Maintain access to property for emergency response vehicles.

.2 Due to remote location of works, provide a detailed emergency procedure for emergencies, see section 01 35 29.06 – Health and safety.

1.5 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Where applicable, be responsible for damage incurred.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

PART 1 - GENERAL

1.1 REFERENCE  
STANDARDS

- .1 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves the right to have such products or systems tested.
- .2 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents, or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected regardless of previous inspections. Inspection does not relieve Contractor's responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.3 PRODUCT STORAGE,  
HANDLING AND  
PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions where applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Keep sand used for grout or mortar materials, clean and dry. Store on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .5 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

- .6 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .7 Replace damaged products at own expense and to satisfaction of Departmental Representative.
- .8 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.5 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in the specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures/containers provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions; the Departmental Representative will then establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with manufacturer's instructions, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price.

1.6 WORKMANSHIP

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
  - .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site of workers deemed incompetent or careless.
  - .3 Decisions as to standard or fitness of Quality of Work or labour qualification in cases of dispute rest solely with Departmental Representative, whose decision is final.
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- 1.7 CO-ORDINATION
- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
  - .2 Be responsible for coordination of Work and placement of openings, sleeves and accessories.
- 1.8 REMEDIAL WORK
- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as need be.
  - .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.
- 1.9 FASTENERS – GENERAL
- .1 Unless otherwise indicated, provide metal accessories and fasteners displaying the same texture, colour and finish as the element to be fastened.
  - .2 Prevent any electrolytic reaction between dissimilar metals or materials.
  - .3 Except where fastening items in stainless steel or in other material are prescribed in the relevant section of the specification, use corrosion-proof anchors and fasteners in hot-dip galvanized steel to fasten outdoor assemblies.

PART 2 - PRODUCTS

- 2.1 NOT USED
- .1 Not Used.

PART 3 - EXECUTION

- 3.1 NOT USED
- .1 Not Used.

End of section

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PART 1 - GENERAL

1.1 QUALIFICATIONS  
OF SURVEYOR

- .1 Qualified registered land surveyor, licensed to practice in Place of Work.

1.2 SURVEY  
REFERENCE POINTS

- .1 Existing base horizontal and vertical control points are indicated on the drawings.
- .2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points throughout construction.
- .3 Make no changes or relocations without prior written notice to Departmental Representative.
- .4 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Contractor to peruse the tide tables published by Fisheries and Oceans Canada in order to assess the effect of tides on the proposed construction.

1.3 SURVEY  
REQUIREMENTS

- .1 Establish two (2) permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Stake work site for grading, drilling and placement of backfill.
- .4 Assume exclusive responsibility for the staking of the work and perform entire execution to indicated lines, levels and locations.
- .5 Provide the equipment required to stake and implement the work.
- .6 Provide required material to Departmental Representative (DR) such as rulers and templates to facilitate DR's work during inspections.

#### 1.4 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 Before excavation and dredging work is undertaken, and at completion of same, prepare a certified survey of excavation and dredging zones as required in article 3.6 of section 35 30 23, Dredging.
- .3 Keep two sets of annotated drawings on the work site. As work progresses, clearly annotate the drawings with the modifications introduced. At work completion, hand annotated drawings to the Departmental Representative.
- .4 Keep a record of modifications made to the work.

#### 1.5 TRACE OF THE STRUCTURE

- .1 Before tracing or aligning the work, proceed to field verification of measurements and inform the Departmental Representative of any error or discrepancy.

#### 1.6 SITE INSPECTION

- .1 Before filing his bid, the Contractor may if deemed necessary visit the location and, take stock of existing conditions, and examine any other aspect likely to have a bearing on costs, work duration and execution methods. Deficient knowledge of local conditions may not be argued to claim additional amounts of money.

### PART 2 – PRODUCTS

#### 2.1 NOT USED

- .1 Not Used.

### PART 3 - EXECUTION

#### 3.1 NOT USED

- .1 Not Used.

End of section

PART 1 - GENERAL

1.1 RELATED SECTION .1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.2 PROJECT CLEANLINESS .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.  
.2 Remove debris, waste materials and dredged material (spoil) from site at reasonable frequency.  
.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.  
.4 Dispose of waste materials and debris off site.  
.5 Store volatile waste in covered metal containers, and remove from premises at end of each work shift.

1.3 FINAL CLEANING .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.  
.2 Prior to final inspection remove surplus products, tools, construction machinery and equipment.  
.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste, debris and dredge spoil.

1.4 WASTE MANAGEMENT AND DISPOSAL .1 Separate waste materials for reuse and recycling in accordance with section 01 74 21, Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 – EXECUTION

3.1 NOT USED .1 Not Used.

End of section

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PART 1 - GENERAL

1.1 WASTE  
MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.
- .2 Accomplish maximum control of solid construction waste.
- .3 Preserve environment and prevent pollution and environment damage.

1.2 ENVIRONMENTAL  
ASSESSMENT

- .1 Refer to environmental report (Appendix 2).

1.3 DEFINITIONS

- .1 To recycle: process by which waste and recyclable materials are transformed or collected for purpose of being reintroduced in a consumption cycle as new products.
- .2 Recycling: operations or process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .3 Recovery/reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
  - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2 Returning reusable items including for example pallets or unused products to vendors.
- .4 Salvage: removal of structural and non-structural materials from deconstruction/disassembly or commercial, industrial or institutional projects for purpose of recovery/reuse or recycling.
- .5 Separate Condition: refers to waste sorted into individual types.
- .6 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

1.4 PRECAUTIONS

- .1 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 Sort waste material at source.
  - .2 Provide waybills for separated materials.

1.5 DISPOSAL OF NON-  
CONTAMINATED  
MATERIALS

- .1 All materials generated in the dredge spoils must be reused in the proposed structures.
- .2 Do not bury rubbish or waste materials.
- .3 Do not dispose of waste, volatile materials, mineral spirits or hydrocarbons into waterways, storm, or sanitary sewers.
- .4 Recover/manage waste materials as Work progresses.
- .5 Prepare project summary to verify destination and quantities of waste disposed of on a material-by-material basis.
- .6 Uncontaminated dry materials that are not reused/backfilled or recycled shall be disposed of in one or several sites authorized by MDDELCC (ministère du Développement durable, de l'Environnement et de la lutte contre les changements climatiques). Comply with the requirements of the Environment Quality Act (L.R.Q. c.Q-2). Upon request, MDDELCC personnel may provide information on operational sites designated to accept forwarded waste types.
- .7 Provide the Departmental Representative with a copy of the authorizations and permits obtained from the owners or managers of dry material disposal sites prior to requesting Departmental Representative's authorization to remove dry materials from work site.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.

End of section

PART 1 - GENERAL

- 1.1 RELATED SECTION .1 Section 01 74 11 - Cleaning
- 1.2 INSPECTION AND DECLARATION OF SUBSTANTIAL ACHIEVEMENT .1 Contractor's Inspection: Contractor and Subcontractors shall proceed to inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
- .2 Request Departmental Representative's inspection.
- .2 Departmental Representative inspection: Departmental Representative will perform inspection of Work with Contractor in attendance to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .3 Work completion: submit written statement certifying that the following have been performed:
- .1 Work has been completed, inspected and deemed in compliance with Contract Documents.
- .2 Defects and deficiencies identified during inspection have been corrected.
- .3 Work is complete and ready for final inspection.
- .4 The personnel designated by the Departmental Representative was trained as required on the operation of equipment and systems.
- .4 Final Inspection: when above steps are completed, request final inspection of Work by Owner, Departmental Representative and Contractor jointly. If Work is deemed incomplete by Owner and Departmental Representative, complete outstanding items and request reinspection.
- 1.3 CLEANING .1 In accordance with Section 01 74 11 (Cleaning).
- .2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 21 (Construction/Demolition Waste Management and Disposal).

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 77 00 – Closeout procedures

1.2 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Furnish evidence, if requested, for type, source and quality of products provided.
- .3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.3 GENERAL

- .1 Arrange, correlate, cross-reference, and establish the table of contents of each manual to be provided at work completion.
- .2 Submit the operating and maintenance manual to the Departmental Representative six (6) weeks prior to project provisional acceptance.
- .3 Submit three (3) copies of the manual in French and two (2) copies in English.
- .4 Arrange data and information in the same numerical sequence as that of contract document sections.
- .5 Mark each section with a celluloid-covered tab fastened to a rigid paper separator.
- .6 Type base lists and any comments or remarks.
- .7 Manufacturers' drawings, diagrams and publications shall be legible.

1.4 BINDERS

- .1 Vinyl, hard covered, 3 'D' ring, loose leaf 215 x 280 mm with spine and face pockets.
  - .2 Identify content of each binder on spine (insert).
-

1.5 CONTENTS - EACH  
VOLUME

- .1 Binder n° 1 :
  - .1 Cover page of binder n° 1 to display the following information:
    - .1 Date submitted.
    - .2 Project designation (name), location and number.
    - .3 Name and address of Contractor and of all subcontractors.
  - .2 Table of contents of each binder.
  - .3 Warranties.
  - .4 Copies of approval certifications and other required certificates.
- .2 Every other binder:
  - .1 Cover page displaying the following information:
    - .1 Date submitted.
    - .2 Project designation (name), location and number.
  - .2 Table of contents of each binder.
  - .3 The following data specified in individual sections of Divisions 01 to 35 :
    - .1 Listing of the equipment, including the service centre.
    - .2 The information displayed on identification plates such as equipment number, brand name, dimensions, capacity or output, model number, as well as serial number.
    - .3 Listing of parts.
    - .4 Details pertaining to equipment installation.
    - .5 Instructions pertaining to equipment operation.
    - .6 Instructions pertaining to equipment maintenance.
    - .7 Instructions pertaining to the maintenance of finishes.
- .3 Shop drawings: bind separately a complete set of final, reviewed shop drawings.
- .4 Documents described in articles 1.8 and 1.9 of section 01 11 01, Summary of work.
- .5 Final survey certificate.

1.6 FINAL SURVEY  
CERTIFICATE

- .1 Submit final survey certificate in accordance with section 01 71 00, Examination and preparation, indicating the compliance or non-compliance of the location and spot elevations of finished work with respect to contract document requirements.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

End of section

## PART 1 - GENERAL

### 1.1 REFERENCES

- .1 Definitions:
  - .1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
  - .2 Hazardous Material: product, substance, or organism used for its original purpose; and is material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
  - .3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .2 References:
  - .1 Canadian Environmental Protection Act, 1999 (CEPA 1999):
    - .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
  - .2 Department of Justice Canada (Jus):
    - .1 Transportation of Dangerous Goods Act, 1992 (TDG Act) 1992, c. 34.
    - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).
  - .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
    - .1 Material Safety Data Sheets (MSDS).
  - .4 National Research Council Canada Institute for Research in Construction (NRC-IRC):
    - .1 National Fire Code of Canada-2005.

### 1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with section 01 33 00, Submittal Procedures.
- .2 Technical data sheets:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for required hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two (2) copies of WHMIS MSDS in accordance with section 01 35 29.06, Health and Safety Requirements to Departmental Representative for each hazardous material required prior to bringing hazardous material on site.

.3 Submit hazardous materials management plan to Departmental Representative that identifies hazardous materials required, usage, location, personal protective equipment requirements, and disposal arrangements.

### 1.3 DELIVERY, STORAGE AND HANDLING

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- .1 Deliver, store and handle materials in accordance with section 01 61 00, Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .4 Storage and Handling:
  - .1 Co-ordinate storage of hazardous materials with Departmental Representative and abide by local regulations.
  - .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
  - .3 Store and handle flammable and combustible substances in accordance with National Fire Code of Canada requirements.
  - .4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use conditional to the following:
    - .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
    - .2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.
  - .5 Transfer of flammable and combustible liquids is prohibited within buildings.
  - .6 Transfer flammable and combustible liquids away from open flames or heat-producing devices.
  - .7 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.

- .8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
- .9 Observe smoking regulations. Smoking is prohibited in areas where hazardous materials are stored, used, or handled.
- .10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids are as follows:
  - .1 Store hazardous materials and wastes in closed and sealed containers.
  - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
  - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
  - .4 Segregate incompatible materials and wastes.
  - .5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.
  - .6 Store hazardous materials and wastes in secure storage area with controlled access.
  - .7 Maintain clear egress from storage area.
  - .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
  - .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
  - .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
  - .11 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
  - .12 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.
- .5 Packaging Waste Management: remove for reuse and return to makers of pallets, crates, padding, and other packaging materials as specified in accordance with section 01 74 21, Construction/Demolition Waste Management and Disposal.

## PART 2 – PRODUCTS

### 2.1 MATERIALS

- .1 Description:
  - .1 Bring on site only quantities hazardous material required to perform Work.

.2 Maintain MSDS (material safety data sheets) in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

### PART 3 - EXECUTION

#### 3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with section 01 74 11, Cleaning. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with section 01 74 11, Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with section 01 74 21, Construction/ Demolition Waste Management and Disposal.
  - .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
  - .2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.
  - .3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
  - .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
  - .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
  - .6 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
  - .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
  - .8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
    - .1 Hazardous wastes recycled in manner constituting disposal.
    - .2 Hazardous waste burned for energy recovery.
    - .3 Lead-acid battery recycling.
    - .4 Hazardous wastes with economically recoverable precious metals.

End of section

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 03 20 00 – Concrete Reinforcing
- .2 Section 03 30 00 – Cast-in-Place Concrete
- .3 Section 03 41 00 - Precast structural concrete

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA-O86S1-05, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.
  - .3 CSA O121-M1978(R2003), Douglas Fir Plywood.
  - .4 CSA S269.1-1975(R2003), Falsework for Construction Purposes.
  - .5 CAN/CSA-S269.3-M92(R2003), Concrete Formwork, National Standard of Canada
- .2 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Where required, submit shop drawings for falsework. Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Québec, Canada.
- .3 Shop drawings to indicate, show or include method of construction, shoring, stripping and re-shoring procedures, materials and location of embedded parts. Comply with CSA S269.1, for falsework drawings. Comply with CAN/CSA-S269.3 for formwork drawings.

1.4 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Separate waste materials for reuse and recycling. Dispose of wastes as prescribed in section 01 74 21 (Construction/ Demolition Waste Management and Disposal).
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

- .3 Collect and separate for disposal paper, plastic, polystyrene or corrugated cardboard packaging material in appropriate on-site bins for recycling.
- .4 Fold up metal banding, flatten and place in designated area for recycling.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Formwork materials:
  - .1 For concrete, use wood and wood product formwork materials to CSA-O121 and CAN/CSA-O86.
  - .2 For exposed concrete, use formwork materials to CSA-A23.1/A23.2.
- .2 Form ties:
  - .1 For concealed concrete, use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.
  - .2 For exposed concrete, use snap ties complete with plastic cones and light grey concrete plugs.
- .3 Form stripping agent: stripping agent shall not stain the concrete.
- .4 Falsework materials: to CSA-S269.1.

## PART 3 - EXECUTION

### 3.1 FABRICATION AND ERECTION

- .1 Before proceeding with formwork/falsework, ensure dimensions agree with drawings.
- .2 Where required, fabricate and erect falsework in accordance with CSA S269.1.
- .3 Provide site drainage to prevent washout of soil supporting mud sills and shores.
- .4 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.

- .5 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.
- .6 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.
- .7 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

3.2 TOLERANCES

- .1 Comply with following tolerances in constructing the formwork:
  - .1 General dimensional tolerances (D):  $\pm 5$  mm.

Dimension "D" metre (m)	Admissible deviation millimetres (mm)
$0 < D < 2,4$	$\pm 5$
$2,4 < D < 4,8$	$\pm 8$

3.3 FORM REMOVAL  
(STRIPPING)

- .1 After a pour, leave formwork in place for a period of three (3) days minimum. This time period does not relieve the Contractor of his responsibility in keeping with the complexity and type of work, weather conditions, and to ascertain that the concrete has reached sufficient strength to support its own weight and other design loads before undertaking the formwork dismantling process.

End of section

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 03 10 00 – Concrete Forms and Accessories
- .2 Section 03 30 00 – Cast-in-Place Concrete
- .3 Section 03 41 00 - Precast structural concrete

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA-A23.3-04, Design of Concrete Structures.
  - .3 CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement, A National Standard of Canada.
  - .4 CSA W186-M1990(R2002), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .2 Reinforcing Steel Institute of Canada (RSIC)
  - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Quality Assurance: in accordance with Section 01 45 00 (Quality Control).
  - .1 Mill Test Report: upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, minimum one (1) week prior to beginning reinforcing work.
  - .2 Upon request submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

1.4 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Separate waste materials for reuse and recycling. Dispose of wastes as prescribed in section 01 74 21 (Construction/ Demolition Waste Management and Disposal).
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene or corrugated cardboard packaging material in appropriate on-site bins for recycling.
- .4 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Departmental Representative.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .3 Cold-drawn annealed steel wire ties: to ASTM A 497/A497M.
- .4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .5 Lamp post base anchor bolts: galvanised rebars, threaded one end, w/galvanised nuts and washers.

2.2 FABRICATION

- .1 Unless otherwise instructed, fabricate reinforcing steel in accordance with CSA-A23.1/A23.2.
- .2 Obtain Departmental Representative approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Bundles of bar reinforcement shipped shall be clearly identified and colour coded (tagged) in accordance with bar bending details and lists.

PART 3 - EXECUTION

3.1 FIELD BENDING

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.

3.2 PLACING  
REINFORCEMENT

- .1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.
- .2 Prior to placing concrete, seek and obtain Departmental Representative's approval of reinforcing material and placement.
- .3 Ensure cover to reinforcement is maintained during concrete pour.

End of section

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 03 10 00 – Concrete Forming and Accessories
- .2 Section 03 20 00 – Concrete Reinforcing
- .3 Section 03 41 00 - Precast structural concrete

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA A283-00(R2003), Qualification Code for Concrete Testing Laboratories.
  - .3 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  - .4 CSA-A3001-03, Cementitious Materials for Use in Concrete.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Submit required MSDS (Material Safety Data Sheets) in accordance with Workplace Hazardous Materials Information System (WHMIS).

1.4 QUALITY  
ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 (Quality Control).
- .2 Submit to Departmental Representative, minimum 4 weeks prior to starting concrete work, valid and recognized certificate from plant supplying concrete. When plant does not hold valid certification, provide test data and certification by qualified independent inspection and testing laboratory that materials used in concrete mixture will meet specified requirements.
- .3 Minimum 4 weeks prior to starting concrete work, submit proposed quality control procedures for review by Departmental Representative on following items:
  - .1 Falsework erection.
  - .2 Hot weather concrete.
  - .3 Cold weather concrete.
  - .4 Curing.
  - .5 Finishes.
  - .6 Formwork removal.
- .4 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 (Health and safety).

1.5 DELIVERY,  
STORAGE AND  
HANDLING

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.1 Concrete hauling time: maximum allowable time for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching. Where mixing is performed directly on the work site, an independent laboratory shall be in attendance to ensure compliance of procedures and proportioning.

.1 Modifications to maximum time limit must be agreed to by laboratory representative and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by Departmental Representative.

.2 Concrete pour: ensure continuous concrete pouring to CSA A23.1/A23.2.

.3 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling.

.2 Divert unused concrete materials from landfill to authorised recycling facility.

.3 Ensure that washing the concrete production equipment is environmentally sound and carried out in accordance with section 01 74 21 (Construction/Demolition Waste Management and Disposal).

.4 Divert unused admixtures and additive materials (pigments, fibres) from landfill to official hazardous material collections site as approved.

.5 Unused admixtures shall not be disposed of into water (sea), onto ground or in any location where it will pose health or environmental hazard.

.6 Prevent concrete admixtures and additive materials from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with inert, non-combustible material and remove for disposal. Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations and in compliance with provisions of section 01 74 21 (Construction/Demolition Waste Management and Disposal).

1.6 WASTE  
MANAGEMENT AND  
DISPOSAL

---

.1 Separate waste materials for reuse and recycling. Dispose of wastes as prescribed in section 01 74 21 (Construction/Demolition Waste Management and Disposal).

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene or corrugated cardboard packaging material in appropriate on-site bins for recycling.

.4 Fold up metal banding, flatten and place in designated area

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for recycling.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Cement: general purpose, to CAN/CSA-A3001, Type GUb-SF.
- .2 Supplementary cementing materials: to CAN/CSA-A23.1 and CAN/CSA-A3001.
- .3 Water: to CSA-A23.1.
- .4 Aggregates: to CAN/CSA-A23.1/A23.2.
- .5 Admixtures:
  - .1 Air entraining admixture: to ASTM C 260.
  - .2 Chemical admixture: to ASTM C 494 and ASTM C 1017.
- .6 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA-A23.1/A23.2.
- .7 Curing compound: to CSA-A23.1/A23.2 and ASTM C 309.
- .8 Waterstops: ribbed, extruded PVC of sizes indicated.
- .9 Premoulded joint fillers:
  - .1 Bituminous impregnated fibre board: to ASTM D 1751.
  - .2 Sponge rubber: to ASTM D 1752, Type I, firm grade.
- .10 Bonding adhesive: "Armatec 110 – Epocem" type adhesive made by Sika.

### 2.2 MIXES

- .1 Concrete :
  - .1 Portland cement type GUb-SF.
  - .2 Minimum compressive strength at 28 days: 35 MPa.
  - .3 Aggregate size: 20 mm Maximum.
  - .4 Exposure class : C-1.
  - .5 Slump: at time and point of discharge 50 to 110 mm.
  - .6 Air-entraining: 6½% ± 1½%.

- .7 Chemical admixtures: Water reducing, set retarding, set accelerating, strength enhancer, air entraining, plasticizing agents to ASTM C 494.
- .8 Water/cement maximum ratio: 0.4.
- .9 Minimum cement quantity: 375 kg/m<sup>3</sup>.
- .10 Concrete preparation: prepare concrete to CSA-A23.1.
- .11 All aggregate used in the concrete shall be non-reactive with cement alkalis (to CSA- A23.2-27A).
- .12 Supplementary cementing material: any addition shall be approved by the Departmental Representative.
- .13 Shrinkage compensation grout: 50 MPa strength.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- .1 Obtain Departmental Representative approval before placing concrete. Provide 24 hours notice prior to placing of concrete.
  - .2 Place concrete reinforcing in accordance with Section 03 20 00 (Concrete Reinforcing).
  - .3 Install sufficient rock anchors to assure stability of the gangway base. Submit sealed method by professional Engineer to Departmental Representative and obtain approval prior to installation of anchors.
  - .4 During concreting operations, follow instructions below:
    - .1 Development of cold joints not allowed.
    - .2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
  - .5 Pumping of concrete is permitted only after approval of equipment and mix.
  - .6 Ensure reinforcement and inserts are not disturbed during concrete placement.
  - .7 Prior to placing of concrete obtain Departmental Representative approval of proposed method for protection of concrete during placing and curing in adverse weather.
-

- .8 Protect previous Work from staining.
- .9 Clean concrete surfaces and remove any stains.
- .10 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

### 3.2 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CSA-A23.1/A23.2.
- .2 Sleeves and inserts:
  - .1 Set sleeves, ties, pipe hangers and other inserts as indicated or specified elsewhere.
  - .2 Do not remove or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Departmental Representative before placing of concrete.
- .3 Post base anchor bolts for lamp and gangway block :
  - .1 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.
  - .2 With approval of Departmental Representative, grout anchor bolts set in drill-holes bored in rock according to manufacturer.
  - .3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
  - .4 Set bolts and fill holes with shrinkage compensating grout.
  - .5 Take into account atmospheric temperature when setting anchor bolts.
- .4 Finishing and curing:
  - .1 Finish concrete in accordance with CSA-A23.1/A23.2.
  - .2 Use procedures as defined in CSA-A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.
  - .3 Unless otherwise indicated, provide rough finish using wood trowel.
  - .4 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radius edges unless otherwise indicated.

### 3.3 SURFACE TOLERANCE

- .1 Concrete tolerance in accordance with CSA-A23.1/A23.2 straightedge method.

### 3.4 FIELD QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Departmental Representative for review in accordance with

CSA-A23.1/A23.2.

3.5 COMPLIANCE  
VERIFICATION

.1

Quality Control Programme: ensure concrete supplier meets specified performance criteria of concrete, and apply compliance control as defined in PART 1 – Quality Assurance.

End of section

## **PART 1 - GENERAL**

### **1.1 Related requirements**

- .1 Section 03 20 00 – Concrete Reinforcing.
- .2 Section 03 30 00 – Cast-in-place Concrete

### **1.2 References**

- .1 Canadian Standards Association (CSA)/CSA International.
  - .1 CAN/CSA-A23.1/A23.2-Concrete Materials and Methods of Concrete/Construction/Methods of Test for Concrete.

### **1.3 Definitions**

- .1 Tremie concrete is placed underwater through a tube called tremie pipe.
  - .1 Tremie pipe has a hopper at upper end and may be open ended or may have foot valve, plug or travelling plug to control flow of concrete.
  - .2 Concrete is placed in hopper and sufficient head of concrete is maintained in tremie pipe to provide desired rate of flow.
- .2 Pumped concrete method consist of placing concrete underwater using a concrete pump with discharge line used in similar manner to a tremie pipe.

## **PART 2 - PRODUCTS**

### **2.1 Materials**

- .1 Concrete materials: to Section 03 30 00 - Cast-in-Place Concrete.

### **2.2 Mixes**

- .1 Use 35 MPa mix as stated in Section 03 30 00.

## **PART 3 – EXECUTION**

### **3.1 Preparation**

- .1 Where concrete must bond to existing surfaces, clean surfaces just prior to starting concrete placement.

- .1 Use water jets, mechanical scrapers or other means, and when quantities of mud or rock cuttings are present, remove by air lift.

### 3.2 Installation

- .1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete and to CAN/CSA-A23.1/A23.2. Testing for concrete to CAN/CSA-A23.1/A23.2, except where specified otherwise.
- .2 Where concrete placement extends above water surface, protect concrete from direct contact with air at temperature below 5 degrees Celsius in accordance with CAN//CSA-A23.1.
- .3 Place concrete in one continuous operation to full depth required.
  - .1 Supply complete equipment for every phase of operation.
  - .2 Provide sufficient supply of concrete to complete pour without interruption.
- .4 Take necessary measures to prevent concrete from being dropped in marine environment.
- .5 Tremie method.
  - .1 Provide water-tight tremie pipe sized to allow free flow of concrete.
  - .2 Provide hopper at top of tremie pipe and provide a mean to raise and lower tremie pipe.
    - .3 Provide plug or foot valve at bottom of tremie pipe to permit initial filling of pipe with concrete.
  - .4 Provide minimum of one tremie pipe for every pile. Do not move tremie pipes laterally through concrete.
  - .5 Start concrete placement with full tremie pipe. Keep bottom of pipe buried minimum 300 mm in freshly placed concrete. Control rate of flow by varying depth of pipe bottom in concrete.
    - .6 If seal is lost, allowing water to enter pipe, withdraw pipe immediately. Refill pipe, and continue placing as specified.
    - .7 If tremie operation is interrupted so that horizontal construction joint has to be made, cut surface laitance by jetting, within 24 to 36 hours and remove loose material by pumping or air lifting before placing next lift.

.8 Do not vibrate, disturb or puddle concrete after placement.

.6 Pumped concrete method.

.1 Follow procedures as for tremie method in placing concrete using discharge line from concrete pump as tremie pipe.

**END OF SECTION**

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 03 20 00 – Concrete Reinforcing
- .2 Section 03 30 00 – Cast-in-place Concrete
- .3 Section 05 50 00 – Metal Fabrications

1.2 REFERENCES

- .1 Canadian Standards Association (CSA)
  - .1 CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
  - .2 CAN3-A23.3, Design of concrete structures.
  - .3 CAN-A23.4, Precast concrete - Materials and construction.
  - .4 CSA-A251 Materials and Construction/Qualification Code for Architectural and Structural Precast Concrete Products.
  - .5 CAN/CSA-G30.18, Billet-Steel Bars for Concrete Reinforcement.

1.3 PERFORMANCE  
REQUIREMENTS

- .1 Tolerances of precast elements shall comply with requirements set forth in CSA-A23.4, section 10.
- .2 Variance between actual length and nominal length of precast elements shall not exceed 5 mm upwards or downwards.
- .3 Variance between actual and nominal transversal dimensions of precast elements shall not exceed 5 mm upwards or downwards.
- .4 Variance relative to straight line shall not exceed 1 mm per linear metre.

1.4 SHOP  
DRAWINGS

- .1 Submit shop drawings as required in section 01 33 00 (Submittal Procedures).
- .2 Each shop drawing submitted shall bear the seal and signature of a qualified engineer member of OIQ or holding a licence allowing him or her to practice in Canada, in the Province of Québec.

1.5 QUALIFICATION

- .1 Fabricate precast concrete elements by CSA certified manufacturing plant in appropriate categories according to CSA-A251.

- .2 Precast concrete manufacturer to be certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting tender and to specifically verify as part of tender that plant is currently certified in appropriate categories, Structural.
- .3 Only precast elements fabricated in such certified plants to be acceptable to Departmental Representative and plant certification to be maintained for duration of fabrication, erection until warranty expires.
- .4 Welding companies shall be certified to CSA-W47.1.

1.6 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with prescriptions in this specification.
- .2 Ensure that empty containers are sealed and properly stored away from children pending their disposal.
- .3 Take appropriate measures to prevent contamination of potable water sources by plasticizers, water reducers and air entrainment agents added to concrete. Where necessary, collect or solidify liquid waste with inert non-combustible material and take all required safety measures. Dispose of such waste to applicable requirements in local, provincial and federal rules and regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Concrete materials: to requirements of section 03 30 00 (Cast-in-place concrete).
- .2 Steel reinforcement: to requirements of section 03 20 00 (Concrete reinforcing).
- .3 Concrete-encased steel plates: steel plates to CAN/CSA G40.20 and CAN/CSA G40.21. Plates shall be hot-dip galvanized to requirements of section 05 50 00 (Metal fabrications).

2.2 PROPORTIONING

- .1 Prepare concrete for the anchor concrete block in precast concrete to CSA-A23.1 (Table 11, Alternative I), in order to yield the following mix:
  - .1 Cement: use GUb-SF type cement.
  - .2 28-day minimum strength: 35 MPa.
  - .3 Minimum cement content: 375 kg/m<sup>3</sup> of concrete.
  - .4 Exposure class: C-1.

- .5 Maximum water-cement ratio: 0.4.
- .6 Minimum size or coarse aggregate: 20 mm to CSA-A23.1.
- .7 Slump: 50 to 100 mm.
- .8 Air content: 5 to 8%.
- .9 Admixtures: quantities as recommended by manufacturer.

2.3 PRECAST  
ELEMENTS

- .1 Fabricate precast elements to CSA-A23.4 and CSA-A251.
- .2 Each precast element shall bear the date of pour, and the matching identification mark identified on the shop drawings and used to locate the element.
- .3 Hardware items adequate to handle the precast elements, shall be provided and installed.

2.4 QUALITY CONTROL  
AT THE SOURCE

- .1 Provide Departmental Representative with certified copies of quality control tests related to this project as specified in CAN3-A23.4 and CSA-A251.
- .2 Provide records from in-house quality control programme based upon plant certification requirements to Departmental Representative for inspection and review.
- .3 Upon request, provide Departmental Representative with copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.
- .4 Precast plants should keep complete records of supply source of concrete material, and provide to Departmental Representative for review upon request.

PART 3 - EXECUTION

3.1 PLACEMENT

- .1 Handling and storage: ship, handle and store precast elements to CSA-A23.4 requirements.
- .2 Installation: install precast elements as shown on the drawings. Exact location of the block will depend on actual configuration of floating docks determined on site and approved by Department Representative.

End of section

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 03 30 00 - Cast-in-Place Concrete
- .2 Section 03 41 00 - Precast structural concrete
- .3 Section 31 62 16.19 - Anchored Steel Piles
- .4 Section 35 51 23.01 - Floating docks

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A 307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.
  - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.
  - .4 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5 CSA W59-1989(R2001), Welded Steel Construction (Metal Arc Welding) (Metric).

1.3 SUBMITTALS

- .1 Product Data
  - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 (Submittal Procedures).
  - .2 Submit two (2) copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Shop Drawings
  - .1 Submit shop drawings in accordance with Section 01 33 00 (Submittal Procedures).
  - .2 Indicate materials, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
  - .3 Shop drawings shall bear the seal and signature of an engineer member of O.I.Q. (Ordre des ingénieurs du Québec).

<u>1.4 QUALIFICATION</u>	.1	The Contractor or his designated subcontractor shall hold a certificate in good standing in accordance with the requirements of CAN/CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures (division 3).
<u>1.5 QUALITY ASSURANCE</u>	.1	Test Reports: upon request by Departmental Representative, provide test reports on products, materials and equipment certifying compliance with specified performance characteristics and physical properties.
	.2	Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
<u>1.6 DELIVERY, STORAGE, AND HANDLING</u>	.1	Packing, Shipping, Handling and Unloading: Deliver, store, handle and protect materials in accordance with Section 01 61 00 (Common Product Requirements).
<u>1.7 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate and recycle waste materials as directed in section 01 74 21 (Construction/Demolition Waste Management and Disposal).
	.2	Remove from site and dispose of packaging materials at appropriate recycling facilities.
	.3	Collect and separate for disposal paper, plastic, polystyrene or corrugated cardboard packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.
	.4	Divert unused metal materials from landfill to approved metal recycling facility.
<u>PART 2 - PRODUCTS</u>		
<u>2.1 MATERIALS</u>	.1	Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.
	.2	Steel pipe: to CAN/CAS-G4a21 350W, Class H.
	.3	Bolts and tie-rods: to ASTM A307. Where stainless steel bolts and nuts are specified, use grade 316 stainless steel.

- .4 Welding materials: to CSA W59.
- .5 Welding electrodes: to CSA W48 Series.
- .6 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours and 50 MPa at 28 days.
- .7 Galvanization: hot-dip galvanization, with a 600 g/m<sup>2</sup> coat to CAN/CSA-G164.
- .8 Touch-up paint for hot-dip galvanized surfaces: zinc-rich primer to CGSB 1-GP-181a.
- .9 Rock anchors for lamp base : consider model and anchor type according to manufacturer for 30 feet and 20 feet timber piles.

### PART 3 - EXECUTION

#### 3.1 ASSEMBLY AND ERECTION OF STEEL ELEMENTS

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- .4 Erect metalwork square, plumb, straight, and true, accurately fitted.
- .5 Provide anchor bolts as shown on the drawings for assembly to floating docks.
- .6 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .7 Make field connections with bolts and comply with CAN/CSA-S16.1.
- .8 Hand items over for casting into concrete to appropriate trades together with setting templates.
- .9 Touch-up galvanized surfaces with zinc rich primer where damage has occurred during construction.
- .10 Repair to Departmental Representative's satisfaction all painted surfaces of steel components that may have been damaged during shipping, handling or installation.

3.3 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

End of section

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 06 10 00.01 - Walkway carpentry
- .2 Section 06 15 00 - Wood walkway decking
- .3 Section 35 51 23.01 - Floating docks

1.2 REFERENCES

- .1 American Wood-Preservers' Association (AWPA)
  - .1 AWPA M2-01, Standard for Inspection of Treated Wood Products.
  - .2 AWPA M4-06, Standard for the Care of Preservative-Treated Wood Products.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA O80 Series O80S2-05, Wood Preservation.
  - .2 CSA O80.201-M89, This Standard covers hydrocarbon solvents for preparing solutions of preservatives.
- .3 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
  - .1 SCAQMD Rule 1113-04, Architectural Coatings.

1.3 SUBMITTALS

- .1 Submit Submittal submissions: in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Quality assurance submittals:
  - .1 Submit certificates in accordance with Section 01 33 00 (Submittal Procedures).
  - .2 For products treated with preservative by pressure impregnation submit following information certified by authorized signing officer of treatment plant:
    - .1 Information listed in AWPA M2 and revisions specified in CSA O80 Series, Supplementary Requirement to AWPA M2 applicable to specified treatment.
    - .2 Moisture content after drying following treatment with water-borne preservative.

1.4 QUALITY  
ASSURANCE

- .1 Plant inspection of products treated with preservative by pressure impregnation will be carried out by designated testing laboratory to AWPA M2, and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.
- .2 Regulatory Requirements: Each board or bundle of fire-retardant treated material to bear ULC label indicating Flame Spread Classification (FSC), and smoke developed.

1.5 DELIVERY,  
STORAGE, AND  
HANDLING

- .1 Waste Management and Disposal: Separate waste materials for recycling in accordance with Section 01 74 21 (Construction/Demolition Waste Management and Disposal).

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Wood preservative: water-soluble chromated copper arsenate (CCA) to CSA O80 standards series.

PART 3 - EXECUTION

3.1 APPLICATION:  
PRESERVATIVE

- .1 Treat material to CSA O80 using CCA preservative to obtain minimum net retention of 6,4 kg/m<sup>3</sup> per cubic metre of wood for all sidewalk wood and 24 kg/m<sup>3</sup> for all pontoon wood.
- .2 Wood shall be dried before treatment to 19% maximum moisture content.
- .3 Make incisions in all decking wood (sidewalk and pontoon) and use GEN II micro-incision method.
- .4 Following water-borne preservative treatment, dry material to maximum moisture content of 19 %.

3.2 FIELD TREATMENT

- .1 Comply with AWPA M4 and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.
- .2 Remove chemical deposits on treated wood to receive applied finish.

End of section

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 06 05 73 - Wood treatment
- .2 Section 06 15 00 - Wood walkway decking

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A 123/A 123M-02, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2 ASTM A 653/A 653M-06, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CAN/CSA-O86, Engineering Design in Wood.
  - .4 CSA O141-05, Softwood Lumber.
- .3 Forest Stewardship Council (FSC)
  - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
  - .2 FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1.
  - .3 FSC Accredited Certified Bodies.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .5 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2005.
- .6 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
  - .1 SCAQMD Rule 1113-04, Architectural Coatings.
  - .2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

1.3 SUBMITTALS

- .1 In accordance with Section 01 33 00 (Submittal Procedures).

1.4 QUALITY  
ASSURANCE

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Wood material, pieces for the sidewalks shall be accepted by Departmental Representative before delivery to work site.
- .3 Departmental Representative reserves the right to reject any wood that does not comply with requirements herein specified.
- .4 Departmental Representative may require that moisture content be verified upon arrival at the work site.

1.5 DELIVERY,  
STORAGE, AND  
HANDLING

- .1 Waste Management and Disposal: Separate waste materials for recycling in accordance with Section 01 74 21 (Construction/Demolition Waste Management and Disposal).

PART 2 - PRODUCTS

2.1 SUSTAINABLE  
REQUIREMENTS

- .1 Materials and products in accordance with Section 01 61 00 (Common Product Requirements).

2.2 LUMBER MATERIAL

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 Incised for CCA treatment to CAN/CSA O80 requirements and in accordance with section 06 05 73 (Wood treatment).

2.3 ACCESSORIES

- .1 All accessories and assembly systems shall be hot-dip galvanized except where grade 316 stainless steel is specifically called for.

2.4 FINISHES

- .1 Galvanized steel: fastening systems for outdoor structures in pressure treated lumber to CAN/CSA-G164 and ASTM A 653/A 653M.
- .2 Stainless steel: use stainless steel 316.

2.5 WOOD  
PRESERVATIVE

- .1 Water-soluble chromated copper arsenate (CCA) to CAN/CSA O80 series standards. Refer to section 06 05 73 (Wood treatment).

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Apply specified preservative to wood surfaces, before installation.
- .2 Before installation, re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative.

3.2 ERECTION

- .1 Erect sidewalk lumber structure as shown on the drawings and described in the specifications.
- .2 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .3 Countersink bolts where necessary to provide clearance for other work.

End of section

## PART 1 - GENERAL

### 1.1 RELATED SECTIONS

- .1 Section 06 05 73 – Wood treatment
- .2 Section 06 10 00.01 – Walkway carpentry

### 1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A 653/A 653M-06, Standard Specification for Steel Sheet, Zinc-Coated (Galvanised) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 American Wood Preservers' Association (AWPA)
  - .1 AWPA A2-06, Standard Methods for Analysis of Water-Bourne Preservatives and Fire Retardant Formulations.
  - .2 AWPA A3-05, Standard Methods for Determining Penetration of Preservatives and Fire Retardants.
- .3 Canadian Standards Association (CSA)/CSA International
  - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
  - .2 CSA 080 Series O80 S2, Wood preservation.
  - .3 CSA 080.20-97(C2002), Preservative treatment of lumber, timber, bridge ties and mine ties by pressure processes.
  - .4 CAN/CSA 086-01(R2006), Consolidation Engineering Design in Wood.
- .4 Forest Stewardship Council (FSC)
  - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
  - .2 FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1.
  - .3 FSC-accredited organisations. .
- .5 National Lumber Grades Authority
  - .1 NLGA, Standard grading rules for Canadian lumber, 2005.

### 1.3 SUBMITTAL PROCEDURES

- .1 Submit required documents and samples/mock-ups to section 01 33 00 (Submittal procedures).

#### 1.4 QUALITY ASSURANCE

- .1 Lumber identification: timber shall be stamped with the seal of a grading organisation certified by the Canadian Lumber Standards Accreditation Board (CLSAB).
  - .1 Marking: grade stamp by a CLSAB-certified organisation.
  - .2 Each piece shall be stamped on its end indicating species, grade, and moisture content.
  - .3 The lumber shall be accepted by the Departmental Representative before shipment and delivery to work site.
  - .4 Before lumber is delivered to work site, a qualified inspector shall examine the following: wood species, rating, grade and other properties as required.
  - .5 Wood may then be shipped to intended destination on work site following acceptance of materials at hand by Departmental Representative and report by qualified inspector.
  - .6 Departmental Representative reserves the right to reject wood that does not comply to criteria herein described.
  - .7 Supplier of timber shall provide evidence of product traceability (source of wood in the round and converting plant) in order to confirm source, species, and quality of industrial wood.
  - .8 Verification of materials moisture content: submit samples of materials provided to testing laboratory. Materials testing laboratory shall be designated by Departmental Representative with a view to ascertain that wood furnished meets the quality criteria herein described.
  - .9 Tests shall be paid for by Contractor.
  - .10 All pieces of wood with scraped or dented corners, or damaged surfaces, including pieces displaying significant areas of false heartwood and shall be rejected and removed from work site.

#### 1.5 SHIPPING, HANDLING AND STORAGE

- .1 Waste management and disposal:
  - .1 Sort and recycle waste as required in section 01 74 21 (Construction/Demolition Waste Management and Disposal).
  - .2 Ship and store materials to work site without damage.
  - .3 Ship and store treated wood decking where indicated on the worksite and avoid damaging the materials.
  - .4 Store materials in dry and well ventilated location, sheltered from weather conditions (snow, rain, sunlight) and do not deposit materials directly on the ground.
  - .5 Stack wood above the ground in the storage area.
  - .6 Cover the different wood bundles with waterproof membrane.
  - .7 Protect wood against theft and vandalism.
  - .8 All pieces shall be carefully wrapped. Protect sharp edges in shipping, handling, and during storage on work site.
  - .9 Handle wood pieces carefully and avoid permanent deformations.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Decking boards: to NLGA grading rules for Canadian lumber, 127b Select, jack pine (65% minimum) and red pine (35% maximum), Grade 2 and Better quality (no false heartwood), 51 mm nominal thickness, 190 mm nominal width, dressed four sides, with 19% maximum moisture content before and after treatment.
- .2 Length of boards: to width of walkway.
- .3 Nails: to CSA B111, hot-dip galvanised.
- .4 Screws: to CSA B34-1972, hot-dip galvanised, in galvanised metal, type as recommended by the maker of the decking.
- .5 All hardware and fasteners shall be hot-dip galvanised to CSA G164-M1981.

### 2.2 WOOD TREATMENT PRODUCT

- .1 Water-soluble chromated copper arsenate (CCA) meeting the requirements set forth in CAN/CSA series O80 standards. Refer to section 06 05 73, Wood treatment.

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION

- .1 Unless instructed otherwise, perform work to CAN/CSA O86-01, Consolidation Engineering Design in Wood.
- .2 Comply with specifications described on the drawings with respect to plank layout and pattern.
- .3 Apply preservative product on extremities of cut pieces.
- .4 Before installing wood elements, touch-up with brush and apply generous quantity of preservative product used for treating the wood on all surfaces that were cut, sawed, dressed and drilled on the work site.

### 3.2 FIELD QUALITY CONTROL

- .1 Tests: moisture content in materials delivered shall be verified by a materials testing laboratory designated by Departmental Representative.
-

### 3.3 PRE-DRILLING OF SCREW HOLES

- .1 Comply with CAN/CSA-O86-01 requirements with respect to drill holes in boards for installation of deck screws.
- .2 Pre-drill hole the length equal to unthreaded segment of screw and same diameter.
- .3 Continue drilling to two thirds (2/3) the diameter of the screw and to depth equal to threaded part of screw.
- .4 Use screw wrench to drive screws. Do not use hammer, sledge, or other percussion tool.

### 3.4 ASSEMBLY OF WOOD ELEMENTS

- .1 Discard wood displaying damaged surface.
- .2 Fit and assemble decking to CAN/CSA O86-01 and to requirements herein described.
- .3 Install elements to lines, levels and elevations as prescribed, mount square, and space evenly.
- .4 Assemble, anchor, drill, fasten and brace elements to ensure required strength and rigidity.
- .5 Countersink holes and prevent screw heads from protruding.
- .6 Boards shall be continuous over entire width of walkway.
- .7 Fasten each decking board to each stringer with two fasteners.

### 3.5 EXPOSED SURFACES

- .1 Install frame elements in such way that no stamp or brand name on exposed surfaces is visible.

### 3.6 SURFACE FINISH

- .1 Remove tool marks, scratches and any trace of abrasion.

End of section

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 26 50 00 – Lighting
- .2 Section 26 56 19 – Roadway lighting

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
  - .1 CSA C22.1F09, Canadian Electrical Code, Part 1 (21th Edition), Safety Standard for Electrical Installations.
  - .2 CAN/CSA-C22.3 No. 1-01(Update March 2005), Overhead Systems.
  - .3 CAN3-C235-83(R2000), Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
- .2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)
  - .1 EEMAC 2Y-1-1958, Light Gray Colour for Indoor Switch Gear.
- .3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
  - .1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.3 DEFINITIONS

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.4 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235.
- .2 Control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
  - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates for control items in English and French.
- .4 Use one nameplate for both languages.

1.5 SUBMITTALS

- .1 Shop drawings:
  - .1 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.

- .2 Submit 1 number of copies minimum size drawings to authority having jurisdiction.
  - .3 If changes are required, notify Departmental Representative of these changes before they are made.
  - .2 Quality Control: in accordance with Section 01 45 00 - Quality Control.
    - .1 Provide CSA certified equipment and material.
    - .2 Where CSA certified equipment and material is not available, submit such equipment and material to authority having jurisdiction for approval before delivery to site.
  - .3 Permits and fees: in accordance with General Conditions of contract.
- 1.6 QUALITY ASSURANCE
- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
  - .2 Qualifications: electrical Work to be carried out by qualified, licensed electricians who hold valid Master Electrical Contractor license or apprentices in accordance with authorities having jurisdiction as per the conditions of Provincial Act respecting manpower vocational training and qualification.
    - .1 Employees registered in provincial apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.
    - .2 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.
  - .3 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- 1.7 DELIVERY, STORAGE AND HANDLING
- .1 Material Delivery Schedule: provide Departmental Representative with schedule within 2 weeks after award of Contract.
  - .2 Construction/Demolition Waste Management and Disposal: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- 1.8 SYSTEM STRATUP
- .1 Instruct Departmental Representative and operating personnel in operation, care and maintenance of systems,

system equipment and components.

1.9 OPERATING  
INSTRUCTIONS

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .2 Operating instructions to include following:
  - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
  - .2 Start up, proper adjustment, operating, and shutdown procedures.
  - .3 Safety precautions.
  - .4 Procedures to be followed in event of equipment failure.
  - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
- .3 Post instructions where directed.
- .4 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

PART 2 - PRODUCTS

2.1 MATERIALS AND  
EQUIPMENT

- .1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Material and equipment to be CSA certified. Where CSA certified material and equipment are not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.

2.2 WIRING  
TERMINATIONS

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminium conductors.

2.3 EQUIPMENT  
IDENTIFICATION

- .1 Identify electrical equipment with nameplates as follows:
  - .1 Nameplates: lamicoid 3 mm thick plastic engraving sheet melamine, black face, white core, lettering accurately aligned and engraved into core mechanically attached with self tapping screws.
  - .2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on nameplates to be approved by Departmental Representative prior to manufacture.
- .4 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .5 Identify equipment with Size 3 labels engraved "ASSET INVENTORY NO. [ ]" as directed by Departmental Representative.
- .6 Disconnects, starters and contactors: indicate equipment being controlled and voltage.
- .7 Terminal cabinets and pull boxes: indicate system and voltage.

2.4 WIRING  
IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1.

2.5 FINISHES .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.

PART 3 - EXECUTION

3.1 INSTALLATION .1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

3.2 NAMEPLATES AND LABELS .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.3 CONDUIT AND CABLE INSTALLATION .1 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

3.4 MOUNTING HEIGHTS .1 Mounting height of equipment is from ground unless specified or indicated otherwise.

.2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

.3 Install lighting fixtures at following heights unless indicated otherwise.  
.1 Lighting fixtures: 8.8 m.

3.5 CO-ORDINATION OF PROTECTIVE DEVICES .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.6 FIELD QUALITY CONTROL .1 Conduct following tests in accordance with Section 01 45 00 - Quality Control.

.1 Lighting and its control.

.2 Electrical outlet

.2 Carry out tests in presence of Departmental Representative.

.3 Provide instruments, meters, equipment and personnel

required to conduct tests during and at conclusion of project.

3.7 CLEANING

- .1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

End of section

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS .1 Section 26 05 00 – Common work results for electrical.

1.2 SHOP DRAWINGS AND PRODUCT DATA .1 Submit shop drawings and luminaire (light fixture) characteristics.  
.2 Unless otherwise indicated, submit comprehensive photometric data of proposed lights as established by an independent testing laboratory.

1.3 GENERAL .1 All equipment shall bear the CSA label as well as that of the manufacturer, including the item's catalogue number.  
.2 Any equipment that is not CSA approved – including specified items – shall be rejected and replaced. Final choice to occur during construction.

1.4 OPTICAL PROJECTOR DETAILS

PART 2 - PRODUCTS

2.1 BALLAST

2.2 LIST OF LUMINAIRES .1 Refer to list of luminaires shown on the drawings, or approved equivalent(s).

PART 3 - EXECUTION

3.1 INSTALLATION .1 Luminaires shall be installed only when construction activities likely to damage or soil them have been completed.

3.2 WIRING .1 Connect luminaires to lighting circuits as indicated.

3.3 TESTS .1 Carry out tests in accordance with section 26 05 00 - Electrical – General requirements for electrical work.  
.2 Verify luminaires and replace defective lamps, ballasts and accessories.

End of section

PART 1 – GENERAL

<u>1.1 SECTION INCLUDES</u>	.1	Materials and installation for wood lighting poles.
<u>1.2 RELATED SECTIONS</u>	.1	Section 01 33 00 - Submittal Procedures.
	.2	Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
	.3	Section 26 05 00 - Common Work Results - Electrical.
	.4	Section 26 50 00 - Lighting.
<u>1.3 REFERENCES</u>	.1	Canadian Standards Association (CSA International)
	.1	CSA C22.2 No.206-M1987(R1999), Lighting Poles.
<u>1.4 SUBMITTALS</u>	.1	Submit product data in accordance with Section 01 33 00 (Submittal Procedures).
<u>1.5 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate and recycle waste materials in accordance with Section 01 74 21 (Construction/Demolition Waste Management and Disposal).
	.2	Remove from site and dispose of packaging materials at appropriate recycling facilities.
	.3	Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
	.4	Divert unused metal and wiring materials from landfill to metal recycling facility approved by Departmental Representative.

PART 2 - PRODUCTS

<u>2.1 TIMBER LAMP POSTS</u>	.1	Timber poles to CAN/CSA-O15- standard, Class 1, Cedar, having the following characteristics :
	.1	Length : 9.1 m. or as mentioned on plans

2.2 LIGHT FIXTURE SUPPORTS .1 Supports suitable for prescribed light fixtures (luminaires) and displaying the following characteristics.  
.1 Supports as indicated.

2.3 SERVICE LAMP .1 Luminaires, weatherproof, in accordance with section 26 50 00 (Lighting).

PART 3 - EXECUTION

3.1 INSTALLATION .1 Install support posts straight and plumb, and as recommended by the manufacturer.  
.2 Erect luminaires on post cross arm.  
.3 Verify light orientation, height and inclination. Proceed to final adjustments at night-time.  
.4 Connect luminaire to lighting circuit.  
.5 Carry out required tests in accordance with section 26 05 00 (Electrical – General provisions).

End of section

## PART 1 – GENERAL

### 1.1 RELATED SECTION

- .1 Section 31 32 19.01 – Geotextiles

### 1.2 GENERAL REQUIREMENTS

- .1 Acquaint oneself with laws, regulations, decrees and safety codes pertaining to work governed by this section of the specification, and comply with provisions.

### 1.3 SCOPE OF BACKFILL WORK

- .1 Fill work includes, without limitation, the following activities or items:
  - .1 Quantities of fill material required to develop the all-terrain vehicle (ATV) parking area shown on the drawings.
  - .2 Keep in mind that premises are mostly in rock outcrop and display a difficult topography. Expect a difference in ground level of approximately two (2) metres between high and low areas to be filled, depending on the exact location of parking.
  - .3 Fill to thicknesses as shown on the drawings.
  - .4 Compaction of all fill materials.

### 1.4 NATURE OF THE GROUND

- .1 Fill to be performed for ATV parking area is located on mostly rocky outcrop location with a layer of granular material and sparse vegetation.

### 1.5 ZERO LINE AND DATUM

- .1 Place all necessary markers on fill construction site and stake accurately the area for line and elevation.
- .2 Exact location of parking depends on positioning of floating docks and gangways. Exact location of docks and parking are to be determined and approved on site with Department Representative.

### 1.6 EXISTING STRUCTURES

- .1 Take all necessary measures to prevent damaging existing structures in the vicinity of work site (electrical poles, walkways). Repair to owner(s) satisfaction any damage caused by construction activities and bear all costs.

1.7 WORKSITE  
PROTECTION AND  
MAINTENANCE

- .1 Keep work site dry and free of water and snow throughout construction period.
- .2 Protect fill benches from freezing conditions, erosion, slides, rock falls and prevent any natural or accidental soil degradation phenomena.
- .3 Ascertain that elevation and line markers are not damaged or displaced during construction. Where needed, restore markers at earliest possible time and bear all costs.

1.8 ACCESS ROUTES

- .1 There is no access route leading to the fill worksite or all-terrain vehicle parking area. The materials required shall be shipped by barge and transferred to the worksite by appropriate means.
- .2 Clean immediate surroundings of parking area as work progresses.

1.9 WORK SUPERVISION

- .1 Supervision of all the fill work shall be carried out by a materials testing laboratory. Laboratory will be hired by Departmental Representative and professional services paid by same.
- .2 The materials testing laboratory is Departmental Representative's delegated authority on the work site and may issue directions to which Contractor shall conform.
- .3 Cooperate at all times with Laboratory personnel and provide any assistance and equipment as needed.

PART 2 – PRODUCTS

2.1 BACKFILL MATERIALS

- .1 Clean granular materials free of shale particles and organic matter, approved by the Laboratory.

- .2 Granulometry:

- .1 Granular material:

Sieve passing %	5 mm 12-100	80 µm 0-10
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Uniformity coefficient to be higher than 4.

.2 Crushed stone MG 20:

Sieve passing %	31,5 mm 100	20 mm 90-100	14 mm 68-93
	5 mm 35-60	1,25 mm 19-38	315 µm 9-17
			80 µm 2-7

.3 Stone 150-400 :

Sieve passing %	450 mm 100	100 mm 0-10
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The largest dimension of each stone shall not exceed twice the smallest dimension of that stone.

2.2 QUALITY OF 100-300 STONE

- .1 Stone shall be hard, without fissure and any other fault likely to affect durability.
- .2 Relative density: 2,65 minimum.
- .3 Absorption: maximum absorption, 2% to ASTM C127.
- .4 Slate and shale: unacceptable.

PART 3 – EXECUTION

3.1 BACKFILL MATERIALS

- .1 With a granular material, fill to 300 mm below level of proposed parking area. Perform the last 300 mm with MG 20 crushed stone.
- .2 Provide riprap blanket on all slopes as indicated to prevent parking area washout.

3.2 PLACEMENT OF BACKFILL

- .1 Ascertain that surfaces to receive fill material are clean, dry, free of frozen soil, snow and ice, and that the fill material itself includes no snow, ice, and debris. As well, ensure that load-bearing surfaces comply with specifications.
- .2 Fill in successive and uniform layers not exceeding 150 mm thickness after compaction. Coordinate fill material placement with the construction of footings as designed at different levels.
- .3 Maintain in fill materials adequate moisture content to yield required compaction density.

- .4 Departmental Representative is at all times authorised to interrupt ongoing fill work in order to allow for Laboratory on-site verification of material density being placed.
- .5 Take special care with the compaction of fill material in hard to reach zones.

### 3.3 COMPACTION

- .1 Fill materials: with the exception of riprap blanket material, all materials shall be compacted to at least 95% of maximum dry density, modified Proctor test.

### 3.4 QUALITY CONTROL

- .1 Compaction tests shall be conducted on fill materials at Departmental Representative's request. Cost of testing will be borne by same.
- .2 Non-compliance with requirements: the results of tests are witness to the quality of materials and workmanship (placement) and shall meet the requirements set forth in the plans and specifications. Where results of tests carried out during construction indicate that fill work do not meet requirements, work will be rejected and fill material removed, reconstructed and retested without delay at no cost to Departmental Representative.

End of section

PART 1 - GENERAL

1.1 SECTION  
INCLUDES

- .1 Materials and installation of polymeric geotextiles used in revetments, breakwaters, retaining wall structures, filtration, drainage structures, roadbeds and railroad beds, the purpose of which is to:
- .1 Separate and prevent mixing of granular materials of different grading.
  - .2 Act as hydraulic filters allowing the seeping of water while retaining soil strength of granular structure.

1.2 RELATED  
SECTIONS

- .1 Section 31 23 33.02 – Fill: All Terrain Vehicle Parking

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM D 4491-99a, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  - .2 ASTM D 4595-86(2001), Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
  - .3 ASTM D 4716-01, Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
  - .4 ASTM D 4751-99a, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-4.2 No. 11.2-M89(April 1997), Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
  - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Geomembranes (complete set).
    - .1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
    - .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
    - .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
    - .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
    - .5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

1.4 SUBMITTALS

- .1 Submit samples in accordance with section 01 33 00 (Submittal Procedures).
- .2 Submit to Departmental Representative the following samples at least 4 weeks prior to beginning Work:
  - .1 Minimum length of 2 m of roll width of geotextile.
- .3 Submit to Departmental Representative copies of mill test data and certificate at least 4 weeks prior to start of Work, and in accordance with Section 01 33 00 (Submittal Procedures).

1.5 DELIVERY,  
STORAGE AND  
HANDLING

- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

1.6 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Separate waste materials for reuse and recycling. Dispose of wastes as prescribed in section 01 74 21 (Construction/ Demolition Waste Management and Disposal).
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene or corrugated cardboard packaging material in appropriate on-site bins for recycling.
- .4 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 MATERIAL

- .1 Geotextiles: needle-punched synthetic fibre fabric, rot-proof, oil and salt water-resistant, and supplied in rolls:
  - .1 Made in polyester to at least 85 % of its mass.
- .2 Physical properties:
  - .1 Thickness: at least 4.0 mm, to the requirements of CAN/CGSB-148.1, number 3.
  - .2 Mass per unit area: at least 500 g/m<sup>2</sup>, measured as stated in CAN/CGSB-148.1, number 2.
  - .3 Tensile strength and tear resistance in any principal direction: to CAN/ONGC-4.2, method 9.2:
    - .1 Breaking force: at least 1 300 N wet.
    - .2 Elongation at break: at least 100 %.

- .3 Mechanical strength at joints: at least equal to or better than the fabric's tensile strength.
- .4 Bursting strength: as per Mullen method, at least 3500 kPa wet, to CAN/CGSB-4.2, method 11.1.
- .5 Rupture strength induced using the trapezoidal method CAN/CGSB-4.2: high strength fabric testing methods – over 490 N.
- .3 Hydraulic properties: filtration opening size (FOS): 100 micrometers to *US Army Corps of Engineers CW-02215-1977*.
- .4 Washers and hook anchors: to CAN/CSA-G40.21, gage 300W, hot dip galvanized with zinc coating at least 600 g/m<sup>2</sup> to the requirements of CSA-G164.
- .5 Mill-made joints: sewed to manufacturer's instructions.
- .6 Yarn for sewed joints: resistance to chemical and biological agents equal to or better than that of geotextile.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- .1 Where indicated and as instructed, install geotextile onto graded and compacted surface (as appropriate) by unrolling downwards; fasten using weights or tongs when a vertical surface is being covered.
- .2 Place geotextile to obtain a smooth surface free of tension stress, folds and creases.
- .3 On sloping surfaces, place geotextiles in one continuous length from toe of slope to planned upper limit.
- .4 Overlap each successive strip of geotextile 1000 mm over adjoining strip or following the recommendation of the manufacturer, whichever are most stringent.
- .5 Remove any outcropping stone at the surface of designated area and seek Departmental Representative's approval before placing the fabric.
- .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of protective layers.
- .7 After installation, cover with protective layer within 4 h of placement.

.8 Replace damaged or deteriorated geotextile and obtain Departmental Representative's approval.

3.2 CLEANING

.1 Remove construction debris from project site and dispose of debris in an environmentally responsible and legal manner as prescribed in section 01 74 11 (Cleaning).

3.3 PROTECTION

.1 Vehicular traffic not permitted directly on geotextile.

End of section

PART 1 - GENERAL

<u>1.1 RELATED SECTION</u>	.1	Section 31 62 16.19 – Anchored steel piles
<u>1.2 SUBMITTAL PROCEDURES</u>	.1	Provide submittals in accordance with section 01 33 00, Submittal Procedures.
	.2	Product data: submit manufacturer's printed product literature, specifications and datasheet.
	.3	Sea bottom characterisation report : should site conditions differ from those indicated, submit written notification to Departmental Representative and await further instructions.
	.4	As indicated, provide Departmental Representative with the planned sequence for anchor blocks and pile installation.
	.5	Equipment
	.1	Prior to pile installation, provide Departmental Representative the list and details of equipment used toward the installation of piles, including anchor plates.
	.2	
	.6	Quality assurance (certificates): where required, provide certificates signed by the manufacturer stating that materials and equipment comply with specified performance characteristics and physical properties.
<u>1.3 SHIPPING, STORAGE AND HANDLING</u>	.1	Ship, store and handle materials and equipment in accordance with requirements herein described.
	.2	Protect piles and anchor plates from damage due to excessive bending stresses, impact, abrasion or other causes during shipping, storage and handling.
	.3	Replace damaged piles as directed by Departmental Representative.
<u>1.4 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate waste materials for reuse and recycling in accordance with this document.

1.5 EXISTING  
CONDITIONS

- .1 A seabed characterisation report and granular description report is attached to specification in Appendix.
- .2 Should sub-surface characteristics differ from those indicated, submit written notification to Departmental Representative and await instructions before resuming work.

1.6 WORK  
SCHEDULING

- .1 Provide schedule of planned sequence of pile installation to Departmental Representative no less than four (4) weeks before undertaking operations.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Material requirements for pile installation are specified in section 31 62 16.19, Anchored Steel Piles and section 05 50 00 – Metal Fabrications.
- .2 Supply full length piles as indicated. As well, provide equipment to handle specified length piles without cutting and splicing.
- .3 Supply anchor plate and weld plate to pile before installation to anchor blocks.

PART 3 - EXECUTION

3.1 PREPARATION  
WORK

- .1 Ensure that ground conditions at pile locations are adequate to support prescribed loads.
- .2 Carry out cleaning of sea floor along the installation corridor of new piles and remove all debris, rocks and other material likely to hinder operations.
- .3 Install crushed stone under anchor blocks as shown on drawings.

3.2 INSTALLATION

- .1 Installation of each pile will be subject to the approval of Departmental Representative. The latter will be sole judge of acceptability of each pile with respect to final bending strength.
  - .2 Bolt anchor plate to anchor block.
-

- 3.3 APPLICATION / DRILLING
- .1 Hold piles securely and accurately in position while bolting.
  - .2 Where required, cut off piles neatly and squarely at elevations as indicated to tolerance of plus or minus 25 mm.
  - .3 Remove cut-off lengths from site on completion of work.
- 3.4 TOLERANCES
- .1 Pile heads to be within 50 mm horizontally of locations as indicated.
  - .2 Piles not to be more than 1% of length out of vertical alignment.
- 3.5 REPAIR/ REPLACEMENT OF DEFECTIVE PILES
- .1 Remove rejected piles and replace with new.
  - .2 No extra compensation will be made for removing and replacing or other work made necessary through rejection of defective piles.
- 3.6 FIELD QUALITY CONTROL
- .1 Measurement
    - .1 Maintain accurate records of installation for each pile, including:
      - .1 Length and position (coordinates) of each pile;
      - .2 Final elevation of pile end and tip and cut-off (as appropriate);
      - .3 Other relevant information such as interruption of continuous installation or pile damage;
    - .2 Provide Departmental Representative with one copy of records.
- 3.7 CLEANING
- .1 On completion of installation and performance verification operations, remove from site any surplus materials, excess materiel, rubbish, tools and equipment. Restore site to original condition.

End of section

PART 1 - GENERAL

<u>1.1 CONTENT OF SECTION</u>	.1	Required materials and installation of steel piles.
<u>1.2 RELATED SECTIONS</u>	.1	Section 05 50 00 - Metal Fabrications
	.2	Section 31 61 13 - Pile, general requirements
	.3	Section 35 51 23.01 - Floating docks
	.4	Section 03 41 00 - Precast structural concrete
<u>1.3 REFERENCES</u>	.1	American Society for Testing and Materials International, (ASTM). .1 ASTM A 6/A6M, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling. .2 ASTM A 307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile. .3 ASTM A 1011/A1011M, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
	.2	Canadian Standards (CSA)/CSA International. .1 CAN/CSA G40.20/G40.21, General requirements for rolled or welded structural quality steel/ Structural quality steel. .2 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures. .3 CSA W47.1S1, Supplement No. 1-M1989 to W47.1-1983 Certification of Companies for Fusion Welding of Steel Structures. .4 CSA W59, Welded Steel Construction (Metal Arc Welding). .5 CSA W59S1, Supplement No. 1-M1989, Steel Fixed Offshore Structures, to W59-1989, Welded Steel Construction (Metal Arc Welding).
<u>1.4 SUBMITTAL PROCEDURES</u>	.1	Submit shop drawings and other required documents in accordance with requirements in section 01 33 00 (Submittal Procedures).
	.2	Provide Departmental Representative with copy of certification for fusion welding to CSA W47.1 and CSA W47.1S1.

1.5 QUALITY  
ASSURANCE

- .1 Materials that do not meet requirements set forth in specification after inspection or testing by Departmental Representative shall be rejected.
- .2 Where inspection or testing carried out by designated testing laboratory indicate that work does not meet requirements set forth in specification, the Contractor shall bear cost of additional inspections or testing. Adjusted or corrected items shall be submitted to Departmental Representative for approval.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Tubular steel piles, 508 mm outer diameter and 15,9 mm thickness: longitudinal straight seam or spiral butt seam, to dimension and wall thickness as indicated, flat ends to ASTM-A252, grade 3, 350 MPa yield point, and to the following:
    - .1 Chemical composition of tubular piles: to CSA-Z245.1;
    - .2 Permissible deviations in steel piles: linear deviations, specified diameter, wall thickness and pile ovality, body and extremities shall comply with API SPEC 5L standard. Before piles leave the steel mill, check tubes to determine possible deviations.
  - .2 Piles shall be galvanized between levels -1,0 and +4,0. Galvanisation shall comply with requirements in section 05 50 00 (Metal Fabrications).
  - .3 Threaded rods for anchor plate : rods, bolting and grout according to manufacturer recommendations. Each anchor must take a minimum factored resistance of 350 kN in traction.
  - .4 Anchoring steel plates : of dimensions indicated on drawings, with a yield strength of 350 MPa and whose chemical composition complies with the CSA Z245.1 - standard.
  - .5 Welding of anchor plate to the pile must be square and must meet the tolerances as to respect final position of the pile and its verticality.
  - .6 Pour concrete into piles before welding pile end plates.
  - .7 Welding electrodes: to CSA W59.
-

- .8 Pile filler concrete: as required in section 03 30 00 (Cast-in-place Concrete).

2.2 QUALITY CONTROL:  
TUBULAR STEEL PILES

- .1 Marking:  
.1 Each length of pipe pile shall be legibly marked by stenciling, stamping, or rolling to show:  
.1 Manufacturer name or brand;  
.2 Heat number;  
.3 Type of pile, that is: without seam, or spiral lapped seam, or electrical discharge machining (EDM) spiral butt seam, fusion or electric resistance;  
.4 Dimensions, wall thickness, weight and length;  
.5 Specification number and steel grade.  
.2 Tubular piles not marked as indicated above shall be rejected.
- .2 Quality assurance:  
.1 In addition to the requirements in article 2.2.1 above, the Departmental Representative may at discretion carry out further inspections and tests on materials used in the fabrication of the tubular piles.  
.2 Inspection and testing of materials used in the fabrication of the tubular piles shall comply with ASTM-252 with modifications as follows:  
.1 Samples from spiral seam piles for tension testing shall be cut parallel to the axis of the pile. Sample centre at minimum distance equal to one quarter of skelp width between helical seams.  
.2 Samples from straight seam piles for tension testing shall be cut parallel to pile axis. Sample centre at 90° of welded seam.  
.3 Materials inspected or tested by Departmental Representative that do not meet specified requirements shall be rejected.  
.4 Where inspection or testing of tubular pile materials show evidence of non-compliance with specified requirements, all costs of inspection and/or testing shall be borne by Contractor.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- .1 Install anchor blocks on seabed at indicated levels and in prescribed tolerances with the adequate granular foundations.
- .2 Install piles on blocks by bolting anchor plates.

- .3 Cut off piles if necessary.
- .4 Pour specified concrete in tubular steel piles.
- .5 Weld upper end plates.
- .6 Touch-up with zinc-rich paint.

### 3.2 WELDING

- .1 Perform welds to section 05 50 00 (Metal Fabrications).

### 3.3 STEEL PILES

- .1 Do not undertake installation of steel pile before all quality control tests are done and reports available and approved.
- .2 Install steel piles as prescribed in section 31 61 13 (Pile, general requirements), and in this section of the specification.
- .3 Before work is undertaken, submit to Departmental Representative's review all details pertaining to work method and schedule.
- .4 Proceed to implement steel piles as shown on the drawings.
- .5 When installation is completed, the centre of piles at cut-off shall be within 50 mm of expected location and vertical deviation shall not exceed 1/100.

### 3.4 OXYGEN CUTTING (OC)

- .1 To cut-off pile head, follow method below, as appropriate:
  - .1 Where air temperature is above 0 °C, preheating is not necessary;
  - .2 Where air temperature is below 0 °C, preheat until steel has reached temperature too hot to touch (approx. 35 °C) 25 mm on both sides of cutting line. To measure temperature, one may use pencil marks indicating temperature.
  - .3 Use a cutting guide to perform perfectly straight cuts.
  - .4 Perform smooth cuts, free of grooves throughout. Where grinding is used to remove grooves or fissures, finish radius shall be at least 5 mm.

### 3.5 CONCRETE PLACEMENT IN TUBULAR PILES

- .1 After implanting steel piles at demanded elevations, fill all piles in accordance with requirements described in section 03 30 00 (Cast-in-place Concrete).

End of section

## PART 1 - GENERAL

### 1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal procedures
- .2 Section 03 41 00 - Precast structural concrete.
- .3 Section 35 51 23.01 - Floating docks.

### 1.2 WORK INCLUDED

- .1 Supply and installation of two (2) aluminium gangways providing access to floating docks.
- .2 The Contractor shall be responsible for the design and fabrication of the gangway to the criteria herein specified. Submit footbridge drawings sealed and signed by a design engineer to Departmental Representative.
- .3 Gangways must be removed and stored on land for winter with the help of an ATV and a fishing boat crane. The Contractor shall be responsible for the design and fabrication of the wintering system.

### 1.3 DESIGN CRITERIA

- .1 Each gangway shall be designed and calculated to the requirements of the National Building Code of Canada (NBCC 2010 and supplements), the overriding criteria being user safety.
- .2 Wintering system must be designed so that it does not damage the gangway nor the concrete block, and so that it respects their structural capacity. Consider the fact that the only available vehicles on the island are ATV and fishing boat.
- .3 Both the construction drawings and shop drawings shall bear the seal and the signature of an engineer member of OIQ (Ordre des ingénieurs du Québec).
- .4 In addition to dead load, each gangway shall withstand the following additional loads:
  - .1 A 4,8 kN/m<sup>2</sup> dynamic load over entire floor surface.
  - .2 Snow load up to 3,0 kN/m<sup>2</sup> over entire floor surface.
  - .3 Wind loads calculated as per NBCC 2010 and applied non-coincidentally in all directions.
  - .4 Live loads due to rain and ice calculated as per NBCC 2010.
  - .5 Additional loads may apply in part or in full, distinctly or simultaneously, and therefore design calculations shall anticipate the worse possible conditions.
  - .6 Length of each gangway to be of a maximum length of 18 000 mm between supports.

.7 Gangway clearance between railings shall be 1 200 mm.

.8 Gangway railings shall withstand loads prescribed in NBCC 2005. Railings to be 1 070 mm high.

.9 Each gangway must be provided open channels on either side of guards of sufficient size to receive service ducts for electricity.

#### 1.4 QUALIFICATION

.1 The welding company and the welders of aluminum elements shall be certified under CSA-W47.2-FM1987.

.2 Aluminum electrodes to comply with AWS A5.10/A5.10M 1999.

#### 1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with prescriptions of section 01 33 00 Submittal Procedures.

.2 Shop drawings to clearly show or indicate all construction details, including anchorage, details of overlapping plates, details of travel wheels if so, details of wintering system. details of railings as well as the loads applied to the receiving pontoon.

.3 Drawings must show all scenarios of positioning for gangway according to tide levels to show gangway will not be folded.

.4 Drawings must include the wintering system and its operation.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS/MATERIEL

.1 All items that are part of the gangway construction shall be designed and built in accordance with codes and standards, including CAN/CSA-S157/S157.1- Strength Design in Aluminum.

.2 Construction of gangway includes but is not limited to:

.1 Gangways, transition plates and guardrails will be aluminum.

.2 Installation accessories and joints.

.3 Gangway deck shall be perforated aluminum grating.

.4 Open channel.

.3 Gangway geometry:

.1 Length: maximum 18 000 mm between supports.

.2 Free Width: 1.2 m between guardrails.

.4 Gangway shall be provided with open channel on either side of the guardrails for service ducts

.5 Gangway shall be provided with a transition plates.

.6 The materials used in the construction of bridges are:

.1 Corrosion resistant aluminum type (minimum service life of thirty years) 6061-T6 or 6005-T5-type or approved equivalent, extruded and anodized.

.2 Welding work in accordance with CAN/CSA-W59.2 and CAN/CSA-W47.2

- .3 Gangway gratings to be nonslip folded aluminum, perforated and textured.
- .4 Lower section wheels of Gangway to be polymer type Vekton (cast nylon) 6P grade or equivalent, stainless steel shaft at least 25 mm in diameter. A galvanized steel shaft must be installed at gangway top.
- .5 A-316 Stainless Steel for all hardware, including wheel guides for 2 gangways.
- .6 Hot dip galvanizing: in accordance with A653 / ASTM A653M, with zinc coating of 600 g / m<sup>2</sup>.
- .7 Repairs off galvanized steel components in accordance with ASTM A 780 - Repairs of damaged galvanized coating.
- .7 Gangway operational conditions
  - .1 Uniformly distributed live load of 4.8 kN/m<sup>2</sup>.
  - .2 Maximum deflection of L/300.
  - .3 Horizontal load on top of each guardrails 0.75 kN / m or 1.0 kN concentrated at any point on guardrails.
  - .4 Minimum service life: 30 years.
  - .5 Lifting rings shall be provided for handling gangway using a crane or a winch with slings.
- .8 Gangway record.
  - .1 Record shall include shop drawings, dimensions and characteristics of all gangway components. Record shall respect all above operational conditions
  - .2 Record shall also indicate the type of maintenance that needs to be done on gangway to ensure their sustainability. Materials, equipment, method of handling and wintering procedures shall be provided by the supplier in its bid taking into account existing facilities and handling equipment available.
    - .1 Provide aluminum non-slip strips on gangway aluminum slated floor.
    - .2 Where gangway is anchored to concrete pad and for the wintering system, provide teflon parts between the aluminium and the galvanized steel items in the concrete pad. No contact between aluminium and steel shall be tolerated.
    - .3 Gangway wheels shall also be coated with teflon to prevent contact with galvanized steel track. No contact between aluminium and steel shall be tolerated.
    - .4 The non-slip overlapping plate located between the gangway and the concrete pad shall be in brushed aluminium and treated to resist both UV rays and salt mists to ASTM B117. Provide teflon element or part between plate and concrete.

### PART 3 - EXECUTION

#### 3.1 ASSEMBLY AND ERECTION OF ALUMINUM ELEMENTS

- .1 Exposed welds shall be continuous over entire length of seam and yield a smooth, even surface.

- .2 Whenever possible, fabrications shall be shop assembled and adjusted, and delivered ready to mount and install on site.
- .3 Set aluminium fabrications square, plumb and level, accurately aligned and adjusted.
- .4 Install gangway between concrete pad and floating dock on which it rests, including required overlapping plates as specified on the drawings and in the specifications.
- .5 Repair surfaces of aluminium parts to Departmental Representative's satisfaction.

### 3.2 CLEANING

- .1 At completion, remove from worksite any surplus materials and all waste, tools, etc.

End of section

PART 1 - GENERAL

1.1 RELATED  
SECTION

- .1 Section 31 62 16.19 - Anchored Steel Piles

1.2 DEFINITIONS

- .1 Dredging: excavating, transporting and disposing of underwater materials.
- .2 Class "A" material: solid rock requiring drilling and blasting to loosen, and boulders or rock fragments of individual volumes of 1.5 cubic metres or more.
- .3 Class "B" material: loose rock, silt, sand, quick sand, mud, shingle, gravel, clay, gumbo, boulders, till, and debris not specified under Class "A".
- .4 Obstructions: class of material greater than 1.5 cubic metres that is not included in this specification.
- .5 Debris: pieces of wood, wire rope, tires, scrap steel, pieces of concrete and other waste materials.
- .6 Grade: plane above which all material is to be dredged.
- .7 Sub-grade: plane parallel to and 300 mm below grade.
- .8 Side slope: inclined surface from grade depth at side limit of dredging area to intersect original ground line outside of dredging area. Side slope also includes the inclined plane or surface between adjacent subgrade surfaces dredged to different depths. Side slope is expressed as a ratio of horizontal to vertical measurement.
- .9 Estimated quantity: volume of material calculated to be above subgrade and inside specified side slopes unless otherwise specified.
- .10 Definitions:  
.1 CPM: cubic metres place measurement at dredging site.  
.2 CMSM: cubic metres scow measurement.  
.3 SQM: area in square metres projected on horizontal plane.
- .11 Cleared areas: areas of dredging accepted as complying with plans and specifications.

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- .12 Mechanical sweep: clearing all the dredged areas to the grade depth using a mechanical device suspended from a barge.
- .13 Chart datum: permanently established plane from which soundings or tide heights are referenced.
- .14 Coordinates:  
.1 U.T.M.: universal transverse Mercator projection.  
.2 M.T.M.: modified transverse Mercator projection.  
.3 U.T.M. or M.T.M. Coordinates: plane rectangular coordinates used in grid system in which grid network is applied to U.T.M. or M.T.M. projection. Horizontal control information as indicated.
- .15 Minimum mode: mode of operation of hydrographic survey equipment where minimum sounding over length of travel between position updates will be retained in memory.
- .16 Matrix block: each dredge area is presented as a number of acceptance cell blocks. Dependant on position of sounding, acceptance cell blocks may contain multiple soundings.
- .17 Least of minimum plan: hydrographic survey plan in which least sounding in grouping of matrix blocks is plotted.
- .18 Instantaneous mode: mode of operation of hydrographic survey equipment where only sounding observed at predetermined distance interval is retained in memory.
- .19 Average of instantaneous plan: hydrographic survey plan in which average sounding in an appropriate group of matrix blocks is plotted.
- 1.3 DOCUMENTS/TEST SAMPLES TO BE SUBMITTED
- .1 At least two weeks before dredging on site provide the Departmental Representative with details of the proposed dredging operations indicating the type machinery used, safety measures that will be followed, schedule and time of dredging operations and all other pertinent details. The Departmental Representative shall be advised of any changes to the proposed operations prior to the start.
- .2 During dredging, provide Department Representative with a plan of the daily dredged zone and daily dredged quantities to comply with requested depths.
- 1.4 MANAGEMENT AND ELIMINATION OF WASTE MATERIALS
- .1 Sort and recycle waste materials in accordance with section 01 74 21 Construction /Demolition Waste and Excavated Material Management and Disposal.
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All dredged materials must be incorporated in the new breakwater, as quarry-run or as brem stone if possible.

1.5 DREDGING  
LOCATIONS

- .1 Areas to be dredged are indicated on contract drawings. Dredging work will be executed in accordance with requirements specified in this section.
- .2 Excavate sediments in accordance with the presence of large boulders located on drawings.
- .3 Other boulders might be present on the seabed and it is the responsibility of Contractor to comply with the proposed dredging and to inform Department Representative of any problem.
- .4 Final location of dredging depends on the location of boulders, and other technics that excavation can be used (deepening, displacement).

1.6 INTERFERENCE  
TO NAVIGATION

- .1 Do not impede navigation during progress of work in accordance with the Collision Regulation with Canadian Modifications 1983.
- .2 Ascertain schedule of vessel movements and fishery activities in area affected by dredging operations including movement of vessels at adjacent wharves.
- .3 Plan and execute work in manner that will not interfere with fishing operations, or access to various marine or private installations by land or water.
- .4 Make no claim for delays resulting from the above.
- .5 Departmental Representative will not be responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in the Bay or due to other Contractor's operations.
- .6 Keep Marine Communications and Traffic Services (MCTS), Canadian Coast Guard,(CCG) Transport Canada, Montreal Quebec, (1-450-928-6174) informed of dredging operations in order that necessary Notices to Shipping and Notices to Mariners will be issued. Make arrangements with CCG to relocate and replace buoys for execution of work. Advise nearest Coast Guard Base of any requirements to relocate channel markers/buoys within dredging area.

1.7 REQUIREMENTS  
OF REGULATORY  
AGENCIES

- .1 Mark floating equipment with lights in accordance with the Collision Regulations with Canadian Modifications, 1983, and maintain a VHF marine radio watch on board.

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- .2 Comply with municipal, provincial and national codes and regulations relating to project.
- 1.8 SITE INFORMATION
- .1 Material to be dredged consists of granular and sandy sediments.
- .2 Results of laboratory analyses for sediment samples obtained at the site are contained in Appendix.
- .3 Results of most recent soundings are shown on drawings.
- .4 Environmental Assessment report is contained in Appendix 2.
- .5 Undertake necessary measures to become familiar with possible difficulties that may be encountered at the site during periods of unfavorable weather and sea conditions in this region, as to such a remote location.
- 1.9 FLOATING PLANT
- .1 Dredges or other floating plants to be employed on this Work, to be of Canadian registry, make or manufacture, or, must receive certificate of qualification from Industry Canada, Marine Directorate.
- .2 Requests for certification to be directed to Senior Director, Marine, Energy and Marine Branch, Marine Directorate, Industry Canada, 235 Queen Street, Ottawa, Ontario, K1A 0H5, and to be received there not less than 14 days prior to bid closing.
- 1.10 SURVEY REQUIREMENTS
- .1 Provide, at own expense, survey vessel, equipment and crew to set up and maintain control for location of dredge limits and to sound areas immediately after all dredging is done, to verify that grade depth has been attained. Areas are to be sounded in the presence of Department Representative to provide proof of sufficient-depth. The method for sounding must be approved by Department Representative prior to beginning of survey.
- 1.11 SURVEYS AND ACCEPTANCE OF WORK
- .1 Contractor must verify existing depths before dredging and inform as soon as possible Department Representative of any major difference between existing survey on drawings, and prove the major difference.
- .2 Contractor to redredge as necessary to remove all material within dredge areas which is found to be above grade.
- .3 If needed, one additional survey will be undertaken at
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Departmental Representative's cost, for those areas not meeting acceptance criteria for dredging. All additional surveys required to clear areas will be undertaken by the Departmental Representative at Contractor's cost.

- .4 All elevations obtained in minimum mode within specified areas of dredging must be at or deeper than grade depth requested before area will be considered completed.

## PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not used.

## PART 3 - EXECUTION

- 3.1 GENERAL .1 Mark floating equipment with lights in accordance with International Rules of Road and maintain radio watch on board.
- .2 Place and maintain buoys, ranges, markers and lights required to define work.
- 3.2 LAYOUT OF WORK .1 Immediately upon entering site for purpose of beginning work on this project, locate all reference points and take proper action necessary to prevent their disturbance.
- .2 Departmental Representative will meet with the Contractor and his survey staff to identify the established horizontal control consisting of a coordinate system with reference control monuments and vertical control consisting of benchmark to define the work and disposal areas.
- .3 Maintain the established horizontal and vertical control and lay out the work from these established references. Be responsible for the accuracy of work relative to established references. Provide and maintain electronic position fixing and distance measuring equipment as required for accurate dredging control. Provide, at own expense, survey vessel, equipment and crew to set up and maintain control for location of dredge limits.
- .4 Install and maintain water level gauges and tide boards in vicinity of worksite in order that proper depth of dredging can be determined. Locate gauges and tide boards so as to

be clearly visible.

- .5 Establish and maintain additional on-land temporary targets, markers and buoys for location and definition of designated dredge area limits as required. Remove on completion of work.

### 3.3 DREDGING DETAILS

- .1 Remove all class "A" and class "B" materials above specified grade depths, within limits indicated. Material removed from below subgrade depth or outside specified area or side slope is not part of work. Do not over excavate.
- .2 The Contractor is responsible to make his own evaluation of the quantities and thicknesses of class A and class B materials based on the attached geotechnical investigation report.
- .3 Remove spillage or shoaling which occurs as a result of work. This quantity will not be measured for payment.
- .4 Do not cast-over material unless authorized in writing by Departmental Representative. Remove material cast-over on to surrounding area and dispose of it as dredged material.
- .5 Remove infilling in dredge areas which occurs prior to acceptance by Departmental Representative.
- .6 Make provision for removal of debris in tender. Make no claims for delays attributed to debris.
- .7 Immediately notify Departmental Representative upon encountering an object which might be classified as an obstruction. By-pass the object after clearly marking its location and move to another area and continue work.

### 3.4 CLASS "A" REMOVAL

- .1 Complete removal of Class "B" material in area before blasting for Class "A". Work toothed buckets over area to remove Class "B" material until Departmental Representative is satisfied that further removal cannot be accomplished without blasting.
- .2 Provide a specialist with qualifications acceptable to Departmental Representative and Municipal or Provincial Authorities to programme and supervise blasting.
- .3 Submit to Departmental Representative for review and record, four weeks before blasting, details of proposed blasting operations showing types and quantities of explosives, loading charges and patterns, type of blasting

caps, blasting techniques, blast protection measures, time of blasting and other pertinent details. Submit subsequent changes to Departmental Representative before proceeding.

3.5 USE OF DREDGED  
ROCK MATERIALS IN THE  
NEW CONSTRUCTION  
WORK

- .1 Use of dredged class A rock materials in the new works is permissible provided that such materials meet all specified requirements with respect to material quality, shape and size. Use of class B dredged materials is not permissible. Class B dredged materials shall be disposed of at sites as authorized by the MDPP.
- .2 Class A rock materials from the dredging operation intended for use in the work shall be sorted and stockpiled in accordance with size and categories described in this specification for inspection by the Departmental Representative. Only those materials inspected and approved by the Departmental Representative shall be placed in the work.
- .3 The tonnage of dredged class A rock materials placed in the work shall be mutually determined by the Contractor and the Departmental Representative based on volume measurements. Volume measurement shall be converted to tonnage by multiplying the cubic metre volume by a conversion factor equal to 1.8.

3.6 SWEEPING AND  
ACCEPTANCE OF WORK

- .1 On completion of dredging, the Contractor will conduct in the presence of the Departmental Representative, a mechanical sweep of the dredged areas to confirm that grade depth has been achieved. Provide details of sweep system including horizontal and vertical control methods within 4 weeks after contract award.
- .2 Sweeping equipment to consist of heavy steel beam suspended from a barge at required depth. Beam to be capable of adjustment and calibration.
- .3 Upon successful completion of the mechanical sweep as determined by the Departmental Representative, provided that no high spots were encountered, the Departmental Representative will conduct a post dredging survey.
- .4 Provide a minimum of 14 days notice to Departmental Representative for commencement of the mechanical sweeping of the site.
- .5 The post dredging sounding survey takes precedence over the mechanical sweep for measurement purposes.

3.7 RE-DREDGING

- .1 Re-dredge unsatisfactory work and verify depths with additional sounding or mechanical sweeping to approval of Departmental Representative.

3.8 CO-OPERATION  
AND ASSISTANCE TO  
DEPARTMENTAL  
REPRESENTATIVE

- .1 Cooperate with Departmental Representative on inspection of work and provide assistance requested.
- .2 Furnish use of such boats, equipment, labour and materials forming ordinary and usual part of dredging plant as may be reasonably necessary to inspect and supervise work.

3.9 MONITORING OF  
WORK

- .1 Contractor is responsible to monitor effectiveness and productivity of his own work on an ongoing basis.

End of section

PART 1 - GENERAL

<u>1.1 RELATED SECTIONS</u>	.1	Section 31 61 13 – Pile, General requirements
	.2	Section 31 62 16.19 – Anchored Steel Piles
	.3	Section 35 20 23 – Dredging
	.4	Section 35 31 25 – Placement of stone
<u>1.2 REFERENCES</u>	.1	American Society for Testing and Materials (ASTM)
	.1	ASTM C127-07, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
	.2	ASTM C535, Standard Test Method for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
	.3	ASTM D4992, Standard Practice for Evaluation of Rock to be Used
	.4	ASTM C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
	.5	ASTM C295, Standard Guide for Petrographic Examination of Aggregates for Concrete
	.6	ASTM D65,3 Standard Terminology Relating to Soil, Rock, and Contained Fluids
	.7	ASTM D5312, Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions
	.8	ASTM D531,3 Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Wetting and Drying Conditions
<u>1.3 SOURCE MATERIALS</u>	.1	Inform Departmental Representative of proposed source of materials and provide access and assistance for inspection and testing at least 2 weeks prior to commencing work.
<u>1.4 SUBMITTALS</u>	.1	Submit test results in accordance with Section 01 33 00 (Submittal Procedures) for the following
	.1	stone material properties.
	.2	gradation tests for filter and armour stone material.
<u>1.5 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate and recycle waste materials in accordance with Section 01 74 21 (Construction/Demolition Waste Management and Disposal).
	.2	Excavated materials must be reused in the new breakwater.

1.6 INTERFERENCE  
TO NAVIGATION

- .1 Be familiar with vessel movements and fishery activities in area affected by construction operations.
- .2 Plan and execute work, in a manner that will not impede navigation, including movement of vessels at the facility.
- .3 Plan and execute work, in a manner that will not interfere with fishing operations or access to marine structures by land or water.
- .4 Departmental Representative will not be responsible for loss of time, equipment, material or any other charges related to interference with moored vessels in the bay or residents or other Contractor's operations.
- .5 Keep the Marine Communications and Traffic Services' Centre, Fisheries and Oceans Canada, informed of construction operations, in order that necessary Notices to Mariners may be issued.
- .6 Inform Department Representative of schedule for the breakwater construction at least four (4) weeks prior to beginning of works.

1.7 REGULATORY  
REQUIREMENTS

- .1 Comply with municipal, provincial and national codes and regulations relating to project.
- .2 Mark floating equipment with sound and light signals in accordance with Collision Regulations made pursuant to the Canada Shipping Act and Notice to Mariners.

1.8 QUALITY CONTROL

- .1 Survey Control
  - .1 Provide range poles, marker buoys, templates, batter boards and/or any other means of guidance and control as necessary to construct the rubble mound breakwater to the required tolerances.
  - .2 Maintain temporary vertical and horizontal control monuments in the immediate vicinity of the work being performed.
- .2 Verification Surveys
  - .1 Perform verification surveys as the work progresses to verify that lines, grades, and thicknesses for the completed work are within the specified tolerances.
  - .2 Verification surveys shall be performed with a total station survey instrument and range pole-mounted prism; surveyor's level, range pole and surveyor's tape; tag line and sounding basket; or other methods that are consistent

with the requirements of this section, subject to the approval of the Departmental Representative. Range poles, if used, shall be fitted with a flat, durable, 30 cm diameter base.

.3 Verification surveys for each stone course shall consist of cross sections of the rubble mound structure performed jointly by the Contractor and the Departmental Representative. Cross sections are to be obtained at 10 m intervals and at each change in alignment of the structure. At the head of the breakwater cross sections of the slope will be obtained in a radial pattern at 15 degree intervals. Obtain additional cross sections at the discretion of the Departmental Representative.

.4 Elevation readings (soundings) for each cross section will be obtained at 1.5 m intervals, and at every break in grade, to a distance not less than 5 m beyond the limits of the stone course being surveyed.

.3 Armour Stone and Filter Stone Gradation Testing

.1 Gradation testing of the armour stone and filter stone materials shall be conducted at the source to ensure that the materials delivered to the site are in conformance with the gradation limits specified.

.2 Gradation testing will be conducted in the presence of the Departmental Representative. Advise Departmental Representative at least 2 weeks in advance of testing.

.3 Gradation testing for armour stone and filter stone materials will be undertaken in accordance with the following.

.1 For each test the Departmental Representative will randomly select a representative sample of stone equal to at least 30 times the median stone weight.

.2 The total sample shall be accurately weighed to within 1%.

.3 Each individual stone in the sample will then be measured along three mutually perpendicular axes (dimensions a, b and c) and the measurements recorded.

.4 Individual stone weights will then be initially estimated based on the measured volume (i.e.: measured volume =  $a \times b \times c$ ) multiplied by the saturated surface dry (SSD) stone density for that stone type.

.5 The individual initial estimated weights shall then be "adjusted" by an adjustment factor equal to the ratio of the actual total sample weight divided by the sum of the individual initial estimated weights.

.6 The resulting "adjusted" stone weights will

be used to assemble a gradation curve for the sample.

- .7 Alternatively, the Contractor may elect to weigh every stone in the sample, in which case the gradation curves will be assembled using the actual measured stone weights.
- .8 Contractor will provide all equipment necessary for conducting the gradation testing.
- .4 Three gradation tests will be undertaken for the armour stone material and three gradation tests will be undertaken for the filter stone material in accordance with the following.
  - .1 The first set of gradation tests shall be undertaken at the beginning of the breakwater construction.
  - .2 The second set of gradation tests shall be undertaken when filter stone and armour stone placement has reached 33%.
  - .3 The third set of gradation tests shall be undertaken when filter stone and armour stone placement has reached 66%.
- .5 Based on the results obtained from the testing, the Departmental Representative may at his discretion require that additional gradation tests be undertaken at the source of the materials.

## PART 2 - PRODUCTS

### 2.1 ROCK MATERIAL

- .1 All rock materials to be highly resistant to inclement weather conditions including resistance to deterioration and disintegration from freeze thaw cycles, resistance to wetting and drying cycles and immersion in salt water and shall be of a quality that will ensure permanence of the structure. All rock materials placed in the structure to be quarried, irregular, angular shaped rocks comprised of hard durable stones free from cracks or other defects which could impair durability under normal circumstances or other which could result in fracturing during handling and placing operations. Inclusion of dirt, sand, shale, slate, quartzite, mica, dust, stone dust, organic or other deleterious materials or any materials impregnated with oil is not permitted.
- .2 Relative density: 2.65 minimum.

- .3 Absorption: 0.5% maximum as determined by ASTM C127 test procedure.
- .4 Resistance to compression : 100 MPa.
- .5 Durability: less than 15% abrasion Wear, ASTM C535 test procedure.
- .6 Sulphate Soundness Determination: maximum 1.5% maximum loss after 5 cycles in accordance with ASTM C88.
- .7 Conglomerates will not be acceptable in this project regardless of conformity with other requirements for materials.

#### 2.2 QUARRY RUN CORE

- .1 Material for quarry run core to be blasted rock or recovered materials from dredging.
- .2 Quarry-stone size to be well graded between 2.5 kg to 250 kg, except for stones recovered from dredging.
- .3 Per cent by weight less than 2.5 kg not to exceed 5.

#### 2.3 USE OF DREDGED ROCK MATERIALS

- .1 Use of dredged materials in the new works is permissible provided that such materials meet all specified requirements with respect to material quality, shape and size.
- .2 Rock materials from the dredging operation intended for use in the work shall be sorted and stockpiled in accordance with size and categories described in this specification for inspection by the Departmental Representative. Only those materials inspected and approved by the Departmental Representative shall be placed in the work.
- .3 All recovered stone from 1000 kg to 4000 kg must be incorporated in the berm.
- .4 The tonnage of dredged class A rock materials placed in the work shall be mutually determined by the Contractor and the Departmental Representative based on volume measurements. Volume measurement shall be converted to tonnage by multiplying the cubic metre volume by a conversion factor equal to 1.8.

#### 2.4 BERM STONE

- .1 Material for filter stone to be blasted rock or recovered from dredging
- .2 Gradation of 1 – 4 tm berm stone from quarry to be in

accordance with the following:

- .1 25% of the stones shall be between 3 250 kg and 4 000 kg .
  - .2 25% of the stones shall be between 2 500 kg and 3 250 kg .
  - .3 25% of the stones shall be between 1 750 kg and 2 500 kg .
  - .4 25% of the stones shall be between 1 000 kg and 1 750 kg .
- .3 Greatest dimension of each stone not to exceed two (2) times the least dimension.
  - .4 For stones recovered from dredging, then only criteria is the weight of the stone which must be between 1000 kg and 4 000 kg.

## 2.5 FILTER STONE

- .1 Material for filter stone to be blasted rock
- .2 Gradation of stone :
  - .1 Gradation of filter stone 600 - 1000 kg to be in accordance with the following:
    - .1 25% of the stones shall be between 900 kg and 1000 kg.
    - .2 25% of the stones shall be between 800 kg and 900 kg.
    - .3 25% of the stones shall be between 700 kg and 800 kg.
    - .4 25% of the stones shall be between 600 kg and 700 kg.
  - .2 Gradation of filter stone 500 - 800 kg to be in accordance with the following:
    - .1 25% of the stones shall be between 725 kg and 800 kg.
    - .2 25% of the stones shall be between 650 kg and 725 kg.
    - .3 25% of the stones shall be between 575 kg and 650 kg.
    - .4 25% of the stones shall be between 500 kg and 575 kg.
- .3 Greatest dimension of each stone not to exceed two (2) times the least dimension.

## 2.6 ARMOUR STONE

- .1 Material for armour stone to be blasted rock
- .2 Gradation of armour stone 6 – 10 tm to be in accordance with the following:

- .1 25% of the stones shall be between 9 000 kg and 10 000 kg.
  - .2 25% of the stones shall be between 8 000 kg and 9 000 kg.
  - .3 25% of the stones shall be between 7 000 kg and 8 000 kg.
  - .4 25% of the stones shall be between 6 000 kg and 7 000kg.
- .3 Gradation of armour stone 5 – 8 tm to be in accordance with the following:
- .1 25% of the stones shall be between 7 250 kg and 8 000 kg.
  - .2 25% of the stones shall be between 6 500 kg and 7 250 kg.
  - .3 25% of the stones shall be between 5 750 kg and 6 500 kg.
  - .4 25% of the stones shall be between 5 000 kg and 5 750 kg.
- .4 Gradation of armour stone 3 – 5 tm to be in accordance with the following:
- .1 25% of the stones shall be between 4 500 kg and 5 000 kg.
  - .2 25% of the stones shall be between 4 000 kg and 4 500 kg.
  - .3 25% of the stones shall be between 3 500 kg and 4 000 kg.
  - .4 25% of the stones shall be between 3 000 kg and 3 500 kg.
- .5 Greatest dimension of each stone not to exceed two (2) times the least dimension.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- .1 Construct and maintain haul roads.
- .2 Construct temporary ramps and platforms as required to access and execute the work

#### 3.2 STONE GRADATIONS

- .1 Material having the gradations listed shall be placed in the work at the locations indicated.
- .2 Gradation limits are in-place requirements.
- .3 Adjustments in production, transportation and placement methods shall be made as necessary to assure final placed

materials are within specified ranges.

- .4 All gradations for armour stone and filter stone are by count of individual stones.

### 3.3 QUARRY RUN CORE

- .1 Place quarry run core to lines, grades and dimensions indicated.
- .2 Sequence construction operations such that sufficient armour and filter stone is placed to protect the core at all times.
- .3 Before placement of filter material obtain cross sections of the completed core to verify that material has been placed within specified limits. Provide Departmental Representative with results of the cross section survey.

### 3.4 FILTER STONE

- .1 Place filter stone over quarry run core as indicated.
- .2 Place filter stone randomly in stable tight position beginning from the bottom of the slope progressing towards the top to achieve the layer thickness indicated.
- .3 Provide equipment for placement of filter stones that will be capable of placing stones to final position before release, and also capable of moving and repositioning released stones if necessary. Casting or dropping of stones over 0.3m will not be permitted.
- .4 Placing filter stone by end dumping or dozing will not be permitted.
- .5 Place filter stone to a total layer thickness as indicated on the drawings.
- .6 Before placement of armour material obtain cross sections of the completed filter stone layer to verify that the filter material has been placed within specified limits. Provide Departmental Representative with results of the cross section survey.

### 3.5 ARMOUR STONE

- .1 Place armour stone over filter stone layer as indicated.
- .2 Place armour stone randomly in stable tight position beginning from the bottom of the slope progressing towards the top to achieve the layer thickness indicated.
- .3 All armour stone shall be selected as to size and shape during the placing operation, and carefully keyed in to

provide a compact and integrated surface course.

- .4 Keying of armour stone shall be taken to mean the wedging and interlocking of the individual stones such that each stone is firmly seated, and also firmly wedged by the adjacent stones.
- .5 Provide equipment for placement of armour stones that will be capable of placing stones to final position before release, and also capable of moving and repositioning released stones if necessary. Casting or dropping of stone over 0.3m will not be permitted.
- .6 Placing armour stone by end dumping or dozing will not be permitted.
- .7 Place armour stone to a total layer thickness as indicated on the drawings.
- .8 Obtain cross sections of the completed armour stone layer to verify that the armour material has been placed within specified limits. Provide Departmental Representative with results of the cross section survey.

### 3.6 TOLERANCES

- .1 Note: These tolerances are not to be considered pay limits but are specified to ensure contractor keeps within acceptable lines and grades.
- .2 Completed component layers to be within the following tolerances of lines and grades indicated:
  - .1 Quarry run core:  $\pm 150$  mm for stone placed above chart datum elevation,  $\pm 250$  mm for stone placed below chart datum elevation.
  - .2 Filter stone:  $\pm 200$  mm for stone placed above chart datum elevation,  $\pm 400$  mm for stone placed below chart datum elevation.
  - .3 Armour stone:  $\pm 300$  mm for stone placed above chart datum elevation,  $\pm 500$  mm for stone placed below chart datum elevation.

End of section

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1    Section 01 11 01 – Summary of Works
- .2    Section 01 33 00 – Submittal Procedures
- .3    Section 01 35 43 – Environmental Protection
- .4    Section 01 41 00 – Regulatory Requirements
- .5    Section 01 45 00 – Quality Control
- .6    Section 35 31 23 – Rubble mound Breakwater

**1.2                SUBMITTALS**

- .1    The following information shall be submitted to the Departmental Representative as required in Section 01 33 00 – Submittal Procedures.
  - .1    Construction Equipment and procedures
    - .1    At least ten (10) working days before work inspection, the Contractor shall submit his construction procedures which must include :
      - .1    List of all equipment and machinery to be used;;
      - .2    Detailed stone methods for each category and the placement sequencing;
      - .3    Exemple of daily stone placement report.
  - .2    Inspection techniques and surveying methods.
    - .1    At least ten (10) working days before undertaking the placement of stones in the structure, the Contractor shall provide the Departmental Representative with the following information review:
      - .1    Inspection techniques and evaluation criteria applied to the placement of stones in structure;
      - .2    Detailed surveying methods implemented to ensure accurate placement, including alignment, levelling and the control of transverse sections during construction.
      - .3    After review by the Departmental Representative, the submittal shall be included in the detailed quality control plan (QCP).
  - .3    Installation and certification of weight scale (s)
    - .1    The Contractor shall make arrangements for the installation and certification of an electronic weigh scale at the quarry loading site(s) before shipping the stones as required in paragraph 1.3.
    - .2    Weigh scale installation and certification are provided at Contractor's expense;
    - .3    At least five (5) working days before loading, submit the details concerning the location and the type of weigh scale installed for the

purpose of the project as well as a document certifying the accuracy of the scale(s) under the Weights and Measures Act (R.S., 1985, c. W-6).

- .4 Weigh scale operators
  - .1 The Contractor shall provide weigh scale operators and pay all costs involved
- .5 Other weighing devices
  - .1 Submit the details of the devices to weigh stones Contractor's expense.
- .6 Certified weigh scale tickets
  - .1 A copy of each weight scale tickets, including certification of exact weight, time of weighing and of delivery shall be submitted to the Departmental Representative within one (1) working day after weighing.
- .7 Existing conditions and verification survey data
  - .1 A copy of the record of each verification survey, including existing conditions, shall be submitted to the Departmental Representative within one (1) working day after the survey. Provide submittal in both hard copy and digital formats.
- .8 Stone placement reports
  - .1 The Contractor shall submit daily stone placement reports. The Reports shall display, as a minimum, the following information: as estimate of the total tonnage placed; chaining along the control line (LC) between which stones were placed; and the total placement time. The Contractor shall also update work progress drawings indicating dates and locations of stone placement and verification surveys for each layer of stone, for review by the Departmental Representative at any time.

### 1.3 MEASUREMENT OF STONE

- .1 All stone materials imported on site shall be measured for payment by metric ton unit (1000 kilograms), for material acceptably placed in the work according to certified scale tickets as follows and Section 01 11 01 – Summary of Work :
  - .1 The Contractor shall proceed to the installation and the certification of an electronic weigh scale at the barge leading site(s) before shipping the stones. Weigh scale shall be of register type and have a sufficient size and capacity to weigh the stone and their means of transportation. The size of weight scale shall allow the receiving of all the wheels of the means of transportation used by the Contractor or the subcontractor.
  - .2 The Contractor shall supply each day to the Departmental Representative scale ticket copies for all stones delivered on site, separated by category.

### 1.4 TERMINOLOGY

- .1 In the description of the stone construction, one must refer to the survey control line (CL) and the neat lines. The following definitions shall apply to those items:
  - .1 Survey control line (CL) – Line shown on the contract drawings to which all breakwater surveys shall be referenced;
  - .2 Neat lines – Solid lines shown on the contact drawings which depict the limits of the various types of stone materials. Tolerances for the placement of the stones described in this section are perpendicular to these neat lines.

- .3 The word “ton” (t) refers to the metric ton (1 t = 1000 kg).

**Part 2 Products**

**2.1 STONE**

- .1 All the stone used on this project shall meet the requirements of Section 35 31 23 – Rubblemound breakwater.

**Part 3 Execution**

**3.1 QUALITY CONTROL OF STONE PLACEMENT**

- .1 General
- .1 The Contractor is responsible for Quality control and shall establish and maintain a Quality Control Plan (QCP) as required in sections 01 45 00 – Quality Control and 35 21 23 – Rubblemound breakwater.
- .2 The Contractor shall keep records of all quality control tests, surveys, inspections, including corrective measures implemented and provide copies to the Departmental Representative.
- .2 Survey control
- .1 The Contractor shall provide range poles, marker buoys, templates, batter-boards and/or any other means of guidance and control required to place the successive stone layers within construction tolerances.
- .2 The Contractor shall provide and maintain markers at 10 m intervals along the crest of the breakwater over the entire length of the work area. Markers shall be visible in both directions along the chaining.
- .3 Control markers are described in the project drawings. The provisional vertical and horizontal control markers shall be kept in the immediate vicinity of ongoing work.
- .4 Supply, control and maintain tide gauges – with stilling tubes if needed, to allow both the Contractor and the Departmental Representative to read tide height at any desired time during the project. The tide gauges must be graduated in metres in 1 m and 25 cm increments and place graduation marks at 2,5 cm intervals. Install the instrument to allow direct reading of water level with reference to tidal datum. The type of instrument and its location shall be approved by the Departmental Representative.
- .3 Verification surveys
- .1 Object
- .1 The Contractor shall carry out verification surveys as work progresses to ensure that the lines, elevations and course thicknesses of work performed are within specified tolerances.
- .2 Verification surveys are used by the Departmental Representative to estimate the excess stone volume (beyond tolerance limits), if the Departmental Representative allows such stone to remain in place. This volume shall be converted to weight and subject to deductions from contract payment quantity.
- .2 Scope

- .1 Verification surveys on the existing structure are required before and after excavation, and then for each course of stone placed. Each verification survey shall consist of cross-sections of the structure carried out by the Contractor at intervals of ten metres (10 m) along the control line (CL). For the roundhead of the breakwater, radial sections shall be taken at 15 degrees intervals from the center of the roundhead. Verification surveys shall be carried out from the same locations along the CL and along the roundhead radials before and after the excavation and for each course of stone.
- .2 Take elevation readings at 1.5 m intervals and at every theoretical break in grade, to a distance not less than 3 m beyond the limits of the stone course being surveyed. Carry out other elevation readings as directed by the Departmental Representative.
- .3 Other cross sections spacing and reading intervals may be used if deemed appropriate by the Departmental Representative.
- .3 Equipment
  - .1 Carry out verification surveys using a DGPS, a total station survey instrument and range pole-mounted prism, a surveyor's level, range pole and surveyor's tape; tagline and sounding basket; or other methods in accordance with this section and subject to Departmental Representative's approval. If range poles or soundings poles are used, these devices shall be fitted with a flat, durable 30 cm base.
  - .2 Carry out depth measurements by physical contact with the stone using, for example, sounding poles or leadlines. Sonic or electronic measurements are not authorized for depth measurement. Accuracy shall be better than 6 cm.
  - .3 Other measurement methods using sonic or electronic methods may be considered subject to approval by the Departmental Representative. The Contractor shall submit evidence of the accuracy of any other method and submit detailed comparison with measurements done by physical contact for all courses of stone.
  - .4 The Contractor shall provide the boats, the personnel and all the equipment required to carry out verification surveys safely.
- .4 Execution
  - .1 Above water surveys shall be undertaken using conventional land surveying methods. For underwater surveying, the Contractor shall move by boat or platform as needed, to each required reading location to cover the whole structure, including the tidal zone.
  - .2 All survey verifications are conducted using the survey control line (LC) and chart datum (CD).
  - .3 Survey verifications shall be carried out in the presence of the Departmental Representative unless the latter declines to attend.
  - .4 For each verification survey carried out, the Contractor shall provide the Departmental Representative with a record of verification surveys displaying the following information:
    - .1 Location of the verification survey (station along the control line);
    - .2 Category of stone surveyed;
    - .3 Date and time of the survey;
    - .4 Weather conditions;
    - .5 Tide gauge readings at the time of the survey;
    - .6 Name of participants;
    - .7 Field notes;

- .8 Plot on cross-section paper showing the control line, neat lines and individual elevation readings.
- .5 The exact format of the verification survey record shall be agreed upon by the Departmental Representative and the Contractor.
- .6 The verification surveys of the underlying material (i.e., the existing structure, or the excavated structure, or the previously placed course of stone) carried out by the contractor involved shall be verified by the Departmental Representative before the next course of stone is placed.

### **3.2 STONE PLACEMENT**

- .1 General
  - .1 The Contractor is free to choose the construction process. However, he shall be held responsible for any damage caused during construction and shall make good the work at his own expense and to the Departmental Representative's satisfaction. It would be preferable for the Contractor to place armour stone as work progresses.
  - .2 The Contractor shall use suitable equipment to place the stones in the correct location and on the grades and slopes shown on drawings. He shall replace any badly placed stones at his own expense.
  - .3 Discharge of armour stone will not be allowed. Place each armour material, stone by stone, starting from the bottom of slope and so that stone is stable and in contact with all adjacent stones.
  - .4 Stones shall be placed individually between the neat lines and sloped as indicated on the contract drawings within the tolerances described in the section.
  - .5 Stones of the same category shall be evenly spread by size throughout the work in such way as to avoid concentrations of same size stones in the same area.
  - .6 The equipment used to place the stones shall be capable of placing the stones without dropping them from more than 0.3 m above final position; the equipment shall also allow to move the stones and rework their position if need be.
  - .7 Place the stones and ensure that they rest firmly onto the stones below and are in contact with surrounding stones; to achieve adequate lodging, it may be necessary to change the arrangement of adjacent stones.
  - .8 Stones must be placed without regular pattern and randomly oriented in such way that joints with adjacent stones are not aligned.
  - .9 Perform outer slope finish as the layer of armour stone is placed. The finished slope shall be even and avoid passing of stones from the underlayer.
  - .10 The approval of stone placement and/or of survey verifications of a course or portion of course is not a final acceptance. Stone work shall be considered final when the Departmental Representative approves the placement and the verification surveys for all the courses in all the repair zones.
  - .11 Before final acceptance, any damage to existing structure or to partially built or approved stone courses shall be repaired by the Contractor at own expense whether such damage results from Contractor's or subcontractors' operations, or from the action of wind, waves, tides or ice.
  - .12 At the end of each work day of placing stones, the Contractor shall provide the Departmental Representative with a written stone placement summary. The exact format of the stone placement summary shall have been determined and approved by the Departmental Representative prior to commencing the stone placement. This summary shall include, at a minimum, the following: an estimate of the tonnage placed, chaining between which the stones were placed, and the total duration of placement for each type of stone.

- .13 Place stones carefully and avoid damaging adjacent structures. In case of damage, all repair and/or replacement costs resulting from a lack of precaution shall be at Contractor's expense.
- .14 Placement using any method likely to cause segregation in a given category of stone is no authorized. Placement shall begin at the toe of the slope and proceed upward. Casting of stone or moving by drifting or manipulating down the slope is not permitted. Final slope and elevation are to be achieved as stones are placed.
- .2 **Armour stone**
  - .1 All the requirements set forth in section 3.2.1 shall apply except where a more stringent and/or specific requirement is prescribed as follows. In all cases, the requirements are aimed at preventing damage to stone in place.
    - .1 The equipment used to place the stones shall be capable to bring the stone to its final position steadily and without dropping it.
    - .2 The equipment shall capable to move and reposition the stones smoothly and with accuracy to ensure that the stone rests firmly on the elements beneath and in close, tight contract with adjacent stones.
    - .3 The method and the equipment used will have to be adapted as needed to ensure that stones are not damaged or broken during placement.
- .3 **Filter stone, berm and quarry-run**
  - .1 End dumping and dozing of quarry-run material and of stones between are not authorized. Place by clamshell, dragline, backhoe or similar equipment to ensure that the materials are evenly distributed on the geotextile-covered seabed or excavated structure or previously placed material, Stones shall not be released from higher than 0.6 m of final location.
  - .2 All the materials shall be placed evenly along the lines and slopes as indicated on the contract drawings and within tolerances as described in this section.
  - .3 Handle and place materials to minimize segregation, to yield and evenly arranged mass in terms of sizes, and to perform the required in situ gradation.
- .4 **Degradation/contamination of stone layers resulting from Contractor's operations**
  - .1 The finished structure shall be free of undersize materials, including materials used in the access road as well as fractured or other materials chosen by the Contractor to assist him in the construction. The use of mats, geotextiles or other temporary working surfaces for which removal can be verified is preferred. Any other method is subject to the approval of the Departmental Representative.
  - .2 Contractor is responsible to remove and replace any stone materials that are damaged/degraded during the works to the extent that they do not meet the requirements of these specifications.

### **3.3 DEFORMATION**

- .1 In case of deformation of any part of the work during construction or after construction but before acceptance, the Contractor shall remove the displaced materials and rebuild this portion of the structure using either new materials or the displaced materials if deemed appropriate.
- .2 Stone placement prior to the installation of the outer protection shall be at Contractor's own risk.

**3.4 TOLERANCES**

- .1 Surfaces obtained shall not deviate from the lines and grades indicated on the contract drawings in a range or plus or minus the tolerances indicated below. Tolerances are measured perpendicularly to the indicated neat lines.
- .2 Extreme limits of the tolerances given below shall not be continuous in any given direction over five (5) times the average dimension of a stone and/or over more than ten square metres of structure surface area.
- .3 Any section of a stone course built to the upper tolerance limit shall not be in the immediate vicinity of a section built to the lower limit and vice-versa. In other words, transitions between tolerance limits shall be smooth.

MATERIAL	ABOVE CHART DATUM	BELOW CHART DATUM
Armour stone 6 – 10 tm	40 cm	50 cm
Armour stone 3-5 tm and 5-8 tm	30 cm	40 cm
Berm	n/a	30 cm
Filter stone	25 cm	30 cm
Quarry-run	20 cm	20 cm

- .4 In addition to the above-indicated perpendicular tolerances with reference to the slope, the horizontal position of every break in grade of finished stone courses shall be within +/- 60 cm the indications on the contract drawings. The variation shall not be systematic in one way or the other. Lines, arcs and curves lines shall be continuous and smooth, without visible deflection, bends or kinks.
- .5 The above tolerances aim at ensuring that the work is constructed to the required heights, slopes and levels. Placed material that would not meet these requirements shall be removed or reworked as directed by the Departmental Representative.

**3.5 CIRCULATION ON THE BREAKWATER**

- .1 Construction of a temporary access road can be considered, but only if done using mats, geotextiles or other temporary working surfaces in order to make sure that there will be no remaining contamination of the breakwater with unacceptable materials. In all cases, the construction method of such temporary access road will have to be approved by the Departmental Representative.

**3.6 DEBRIS**

- .1 Unless otherwise indicated by the Departmental Representative, all the timbers, the unsatisfactory materials and the debris within the construction zone shall be removed and

become the Contractor's property. All the materials shall be disposed of as required in sections 01 35 43 – Environmental Protection and 01 41 00 – Regulatory Requirements.

**3.7 TURBIDITY CONTROL**

- .1 The Contractor shall control stone placement in such way as to minimize water turbidity. Contractor operations shall comply with the requirements of Sections 01 35 43 and 01 – Environmental Protection and 01 41 00 – Regulatory Requirements.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittals
- .2 Section 05 50 00 - Metal Fabrications
- .3 Section 06 05 73 - Wood treatment
- .4 Section 31 62 16.19 - Anchored Steel Piles

### 1.2 SUMMARY OF WORK AS PER CONTRACT DOCUMENTS

- .1 Work activities herein listed is not necessarily complete and does relieve Contractor of his obligation to perform any other necessary work, change or modification required to deliver work of this project to Departmental representative's satisfaction.
- .2 Work involved in the fabrication of floating docks with wood framework in the wake of the Harrington Harbour development project include, without limitation, the following:
  - .1 Supplying the materials required to fabricate, build nineteen (19) docks.
  - .2 Fabrication of eighteen (18) docksdocks as shown on the drawings.
  - .3 Delivery and installation on site of eighteen (18) docksdocks as shown on the key plan.

### 1.3 SCOPE

- .1 Work involved in this project includes the supply of all materials, labour, tools, equipment, protection and transportation as required toward the construction and completion of the project as prescribed herein and shown on the drawings.
- .2 Work distribution and coordination among subcontractors is under the Contractor's exclusive responsibility and any mention of subcontractors in the contract documents shall not be construed or interpreted as a provision involving the Departmental Representative in such distribution of the work .

### 1.4 SUBMITTALS

- .1 Submit shop drawings or product data sheets of following items in accordance with section 01 33 00 Submittal Procedures:
  - .1 Machine bolts.
  - .2 Treated wood.
  - .3 Styrofoam pads.
  - .4 Hardware.

- .5 Floating docks.
- .6 Dock-to-pile fastening system

## 1.5 QUALITY CONTROL

- .1 The Departmental Representative will hire the services of independent inspection and testing organisations. Cost of inspection and testing services shall be borne by Departmental Representative.
- .2 The involvement of inspection and testing laboratories in the process does not relieve the of his responsibility for executing the work as required in the contract documents.
- .3 Remove any defective item or any element deemed non-compliant with contract documents and rejected by the Departmental Representative, whether poorly performed (not to best practices), or performed with defective materials or products, and even where item or product is / was incorporated in the work. Replace or redo such element as required in contract documents.

## PART 2 – PRODUCTS

### 2.1 STEEL

- .1 All steel parts must be galvanized in compliance with standards ASTM A123/123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Production.
  - .1 Bolts and nuts: 460 g/m<sup>2</sup>;
  - .2 Section, plates and rods: 705 g/m<sup>2</sup>
- .2 All mechanical bolts, lag screw, nails shall be galvanized, medium grade steel in accordance with ASTM A-307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
- .3 Machine bolts, lag bolts and drift spikes will have forged heads.
- .4 Lag-screw to be threaded
- .5 The lag bolt holes must conform to the following:
  - .1 The pilot hole for the bolt shank must be the same diameter as the bolt shank and the same height as the bolt shank length without the thread.
  - .2 The diameter of the pilot hole for the threaded portion must be 60 to 75 percent of the diameter of the bolt shank for the length equal to the threaded portion of the bolt.
  - .3 The threaded portion of the screw must be inserted into the pilot hole by turning the screw with a wrench and not by using a hammer.

- .4 Soap or any other lubricant that is not petroleum based may be used on the screw or in the pilot hole in order to facilitate insertion and prevent damage to the screw.

.1

## 2.2 WOOD

- .1 Wood used in the construction shall be Douglas fir from the coast or Pacific hemlock, eastern hemlock or red pine.
- .2 Douglas fir from the coast and Pacific hemlock shall meet the requirements of the British Columbia Lumber Manufacturer's Association entitled Standard Specifications For Construction Grade.
- .3 Spruce, grey pine and eastern hemlock shall comply with the latest issue of lumber grade standards by the Eastern Spruce Grading Committee, approved and published by the Canadian Wood Association, the AMBSQ (Association des Manufacturiers de bois de sciage du Québec) and the Maritime Lumber Bureau, except for the balsam fir which will be refused although the species is listed in regulation n° 1.
- .4 All wood species shall comply with NLGA (National Lumber Grades Authority) requirements described in its Standard Grading Rules for Canadian Lumber.
- .5 All wood incorporated in the work shall be Standard grade or better.
- .6 Wood quality shall be n° 1 or Standard to NLGA regulations entitled Standard Grading Rules for Canadian Lumber. As part of the Standard quality, no decay in any form or shape shall be tolerated.
- .7 All the wood used in the construction, fabrication of the docks shall be CCA (chromated copper arsenate) pressure treated in accordance with requirements in CAN/CSA-080-M. Net retention and penetration shall be as specified therein for marine structures (24 kg/m<sup>3</sup>). All chamfers to be cut before CCA treatment.
- .8 Wood shall be trimmed square before treatment to NLGA 748-B.
- .9 In no circumstances shall spruce and balsam fir be accepted where treated wood is specified.
- .10 All pressure treated materials that require cutting and trimming for adjustment purposes shall be given – when dry – three (3) coats of preservative as required in CAN/CSA-080. All the holes in wood pieces shall be treated similarly.
- .11 The preservative used in pressure-treating the wood shall comply with requirements in CAN/CSA-080.

### 2.3 STYROFOAM BILLETS

- .1 Extruded polystyrene high density Styrofoam billets shall be Styrofoam™ 250 x 500 x 2400 type (buoyancy force of 312 kg per Styrofoam billet).

### PART 3 – EXECUTION

#### 3.1 WORK OF THIS SECTION

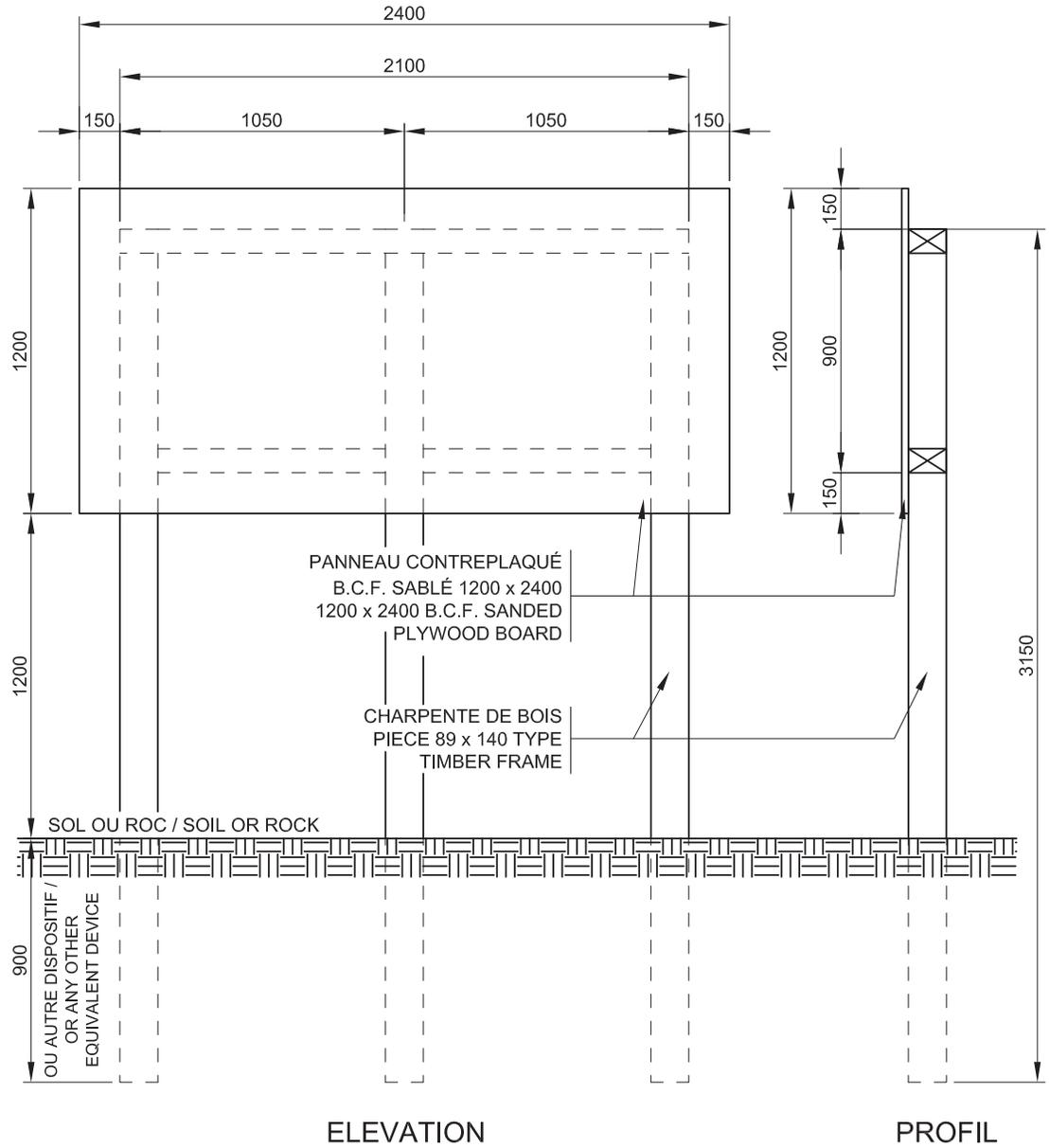
- .1 Build, fabricate nineteen (19) floating docks in treated wood to required dimensions and as indicated on the drawings. Each pontoon shall be numbered for its unique location in the system, assembly.
- .2 Two (2) of the docks will become a landing dock to welcome a gangway.
- .3 All wood pieces shall be of same length.
- .4 All steel parts incorporated in the docks shall be shop-fitted.
- .5 Fastening devices to attach docks to the piles shall be correctly installed, located on the docks. To this end, proceed to accurate survey of pile locations before installing fastening devices to numbered docks.
- .6 Slots, holes and chamfers shall be fully coated with equivalent preservative before placement of wood pieces.
- .7 During the construction and handling of the docks, take appropriate measures to prevent damaging the Styrofoam billets.
- .8 Docks shall not be set directly on the ground. Support flat and level on wood pieces.
- .9 Pontoon structures shall be square, plumb, aligned accurately and to required dimensions. Joints shall be tight and sturdy.
- .10 As much as possible, docks shall be adjusted and assembled at the plant.

End of section

## **APPENDIX 1**

Drawing X-496

LE PANNEAU DE BOIS 1200 x 2400 ET TOUTE LA CHARPENTE DE BOIS 89 x 140 SERONT FOURNIS ET INSTALLÉS PAR L'ENTREPRENEUR / 1200 x 2400 PLYWOOD AND ALL 89 X 140 TIMBER SUPPLIED AND INSTALLED BY CONTRACTOR



\* ON DEVRA CONSULTER LE DEVIS SECTION 01 52 00 - INSTALLATIONS DE CHANTIER- / SEE SPECS 01 52 00 - CONSTRUCTION FACILITIES



Pêches et Océans Canada / Fisheries and Oceans Canada

PANNEAU DE CHANTIER / WORKSITE SIGN



Titre: DÉTAILS / DETAILS		Date: 2014.09.29	Révision: 0
Projet:	No.: X-496	Conçu: E.M.	Vérifié:
Éch: 1:25		Dessiné: E.G.	Appr.:

Toute modification doit être rapportée à: PORTS POUR PETITS BATEAUX, SERVICES D'INGÉNIERIE, RÉGION DU QUÉBEC