

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

Title - Sujet BRISE-LAMES GROS-CACOUNA	
Solicitation No. - N° de l'invitation EE517-140314/A	Date 2013-07-16
Client Reference No. - N° de référence du client EE517-140314	GETS Ref. No. - N° de réf. de SEAG PW-\$QCM-008-15496
File No. - N° de dossier QCM-3-36052 (008)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-08-16	
Time Zone Fuseau horaire Heure Avancée de l'Est HAE	
F.O.B. - F.A.B.	
Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Rochette, Jean	Buyer Id - Id de l'acheteur qcm008
Telephone No. - N° de téléphone (418) 649-2834 ()	FAX No. - N° de FAX (418) 648-2209
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Port de Gros-Cacouna, Québec, Canada	

Instructions: See Herein

Instructions: Voir aux présentes

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

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INVITATION TO TENDER

TITLE : REPAIR OF THE GROS-CACOUNA BREAKWATERS

IMPORTANT NOTICE TO BIDDERS

CLAUSES REFERRED TO BY NUMBER (I.E. R2890D) CAN BE FOUND AT THE FOLLOWING WEB SITE

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

The Insurance Terms for this solicitation are amended. Refer to the Supplementary Conditions.

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GENERAL INSTRUCTIONS TO BIDDERS (GI) - R2710T (2013-06-27)

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	Code of Conduct and Certification - Bid
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GI15	Approval of Alternative Materials
GI16	Performance Evaluation
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CONTRACT DOCUMENTS (CD)

BID AND ACCEPTANCE FORM (BA)

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APPENDICES

Appendix 1 - Combined Price Form

Appendix 2 - Complete list of each individual who are currently Directors of the bidder

SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 CODE OF CONDUCT AND CERTIFICATIONS - RELATED DOCUMENTATION

By submitting a bid, the Bidder certifies that the Bidder and its affiliates are in compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Bid of Standard Instructions R2710T (2013-06-27). The related documentation therein required 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 to Bidders R2710T (2013-06-27);
- d. Clauses & Conditions identified in "Contract Documents";
- e. Drawings and Specifications;
- f. Bid and Acceptance Form and related Appendice(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 to Bidders 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>

SI03 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to 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 G116 of R2710T "General Instructions to Bidders", enquiries should be received no later than five (5) business 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

SI05 REVISION OF BID

A bid may be revised by letter or facsimile in accordance with G111 of R2710T "General Instructions to Bidders". 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 (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 SI07 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 SI07 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 G112 of R2710T "General Instructions to Bidders".

SI09 CONSTRUCTION DOCUMENTS

The successful Contractor will be provided with one paper copy of the sealed and signed drawings, the specifications and the amendments upon acceptance of the offer. Additional copies, up to a maximum of two (2), will be provided free of charge upon request by the Contractor. Obtaining more copies shall be the responsibility of the Contractor including costs.

SI10 SECURITY RELATED REQUIREMENTS

Not applicable

SI11 TRANSMISSION OF THE BID BY FACSIMILE OR EMAIL

Bids transmitted by facsimile or email are not accepted.

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:

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

Contracts Canada (Buy and Sell) <https://www.achatsetventes-buyandsell.gc.ca/eng/welcome>

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>

Certificate of Insurance (form PWGSC-TPSGC 357)
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/357.pdf>

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

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Schedules of Wage Rates for Federal Construction Contracts

http://www.rhdcc-hrsdc.gc.ca/eng/labour/employment_standards/contracts/schedule/index.shtml

PWGSC, Industrial Security Services [Http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html](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](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](http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/229.pdf)

SUPPLEMENTARY CONDITIONS (SC)

SC01 INSURANCE TERMS (IT)

IT1 (2008-12-12) General

IT1.1 Proof of Insurance

1. Before commencement of the Work, and within thirty (30) days after acceptance of its bid, the Contractor shall deposit with Canada a Certificate of Insurance Form 357, available on Public Works and Government Services Canada Web site.
2. Upon request by Canada, the Contractor shall provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the provisions contained herein.
3. The insurance policies shall 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.

IT1.2 Payment of Deductible

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

IT2 (2008-05-12) Commercial General Liability

IT2.1 Scope of Policy

1. The insurance coverage provided shall not be less than that provided by IBC Form 2100, as amended from time to time, and shall have:
 - a. an Each Occurrence Limit of not less than \$5,000,000;
 - b. a Products/Completed Operations Aggregate Limit of not less than \$5,000,000; and
 - c. a General Aggregate Limit of not be less than \$10,000,000 per policy year, if the policy is subject to such a limit.
2. The policy shall 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 building or land whether such support be natural or otherwise if the work is performed by the insured contractor.

IT2.2 Insured

1. The policy shall insure the Contractor and shall include Her Majesty the Queen in right of Canada, represented by the Minister of Public Works and Government Services Canada as an additional Insured, with respect to liability arising out of the operations of the contractor with regard to the work.

IT2.3 Period of Insurance

1. Unless otherwise directed in writing by Canada, or, otherwise stipulated elsewhere herein, the policy required herein shall be in force and be maintained from the date of contract award until the day of issue of the Certificate of Completion except that the coverage for Completed Operations Liability shall, in any event, be maintained for a period of at least six (6) years beyond the date of the Certificate of Substantial Performance.

IT3 (2008-05-12) Marine liability insurance

1. The Contractor must obtain Protection & Indemnity (P&I) insurance that must include excess collision liability and pollution liability. The insurance must be placed with a member of the International Group of Protection & Indemnity Associations or with a fixed market in an amount of \$ 10,000,000.00. Coverage must include crew liability, if it is not covered by Worker's Compensation as detailed in paragraph 2 below.
2. The Contractor must obtain Worker's Compensation insurance covering all employees engaged in the Work in accordance with the statutory requirements of the Territory or Province or state of nationality, domicile, employment, having jurisdiction over such employees. If the Contractor is assessed any additional levy, extra assessment or super-assessment by a Worker's Compensation Board, as a result of an accident causing injury or death to an employee of the Contractor or subcontractor, or due to unsafe working conditions, then such levy or assessment must be paid by the Contractor at its sole cost.
3. The Protection and Indemnity insurance policy must include the following:
 - (a) Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada as additional insured should read as follows: Canada, represented by Public Works and Government Services Canada.
 - (b) Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Transport Canada and Public Works and Government Services Canada for any and all loss of or damage to the watercraft however caused.
 - (c) Notice of Cancellation : The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.
 - (d) Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

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	R2810D	(2013-04-25)
GC2 Administration of the Contract	R2820D	(2012-07-16);
GC3 Execution and Control of the Work	R2830D	(2010-01-11);
GC4 Protective Measures	R2840D	(2008-05-12);
GC5 Terms of Payment	R2850D	(2010-01-11);
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	R2882D	(2008-12-12);
GC9 Contract Security	R2890D	(2012-07-16);
GC10 Insurance	R2900D	(2008-05-12);
Supplementary Conditions		
Insurance Terms		
Fair Wages and Hours of Labour - Labour Conditions	R2940D	(2012-07-16);
Allowable Costs for Contract Changes Under GC6.4.1	R2950D	(2007-05-25);
Schedules of Wage Rates for Federal Construction Contracts;		
 - e. Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
 - 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. Schedules of Wage Rates for Federal Construction Contracts is included by reference and may be accessed from the Web site:
http://www.rhdcc-hrsdc.gc.ca/eng/labour/employment_standards/contracts/schedule/index.shtml.
4. 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

Repair of the Gros-Cacouna breakwaters

Solicitation no : EE517-140314/A

Project no : R.041532.001

BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

Address: _____

Telephone: _____ Fax: _____ PBN: _____

Email address : _____

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 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 as folloe :

Phase 1 : from the date of notification of acceptance of the offer to March 31, 2014.

Phase 2 : from May 15, 2014 to August 31, 2014.

BA07 BID SECURITY

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The Bidder is enclosing bid security with its bid in accordance with GI09 - Bid Security Requirements of R2710T - General Instructions to Bidders.

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	Specification Reference	Description	Firm Total Amount
1	01 29 00	Site organization	_____ \$
2	01 29 00	Mobilization and Demobilization	_____ \$
3	01 29 00	Access To Work Areas - North Breakwater Repairs	_____ \$
4	01 29 00	Access To Work Areas - South Breakwater Repairs	_____ \$
5	01 29 00	Demolition of the l'heliport	_____ \$
6	01 29 00	Excavation, sorting, stockpiling and disposal of materials to be removed from the South Breakwater	_____ \$
LUMP SUM AMOUNT (LSA) 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.

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Item	Specification Reference	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity (EQ)	Price per Unit GST/HST extra (PU)	Extended amount (EQ x PU) GST/HST extra
7	01 29 00	Armour Stone (3000 kg to 7000 kg) – North Breakwater	Ton	5 000	_____ \$	_____ \$
8	01 29 00	Filter Stone (500 kg to 1100 kg) – South Breakwater	Ton	8 850	_____ \$	_____ \$
9	01 29 00	Armour Stone (4000 kg to 8000 kg) – South Breakwater	Ton	22 800	_____ \$	_____ \$
TOTAL EXTENDED AMOUNT (TEA) Excluding GST and QST						_____ \$

TOTAL BID AMOUNT

TOTAL BID AMOUNT (LSA +TEA) Excluding GST and QST	
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Public Works and Government Services Canada

GENIVAR - CBCL - DEL Consortium

GROS-CACOUNA

REPAIR OF BREAKWATERS

TECHNICAL SPECIFICATION

PROJECT No. R.041532.001

FOR TENDER

DO NOT USE THESE DOCUMENTS FOR CONSTRUCTION PURPOSES

GENIVAR - CBCL - DEL Consortium
5355 des Gradins Blvd
Québec, Québec
G2J 1C8
O/F: Q119920-706

Prepared by: Éric Therrien, ing.
Jean-François Hudon, ing.
Ennio De Curtis, Eng.



Verified by: Jean-François Hudon, ing.

July 12, 2013

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APPENDIX

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PART 1 - GENERAL

1.1 RELATED SECTION

- .1 Section 01 56 00 - Temporary Barriers and Enclosures

1.2 WORK COVERED BY
CONTRACT DOCUMENTS

- .1 Work of this contract involves repair work to the breakwaters at Gros-Cacouna.
- .2 Repair work to the breakwaters at Gros-Cacouna will proceed in two (2) phases for budgetary reasons and include mainly, without limitation:
Phase 1: Beginning at issuance of contract award and ending March 31, 2014:
 - .1 Repairing the head of the South Breakwater.
 - .2 Production of all stone required and delivery to project site.**Phase 2:** Beginning on May 15, 2014 and ending on July 31, 2014
 - .1 Repair of the North Breakwater.

1.3 CONTRACTOR'S USE
OF THE PREMISES

- .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 The space available to the Contractor is exclusively limited to the boundaries indicated on the plan, including access roads as indicated. Should the Contractor wish to access and use other areas 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. Should the Contractor use the wharf, additional access roads will be granted to this end.
- .4 There is at present no suitable vehicular track on the breakwaters. Construction of temporary access roads may be contemplated only if performed in accordance with the requirements set forth in section 35 31 25 – Rubble Mound Breakwater. The only alternative to these specifications is to perform the work from floating equipment.

- .5 Use of the wharf: the Contractor may use the wharf to unload materials. Contractor's use of the wharf is subject to Transport Canada rules and regulations, namely SOR/2001-154 – Public Ports and Public Port Facilities Regulations. The following general criteria are applicable:
 - .1 The wharf is available to the Contractor and other uses on a first come, first served basis.
 - .2 Loading/unloading operations at the wharf are given priority over waiting time on quayside.
 - .3 The Contractor shall be responsible for related costs and fees, side wharfage fees, charges for storage, harbour dues, wharfage and transfer charges as defined by Transport Canada.
- .6 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.

1.4 RANGING OUT OF THE PREMISES

- .1 Assume full responsibility for staking out the work and 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 Bench-mark stations used for implementing the breakwaters are provided on the drawings.

1.5 METRIC UNITS

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

1.6 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 Certificate of compliance for materials.
 - .7 Approved technical data sheets.
 - .8 Change Orders.
 - .9 Other Modifications to Contract.
 - .10 Field Test Reports.
 - .11 Copy of Approved Work Schedule.

- .12 Health and Safety Plan and Other Safety Related Documents.
- .13 Other documents as specified.

1.7 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 Certificate of compliance for materials;
 - .7 Field test records.
 - .8 Inspection certificates.
 - .9 Certificates issued by the suppliers of the materials.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files & racks as well as 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.

1.8 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of opaque drawings provided by Departmental Representative.
- .2 Provide felt tip marking pens, and use red colour for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings: mark each item to record actual construction, including:
 - .1 Measured horizontal and vertical locations of excavation bottoms, quarry-run and filter stone layers.
 - .2 Field changes of structural dimension and detail.

- .3 Changes made following change orders.
- .4 Details not on original Contract Drawings.
- .5 Specifications: mark each item to record actual structures, including modifications made to reflect all Addenda and change orders.
- .6 Other Documents: retain and file suppliers' certificates, inspection certifications, and records of testing at both the quarry and the work site.

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 ACCESS TO WORKSITE

- .1 Design and construct temporary means of access to work site and ensure their maintenance.

1.2 USE OF SITE AND FACILITIES

- .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 work site and provide for personnel and vehicle access.
- .3 Where security is likely to be reduced by work activities provide other temporary means required to maintain security of property and safety of persons on premises.

1.3 INTERFERENCE TO NAVIGATION

- .1 Whether work is carried out by means of marine equipment (floating) or from land and work is performed below the high water mark, the Contractor shall seek and obtain all required information concerning boat traffic and fishing activities in the construction area. Design and execute the work in such way as to prevent interfering with commercial and fishing activities or limiting the access to harbour facilities 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, the Contractor 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 and to the Gros-Cacouna harbour master, Mr. Louis D'Amours 418 867-1784.
- .4 The existing navigational aid on the south breakwater head shall remain operational throughout the construction project. Should the Contractor need to remove temporarily the navigational light tower during construction, he shall install and maintain at own cost buoyage indicating the boundaries of the sector. Use two (2) yellow cautionary buoys (spar type, SB-105 – Tideland) or equivalent coastal buoys fitted

with flashing yellow lights (Fl Y 4s) with minimum visibility of two (2) nautical miles. Install buoyage without interfering with navigation or reducing waterway access to and from the port. At no time shall the Contractor or construction activities impair the efficiency of operational marine aids to navigation. At work completion, the Contractor shall reinstall existing buoy to Departmental Representative satisfaction.

1.4 FLOATING EQUIPMENT

- .1 The Contractor shall provide equipment of sufficient size and capacity to undertake the Work as described in the plans and specifications, including excavation, handling, transport and placement of new and salvaged materials indicated in the contract.
- .2 For each floating equipment to be used in the work, a compliance certificate shall be supplied to Departmental Representative before work is undertaken.
- .3 All plant and equipment must be maintained in good repair 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.
- .4 Mark floating equipment with lights/markers in accordance with the Canada Shipping Act.
- .5 Maintain radio watch on board.
- .6 Place in position, moor and maintain all buoys/markers required to properly execute the work.
- .7 The Contractor shall supply, place in position, moor and maintain at own cost 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 his 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.
- .8 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 and comply with regulations including safety, fire, traffic and security requirements.
- .2 Keep within limits of work and avenues of ingress and egress for which authorisations were delivered.

1.6 SMOKE FREE
ENVIRONMENT

- .1 Comply with smoking restrictions.

1.7 BLASTING

- .1 Blasting in any form is prohibited on the Transport Canada property within the framework of this project.

1.8 ENVIRONMENTAL
PROCEDURES

- .1 See section 01 35 43 (Environmental procedures).

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 METHOD OF
MEASUREMENT

- .1 Unless otherwise indicated, all materials, labour, plant, equipment, protection, transport, administrative fees, profits and financing, etc., required to execute the work of this project shall be included in each item herein described.
- .2 The Contractor shall provide, no later than ten (10) days after Notification of Acceptance of the Offer a breakdown of unit price work items.
- .3 Work in phases 1 and 2 which are measured as Firm Lump Sum Amount work items are as follows:
 - .1 Item 1: Site organization: All the works of Division 01 specified on the plans and in the specifications. Includes works specified on the plans and in the specifications and which are not included in any of the other measured items listed in the unit price table. This item to be measured as a lump sum item. Progress payments for this item will be prorated in accordance with the percentage of the total work completed within each measurement period.
 - .2 Item 2: Mobilization and Demobilization:
 - .1 Mobilization and demobilization of all the construction equipment required to execute the repair work for the North and South breakwaters as indicated, will be measured as a single fixed lump sum item.
 - .2 Upon notification of award of contract the Contractor will provide a cost breakdown for this item showing the amount for each piece of equipment, machinery or plant that will be used in the execution of the work.
 - .3 Item 3: Access To Work Areas - North Breakwater Repairs: All plant and work site facilities, labour, equipment and machinery, materials, services, supervision or costs possibly incurred to access the areas of the breakwater to be repaired, including the construction and removal of a temporary access road on the North Breakwater in accordance with requirements of article 3.1.1 in Section 35 31 25 and/or the provision of floating equipment to access the structure will be measured as a lump sum item.
 - .4 Item 4: Access To Work Areas - South Breakwater Repairs: All plant and work site facilities, labour, equipment and machinery, materials, services, supervision or costs possibly incurred to access the head of the breakwater, including the construction and removal of a temporary access road on the South Breakwater in accordance with requirements of article 3.1.1 in Section 35 31 25 and/or

provision of floating equipment to access the work will be measured as a lump sum work item.

.5 Item 5: Demolition of the heliport: this item includes the demolition of the heliport and disposal of demolition materials at an authorised site. This item is measured as a lump sum work item.

.6 Item 6: Excavation, sorting, stockpiling and disposal of materials to be removed from the South Breakwater

.1 Excavation, sorting, stockpiling and disposal of rock materials from the existing breakwater will be measured as a single fixed lump sum item.

.2 The transportation of excavated materials to the sorting zone indicated on the plan for the selection of appropriate materials suitable for re-use in the repair works, as well as the loading and hauling of excavated materials between 0 and 8 tonnes unsuitable for re-use in the repair works; and the transportation and disposal in the cell shown on the plan of excavation materials between 0 and 3 tonnes and excavation materials between 3 and 8 tonnes unsuitable for re-use in the repair works will be considered incidental to the work of this item and will not be separately measured.

.3 This item also includes relocating all the concrete blocks at the head of the breakwater. Concrete blocks to be arranged in piles as instructed by Departmental Representative where indicated on the plan.

.4 This item also includes the loading, transportation and storage of stones weighing more than eight (8) tonnes to be preserved and stored in the zone identified for this purpose on the plan. These stones will not be accounted for in another item of the price schedule.

.4 The measurement method for unit price items is as follows:

.1 Item No. 7: Armour Stone (3000 kg to 7000 kg) - North Breakwater

.1 Regardless of origin, (stones excavated from the South Breakwater, stones recovered in the former quarry adjacent to the North Breakwater, or stones produced in an outside quarry), armour stone will be measured in tonnes of materials supplied, placed and incorporated into the structure.

.2 It is compulsory that all the 3 to 7-tonne stone material excavated from the South Breakwater and found suitable under article 3.3.3 of Section 35 31 25 be utilised. Additional quantities required shall origin either from previously blasted material in the former quarry adjacent to the North Breakwater or an outside stone pit.

.3 Excavation required to perform the work as indicated on the plan will be considered incidental to the work and will not be separately measured.

.4 According to origin, stone material shall be weighed on certified scales at the outside quarry(ies) of origin or on a certified scale to be located in the sorting area indicated on the plan. The certified scales shall be of the recording type and of the size required to weigh both the stone and carrier used. The Contractor shall provide copies of weight tickets for all stone categories to the Departmental Representative on a load basis. Weight tickets should indicate the weight, time and date of weighing and delivery.

.5 All quality control measures as defined in Section 35 31 24 and Section 35 31 25 including assistance provided to the Departmental Representative for quality assurance are considered incidental to the work of this item and will not be separately measured.

.2 Item No. 8: Filter Stone (500 kg to 1100 kg) – South Breakwater

.1 Regardless of origin (stones recovered in the former quarry adjacent to the North Breakwater or stones produced in an outside quarry) all filter stone will be measured in tonnes of materials supplied, placed, and incorporated into the structure.

.2 According to origin, stone material shall be weighed on a certified scale at the outside quarry(ies) or on a certified scale to be located in the sorting area indicated on the plan. The certified scales shall be of the recording type and of the size required to weigh both the stone and carrier used. The Contractor shall provide Departmental Representative with copies of weight tickets for all stone categories on a load basis. Weight tickets should indicate the weight, time and date of weighing and delivery.

.3 All quality control measures as defined in Section 35 31 24 and Section 35 31 25 including assistance provided to the Departmental Representative for quality assurance are considered incidental to the work and will not be separately measured.

.3 Item No. 9: Armour Stone (4000 kg to 8000 kg) – South Breakwater

.1 Regardless of origin, (stones excavated from the South Breakwater, stones recovered in the former quarry adjacent to the North Breakwater, or stones produced in an outside quarry) armour stone will be measured in tonnes of materials supplied, placed and incorporated into the structure.

.2 It is compulsory that all the 4 to 8-tonne stone excavated from the South Breakwater and found suitable under article 3.3.3 of Section 35 31 25 be utilised. Additional quantities required shall originate either from previously blasted and recoverable stones in the former quarry adjacent to the North Breakwater or an outside stone pit.

.3 Repositioning of adjacent armour stones: Any repositioning and/or adjustment of existing adjacent armour stones in the South Breakwater required to achieve the geometry shown on drawings is considered incidental to the work and will not be separately measured.

.4 According to origin, stone material shall be weighed on a certified scale at the outside quarry(ies) or on a certified scale to be located in the sorting area indicated on the plan. The certified scales shall be of the recording type and of the size required to weigh both the stone and carrier used. The Contractor shall provide Departmental Representative with copies of weight tickets for all stone categories on a load basis. Weight tickets should indicate the weight, time and date of weighing and delivery.

.5 All quality control measures as defined in Section 35 31 24 and Section 35 31 25 including assistance provided to the Departmental Representative for quality assurance are considered incidental to the work and will not be separately measured.

- .5 There will be no additional compensation for delays caused by vessel traffic.
- .6 There will be no additional compensation for downtime.
- .7 There will be no additional compensation for delays caused by inclement weather.
- .8 Any stone material placed by the Contractor, whether filter stone or armour stone that is washed out, removed, deteriorated by wave or ice action during construction, or placed outside the limits indicated will not be measured.

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
REQUIREMENTS
SPECIFIED ELSEWHERE

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified elsewhere in various sections of this specification.

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 Testing at quarry sites 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 materials or 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 equipment and to process test samples.
- .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

PART 1 - GENERAL

1.1 ADMINISTRATIVE

- .1 Construction meetings will be held throughout the construction period.
- .2 The Departmental Representative will prepare the meeting agendas.
- .3 The Departmental Representative will provide a five day (5) written notification to the participants concerned.
- .4 The Contractor shall provide a construction trailer to hold such meetings and will make the required arrangements to this end.
- .5 The Departmental Representative will preside over the meetings.
- .6 The Departmental Representative will record the meeting proceedings, take note of all the questions raised and significant decisions taken, and will enter any actions undertaken by the parties.
- .7 The Departmental Representative will make copies of the proceedings and provide the documents to both participants and parties not in attendance alike within five (5) days after each meeting.
- .8 The representatives of the Contractor, subcontractors and suppliers attending a construction 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 Notification of Acceptance of the Offer, 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 each party. This meeting will stand in Québec City.
- .2 The Departmental Representative, the Contractor and the work site supervisor shall attend this meeting.
- .3 The Departmental Representative will establish time and specific location exact of meeting and notify parties concerned minimum five (5) days before meeting.

- .4 Meeting agenda to include, without limitation:
 - .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 Schedule of required submittals in accordance with section 01 33 00 (Submittal Procedures).
 - .4 Requirements for temporary facilities, signage, offices, utilities and fences in accordance with section 01 52 00 (Construction Facilities).
 - .5 Delivery schedule pertaining to specified materials.
 - .6 Site safety, in accordance with section 01 35 29.06 (Health and Safety).
 - .7 Proposed changes, change orders, procedures, required approvals, allowable mark-up, time extensions and other administrative conditions.
 - .8 Project drawing records, in accordance with section 01 33 00 (Submittal Procedures).
 - .9 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .10 Designation of inspection and testing agencies or firms.
 - .11 Insurance and transcript of policies.

1.3 PROGRESS MEETINGS

- .1 The Departmental Representative will establish a schedule of meetings to be held on the work site every three (3) weeks throughout construction. Additional meetings may be scheduled in light of developments of works in progress.
- .2 In addition to the Contractor and the Departmental Representative, the main subcontractors participating to the construction project shall attend these meetings.
- .3 Departmental Representative to notify each participant and confirm the date of each meeting at least five (5) days prior to meetings.
- .4 Departmental Representative to record minutes of the progress meetings and circulate to attending parties including parties not in attendance within five (5) days after meeting.
- .5 Progress and review meetings 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 materials delivery schedule.

- .6 Corrective measures and procedures to recapture scheduling as established.
- .7 Review of construction schedule.
- .8 Review of progress schedule of successive work periods.
- .9 Review of submittals schedule: expedite submittal process as required.
- .10 Preservation of quality standards.
- .11 Review of 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 the course of a 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 Work immediately after providing Contractual Authority with a satisfactory insurance certificate.

- .2 Ensure that planning and implementation schedule are workable with respect to prescribed contract duration.
- .3 Planning and scheduling shall provide action and results as required by the prescribed milestones and time frame.
- .4 Break down activities to shorter segments to allow for progress reporting.
- .5 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.
- .6 The construction schedule and the bar (GANTT) diagram shall take into account the work restrictions described in sections 01 14 00 (Work restrictions) and 01 35 43 (Environmental procedures).

1.3 SUBMITTALS

- .1 Within 10 working days of Award of Contract submit to Departmental Representative Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .2 Submit Project Schedule to Departmental Representative within 5 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, technical data sheets and samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Approval of quarry/quarries outside the Transport Canada site for the supply of stone materials;
 - .6 Approval of the quarry or quarries the Contractor intends to use as a source a supply for stones materials;
 - .7 Repair work to the North Breakwater;
 - .8 Heliport demolition;
 - .9 Demobilization.

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

1.1 RELATED SECTION

- .1 Section 01 45 00 – Quality Control.

1.2 ADMINISTRATIVE

- .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, technical data sheets, samples of materials in SI Metric units.
- .4 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.
- .5 Notify the Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations. Departmental Representative may either accept or reject material submitted.
- .6 Verify and ascertain field elevation measurements over entire area involved in the Work.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals and Contractor shall submit complete and adequate documents.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review and Contractor shall submit documents to contract requirements.
- .9 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, tables or schedules, performance charts, brochures and other documents which are to be provided by Contractor to illustrate quality details, weight and dimensions of materials used in the Work or portion thereof.
- .2 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.
- .3 Submissions include:
 - .1 Preparation dates and revision dates.
 - .2 Project title and number.
 - .3 Name and address of supplier.
 - .4 Quarry of origin.
 - .5 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions and compliance with Contract Documents.
- .4 After Departmental Representative's review, distribute copies of shop drawings and technical data sheets.
- .5 Submit one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .6 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. 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.
- .7 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.
- .8 Delete information which not applicable to Work project.

- .9 Supplement standard information and provide details applicable to Work project.

1.4 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 (Quality Control).

1.5 PHOTOGRAPHIC DOCUMENTARY

- .1 Submit one (1) copy of the digital photographic documentary, in jpg format on an electronic physical storage device.
- .2 Project identification: indicate project designation and number, including date the photographs were taken.
- .3 Number of viewing angles: two (2). Viewing angles and locations to be determined by Departmental Representative.
- .4 Frequency for submission of photographic documentation: weekly.

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit required documents to relevant Workers' Compensation Board.

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 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.

- .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, including:
 - .1 General construction site safety and health courses.
 - .2 First aid in the workplace and cardiopulmonary resuscitation.
 - .3 Work likely to release dust.
 - .4 Wearing and fitting of individual protective gear.
 - .5 Work near water bodies with drowning hazard.
 - .6 Work involving third parties.
- .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 along with the site-specific safety program.

- .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 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 (DR) a certificate of compliance signed by a qualified mechanic. Whenever the DR 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.

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 / IMPLEMENTATION CONDITIONS

- .1 At the site, the Contactor must take into account of the following conditions:
 - .1 Marine work with tidal amplitudes in the range of 3.7 m (average tide) to 5.3 m at maximum tides and variable water depths to 15 metres below hydrographic datum.
 - .2 Risks involved in the transshipment, operation and closing-in of floating equipment.
 - .3 Risks involved in the potential release of oil products at sea and with the operations undertaken to confine the spill.
 - .4 Work in and on the water: the site may also be subject to significant stirring of waves, and to winds, current and floating ice.
 - .5 Underwater excavation work.
 - .6 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.
 - .7 Risks associated with the multiple handling operations of massive rocks.

1.8 SAFETY AND HEALTH MANAGEMENT

- .1 Acknowledge and assume all the charges and obligations which customarily devolve upon a Departmental Representative 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 (demobilization) 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 Risks 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). Refer to Mr. Robert Fecteau, Transport Canada, 418 722-3040.
- .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 Departmental Representative;
 - .3 Company occupational health and safety (OHS) 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, the Contractor shall interrupt work immediately and 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 and fill 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 construction 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.

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 - Submittals.
- .2 Section 01 74 21 - Construction/demolition waste management and disposal.

1.2 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare, unfavourably alter ecological balances of importance to human life, affect other species of importance to humankind or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or of environmental disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; it includes the management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.
- .3 Invasive species: An invasive exotic species is, by definition, a species foreign to the ecosystem where it is found and yet able to breed and negatively affect the economy, environment or human health. In addition to certain plants, this kind of harmful organism includes some animals, fungi and microorganisms which also pose a threat to biodiversity.

1.3 SUBMITTALS

- .1 Submit required documents and samples in accordance with Section 01 33 00 (Submittals).
- .2 Prior to commencing construction activities or delivery of materials and equipment to the worksite, submit Environmental Protection Plan for review and approval by Departmental Representative. The Environmental Protection Plan shall present a comprehensive overview of known or potential environmental issues which must be addressed throughout construction.
- .3 In the Environmental Protection Plan, address topics at level of detail commensurate with environmental issues and required construction work activities. Actions taken shall comply with the requirements set forth in this section of the specifications.

- .4 The Environmental Protection Plan shall include:
 - .1 The name of persons responsible for ensuring compliance with the Environmental Protection Plan;
 - .2 A spill contingency plan, complete with procedures, responders and their training, instructions to be followed and reports to be produced should an unforeseen spill of regulated substance occur;
 - .3 Non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal;
 - .4 An air pollution control plan detailing provisions to ensure that dust, debris, materials, and trash do not become air borne and travel beyond project site;
 - .5 A contamination prevention plan identifying potentially hazardous substances to be used on job site. Also identifies intended actions to prevent introduction of such materials into air or ground; and detailed provisions for compliance with federal, provincial, and municipal laws and regulations for the storage and handling of these materials.

1.4 FIRES

- .1 Do not make fires and burn rubbish on site.

1.5 WASTE DISPOSAL

- .1 Unless explicitly authorised by Departmental Representative, do not bury rubbish and waste materials on the work site.
- .2 Do not dispose of waste or volatile materials such as mineral spirits, oil or paint thinners into waterways, storm or sanitary sewers.

1.6 WORK ADJACENT TO WATERWAYS

- .1 Do not use construction equipment in waterways.
- .2 Do not use waterway bottom or bank as borrow material.
- .3 Do not dump excavated material (spoil), waste material or debris in waterways.
- .4 Underwater blasting is not authorised.
- .5 Carry out equipment refuelling and maintenance at least 30 m from the shore.
- .6 Where equipment must remain within 30 m from a waterway, the Contractor shall provide Departmental Representative with a protection plan designed specifically for these operations.

- .7 Store fuel and any hazardous material at more than 30 m from waterway. Where temporary fuelling installations are used, storage areas shall be designed in compliance with applicable regulations. Install storage systems onto sealed surfaces. Keep an emergency response kit nearby for use in case of accidental hydrocarbon spill.

1.7 TRANSPORTATION OF MATERIALS

- .1 Transport of materials on public roads may proceed Monday to Friday inclusively to the work site unless otherwise determined by the authority having jurisdiction (AHJ).
- .2 Transport of materials through the municipality may begin at 7 AM and cease no later than 7 PM.
- .3 The Contractor shall maintain trucks in good working order. Any truck or other transport mode or vehicle scoring above normal sound levels in the opinion of the Departmental Representative shall cease to run or be repaired or modified to bring the sound pressure to an acceptable level.
- .4 Contractor to use acceptable signage and cooperate with the Municipality, the Departmental Representative and any other authority having jurisdiction (AHJ) in order to minimize the impact of truck noise on the daily activities of the citizens along the traffic roads and in the vicinity of the work site.
- .5 Use tarpaulins to cover the granular materials during hauling outside the Transport Canada harbour property.
- .6 Clean public roads regularly with a mechanical road sweeper.

1.8 PROTECTION OF THE AQUATIC ENVIRONMENT IN THE WORK AREAS

- .1 Do not store demolition debris in the aquatic environment or on the shore.
- .2 As work progresses, the Contractor shall carry out a complete cleaning of the aquatic environment in order to recover any and all debris generated during construction.
- .3 The Contractor shall minimize direct interventions in the aquatic environment, on the shore and beaches. Heavy equipment shall never travel in the aquatic environment outside the work areas.
- .4 Use equipment that minimizes resuspension of sediments, i.e., hydraulic shovel.

- .5 The Contractor shall clearly mark the boundaries of the work area within which the equipment and machinery shall remain at all times.
- .6 Whenever possible, proceed to work in water at low tide.
- .7 All granular materials used in this project shall be clean and free of contaminants.
- .8 Prefer the use of equipment lubricated with HF type biodegradable vegetable oil.

1.9 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 The equipment used shall be in good working order and maintenance carried out before mobilization to the work site. Ascertain that there are no fuel, oil or grease leaks.
- .4 Do not clean equipment near water bodies.
- .5 Avoid useless idling of trucks and machinery.
- .6 Granular materials likely to be dispersed in air shall be covered to prevent their blowing during storage in stockpiles.
- .7 Cover rubbish and wet down dry materials to prevent blowing dust and debris. Provide dust control for access and/or temporary roads.
- .8 Municipal roads that provide access to work site shall be cleaned on a regular basis in order to minimize dust resuspension due to truck traffic.
- .9 Should an accidental fuel spill occur (diesel, gasoline, etc.) or in the event of any other environmental accidental event, immediately notify Departmental Representative and the following authorities:
 - .1 Environment Canada, Environmental Emergency Centre. Tel.: 1-866-283-2333.
 - .2 Ministère du Développement durable, Environnement et Parcs du Québec (MDDEP). Tel.: 1-866-694-5454.
 - .3 Canadian Coast Guard, marine pollution. Tel.: 1-800-363-4735.
 - .4 Work site supervisor.

- .10 The Contractor shall take all measures to control the spill at the source within reasonable and safe limits. Deploy an oil barrier and/or oil absorbing carpet in order to contain the spill. Oil barriers or absorbing mats shall be stored on the bank side in an identified container and towed on site to contain or absorb the spill. Mats and barriers shall thereafter be loaded into sealed containers for appropriate processing and/or disposal.
- .11 Sediments or soils contaminated by an accidental spill shall be stockpiled onto and covered with waterproof tarpaulins. Proceed to an environmental quality verification of such materials before they are removed from the site and comply with MDDEP regulations and directions. Materials shall then be shipped to an authorised disposal site. Following the decontamination operations, in situ characterization of soils or sediments shall be performed to ascertain they are free of contamination. Clean up any hydrocarbon stains.
- .12 Water contaminated during an accidental spill shall be confined for characterization or dealt with directly by a specialised waste company in compliance with MDDEP regulations and directions.
- .13 All the concerned personnel on site shall be fully trained to apply emergency response methods and procedures for spills and use the relevant equipment and material.

1.10 NOTICE OF NON-COMPLIANCE

- .1 The Departmental Representative will notify the Contractor in writing of observed non-compliance with federal, provincial or municipal environmental laws or regulations, federal permits and with any element in the Contractor's environmental protection plan.
- .2 After receipt of such non-compliance notice, the Contractor shall inform the Departmental Representative of proposed corrective action and implement such measure as approved by the Departmental Representative.
- .3 Departmental Representative will issue stop order until satisfactory corrective action has been implemented.
- .4 No time extensions shall be granted or equitable adjustments allowed to the Contractor for such down time.

1.11 INVASIVE SPECIES

- .1 Marine ecosystems are vulnerable to allochthonous or invasive species, in particular when performing work that requires floating equipment. To prevent the introduction of invasive allochthonous species in the natural ecosystem when

performing work in the marine environment with floating equipment, the following measures shall be observed. The risks of introducing allochthonous species are minimized when using clean marine equipment that has been stored on land prior to work inception. For equipment cleaned and stored on land just before work is undertaken, the Contractor needs only submit to Departmental Representative, in writing: a list of the equipment with location of storage area and expected date for streaming. Departmental Representative shall be entitled to verify if equipment was actually cleaned and stored on land prior to work performance.

- .2 In anticipation of using already waterborne equipment, Contractor shall demonstrate, at own expense, that floating equipment is free from invasive species just before mobilization at worksite. For already waterborne equipment, the Contractor shall submit a written inspection report, immediately before its mobilization to worksite, certifying that equipment is free of invasive species. Inspection report to be prepared by a qualified biologist experienced in the identification of benthic fauna and the sampling performed by divers. Report shall include, without limitation, the following information and data: list of inspected equipment (tugs, tow-barges, etc.), date and location of inspection, summary of sampling and identification protocols, a list of the samples, a table of results, and a certification pertaining to the occurrence or absence of invasive species. The report shall include photographs and bear the signature of the qualified biologist prior to submittal to the Departmental Representative along with other Contract documents needed before equipment is mobilised to the Magdalen Islands.
- .3 Should an occurrence of invasive species be confirmed in the inspection report, the Contractor shall be required to replace the equipment or to proceed, at own expense, with complete cleaning of equipment. A description of the cleaning work performed shall be included in the additional inspection report (after cleaning) with all the relevant information herein mentioned.
- .4 The Departmental Representative reserves right to seek a second expert opinion at any time. Should invasive species be observed, the Contractor shall suspend work and proceed, at own expense, with cleaning of the affected equipment and follow the above mentioned procedure.

1.12 TRANSPORTATION ON FLOATING EQUIPMENT

- .1 Should marine mammals approach the floating equipment, reduce travel speed of equipment in order to prevent any collision with the animal.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 CLEANING

- .1 Clean in accordance with section 01 74 11 (Cleaning).
- .2 Waste Management: separate waste materials for recovery and reuse/recycling in accordance with Section 01 74 21 (Construction/Demolition Waste Management and Disposal).

3.2 REPAIR OF THE
BREAKWATERS

- .1 Materials imported to the site and placed to overhaul the breakwaters shall be clean upon arrival at the site.
- .2 The work zone shall be clearly marked out within the harbour in order to prevent any possible navigation accident.
- .3 Construction period in the work zone shall be provided in the form of a Notice To Shipping (NTS).

3.3 BLASTING

- .1 Blasting in any form is prohibited on the Transport Canada property within the framework of this project.

End of section

PART 1 - GENERAL

1.1 CODES, STANDARDS AND OTHER REFERENCE DOCUMENTS

- .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 American Concrete Institute (ACI), Cahier des charges et Devis généraux (CCDG) — 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 SMOKE FREE 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 excavation 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.

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 SCOPE

- .1 This section defines the Contractor's responsibilities for Quality Control (QC) for the Work, including requirements for plans, procedures and organization necessary to produce an end product that complies with the requirements of the Plans and Specifications. Quality Control shall cover all construction operations, both on-site and off-site (i.e. stone sources).
- .2 Specific requirements for Quality Control of quarried stone materials are addressed by the Stone Materials Control Plan, as described in Section 35 31 24 (Production of Stone in Quarries).
- .3 Specific requirements for Quality Control for stone placement, including the verification surveys required to establish payment quantities, are described in section 35 31 25 (Rubble mound breakwater).
- .4 Independent Quality Assurance (QA) activities shall be performed by the Departmental Representative. These QA activities are intended to provide independent observations of conformance to the requirements of the Plans and Specifications. In no way shall QA activities relieve the Contractor of his responsibilities for Quality Control.

1.2 RELATED SECTIONS

- .1 Section 35 31 24 - Production of stone in quarries
- .2 Section 35 31 25 - Rubble mound breakwater

1.3 QUALITY CONTROL

- .1 The Contractor shall:
 - .1 Be responsible for Quality Control (QC) and shall establish and maintain an effective Quality Control program. The Quality Control program shall include the personnel, procedures and organization necessary to produce an end product that complies with the Contract requirements. The program shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed construction sequence.
 - .2 Monitor Quality Control over suppliers, manufacturers, products, services, site conditions and workmanship, in order to deliver Work of specified quality.
 - .3 Comply with manufacturers' instructions at each step of the construction sequence.
 - .4 Should manufacturers' instructions conflict with Contract Documents, request clarification from Departmental Representative before proceeding.

.5 Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more accurate workmanship.

.6 Perform work with persons qualified to perform workmanship of specified quality.

1.4 TOLERANCES

- .1 Monitor tolerance control to produce acceptable work. Do not permit tolerances to accumulate.
- .2 Comply with manufacturers' and specified tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Departmental Representative before proceeding.

1.5 REFERENCES

- .1 For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- .2 Conform to reference standard by date of issue current on date for receiving Tenders, except where a specific date is established by code.
- .3 Obtain copies of standards as required in specification sections.
- .4 Neither the contractual relationship, duties and responsibilities of the parties in the Contract or those of the Departmental Representative shall be altered from the Contract Documents by mention or inference to otherwise in any reference document.

1.6 MEASUREMENT AND PAYMENT

- .1 No measurement for payment purposes is made under this section. All costs associated with developing and maintaining an effective Quality Control program shall be included in the bid prices contained in the tender form.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 QUALITY CONTROL
PLAN

- .1 The Contractor shall furnish for review by the Departmental Representative, not later than 20 days after receipt of Notification of Acceptance of the Offer, the Contractor's proposed Quality Control Plan. The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Departmental Representative will consider an interim plan for the first fifteen days of operation. Construction will be permitted to begin only after acceptance of the Contractor's Quality Control Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of the Contractor's Quality Control Plan or another interim plan containing the additional features of work to be started. No payment will be made for work performed without an approved Quality Control Plan.
- .2 The Quality Control Plan shall include, as a minimum, the following to cover all construction operations, both on-site and off-site, including work by sub-contractors, fabricators, suppliers, and purchasing agents:
 - .1 A description of the Quality Control organizations, including a chart showing lines of authority and acknowledgment that the Contractor's Quality Control staff understands that they shall implement the three-phase control system for all aspects of the work specified. The staff shall include a Contractor's Quality Control System Manager who shall report to the Project Manager or someone higher in the Contractor's organization. Project Manager in this context shall mean the individual with responsibility for the overall management of the project, including quality and production.
 - .2 The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a Quality Control function.
 - .3 A copy of the letter to the Contractor's Quality Control System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the Contractor's Quality Control System Manager, including authority to stop work which is not in compliance with the Contract. The Contractor's Quality Control System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities.
 - .4 Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

.5 Acceptance of the Contractor's Quality Control Plan by the Departmental Representative is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance of work during construction.

.6 After acceptance of the Quality Control Plan, the Contractor shall notify the Departmental Representative in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Departmental Representative.

3.2 QUALITY CONTROL PHASES

.1 Quality Control is the means by which the Contractor ensures that the construction, including that of sub-contractors and suppliers, complies with the requirements of the Contract. The controls shall be adequate to cover all construction operations and both on-site and off-site activities, and will be keyed to the proposed construction sequence. The controls shall include at least three phases of control to be conducted by the Contractor's Quality Control System Manager for all definable features of work, as follows:

.1 Preparatory Phase: This phase to be performed prior to beginning work on each definable feature of work and shall include:

.1 A review of each paragraph of applicable Specifications.

.2 A review of the Contract Plans.

.3 A check to ascertain that all materials and/or equipment have been tested, submitted, and approved.

.4 A check to ascertain that provisions have been made to perform required control inspection and testing.

.5 Examination of the work area to ascertain that all required preliminary work has been completed and is in compliance with the Contract.

.6 A physical examination of required materials, equipment, and sample work to ascertain that they are on hand, that they conform to approved shop drawing or submittal date, and are properly stored.

.7 Discussion of construction work procedures, including amendments necessary to resolve recurring deficiencies. Document construction tolerances and workmanship standards for that phase of work.

.8 A check to ensure that the Departmental Representative has accepted the portion of the Quality Control Plan for the work to be performed.

.2 Initial Phase: This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

.1 A check of completed work to ensure that it complies with Contract requirements.

.2 Verification of overall Contract compliance: verify required Quality Control inspection and testing.

.3 Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Where appropriate, compare with accepted test sections and sample panels.

.4 Resolve all differences.

.5 The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.

.3 Follow-up Phase: Daily checks shall be performed to ensure continuing compliance with Contract requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the Contractor's Quality Control documentation and submitted to the Departmental Representative. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work that may be affected by the deficient work. Contractor shall not build upon or conceal non-conforming work.

3.3 STONE MATERIALS CONTROL PLAN

- .1 The Contractor is responsible for, and shall establish and maintain, a Stone Materials Control plan to assure all stone materials incorporated in the Work are in compliance with the specifications. Section 35 31 24 (Production of Stone in Quarries) defines specific requirements for the plan that shall be implemented by the Contractor for this project.

3.4 SURVEY CONTROL, PROJECT LAYOUT AND STONE PLACEMENT SURVEYS

- .1 The Contractor is responsible for, and shall establish and maintain all survey control as required to perform the work required by the Contract Documents. Project control monuments are depicted on the Drawings.
- .2 The Contractor is responsible for project layout, including establishing and maintaining the Survey Control Line (SCL). Contractor is also responsible for construction surveys necessary to perform the work required by the Contract Documents.

- .3 The Contractor is responsible for and shall undertake verification surveys for all work performed at the site to assure compliance with the specifications. Verification surveys will be used to establish quantities for payment, and shall be conducted in the presence of the Departmental Representative unless waived by the DR.
- .4 Section 35 31 25 (Rubble mound breakwater) defines specific survey requirements to be implemented by the Contractor for this project, including survey control, project layout (location), construction surveys and verification surveys.

3.5 INSPECTION AT COMPLETION

- .1 At the completion of all work, the Contractor's Quality Control System Manager and Departmental Representative shall conduct an inspection of the Work and develop a punch list of items that do not conform to the Plans and Specifications. The Contractor shall provide an estimated date by which the Contractor's Quality Control System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Departmental Representative.

3.6 DOCUMENTATION

- .1 The Contractor shall maintain current records of Quality Control operations, activities, and tests performed, including the work of sub-contractors and suppliers. These records shall be on an acceptable form and shall include factual evidence that required Quality Control activities and/or tests have been performed, including but not limited to the following:
 - .1 Contractor/sub-contractors and their area of responsibility.
 - .2 Test and/or control activities performed with results and references to requirements of Plans and/or Specifications.
 - .3 Identify submittals reviewed, with Contract reference.
 - .4 Conflicts in Plans and/or Specifications.
 - .5 As-built Contract Drawings consisting of a complete set of Contract Drawings marked in red to depict all conditions differing from the original Plans.
 - .6 Shop drawings as finally approved.

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.

1.2 ACCESS TO PROJECT SITE

- .1 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.
- .2 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.
- .3 Clean-up strips and roads travelled by Contractor's and sub-trade vehicles.
- .4 Contractor shall jointly with the Departmental Representative prepare a photographic survey and documentary of the roads he intends to use on the Transport Canada property. Proceed to photographic documentation before and after construction.

1.3 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, the number of construction trailers used, paths or lines of ingress and egress to fenced area and fence construction details.
- .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 Dismantle and remove from site all such work after use.

1.4 HOISTING

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

1.5 SITE STORAGE/ LOADING

- .1 Confine work within boundaries indicated in Contract Documents. Do not unreasonably encumber premises with products.
- .2 Should the wharves be used, do not load or permit to load any part of Work with weight or force that will endanger Work. Seek and obtain all necessary authorisations.

1.6 CONSTRUCTION PARKING

- .1 Contractor to determine parking areas within the designated boundaries.

1.7 OFFICES

- .1 Provide office heated to 22 °C, lighted 750 lux and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Where necessary, subcontractors to provide their own offices. Direct location of these offices.
- .4 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 °C inside temperature at -20 °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, not easily opened without the key.

.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 insure and maintain the road leading to Departmental Representative's office on the work site throughout construction.

.12 Maintain premises in tidy condition.

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

.15 Before construction work is undertaken, site offices shall be installed near the root of the South Breakwater as indicated.

.16 Should a second construction trailer be installed near the root of the North Breakwater, make provision for space dedicated to Departmental Representative use.

1.8 EQUIPMENT AND MATERIALS STORAGE

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

- .2 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.

1.9 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.

1.10 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Maintain and protect traffic on public roads during construction period.
- .2 Contractor's rolling stock used for hauling materials 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 for Contractor's intended purposes. 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.

1.11 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 HP motor, fuel, life vests and all other equipment required by Canadian Coast Guard regulations and Port Authority at Gros-Cacouna. 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) a person handling the boat including team and appropriate equipment to inspect and follow up on Contractor's work.
- .5 Provide a second, safe power craft for situations where Departmental Representative's craft is unavailable for safety reasons. Refer to section 01 35 29.06 (Health and safety).

1.12 SITE SIGNS AND NOTICES

- .1 Within three (3) weeks of signing the contract, provide a worksite construction panel and install at a location designated by the Departmental Representative.
- .2 Panel to measure 2,4 m x 1,2 m, in plywood on a wood frame and able to receive adhesive film overlay supplied by Departmental Representative.
- .3 No other panel or signage may be posted on the work site, except the warning signs.
- .4 Install project identification site sign where indicated by the Departmental Representative and install as follows:
 - .1 Drill holes for posts, erect frame and affix plywood panel to wood frame.
 - .2 Paint all panel and wood frame surfaces with one (1) coat of primer and apply two (2) coats of enamel paint. Use white paint on the face of the panel and black paint on the other surfaces.
 - .3 Apply vinyl coating on the painted face of the panel as indicated on the instructions provided.
- .5 Provide Departmental Representative with applications for approval of the installation of the Contractor's identification sign. General appearance of Contractor's panel to match that of the project identification site sign and the writing shall be in both official languages.
- .6 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321.
- .7 Maintain approved signs and notices in good condition for duration of project, and dispose of offsite on completion of project or earlier if directed by Departmental Representative.

1.13 ELECTRICAL SERVICES

- .1 Provide all electrical services required on the work site.

- .2 Pay for electrical services whether for lighting, heating or other possible electrical uses.
- .3 Pay costs for the installation and removal of electrical services.
- .4 Electrical installations shall comply with applicable standards and regulations.

1.14 CLEAN-UP

- .1 Remove waste materials from work site daily.
- .2 Clean dirt or mud tracked onto paved roadways.

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, install or develop temporary access and means of protection in order to execute Work expeditiously.
- .2 Remove from site all such work and material 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. 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 FIRE & EMERGENCY ROUTES

- .1 Maintain access to property for emergency response vehicles.

1.4 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.

1.5 SNOW REMOVAL

- .1 During the construction period take the necessary measures to carry out snow removal on public roads that are not normally serviced by the relevant authorities.

- .2 Over the entire contract period (construction work), take responsibility to plow the zone within the whole work area.
- .3 Snow removal and disposal activities shall comply with all applicable federal, provincial and municipal rules, regulations and by-laws.

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 Should there be outstanding question as to whether any materials are in conformance with applicable standards, the Departmental Representative reserves the right to have such materials 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 Materials used and incorporated in the Work shall comply with the requirements herein described. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective materials, 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 materials, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain best possible uniformity by ensuring that same type materials originate from same supplier.

1.3 STORAGE, HANDLING
AND PROTECTION OF
MATERIALS

- .1 Handle and store materials in manner to prevent damage, adulteration, deterioration and soiling.
- .2 Replace damaged materials at own expense and to satisfaction of Departmental Representative.

1.4 TRANSPORTATION

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

1.5 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 deliver required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to deny access to site to 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.

1.6 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Contractor to be responsible for coordination of Work.

1.7 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace features 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 involved. Perform in a manner to neither damage or put at risk any portion of Work.

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 QUALIFICATIONS
OF THE 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 (DFO) 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, and locate and lay out by instrumentation.
- .3 Stake work site for excavation, the reconstruction of the South Breakwater Head and repair work to North Breakwater.
- .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 work is undertaken, prepare topographic and bathymetric surveys of the excavation zones in the presence of the Departmental Representative.
- .3 At completion of excavation work, prepare another topographic and bathymetric survey of the excavated zone in the presence of the Departmental Representative.
- .4 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.
- .5 Keep a record of modifications made to the work.

1.5 TRACE OF THE STRUCTURE

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

1.6 SITE INSPECTION

- .1 Before filing his bid, the Contractor should visit the location to 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 PROJECT
CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste.
- .2 Remove waste from site at reasonable frequency.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, and equipment not required for performance of remaining Work.
- .2 Prior to final inspection remove surplus materials, tools and equipment.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste.
- .4 At work completion, roadways and property available to the Contractor shall be cleaned and restored to their original condition.

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 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 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 or material in same form but not necessarily for same purpose in the case of reuse. Reuse includes:
 - .1 Salvaging reusable products or materials from re-modelling projects on structures or buildings, before demolition stage, for resale, reuse, including 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.

1.3 PRECAUTIONS

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

1.4 DISPOSAL OF NON-CONTAMINATED MATERIALS

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits or hydrocarbons into waterways, storm, or sanitary sewers.
- .3 Recover/manage waste materials as Work progresses.
- .4 Prepare project summary to control destination and quantities of waste disposed of on a material-by-material basis.
- .5 Uncontaminated dry materials that are not reused, used as backfill or recycled shall be disposed of at sites authorized for such purpose by MDDEP (Ministère du Développement durable, de l'Environnement et des Parcs). Comply with the requirements of the *Environment Quality Act* (L.R.Q. c.Q-2). Upon request, MDDEP personnel may provide information on operational sites designated to accept forwarded waste types.
- .6 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.
- .7 Concrete blocks that need to be removed at the head of the South Breakwater shall be stockpiled near the root of the South Breakwater as shown on the drawings.
- .8 Stone materials as well as stones weighing 8 tonnes or less generated by excavation operations in the South Breakwater and which are not reusable in the breakwater repair works shall be placed in the disposal cell identified on the drawings.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 CLEANING

- .1 Remove construction equipment and dispose of 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
STATEMENT OF
SUBSTANTIAL ACHIEVEMENT

- .1 Contractor's Inspection: Contractor and Subcontractors shall proceed to inspection of Work, identify deficiencies and defects, and repair as necessary 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 shall correct Work as required.
- .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 Final Inspection: when above steps are completed, file request for final inspection of Work by Departmental Representative and Contractor jointly. Where Work is deemed incomplete by Departmental Representative, complete outstanding items/features and file request for reinspection.

1.3 CLEANING

- .1 Perform clean-up in accordance with Section 01 74 11 (Cleaning).
- .2 Remove waste from site.

1.4 SITE RESTORATION

- .1 Restore/repair all traffic routes and work areas used on the Transport Canada site to condition equal to or better than original at Departmental Representative's satisfaction.

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 In accordance with Section 01 35 29.06 (Health and Safety), submit two (2) copies of MSDS (material safety data sheet) to Departmental Representative for each hazardous material under WHMIS 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

- .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 °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 SCOPE

- .1 This section specifies the production of stone, including the decision-making process for acceptance of the supply sources of stone by the Departmental Representative. Also included are the tasks pertaining to quality control and to quality assurance. The Contractor is responsible for Quality Control (QC) and the Departmental Representative for the Quality Assurance process (QA).

1.2 RELATED SECTIONS

- .1 Section 01 11 01 – Summary of work
- .2 Section 01 33 00 – Submittal Procedures
- .3 Section 01 45 00 – Quality Control
- .4 Section 35 31 25 – Rubble Mound Breakwaters

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - .2 ASTM C127, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
 - .3 ASTM C295, Standard Guide for Petrographic Examination of Aggregates for Concrete
 - .4 ASTM D4992, Standard Practice for Evaluation of Rock to be Used
 - .5 ASTM D653, Standard Terminology Relating to Soil, Rock, and Contained Fluids
 - .6 ASTM D7012, Standard Test Method for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

1.4 SUBMITTALS AND SAMPLES

- .1 The following information and data shall be submitted to the Departmental Representative as required in Section 01 33 00.
 - .1 Supply Source of Stones
 - .1 The Contractor shall provide the information listed below for all the proposed supply sources within 25 working days following the Notification of Acceptance of the Offer:
 - .1 name and location of the quarry;
 - .2 areas and lifts to be worked in the quarry;

inspector and they shall include the following information and data:

- .1 Inspector's name;
 - .2 Identification of the stone handling equipment in all the phases of the work and names of machinery operators who prepared the stone for inspection;
 - .3 Date of inspection of the stone;
 - .4 Weather conditions, including temperature;
 - .5 Weather conditions and date at which the stone was removed from the working face of the quarry; date of blasting and blasting details as the case may be;
 - .6 Blasting location and strata from which the stone are blasted in the quarry (horizontally and vertically);
 - .7 Colour coding and other symbols and markings used by the inspector with aerosol paint to identify the stones individually sorted (and not mechanically sorted), and the rejected stones;
 - .8 Distribution of the approximate quantity of accepted and rejected stones processed during the day for the project, by category;
 - .9 Summary of main reasons for stone rejection during the day;
 - .10 Total quantity of stone shipped from the supply source at date of report, for each category.
- .2 Gradation Testing: Submit all gradation testing for review, including testing data sheets, calculations and testing results in chart form.

1.5 QUALITY CONTROL

- .1 The control plan for stones shall be included to the Contractor's general quality control (QC) program as required in Section 01 45 00.

1.6 QUALITY CONTROL STAFFING

- .1 General
 - .1 The Contractor shall assign a supervisor in charge of the overall process governing stone control, as well as qualified inspectors at the quarry and at loading point.
 - .2 Further the Contractor shall commission a licensed geologist to assist the supervisor as needed throughout the duration of the project.
 - .3 The staff shall ensure that all the stone produced, delivered at the worksite and placed in the structure is in accordance with the requirements in the contract documents and with the specifications.

- .2 Supervisor's Qualifications and Duties
 - .1 The supervisor is responsible for implementing all the elements in the control plan for stones and has 3 equivalent years of experience in the inspection and assessment of armour stone for marine projects. The experience must have been acquired in the quality assessment of the type and size of stone involved in the project at hand.
 - .2 Where the Contractor obtains the stones for this project from a subcontractor, the supervisor shall not be an employee of the latter. The supervisor shall be responsible for the implementation and fulfillment of the control plan for stones, including the management, control and assessment of the work performed by all the inspectors. He shall provide qualified inspection personnel at all times and replace any person whose performance is unsatisfactory. The supervisor is responsible for the quality of all the stone produced.
- .3 Geologist's Qualifications and Duties
 - .1 The geologist shall be qualified and licensed and have 3 equivalent years of experience in the inspection and assessment of armour stone. He shall assist the supervisor in selecting the stone supply source; this includes visual examination and petrographic assessment, identification of acceptable and unacceptable rock zones and layers at the quarry, and the selection of pre-production stones.
 - .2 Further, the geologist shall remain involved during the stone production period if the ongoing QC and QA (quality control, quality assurance) activities indicate that the quality of stones supplied does not comply with the requirements or is questionable; do as instructed by the Departmental Representative.
- .4 Inspectors Qualifications and Duties
 - .1 Inspectors to have at least one (1) equivalent year of experience to carry out in a capable and autonomous manner the tasks indicated below under the supervisor's general foremanship.
 - .1 Participate in the selection of pre-production stones and in the evaluation of stockpiled stones.
 - .2 Hold a clear and legible daily record of their activities and observations in a format to be approved by the Departmental Representative. Draft daily inspection reports and submit them as required.
 - .3 Proceed to visual examination of stones to assess whether they meet the quality criteria herein described. The inspection shall focus on the quality of the stone, fractures, stone geology and detrimental characteristics likely to cause deterioration and fragmentation of the stones in smaller pieces during or after placement in the structure.
 - .4 Clearly mark every acceptable stones with spray paint using a colour and/or symbol system approved by the Departmental Representative. Unless otherwise directed, each stone shall be suitably marked on three mutually perpendicular

sides. Inspection duties also include identifying and marking stones that do not meet the acceptance criteria either for size, quality and/or shape. Mark rejected stones with an X in red aerosol paint on three (3) mutually perpendicular sides.

.5 Measure each stone over three (3) mutually perpendicular sides and reject those that do not meet the required dimensional ratio.

.6 Weigh each armour stone individually using appropriate equipment.

.7 Build and maintain separate stockpiles for each category of stone.

.8 Ensure that rejected stones are stockpiled in the "reject" pile or that they are removed without delay from the site after being marked. Rejected stones shall always be segregated from accepted stones.

.9 If the stones are shipped by barge, ensure that stone categories are segregated during loading and unloading; compile the tonnage of categories of stone for each barge load before releasing the shipment.

.10 Carry out regular verifications aimed at ensuring that the gages and other weighing devices fitted on the equipment accurately weigh the stones for granulometry testing and quality control purposes.

1.7 PRE-PRODUCTION STONES

- .1 Preparation
 - .1 The Contractor shall provide a stock of pre-productions stones within 25 working days from the granting of the contract. The supervisor shall select the pre-production stones for evaluation by the Departmental Representative. Pre-production stones shall be arranged in rows at the supply source.
 - .2 At least 25 pre-production stones shall be provided for each stone category to be produced from each supply source. Stones to be representative of the zones, geologic units, faces and lifts in the quarry of origin where stone is to be produced; and typical of the stone quality to be produced and of the range of sizes specified for each category.
- .2 Inspection of Pre-Production Stones
 - .1 The Contractor's supervisor and inspectors shall accompany the Departmental Representative in his inspection of the stones. The Contractor shall ensure that the stones are not covered with dust or mud and ice or snow, and shall provide the means required to turn the stones to facilitate the Departmental Representative's inspection of the pre-production material. Departmental Representative to mark unsuitable stones in red with an X over three (3) mutually perpendicular sides. If 20% or more of the stones in a stock of pre-production stones are deemed unsuitable, the

Contractor shall replace the rejected stones and another inspection shall ensue.

.2 Should the Contractor fail to provide a complete and adequate stock of pre-production stones after two (2) unsuccessful attempts to correct the situation, the quarry shall be disqualified for the work of this contract. The Contractor shall then be invited to indicate a new source of supply for approval. The Contractor is responsible for all costs incurred in the replacement of stones in the pre-production stocks, and for any changes in the supply source. No extension of the execution date set for this contract shall be granted due to changes in the stone supply sources.

.3 Maintenance of Pre-production Stone as Examples: Pre-production stones deemed acceptable, as well as typically unsuitable stones as established by the Departmental Representative shall remain at the quarry as examples (of the quality, size and shape requirements) throughout the stone shipment period of this contract. Each and all pre-production stones shall be clearly graded with its weight marked on the stone.

.4 At the very end of this job, the preproduction stones deemed acceptable may be incorporated into the structure.

1.8 ACCEPTANCE OF STONE SUPPLY SOURCES AND STONE CONTROL PLAN

.1 The Departmental Representative reserves the right to conduct independent investigations and evaluations, where necessary, including other stone quality evaluations as contained in this specification, in order to verify that compliant materials may be produced from the proposed supply sources. Additional testing may be carried out on stone samples selected by the Departmental Representative and paid for the Departmental Representative.

.2 The Departmental Representative shall decide on the acceptance or non-acceptance of the stone supply sources proposed by the Contractor, and on the control plan for stones and staffing, based the following information:

.1 Review of the information and data on the supply sources and control plan for stones provided by the Contractor;

.2 Visual inspection of the pre-production stones;

.3 Evaluation of the information and data regarding the quality requirements prescribed for the stones;

.4 Review of results of additional laboratory testing if need be.

- .3 The Departmental Representative will provide a determination of acceptance or non-acceptance of the stone supply sources proposed by the Contractor, on the stone control plan and staffing within ten (10) working days following his inspection of the pre-production stones or the reception of additional laboratory test results whichever comes last.
- .1 If the stone supply source and the stone control plan and staffing are deemed acceptable, the Contractor may then proceed with the production of materials providing they comply with the accepted pre-production stones.
- .2 If the control plan for stones is rejected, the Contractor shall prepare and submit a new control plan -which may involve new staff, and obtain the approval of the Departmental Representative before proceeding with the production of stones for the work of this project. No further payment shall be issued for the work until an acceptable control plan is submitted to the Departmental representative. The Contractor is responsible for all the costs involved in preparing a new plan. Moreover, no extension of the execution date set for this contract shall be granted due to changes in the control plan for stones.
- .3 If the supply sources for stones are not approved, the Contractor shall find and indicate new supply sources and proceed to sampling and testing as required toward their approval by the Departmental Representative. All costs incurred by a change in supply sources shall be paid for by the Contractor. Finally, no extension of the execution date set for this contract shall be granted due to changes in the supply sources for stones.
- .4 No extension of any milestone or deliverable due dates will be granted to compensate for the time spent by the Departmental Representative on the decision process aimed at accepting or declining the proposed supply sources.

1.9 QUALITY ASSURANCE

- .1 General
- .1 Quality assurance (QA) activities are conducted by the Departmental Representative. Quality assurance activities aim at providing independent observations on the compliance of stones with the requirements of this section before stones are shipped to the worksite. QA activities shall in no way relieve the Contractor of his obligations.
- .2 The Contractor shall provide the machinery and the operators necessary for all quality activities.
- .3 Where the QA activities conducted by the Departmental Representative uncover non-compliance with the requirements of this section, the Departmental Representative will reject the non-compliant stones. Materials rejected at the source shall immediately be marked (with an X over three mutually perpendicular faces), segregated and removed from the storage area. In addition, materials rejected on the project site shall be removed promptly and excluded

from the measurement and payment process. The removal of unsuitable stones shall be at Contractor's expense.

.4 During his QA activities, if the Departmental Representative finds that the stone furnished does not meet the quality requirements or seems questionable, additional sampling and laboratory tests may be required. Stone sampling and the required testing shall be carried out as directed by the Departmental Representative. In this instance, the Contractor shall pay all costs involved in the additional sampling and laboratory testing of stones.

.5 Persistent non-compliance shall be sufficient reason to reject the control plan for stones as described in paragraph 1.8.3.2, and/or to reject supply sources as provided in paragraph 1.8.3.3.

.2 Gradation Testing

.1 The Departmental Representative may conduct gradation evaluations for quality assurance purposes either at the source or at the worksite, in addition to the testing required from the Contractor. Quality assurance gradation evaluations shall be conducted at intervals determined by the Departmental Representative. The latter shall collect random stone samples for testing. Where the QA gradation test results or the observation of the stones indicate non-compliance with the specifications, the production procedures shall be modified and further gradation testing (both QC and QA) shall validate the corrective measures implemented.

.2 The Contractor shall provide the Departmental Representative with all the loaders, certified scales, machinery operators and labour as required to collect the samples, measure (or weigh) the stones individually and to weigh the whole sample.

PART 2 - PRODUCTS

2.1 GENERAL

.1 All the stones shall comply with the entire range of requirements herein set forth. The Departmental Representative may, at any time during construction and throughout the project, refuse materials at the source or the worksite if they do not meet the requirements. Materials delivered to the worksite and rejected either in a stockpile or after placement in the work, shall be removed at Contractor's expense.

.2 In this project, the control plan and QC & QA activities shall systematically apply throughout both the quarrying and construction phases.

2.2 STONE SOURCES

- .1 The Contractor is solely responsible for ensuring that the selected supply sources will be able to meet the delivery schedule and produce stones of the required quality in sufficient quantities for the project.
- .2 If, as construction activities unfold, the Contractor is unable to provide acceptable stones in sufficient quantities from the original supply source, he may request an authorization to use another source. All the expenses resulting from a change in the supply sources, including the required sampling and testing, shall be at Contractor's expense. In addition, no extension of the execution date set for this contract will be allowed.
- .3 Previously blasted stones found in the zone indicated on the plan may be used in this project providing they comply with the requirements set forth in article 3.3.3, Section 35 31 25 of this specification or if they are split by the Contractor to meet these requirements. However, splitting by blasting is prohibited.

2.3 STONE QUALITY REQUIREMENTS

- .1 General
 - .1 All stone shall be highly resistant to weathering, deterioration and disintegration under freeze-thaw cycles and exposure to water, and of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. Stone shall be a rough broken stone from a quarry. Stone shall be durable, sound and free of cracks, seams and other defects that would tend to increase deterioration from natural causes or result in breakage during handling and/or placement. Inclusions of dirt, sand, clay, shale, quartz mica, pegmatite, oil, oil-stained stones, dust, stone dust, organic or other deleterious material or any materials impregnated with oil is not permitted .
 - .2 Conglomerate stone materials will not be accepted in this project regardless of their compliance with other stone acceptance requirements.
 - .3 Sandstone to be acceptable only where, in addition to compliance with all other requirements in this specification, the material displays a density better than or equal to 2,75. Any sandstone materials that do not meet the latter requirement will be considered as completely unacceptable.
 - .4 Any rock for which there is some uncertainty as to whether it is sandstone or not shall be subject to a petrographic examination including thin section analysis to ASTM C295 at Contractor's expense.

- .2 Relative density:
 - .1 Rocks other than sandstone: 2.65 minimum as determined by ASTM C127 test procedure.
 - .2 Sandstone: relative density to be 2,75 minimum.
- .3 Water Absorption: 0.5% maximum as determined by ASTM C127 test procedure.
- .4 Compressive Strength: 100MPa as determined by ASTM D7012 test procedure.
- .5 Durability: less than 15% abrasion wear, as determined by ASTM D6928 test procedure.
- .6 Sulphate Soundness Determination: 1.5% maximum loss after 5 cycles in accordance with ASTM C88.
- .7 Petrographic Examination: no deleterious materials, good to excellent quality for use intended in accordance with ASTM C295.

2.4 STONE QUALITY TESTING

- .1 The field examination shall include the preparation of a written report that includes a summary of the quarry and proposed quarry development plan as per ASTM D4992-07, including: general lithology, geologic unit and age, source homogeneity, stratigraphic faces; metamorphic and weathering phases; dip, strike and thickness of the bedding; proposed blasting procedure and expected curing time.
- .2 Petrographic examination shall be repeated before and after the sulphate soundness testing. Petrographic examination shall be summarized in a written report that includes the rock's geological name, weathering grade, main constituents, texture, anisotropy and porosity. In addition, the report shall identify/discuss the presence of any constituents, presence of micro-fractures and/or signs of induced stress (and therefore possible stress release) that may be of concern for the proposed use.
- .3 Water absorption test shall be repeated on five (5) different pieces of rock.
- .4 Compressive strength test shall be repeated on three (3) different pieces of rock.
- .5 The Micro-Deval degradation by abrasion test and the sulfate soundness test shall be repeated on two (2) different pieces of rock.

2.5 STONE SHAPE
AND GRADATION

- .1 Stones shall display an angular or blocky shape, or a short oblong profile. For at least 90% of stones placed in the work, the greatest dimension of each stone shall not exceed 2,5 times the least dimension of that stone. Stones where the greatest dimension is between 2,5 and 3,0 times the least dimension of the stones shall be equally distributed in the work. No stone may display a ratio in excess of 3,0:1.
- .2 The methods used for production, transportation and placement must be adjusted to the needs in order to ensure that the materials placed in the final stage are within the prescribed range for weight. Stones must therefore undergo gradation testing and shall not display discontinuities or defects in their individual size ranges.
- .3 Gradation testing to be in accordance with Section 35 31 25.

2.6 VISUAL
INSPECTION AND
TESTING FREQUENCY

- .1 Provide continuous visual inspection for pre-production stone for each source and at each geological change in the quarry.
- .2 Frequency of gradation testing to be in accordance with Section 35 31 25.

PART 3 - EXECUTION

3.1 CURING AND
WINTER QUARRYING
OPERATIONS

- .1 The Contractor shall conduct curing operations on freshly extracted stone to allow the release of stored energy and moisture and to ascertain that the stone will not fracture during the energy release and drying out phase. Stones shall be temporarily stockpiled at the quarry for a minimum period of ten (10) consecutive calendar days without any occurrence of freezing weather (0°C and lower) before being inspected and approved for shipment to the worksite. During winter, stone production is forbidden in sedimentary rock quarries (sandstone, limestone, etc.). Other types of stone (igneous and metamorphic rocks) may be produced in winter but their inspection and final approval should not be expected before spring.
- .2 Sedimentary Rock Quarries
 - .1 When the ambient temperature at the quarry reaches 0°C on average over 24 hours for three (3) consecutive days, this shall be considered as the date of interruption. May 15 will herein after be considered as the restart date.

.2 Stone blasted within two (2) weeks of the interruption date will be accepted only if suitable guaranteed storage is provided and maintained by the Contractor in order to allow their inspection after the restart date.

.3 It is the Contractor's responsibility to establish a production schedule and to manage the operations in order to produce sufficient quantities of suitable stones during the project.

3.2 QUALITY CONTROL DURING PRODUCTION

- .1 The Contractor shall carry out Quality Control activities throughout the stone production and placement period as required in this section and in Section 01 45 00.
- .2 The weighing of stones, or their remeasurement, shall be carried out to ascertain the calculated weight either when the Departmental Representative questions the size of stones or when the inspector deems it appropriate.
- .3 Drop tests shall be carried out when the Departmental Representative questions the quality or integrity of stones or when the inspector deems it appropriate. Drop tests shall be carried out as follows:
 - .1 Visual inspection of the stone on all sides; marking/recording of all existing cracks;
 - .2 Lift the stone to 3m and drop it onto a rigid surface (bedrock or stone of similar size);
 - .3 Visual inspection of the stone on all sides to identify existing and/or developing cracks;
 - .4 Repeat at least three times as directed by the Departmental Representative;
 - .5 The stone is acceptable for the intended purpose if existing cracks have not opened and no new cracks have developed.
 - .6 Under any circumstances should drop tests be performed to secure acceptance on stones already deemed unacceptable with respect to specified requirements.
- .4 The Contractor is notified that adverse weather conditions (rain, snow, ice, frost and mud) may hide or conceal defects that would otherwise have been identified. Winter conditions may postpone the required inspection of stones until the next spring. Stones shall not be shipped to the worksite before their inspection.
- .5 Except where gradation tolerances allow it, any broken or cracked stone, stones that do not meet gradation standards and stones that are not correctly placed in the structure shall be removed and replaced with satisfactory stones. This corrective measure is at Contractor's expense. Rejected materials shall be removed from the worksite without delay. Such materials are excluded from measurement and payment.

3.3 TRANSPORTATION
AND TEMPORARY STORAGE

- .1 The Contractor shall take charge of the transportation and storage of the stones and ensure that stockpiles are not contaminated with dirt or other contaminants; he shall also inhibit size segregation of stockpiled material.
- .2 The storage of stones after shipment from the quarry and before placement into the structure shall be submitted to Departmental Representative for approval. Underwater storage of stones in not permitted.

3.4 PLACEMENT

- .1 Placement of stones to be in accordance with Section 35 31 25.

End of section

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 11 01 – Summary of work
- .2 Section 01 33 00 – Submittal Procedures
- .3 Section 01 45 00 – Quality Control
- .4 Section 35 31 24 – Production of stone in quarries

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - .2 ASTM C127, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
 - .3 ASTM C295, Standard Guide for Petrographic Examination of Aggregates for Concrete
 - .4 ASTM D4992, Standard Practice for Evaluation of Rock to be Used
 - .5 ASTM D653, Standard Terminology Relating to Soil, Rock, and Contained Fluids
 - .6 ASTM D7012, Standard Test Method for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

1.3 SUBMITTALS

- .1 Submit test results in accordance with Section 35 31 24 for the following:
 - .1 Stone material properties.
 - .2 Gradation tests for filter and armour stone material.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

1.5 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 harbour.
- .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.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with municipal, provincial and national codes and regulations relating to project. Refer to the attachments.
- .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.

1.7 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 by the contractor under the supervision of the Departmental Representative.
 - .3 Verification surveys shall be performed with a total station survey instrument and sighting prism, or an electronic positioning system of sufficient accuracy; use surveyor's level, range pole and surveyor's chain, leader cable or tag line and sounding basket; or use other methods consistent with the requirements of this section, subject to the approval of Departmental Representative. Range or sounding poles, if used, shall be fitted with a sturdy 30 cm diameter base.
 - .4 Verification surveys for each stone course shall consist of cross sections of the rubble mound structure. For straight sections of the repair work cross sections are to be obtained at 5 m intervals and at each change in alignment of the structure. For the repair work 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.

.5 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 10 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 Each stone in the sample shall be accurately weighed to within 1%.

.3 Gradation curves will be produced using the actual measured stone weights.

.4 Contractor will provide all equipment necessary for conducting the gradation testing.

.4 Gradation Testing: North Breakwater

.1 Two gradation tests will be undertaken for the armour stone material in the North breakwater in accordance with the following.

.1 The first set of gradation tests shall be undertaken at the beginning of the breakwater repair work.

.2 The second set of gradation tests shall be undertaken when armour stone placement has reached 50%.

.2 Five gradation tests will be undertaken for the armour stone material and five gradation tests will be undertaken for the filter stone material in the South breakwater in accordance with the following.

.1 The first set of gradation tests shall be undertaken at the beginning of the breakwater repair work.

.2 The second set of gradation tests shall be undertaken when filter stone and armour stone placement has reached 20%.

.3 The third set of gradation tests shall be undertaken when filter stone and armour stone placement has reached 40%.

.4 The fourth set of gradation tests shall be undertaken when filter stone and armour stone placement has reached 60%.

.5 The fifth set of gradation tests shall be undertaken when filter stone and armour stone placement has reached 80%.

.5 Based on the results obtained from the testing, the Departmental Representative may at his discretion require that additional gradation tests be undertaken either at the source of the materials or at the site of the work.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 All stone materials to be in accordance with the requirements of Section 35 31 24.

2.2 FILTER STONE SIZE AND GRADATION

- .1 South Breakwater
 - .1 Stone size to be in weight range between 500 kg to 1100 kg.
 - .2 In addition to adequate distribution over the entire size range (500~1100 kg), at least 50% of the rock units shall be larger than the average weight of the filter stone category, that is, weigh 800 kg or more.
- .2 The greatest dimension of each stone shall not exceed 2,5 times the least dimension for at least 90% of stones placed in the work. Stones where the greatest dimension is between 2,5 and 3,0 times the least dimension of the stones shall be equally distributed in the work. No stone shall display a ratio in excess of 3,0:1.

2.3 ARMOUR STONE SIZE AND GRADATION

- .1 North Breakwater
 - .1 Stone size to be in weight range between 3000 kg to 7000 kg.
 - .2 In addition to adequate distribution over the entire size range (3000~7000 kg), at least 50% of the rock units shall be larger than the average weight of the armour stone category, that is, weigh 5000 kg or more.
- .2 South Breakwater
 - .1 Material for armour stone to be blasted rock.
 - .2 Stone size to be in weight range between 4000 kg to 8000 kg.
 - .3 In addition to adequate distribution over the entire size range (4000~8000 kg), at least 50% of the rock units shall be larger than the average weight of the armour stone category, that is, weigh 6000 kg or more.
- .3 The greatest dimension of each stone shall not exceed 2,5 times the least dimension for at least 90% of stones placed in the work. Stones where the greatest dimension is between 2,5 and 3,0 times the least dimension of the stones shall be equally distributed in the work. No stone shall display a ratio in excess of 3,0:1.

PART 3 - EXECUTION

3.1 TEMPORARY ACCESS ROADS

- .1 Should the Contractor elect to travel onto the North Breakwater and/or the South Breakwater to access the work zones, he shall:
 - .1 Remove armour stone over required width (maximum 7,5 m) down to quarry run core. Stockpile the armour stone presently at the crest of the breakwater. Contractor may expect armour stone thickness range between 1,8 and 2,4 m before reaching the pit- run core. There is no filter stone under the armour of existing structures.
 - .2 Upon completion of the work, remove entire thickness of material added by the Contractor to yield the required running surface quality.
 - .3 Reposition onto breakwater all armour stones that were removed to construct temporary access road.
 - .4 Ensure that armour stones that are reset on the breakwater are carefully keyed in to provide a compact and integrated profile.
 - .5 Outside the repair zones already mentioned on the plans, the resulting breakwater characteristics at the crest (elevation, width, size of the stones, porosity of the armour, etc.) shall be equal to or better than initial condition.
 - .6 South Breakwater particulars:
 - .1 If in the nearest 220 m (approximate) from shore the present characteristics of the structure are not sufficient to allow for the travel of the machinery, the Contractor may (for this stretch only) submit to Departmental Representative's approval an alternative to the requirements described in 3.1.1 above. In any case, however, the Contractor shall restore this segment of the breakwater to its original condition.
 - .2 Between chainings 0+490 and 0+540 m, the armour stone at the crest of the breakwater is clearly larger than elsewhere along that part of the structure. At work completion, these larger stones shall be repositioned between the same chainings.

3.2 REPAIR EXCAVATION AT THE HEAD OF THE SOUTH BREAKWATER

- .1 Materials to be excavated or repositioned: The gradation size of existing materials to be excavated or repositioned ranges from quarry run material to large armour stone units weighing up to twenty (20) tonnes or more (cf. size distribution of stones and corresponding note on the drawings). In any case the theoretical thickness of the armour is between 1,8 m to 2,4 m.

- .2 Excavate zone of repair work to lines and grades indicated.
- .3 Transport excavated materials to sorting area indicated on the plan for assessment and selection before reuse.
- .4 Before placement of filter stone, obtain cross sections of the excavated zone to verify that excavation has been completed in accordance with limits indicated. The cross sections shall be obtained by the contractor under the supervision of the Departmental Representative. Provide Departmental Representative with results of the survey in the form of cross sections.

3.3 SORTING OF STONES EXCAVATED FROM THE HEAD OF THE SOUTH BREAKWATER

- .1 Haul all rock materials and stones excavated in the South Breakwater to the area indicated on the drawings for sorting purposes.
- .2 Sort excavated materials according to three (3) size categories as follows:
 - .1 Stones less than 3 tonnes;
 - .2 Stones between 3 and 8 tonnes;
 - .3 Stones larger than 8 tonnes.
- .3 All stones between 3 and 8 tonnes found in compliance with the requirements set forth in articles 2.3.1.1, 2.3.1.2 and 2.5.1 of Section 35 31 24 (Production of Stone in Quarries) and that were approved by the Departmental Representative shall be reused in the breakwater repair works. Sorting operations shall be co-ordinated with the Departmental Representative to allow for the planning of a timetable and of safe conditions toward the inspection and approval of the 3 to 8-tonne stones reused in the breakwater repair works. Stones deemed non-reusable shall be promptly stockpiled in another area separate from the reusable stones.
 - .1 On a total volume of approximately 6400 m³ to be excavated in the South Breakwater, it is believed that 5500 tonnes of 3 to 8-tonne stones can be reused in the repair work.
- .4 All stone weighing less than 3 tonnes as well as stone in the 3 to 8-tonne range that do not comply with all the requirements described in article 3.3.3 above shall be placed in the disposal cell indicated on the plan.
- .5 Excavated stones weighing more than 8 tonnes shall be placed in the storage area designated for that purpose on the plan.

3.4 PREVIOUSLY BLASTED STONE AVAILABLE ON THE TRANSPORT CANADA PROPERTY

- .1 Previously blasted stone is available for reuse by the Contractor for the sole purpose of this project. Stones are randomly distributed along the zone indicated on the plan. The Contractor may use this stone in two ways:
 - .1 Contractor may basically reuse any stone that meets all the requirements in article 3.3.3 of this section;
 - .2 Contractor may proceed to secondary splitting of stones to meet size requirements and all other requirements set forth in article 3.3.3 of this section. The Contractor shall not proceed to secondary splitting of stones by blasting.

3.5 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.

3.6 FILTER STONE

- .1 Place filter stones individually between the reference lines and along grade indicated on the drawings, and within the tolerances prescribed in this section.
- .2 Place filter stone randomly in stable tight position beginning from the bottom of the slope progressing toward the top to achieve the layer thickness indicated.
- .3 Filter stones accepted for placement in the work where the greatest dimension of the stones is between 2.0 and 2.5 times the least dimension, shall be equally distributed in the filter stone layer.
- .4 Stones shall be evenly distributed by size throughout the rubble mound in order to avoid creating concentration zones of same-sized rocks.
- .5 Sequence construction operations such that sufficient armour is placed to protect the filter material at all times.

- .6 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.
- .7 Placing filter stone by end dumping or dozing will not be permitted.
- .8 Place filter stone to a total layer thickness as indicated on the drawings.
- .9 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. The cross sections shall be obtained by the contractor under the supervision of the Departmental Representative. Provide Departmental Representative with results of the cross section survey.

3.7 ARMOUR STONE

- .1 Place armour stones individually between the reference lines and along grade indicated on the drawings, and within the tolerances prescribed in this section.
- .2 Place armour stone randomly in stable tight position beginning from the bottom of the slope progressing toward 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 Armour stones accepted for placement in the work where the greatest dimension is between 2,5 and 3,0 times the least dimension of the stones shall be equally distributed in the armour stone layer.
- .6 Stones to be evenly distributed by size throughout the rubble mound in order to avoid creating concentration zones of same-sized rocks.
- .7 Place randomly oriented armour stones in irregular patterns in such way that the joints between adjacent courses are misaligned.
- .8 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 0.3 m will not be permitted.

- .9 Placing armour stone by end dumping or dozing will not be permitted.
- .10 Place armour stone to a total layer thickness as indicated on the drawings.
- .11 Carefully place new armour stones along the boundary between the existing breakwater and the repair zone.
- .12 The new armour stones along this boundary should be placed such that they are tightly fitted to the existing armour stones.
- .13 When necessary to achieve stable tight fit of new armour stones, temporarily remove and reposition existing armour stones.
- .14 Provide cross sections of the completed armour stone layer to verify that the armour material has been placed within specified limits. The cross sections shall be prepared by the Contractor under the supervision of the Departmental Representative. Submit to Departmental Representative all results of the cross section survey.

3.8 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 Excavation Tolerances
 - .1 Above Chart Datum Elevation: completed excavation limits to be within ± 200 mm
 - .2 Below Chart Datum Elevation: completed excavation limits to be within ± 300 mm
- .3 Completed component layers of repaired zone to be within the following tolerances of lines and grades indicated:
 - .1 Filter stone: ± 200 mm for stone placed above chart datum, ± 400 mm for stone placed below chart datum elevation.
 - .2 Armour stone: ± 300 mm for stone placed above chart datum, ± 500 mm for stone placed below chart datum elevation.
- .4 Specified tolerance limits may not be afforded continuously along any direction in excess of five (5x) times the average stone size of the category.
- .5 Variations within specified tolerances shall be progressive along any single section of the structure.

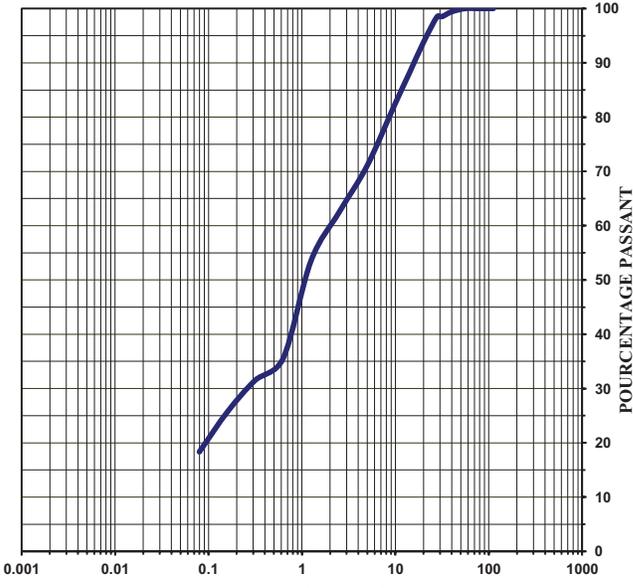
End of section

APPENDIX 1

Excerpts of the Inspec-Sol report

CLIENT: Génivar inc. PROJET: Analyses de laboratoire	PLANCHE NO: 1 PROJET NO: Q023654-A1 ÉCHANTILLON NO: G-495 DATE: 15 octobre 2012
Description du matériau: Pierre brute	Localisation: Pile de réserve
Provenance: Port de Cacouna, Cacouna, Qc	
Usage proposé: Enrochement	Prélevé par: Philippe Morin
	Date de prélèvement:

GRANULOMÉTRIE (% PASSANT) (LC 21-040)																
Tamis	112 mm	80 mm	56 mm	40 mm	31.5 mm	28 mm	20 mm	14 mm	10 mm	5 mm	2.5 mm	1.25 mm	630 µm	315 µm	160 µm	80 µm
Résultats cumulatifs	100	100	100	99	98	98	94	88	83	71	62	53	36	31	26	18.3
Résultats individuels										100	88	75	50	44	36	25.8
Exigences	min.															
	max.															

AUTRES ESSAIS	Résultats	Exigences		ESSAI PROCTOR (NQ 2501-255, méthode C)	
		min.	max.	Résultats	
Compression (ASTM D7012) - C1	95.8	100		Masse volumique sèche maximale	(kg/m ³)
Compression (ASTM D7012) - C2	163.4	100		Humidité optimale	(%)
Compression (ASTM D7012) - C3	121.1	100		COURBE GRANULOMÉTRIQUE 	
Absorption (ASTM C127) - VR4	0.23		0.5		
Absorption (ASTM C127) - VR4	0.31		0.5		
Absorption (ASTM C127) - VR5	0.32		0.5		
Absorption (ASTM C127) - VR5	0.38		0.5		
Absorption (ASTM C127) - VR5	0.31		0.5		
Densité relative apparente (ASTM C127 - VR4)	2.751	2.65			
Densité relative apparente (ASTM C127) - VR4	2.759	2.65			
Densité relative apparente (ASTM C127) - VR5	2.762	2.65			
Densité relative apparente (ASTM C127) - VR5	2.752	2.65			
Densité relative apparente (ASTM C127) - VR5	2.755	2.65			
Micro-Deval (ASTM D6928) - VR4	12.7		15		
Micro-Deval (ASTM D6928) - VR5	13.9		15		

Remarques: Intégrité au sulfate de magnésium (ASTM C88): 0.43 % (exigence: perte maximale de 1.5%) - Voir Annexe II

Préparé par: Stéphane Pelletier Vérifié par: JF. Mattiucci, techn. Date: 10/15/2012

NO RÉF. / REF. NO Q023654-A1 DATE 25 octobre 2012
À / TO Monsieur Jean-François Hudon, ing. – Genivar inc.
DE / FROM Philippe Morin, ing. jr
OBJET / SUBJECT Examen pétrographique avant et après l'essai d'intégrité au MgSO₄
Échantillon provenant de la carrière du port de Cacouna, Cacouna, Qc

AVIS / NOTICE

Monsieur,

Le présent rapport donne suite à l'examen pétrographique réalisé sur la pierre échantillonnée le 12 septembre 2012 à la carrière du port de Cacouna et ce, avant et après les essais d'intégrité au sulfate de magnésium (MgSO₄), tel que demandé par TPSGC. Dans le cadre de ces essais d'intégrité, un premier échantillon composé de pierres concassées a été soumis à cinq (5) cycles de trempage/séchage afin de réaliser cet essai selon la norme ASTM C88. Conjointement à ces granulats concassés, trois pierres ont été soumises aux mêmes cycles de trempage. L'examen pétrographique faisant l'objet de ce rapport a été réalisé sur ces trois (3) spécimens de roche provenant de la carrière du port de Cacouna.

La pierre observée consiste en un grès dur gris-verdâtre à grains très fins à grossiers. La roche examinée fait partie de l'unité de grès verts du Groupe de Saint-Roch et est d'âge cambrien inférieur. Ce grès est composé principalement de quartz (40%), feldspath plagioclase (35%), feldspath potassique (10%), biotite (8%), muscovite (2%) et de calcite (2%). Aucun litage ou altération n'était visible sur les échantillons observés. Une veinule de calcite oxydée en surface a été observée sur un des spécimens. Suite à l'essai au MgSO₄, aucune différence ou détérioration notable n'a pu être observée sur les spécimens observés. Des photographies prises avant (photo n°1) et après (photo n° 2) l'essai d'intégrité au MgSO₄ se retrouve plus bas.



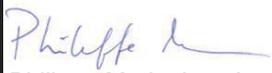
Photo n° 1



Photo n° 2

Les essais de détérioration au MgSO₄ ont révélé une perte de 0,43% pour l'échantillon composé de pierres concassées. Pour ce qui est des trois (3) spécimens examinés, ces derniers ont subi des pertes de 0,04%, 0,04% et 0,01% pour les échantillons n°s 1, 2 et 3, respectivement. Les résultats sont donc tous inférieurs à limite de perte maximale de 1,5 % exigée par TPSGC.

Veuillez croire, Monsieur, à l'expression de nos sentiments les meilleurs.


Philippe Morin, ing. Jr
Coordonateur de projet

Guy Dionne, ing., M.Sc.
Vice-président

PM/GD/jl