

**SPECIFICATION**

**DFO  
P/N C2-00517  
FLOATING DOCK CONSTRUCTION  
PUGWASH, NS**

**ISSUED FOR TENDER**

**OWNER/AGENT :**

FISHERIES AND OCEANS/PÊCHES ET OCÉANS CANADA  
2920 HIGHWAY 104, ANTIGONISH, NS B2G 2K6

**DATE :**

June 9, 2023

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END

1.1 SCOPE

- .1 The work covered under this contract consists of the furnishing of all plant, labour, equipment and material for Floating Dock Construction, Pugwash, Nova Scotia, in strict accordance with specifications and accompanying drawings and subject to all terms and conditions of contract.

1.2 DESCRIPTION OF WORK

- .1 In general, work under this contract consists of but will not necessarily be limited to the following:
- .1 Removal and reinstatement of existing armour stone and core stone berm material as indicated.
  - .2 Dredging of the harbour bottom as indicated on the drawings, and disposal of dredged material in the existing containment berm.
  - .3 Supply and install new floating docks, strongarms and gangways, and continuous concrete retaining wall.
  - .4 Modifications to the berm approach including installation of type 1 gravels.

1.3 SITE OF WORK

- .1 Work will be carried out at Pugwash, Nova Scotia in the location as shown on the accompanying drawings.

1.4 DATUM

- .1 Datum used for this project is benchmark CHS BM 2-1983 located at the old bridge abutment, near the approach road to the old salt wharf, elevation +5.808m above Chart Datum
- .2 Bidders are advised to consult the Tide Tables issued by Fisheries and Oceans in order to make sure of the tidal conditions affecting work.

1.5 FAMILIARIZATION  
WITH SITE

- .1 Before submitting a bid, it is recommended that bidders visit the site and its surroundings to review and verify the form, nature and extent of the work, materials needed for the completion of the work, the means of access to the site, severity, exposure and uncertainty of weather, soil conditions, any accommodations they may require, and in general shall obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.
- .2 Contractors, bidders or those they invite to site are to review specification Section 01 35 28 - Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid.

1.6 CODES AND  
STANDARDS

- .1 Perform work in accordance with the latest edition of the National Building Code of Canada, FC Standard 373 - Standard for Piers and Wharves ([http://www.hrsdc.gc.ca/eng/labour/fire\\_protection/policies\\_standards/commissioner/373/page00.shtml](http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/373/page00.shtml)), and any other code of provincial or local application including all amendments up to project bid closing date provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

- .2 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.
- 1.7 TERM ENGINEER .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative as defined in the General Conditions of the Contract.
- 1.8 SETTING OUT WORK .1 Set grades and layout work in detail from control points and grades established by Departmental Representative.
- .2 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated or as directed by Departmental Representative.
- .3 Provide devices needed to layout and construct work.
- .4 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.
- .5 Supply stakes and other survey markers required for laying out work.
- 1.9 COST BREAKDOWN .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Departmental Representative will provide the required forms for application of progress payment.

- .2 Provide cost breakdown in same format as the numerical and subject title system used in this specification project manual and thereafter sub-divided into major work components as directed by Departmental Representative.
- .3 Upon approval by Departmental Representative, cost breakdown will be used as basis for progress payment.
- 1.10 WORK SCHEDULE & COMPLETION DATE
- .2 Submit within 7 work days of notification of acceptance of bid, a construction schedule showing commencement and completion of all work within the time stated on the Bid and Acceptance Form and the date stated in the bid acceptance letter.
- .3 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .4 As a minimum, work schedule to be prepared and submitted in the form of Bar (GANTT) Charts, indicating work activities, tasks and other project elements, their anticipated durations and planned dates for achieving key activities and major project milestones provided in sufficient details and supported by

narratives to demonstrate a reasonable plan for completion of project within designated time, e.g., show target dates for the placement of each crib, if applicable. Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.

- .5 Submit schedule updates on a minimum monthly basis and more often, when requested by Departmental Representative, due to frequent changing project conditions. Provide a narrative explanation of necessary changes and schedule revisions at each update.
- .6 The schedule, including all updates, shall be to Departmental Representative's approval. Take necessary measures to complete work within approved time. Do not change schedule without Departmental Representative's approval.
- .7 All work on the project will be completed within the time indicated on the Bid and Acceptance Form.

#### 1.11 ABBREVIATIONS

- .1 Following abbreviations of standard specifications have been used in this specification and on the drawings:
  - CGSB - Canadian Government Specifications Board
  - CSA - Canadian Standards Association
  - NLGA - National Lumber Grades Authority
  - ASTM - American Society for Testing and Materials

- .2 Where these abbreviations and standards are used in this project, latest edition in effect on date of bid call will be considered applicable.
- 1.12 QUARRY AND EXPLOSIVES .1 Make own arrangements with Provincial authorities and owners of private properties, for the quarrying and transportation of rock and all materials and machinery necessary for work over their property, roads or streets as case may be.
- 1.13 SITE OPERATIONS .1 Arrange for sufficient space adjacent to project site for conduct of operations, storage of materials and so on. Exercise care so as not to obstruct or damage public or private property in area. Do not interfere with normal day-to-day operations in progress at site. All arrangements for space and access will be made by Contractor.
- .2 Remove snow and ice as required to maintain safe access in a manner that does not damage existing structures or interfere with the operations of others.
- 1.14 PROJECT MEETINGS .1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.
- .2 Project meetings will take place on site of work unless so directed by the Departmental Representative.

- .3 Departmental Representative will assume responsibility for recording minutes of meetings and forwarding copies to all parties present at the meetings.
- .4 Have a responsible member of firm present at all project meetings.

1.15 PROTECTION

- .1 Store all materials and equipment to be incorporated into work to prevent damage by any means.
- .2 Repair or replace all materials or equipment damaged in transit or storage to the satisfaction of Departmental Representative and at no cost to Canada.

1.16 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to site operations.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection of electrical power and communication services to tenant's operational areas. Adhere to approved schedule and provide notice to affected parties.

- .4 Provide temporary services, when directed by Departmental Representative, to maintain critical facility systems.
- .5 Provide adequate bridging over trenches which cross walkways or roads to permit normal traffic.
- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed and abandoned service lines.

1.17 DOCUMENTS  
REQUIRED

- .1 Maintain at job site, one copy each of the following:
  - .1 Contract Drawings
  - .2 Specifications
  - .3 Addenda
  - .4 Reviewed Shop Drawings
  - .5 List of outstanding shop drawings
  - .6 Change Orders
  - .7 Other modifications to Contract
  - .8 Field Test Reports
  - .9 Copy of Approved Work Schedule
  - .10 Site specific Health and Safety Plan and other safety related documents
  - .11 Other documents as stipulated elsewhere in the Contract Documents.

1.18 PERMITS

- .1 Obtain and pay for all permits, certificates and licenses as required by Municipal, Provincial, Federal and other Authorities.

- .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
  - .3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.
  - .4 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.
  - .5 Submit to Departmental Representative, copy of quarry permit, if applicable, prior to start of quarry operations.
  - .6 Comply with all requirements, recommendations and advice by all regulatory authorities unless otherwise agreed in writing by Departmental Representative. Make requests for such deviations to these requirements sufficiently in advance of related work.
- 1.19 CUTTING, FITTING AND PATCHING
- .1 Execute cutting, including excavation, fitting and patching required to make work fit properly.
  - .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
  - .3 Do not cut, bore, or sleeve load-bearing members.
  - .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

1.20 LOCATION OF  
EQUIPMENT

- .1 Location of equipment, fixtures, power pedestals and outlets, shown or specified shall be considered as approximate. Actual location shall be as required to suit conditions at time of installation and as is reasonable. Obtain approval of Departmental Representative.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative when impending installation conflicts with other new or existing components. Follow directives for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.21 FISH HABITAT

- .1 This work is being conducted in an area where fish habitat may be affected. Perform work to conform with rules and regulations governing fish habitat.
- .2 Contact the Protection Program, Marine Development and Infrastructure Unit at (709) 772-2508, at least 48 hours in advance of starting any work on site.

1.22 NOTICE TO  
SHIPPING/MARINERS

- .1 Notify the Marine Communications and Traffic Services' Centre, of Fisheries and Oceans Canada, at (709) 772-2083, ten (10) days prior to commencement and upon completion

of the work, in order to allow for the issuance of Notices to Shipping/Mariners.

- .2 During construction any vessels or barges utilized must be marked in accordance with the provisions of the Canada Shipping Act Collision Regulations.

#### 1.23 ACCEPTANCE

- .1 Prior to the issuance of the Certificate of Substantial Performance, in company with Departmental Representative , make a check of all work. Correct all discrepancies before final inspection and acceptance.

#### 1.24 WORKS COORDINATION

- .1 The contractor shall be responsible for coordinating the work of the various trades, where the work of such trades interfaces with each other.
- .2 Convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required. Provide each trade with the plans and specifications of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
- .3 Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be

the sole responsibility of the General Contractor and shall be resolved at no extra cost to Canada.

1.25 CONTRACTOR'S USE  
OF SITE

- .1 Construction operations, including storage of materials for this contract, not to interfere with the fishing activity and/or operations at this harbour facility. Contractor's use of site is to be coordinated with the Cheticamp Harbour Authority, attention Mr. Stephen Ferdinand at (902) 664-8778.
- .2 The contractor shall be responsible for arranging the storage of materials on or off site, and any materials stored at the site which interfere with any of the day to day activities at or near the site will be moved promptly at the Contractor's expense, upon request by Departmental Representative.
- .3 Contractor will take adequate precautions to protect existing concrete decks and asphalt when operating tracked equipment.
- .4 Exercise care so as not to obstruct or damage public or private property in the area.
- .5 At completion of work, restore area to its original condition. Damage to ground and property will be repaired by Contractor. Remove all construction materials, residue, excess, etc., and leave site in a condition acceptable to Departmental Representative.

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- 1.26 WORK COMMENCEMENT .1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan, unless otherwise agreed by Departmental Representative.
- .2 Project work on site is to commence as soon as possible, with a continuous reasonable work force, unless otherwise agreed by Departmental Representative.
- .3 Weather conditions, short construction season, delivery challenges and the location of the work site may require the use of longer working days and additional work force to complete the project within the specified completion time.
- .4 Make every effort to ensure that sufficient material and equipment is delivered to site at the earliest possible date after acceptance of bid and replenished as required.
- 1.27 FACILITY SMOKING ENVIRONMENT .1 Comply with smoking restrictions.
- 1.28 INTERPRETATION OF DOCUMENTS .1 Supplementary to the Order of Precedence article of the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

PART 1 - GENERAL

1.1 DESCRIPTION .1 This section details the measurement method to be used for payment purposes. Incidental items covered in the various sections of the Specification are to be allowed for in the pricing of each pay item.

1.2 MEASUREMENT FOR PAYMENT .1 **LUMP SUM ITEMS:** The following items are to be measured separately for costing purposes, then combined and submitted as one item under Lump Sum items in the tender Documents:

**Division 01**

Departmental Representative's Site Office: All work associated with the supply, maintenance, and removal from site of the Departmental Representative's site office per Section 01 50 00 of the Specification will constitute a lump sum for measurement purposes.

Mobilization and Demobilization: will be measured for payment by the lump sum. For measurement purposes this item will be considered 50% complete upon commencement of the project and 100% complete upon project completion.

**Division 02**

Sitework, Demolition, and Removals: Sitework, demolition, and removals including disposal off-site will be measured for payment by the lump sum including:

- .1 All normal removals as required to complete the work. All items to be verified by a site

- visit prior to submission of a tender.
- .3 Any regrading of the site required to provide the final grades as indicated on the drawings up to the underside of new Type 2 fill.
  - .4 All excavation, repairs and relocation of armour stone at the existing breakwater.
  - .5 All excavation and reinstallation of existing corestone berm material required to install new retaining walls.

### **Division 35**

Dredging: Dredging for the new floating docks will not be measured for payment and will be a Lump Sum item. The Lump Sum price will also include the cost of roadway construction (if applicable) and all means required to dispose of dredge spoils in the adjacent containment berm and graded with 2% cross slope as noted.

To aid in contractor bidding, the total estimated dredge quantity based on 2017 soundings is 1200 m<sup>3</sup>. Should this quantity vary, no additional payment will be considered.

- .2 **UNIT PRICE ITEMS:** The following items outline the unit of measurement for unit price items as indicated in the tender documents.

### **Division 03**

Reinforced Concrete Retaining Wall:  
Supply and installation of

reinforced concrete abutments and retaining walls including excavation, 300mm thick levelling course, drainage sleeves, and metal attachment for strongarms will be measured for payment by the cubic metre. Contractor to provide all plant, equipment, material, and labour including but not limited to formwork, falsework, concrete, cold weather protection, reinforcing steel, steel strongarm attachment, anchor bolts, precast footing, and cast-in-place walls.

#### **Division 05**

Steel Strongarms: Supply and installation of steel strongarms shall be measured by payment per each. Contractor to provide all plant, equipment, material, and labour including but not limited to galvanizing, pin connections to abutment and floating docks, neoprene gaskets between strongarms and aluminum gangways, and steel strongarms as indicated.

Aluminum Gangways: Supply and installation of aluminum gangways shall be measured by payment per each. Contractor to provide all plant, equipment, material, and labour including but not limited to flip plates at ends of gangways, connection of gangway to steel strongarms, and aluminum gangways as indicated.

#### **Division 31**

Type 1 Fill: The supply and installation of Type 1 Fill will be

measured for payment by the tonne. Contractor to provide all plant, equipment, material, and labour including but not limited to supply and placement of Type 1 fill as indicated on the drawings.

Type 2 Fill: The supply and installation of Type 2 Fill will be measured for payment by the tonne. Contractor to provide all plant, equipment, material, and labour including but not limited to supply and placement of Type 2 fill as indicated on the drawings.

Geotextiles: The supply and installation of geotextiles for the reinstated rip rap revetment slopes and underneath the Type 1 Fill will be measured for payment by the square metre. Contractor to provide all plant, equipment, material, and labour including but not limited to supply and placement of geotextile as indicated on the drawings.

Floating Docks: The supply and installation of floating docks will be measured for payment per each. Contractor to provide all plant, equipment, material, and labour including but not limited to timber, fastenings, and buoyancy compartments.



Representative to verify  
acceptability of corrected work.

1.4 CONTRACTOR'S  
RESPONSIBILITIES

- .1 Provide labour, equipment and facilities to:
  - .1 Provide access to Work to be inspected and tested.
  - .2 Facilitate inspections and tests.
  - .3 Make good Work disturbed by inspection and test.
  - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify 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.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Shop drawings and product data.
- .2 Samples.
- .3 Certificates.

1.2 SUBMITTAL GENERAL REQUIREMENTS

- .1 Submit to Departmental Representative for review submittals listed, including shop drawings, samples, certificates and other data, as specified in other sections of the Specifications.
- .2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
- .3 Do not proceed with work until relevant submissions are reviewed by Departmental Representative.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units, provide soft converted values.
- .6 Review submittals prior to submission to Departmental Representative. Ensure during review that necessary

requirements have been determined and verified, required field measurements or data have been taken, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.

.1 Submittals not stamped, signed, dated and identified as to specific project will be returned unexamined by Departmental Representative and considered rejected.

.7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.8 Verify field measurements and affected adjacent work and coordinate.

.9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.

.11 Submittal format: paper originals, or alternatively clear and fully legible photocopies of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental

Representative. Poorly printed non-legible photocopies or facsimiles will not be accepted and be returned for resubmission.

.12 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.

.13 Keep one reviewed copy of each submittal document on site for duration of Work.

1.3 SHOP DRAWINGS AND  
PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, product data, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Shop drawings only required for details that are not sufficiently detailed in the contract drawings. Confirm with Departmental Representative prior to submitting shop drawings.

.3 Number of Shop Drawings: submit sufficient copies of shop drawings which are required by the General Contractor and sub-contractors plus 2 copies which will be retained by Departmental

Representative. Ensure sufficient numbers are submitted to enable one complete set to be included in each of the maintenance manuals specified, if applicable.

.4 Shop Drawings Content and Format:

.1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work have been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.

.2 Shop Drawings Format:

.1 Opaque white prints or photocopies of original Drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.

.2 Product Data from Manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.

- .3 Non or poorly legible drawings, photocopies or facsimiles will not be accepted and returned not reviewed.
- .3 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
- .4 Delete information not applicable to project on all submittals.
- .5 Allow 10 calendar days for Departmental Representative's review of each submission.
- .6 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.
- .7 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected shop drawings, through same submission procedures indicated above.

- .8 Accompany each submission with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and project number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
  
- .9 Submissions shall include:
  - .1 Date and revision dates.
  - .2 Project title and project number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Cross references to particular details of contract drawings and specifications section number for which shop drawing submission addresses.
  - .6 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.

- .7 Operating weight.
- .8 Wiring diagrams.
- .9 Single line and schematic diagrams.
- .10 Relationship to adjacent work.
  
- .10 After Departmental Representative's review, distribute copies.
  
- .11 The review of shop drawings by the Departmental Representative or their delegated representative is for sole purpose of ascertaining conformance with general concept. This review shall not mean that Fisheries and Oceans Canada approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 SCHEDULES, PERMITS AND  
CERTIFICATES

- .1 Upon acceptance of bid, submit to Departmental Representative copy of Work Schedule and various other schedules, permits, certification documents and project management plans as specified in other sections of the Specifications.
- .2 Submit copy of permits, notices, compliance Certificates received by Regulatory Agencies having jurisdiction and as applicable to the Work.
- .3 Submission of above documents to be in accordance with Submittal General Requirements procedures specified in this section.

- 1.1 SECTION INCLUDES .1 Fire Safety Requirements.
- .2 Hot Work Permit.
- 1.2 RELATED WORK .1 Section 01 35 25 - Special  
Procedures on Lockout Requirements.
- .2 Section 01 35 28 - Health and Safety  
Requirements.
- 1.3 REFERENCES .1 Fire Protection Standards issued by  
Fire Protection Services of Human  
Resources Development Canada as  
follows:
- .1 FC No. 301-latest edition  
Standard for Construction Operations  
([http://www.hrsdc.gc.ca/eng/labour/  
fire\\_protection/policies\\_standards/  
commissioner/301/page01.shtml](http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/301/page01.shtml)).
- .2 FC No. 302-latest edition  
Standard for Welding and Cutting  
([http://www.hrsdc.gc.ca/eng/labour/  
fire\\_protection/policies\\_standards/  
commissioner/302/page01.shtml](http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/302/page01.shtml)).
- 1.4 DEFINITIONS .1 Hot Work defined as:
- .1 Welding work.
- .2 Cutting of materials by use of  
Torch or other open flame devices.
- .3 Grinding with equipment which  
produces sparks.
- 1.5 SUBMITTALS .1 Submit copy of Hot Work Procedures  
and sample of Hot Work permit to  
Departmental Representative for  
review, within 14 calendar days  
after notification of acceptance of  
bid.

- .2 Submit in accordance with the Submittal General Requirements specified in Section 01 33 00.
- 1.6 FIRE SAFETY REQUIREMENTS
- .1 Implement and follow fire safety measures during Work. Comply with following:
    - .1 National Fire Code, 2010.
    - .2 Fire Protection Standards FC 301 and FC 302.
    - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 28.
  - .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
- 1.7 HOT WORK AUTHORIZATION
- .1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot work on site.
  - .2 To obtain authorization submit to Departmental Representative:
    - .1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
    - .2 Description of the type and frequency of Hot Work required.
    - .3 Sample Hot Work Permit to be used.
  - .3 Upon review and confirmation that effective fire safety measures will be implemented during performance of hot work, Departmental

Representative will provide authorization to proceed as follows:

- .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
- .2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Departmental Representative. Follow Departmental Representative's directives in this regard.
- .4 Requirement for individual authorization based on:
  - .1 Nature or phasing of work;
  - .2 Risk to Facility operations;
  - .3 Quantity of various trades needing to perform hot work on project or;
  - .4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.
- .5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.
- .6 In tenant occupied Facility, coordinate performance of Hot Work with Facility Manager through the Departmental Representative. When directed, perform Hot Work only during non-operative hours of Facility. Follow Departmental Representative's directives in this regard.

1.8 HOT WORK  
PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Procedures to include:
  - .1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of Section 01 35 28.
  - .2 Use of a Hot Work Permit system for each hot work event.
  - .3 The step by step process of how to prepare and issue permit.
  - .4 Permit shall be issued by Contractor's site Superintendent, or other authorized person designated by Contractor, granting permission to worker or subcontractor to proceed with hot work.
  - .5 Provision of a designated person to carry out a Fire Safety Watch for a minimum of 60 minutes immediately upon completion of the hot work.
  - .6 Compliance with fire safety codes and standards specified herein and occupational health and safety regulations specified in Section 01 35 28.
- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.
- .4 Hot Work Procedures shall clearly establish worker instructions and allocate responsibilities of:
  - .1 Worker(s),

- .2 Authorized person issuing the Hot Work Permit,
- .3 Fire Safety Watcher,
- .4 Subcontractors and Contractor.
  
- .5 Brief all workers and subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.
  - .1 Failure to comply with the established procedures may result in the issuance of a Non-Compliance Notification at Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 28.

1.9 HOT WORK PERMIT

- .1 Hot Work Permit to include, as a minimum, the following data:
  - .1 Project name and project number.
  - .2 Building name, address and specific room or area where hot work will be performed.
  - .3 Date when permit issued.
  - .4 Description of hot work type to be performed.
  - .5 Special precautions required, including type of fire extinguisher needed.
  - .6 Name and signature of person authorized to issue the permit.
  - .7 Name of worker (clearly printed) to which the permit is being issued.
  - .8 Time Duration that permit is valid (not to exceed 8 hours). Indicate start time and date, and completion time and date.
  - .9 Worker signature with date and time upon hot work termination.
  - .10 Specified time period requiring safety watch.

- .11 Name and signature of designated Fire Safety Watcher, complete with time and date when safety watch terminated, certifying that surrounding area was under continual surveillance and inspection during the full watch time period specified in Permit and commenced immediately upon completion of Hot Work.
  - .2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.
  - .3 Each Hot Work Permit to be completed in full and signed as follows:
    - .1 Authorized person issuing Permit before hot work commences.
    - .2 Worker upon completion of Hot Work.
    - .3 Fire Safety Watcher upon termination of safety watch.
    - .4 Returned to Contractor's Site Superintendent for safe keeping.
- 1.10 DOCUMENTS ON SITE
- .1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.
  - .2 Upon request, make available to Departmental Representative or to authorized safety representative for inspection.

1.1 RELATED WORK

- .1 Section 01 35 24 - Special Procedures on Fire Safety Requirements.
- .2 Section 01 35 25 - Special Procedures on Lockout Requirements.

1.2 SUBMITTALS

- .1 Submit to Departmental Representative copies of the following documents, including updates:
  - .1 Site Specific Health and Safety Plan.
  - .2 Building Permit, compliance certificates and other permits obtained.
  - .3 Reports or directions issued by Federal and Provincial Inspectors and other Authorities having jurisdiction.
  - .4 Accident or Incident Reports.
  - .5 MSDS data sheets.
  - .6 Name of Contractor's representative designated to perform health and safety supervision on site.
- .2 Upon request by Departmental Representative, submit reports and other documentation as stipulated to be produced and maintained by Federal and Provincial Occupational Health and Safety Regulations and as specified herein.
- .3 Submit above documents in accordance with the submittal procedures specified in Section 01 33 00.

1.3 COMPLIANCE REQUIREMENTS

- .1 Comply with the Occupational Health and Safety Act for the Province of Nova Scotia, and the Occupational Health and Safety Regulations made pursuant to the Act.

- .2 Comply with Canada Labour Code Part II, and the Canada Occupational Safety and Health Regulations made under Part II of the Canada Labour Code.
- .3 Observe and enforce construction safety measures required by:
  - .1 2015 National Building Code of Canada, Part 8.
  - .2 Provincial Worker's Compensation Board.
  - .3 Municipal statutes and ordinances.
- .4 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
- .5 Maintain Workers Compensation Coverage for duration of Contract. Submit Letter of Good Standing to Departmental Representative at time of submitting the Project Health and Safety Plan and with each Request for Progress Payment.

1.4 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, of property and for protection of persons and public circulating adjacent to work operations to extent that they may be affected by conduct of the Work.
- .2 Enforce compliance by all workers, sub-contractors and other persons granted access to work site with safety requirements of Contract Documents, applicable Federal, Provincial, and local statutes,

regulations, and ordinances, and with site specific Health and Safety Plan.

1.5 SITE CONTROL AND ACCESS

- .1 Control work site and entry points to construction areas.
  - .1 Delineate and isolate construction areas from other areas of site by use of appropriate means.
  - .2 Post notices and signage at entry points and at other strategic locations identifying entrance onto site to be restricted to authorized persons only.
  - .3 Signage must be professionally made, bilingual in both official languages or display internationally understood graphic symbols.
- .2 Approve and grant access to site only to workers and authorized persons.
  - .1 Immediately stop non-authorized persons from circulating in construction areas and remove from site.
  - .2 Provide site safety orientation to all persons before granting access. Advise of site conditions, hazards and mandatory safety rules to be observed on site.
- .5 Secure site at night time to extent required to protect against unauthorized entry. Provide security guard where protection cannot be achieved by other means.
- .6 Ensure persons granted access to site wear appropriate personal protective equipment (PPE) suitable to work and site conditions.
  - .1 Provide such PPE to authorized persons who require access to perform inspections or other approved purposes.

1.6 PROTECTION

- .1 Carry out work placing emphasis on health and safety of the Public, Facility personnel, construction workers and protection of the environment.
- .2 Erect safety barricades, lights and signage on site to effectively delineate work areas, protect pedestrian and vehicular traffic around and adjacent to work, and to create a safe working environment.
  - .1 See Section 01 56 00 for minimum acceptable barricades.
- .3 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

1.7 PERMITS

- .1 Obtain building permit, licenses, compliance certificates and other permits as specified in Section 01 10 10 before and during progress of work. Post on site.
- .2 Where particular permit or compliance certificate cannot be obtained at the required stage of work, notify Departmental Representative in writing and obtain Departmental Representative's approval to proceed prior to carrying out that portion of work.

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- 1.8 HAZARD ASSESSMENTS .1 Conduct site specific health and safety hazard assessment before commencing project and during course of work identifying risks and hazards resulting from site conditions, weather conditions and work operations.
- .1 Perform on-going assessments addressing new risks and hazards as work progresses including when new subtrade or sub-contractor arrives on site.
  - .2 Also, conduct assessment when the scope of work has been changed by Change Order and when potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety representative.
- .2 Record results in writing and address in Health and Safety Plan.
- .3 Keep copy of all assessments on site.
- 1.9 PROJECT/SITE CONDITIONS .1 The following are known or potential project related health, environmental and safety hazards at site which must be properly managed if encountered during course of work:
- .1 Safety hazards due to existing site conditions and conduct of work at adjacent operational Facility are:
    - .1 Fishing vessels using the harbour.
  - .2 The following are known or potential project related safety hazards at site:
    - .1 Working in close proximity of water.

- .2 Use of water crafts and floating platforms.
  - .3 Wet and slippery conditions.
  - .4 Inclement weather.
  - .5 Potential structural weakness of existing structures.
  - .6 Heavy equipment activity in the area.
  - .7 Heavy lifting.
  - .8 Working at heights.
  - .9 Cutting tools and other construction power tools.
  - .10 Overhead power/utility lines.
  - .11 Risk of electric shock.
  - .12 Vehicular and pedestrian traffic.
  - .13 Confined spaces.
- .3 Above list shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work. Include above items into hazard assessment process.
- .4 Obtain from Departmental Representative, copy of MSDS Data sheets for existing hazardous products stored on site or used by Facility personnel.
- 1.10 HEALTH AND SAFETY MEETINGS .1 Attend pre-construction health and safety meeting conducted by Departmental Representative. Have following persons in attendance:
- .1 Site Superintendent.
  - .2 Contractor's designated Health and Safety Site Supervisor.
  - .3 Departmental Representative will advise of date, time and location.

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- .2 Conduct health and safety meetings and tool box briefings on site. Hold on a regular and pre-scheduled basis during entire work in accordance with requirements and frequency as stipulated in provincial Occupational Health and Safety Regulations.
    - .1 Keep workers informed of potential hazards and provide safe work practices and procedures to be followed.
    - .2 Take written minutes and post on site.
- 1.11 HEALTH AND SAFETY PLAN .1 Develop written site specific Project Health and Safety Plan, based on hazard assessments, prior to commencement of work.
- .1 Submit copy to Departmental Representative within 7 calendar days of acceptance of bid.
  - .2 Submit updates as work progresses.
- .2 Health and Safety Plan shall contain three (3) parts with following information:
- .1 Part 1 - Hazards: List of individual health risks and safety hazards identified by hazard assessment process.
  - .2 Part 2 - Safety Measures: Engineering controls, personal protective equipment and safe work practices used to mitigate hazards and risks listed in Part 1 of Plan.
  - .3 Part 3a: Emergency Response: standard operating procedures, evacuation measures and emergency response in the occurrence of an accident, incident or emergency.
    - .1 Include response to all hazards listed in Part 1 of Plan.

- .2 Evacuation measures to complement the Facility's existing Emergency Response and Evacuation Plan. Obtain pertinent information from Departmental Representative.
- .3 List names and telephone numbers of officials to contact including:
  - .1 General Contractor and all Subcontractors.
  - .2 Federal and Provincial Departments as stipulated by laws and regulations of authorities having jurisdiction and local emergency resource organizations, as needed base on nature of emergency.
  - .3 Officials from DFO and site Facility Management. Departmental Representative will provide list.
- .4 Part 3b - Site Communications:
  - .1 Procedures used on site to share work related safety issues between workers, subcontractors, and General Contractor.
  - .2 List of critical tasks and work activities, to be communicated with the Facility Manager, which has risk of affecting tenant operations, or endangering health and safety of Facility personnel and the general public. Develop list in consultation with the Departmental Representative.
- .3 Prepare Health and Safety Plan in a three column format, addressing the three parts specified above, as follows:

Column 1	Column 2	Column 3
Part 1	Part 2	Part 3a/3b
Identified	Safety	Emergency
Response &	Measures	Site
Hazards		Communications

- .4 Develop Plan in collaboration with subcontractors. Address work activities of all trades. Revise and update Plan as subcontractors arrive on site.
- .5 Implement and enforce compliance with requirements of Plan for full duration of work to final completion and demobilization from site.
- .6 As work progresses, review and update Plan. Address additional health risks and safety hazards identified by on-going hazard assessments.
- .7 Post copy of Plan and updates, on site.
- .8 Submission of the Health and Safety Plan and updates, to the Departmental Representative, is for review and information purposes only. Departmental Representative's receipt, review and any comments made of the Plan shall not be construed to imply approval in part, or in hold, of such Plan by Departmental Representative, and shall not be interpreted as a warranty of being complete and accurate, or as a confirmation that all health and safety requirements of the Work, have been addressed, and that it is legislative compliant. Furthermore, Departmental Representative's review of the Plan shall not relieve the Contractor of

any of his legal obligations for Occupational Health and Safety provisions specified as part of the Work and those required by provincial legislation or those which would otherwise be applicable to the site of the work.

1.12 SAFETY  
SUPERVISION AND  
INSPECTIONS

- .1 Designate one person to be present on site at all times, responsible for supervising health and safety of the Work.
  - .1 Person to be competent in Occupational Health and Construction Safety as defined in the Provincial Occupational Health and Safety Act.
- .2 Assign responsibility, obligation and authority to such designated person to stop work as deemed necessary for reasons of health and safety.
- .3 Conduct regularly scheduled safety inspections of work site on a minimum bi-weekly basis.
  - .1 Note deficiencies and remedial action taken in a log book or diary.

1.13 TRAINING

- .1 Ensure that all workers and other persons granted access to site are competently trained and knowledgeable on:
  - .1 Safe use of tools and equipment.
  - .2 How to wear and use personal protective equipment (PPE).
  - .3 Safe work practices and procedures to be followed in carrying out work.
  - .4 Site conditions and minimum safety rules to be observed on site, as given at site orientation session.

1.14 MINIMUM SITE  
SAFETY RULES

- .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, the following safety rules shall be considered minimum requirements to be obeyed by all persons granted site access:
  - .1 Wear personal protective equipment (PPE) appropriate to function and task on site; the minimum requirements being hard hat, safety footwear and eye protection.
  - .2 Immediately report unsafe activity or condition at site, near-miss accident, injury and damage.
  - .3 Maintain site in tidy condition.
  - .4 Obey warning signs and safety tags.
- .2 Brief workers on site safety rules and on disciplinary measures to be taken by Departmental Representative for violation or non-compliance of such rules. Post rules on site.
- .3 The following actions or conduct by Contractor, workers and sub-contractors will be considered as non-conformance with the health and safety requirements of the contract for which a Non-compliance Notification will be issued to the General Contractor by the Departmental Representative:
  - .1 Failure to follow the minimum Site safety rules specified above.
  - .2 Negligence resulting in serious injury or major property damage.
  - .3 Deliberate non-compliance with Federal and Provincial Acts and Regulations.
  - .4 Falsification of information in Workers Compensation Reports, safety reports and other health and safety related documents submitted to

Departmental Representative or to Authority having jurisdiction.  
.5 Possession of firearms on site.  
.6 Possession of non-prescriptive illegal drugs or alcohol.  
.7 Action, or lack thereof, resulting in the issuance of Warnings, Fines or Stop Work Orders from a Provincial Authority having jurisdiction.  
.8 Violation of other specified health and safety rules and requirements as determined by Departmental Representative.

.4 See elsewhere in this section for details on Non-Compliance Notifications and resulting disciplinary measures.

1.15 ACCIDENT  
REPORTING

.1 Investigate and report the following incidents and accidents:  
.1 Those as required by Provincial Occupational Safety and Health Act and Regulations.  
.2 Injury requiring medical aid as defined in the Canadian Dictionary of Safety Terms-1987, published by the Canadian Society of Safety Engineers (C.S.S.E) as follows:  
.1 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.  
.3 Property damage in excess of \$5000.00.  
.4 Interruption to Facility operations with potential loss to a Federal Department in excess of \$5000.00.  
.5 Those which require notification to Workers Compensation

Board or other regulatory agencies as stipulated by applicable law or regulations.

- .2 Send written report to Departmental Representative for all above cases.

1.16 TOOLS AND EQUIPMENT SAFETY

- .1 Routinely check and maintain tools, equipment and machinery for safe operation.
- .2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.
- .3 Tag and immediately remove from site items found faulty or defective.

1.17 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site. Post on site. Submit copy to Departmental Representative upon receipt.

1.18 BLASTING

- .1 Blasting or other use of explosives is not permitted without prior written instructions from Departmental Representative.
- .2 Do blasting operations in accordance with local and provincial codes.

1.19 POWDER ACTUATED DEVICES

- .1 Use powder actuated fastening devices only after receipt of written permission from Departmental Representative.

1.20 CONFINED SPACES

- .1 Carry out work in confined spaces in compliance with:
  - .1 Provincial Occupational Safety and Health Regulations; and
  - .2 Canada Occupational Safety and Health Regulations (COSH) made under the Canada Labour Code - Part II.
- .2 Conduct hazard assessment and address in Safety Plan before entering confined space.
- .3 Provide and maintain equipment and PPE as required for the safety and emergency evacuation of persons entering confined spaced.
- .4 Provide training to persons who will be entering and to those persons who will be assisting in the confined space entry process. Training to be specialized instructions beyond (basic confined space entry information) as required to suit type and conditions of confined space.
- .5 Safety for Inspectors:
  - .1 Upon request, provide PPE and training to Departmental Representative and to other authorized persons, for the purpose of entering confined space to conduct inspections.
  - .2 Be responsible for the efficacy of the equipment and safety of such persons during their entry and occupancy in the confined space.

1.21 POSTING OF DOCUMENTS

- .1 Post on site safety documentation as stipulated by Authorities having jurisdiction and as specified herein. Place in a common visible location.

1.22 SITE RECORDS

- .1 Maintain on site a copy of all health and safety documentation and reports specified to be produced as part of the work and received from authorities having jurisdiction.
- .2 Upon request, make available to Departmental Representative, or authorized safety representative, for review. Provide copy when directed by Departmental Representative.

1.23 NON-COMPLIANCE  
AND DISCIPLINARY  
MEASURES

- .1 Immediately address and correct health and safety violations and non-compliance issues.
- .2 Negligence or failure to follow occupational health and safety provisions specified in the Contract Documents and of those of applicable laws and regulations could result in disciplinary measures taken by the Departmental Representative against the General Contractor.
- .3 DFO uses a system of Non-Compliance Notifications and Disciplinary Measures on projects as follows:
  - .1 A non-compliance notification is issued to the General Contractor, by the Departmental Representative, whenever there is a violation or non-compliance of the project's health and safety requirements and of those of Provincial and Federal regulations by any worker, subcontractor or other person to whom the Contractor has granted access to the work site.
  - .2 Non-compliance notifications are progressive in nature resulting in disciplinary measures imposed depending on the frequency, nature and severity of the infraction.

- .3 Disciplinary measures could include:
  - .1 Removal of the offending person or party from site;
  - .2 Financial penalties in the form of progress payment reduction or holdback assessments made against the Contract and;
  - .3 Taking the Work Out of Contractor's Hands in accordance with the General Conditions.
  
- .4 Departmental Representative will make final decision as to what constitutes a violation and when to issue a Non-compliance Notification.
  
- .5 Non-compliance Notifications issued by Departmental Representative shall not be construed as to overrule or disregard warnings, orders and fines levied against Contractor by a regulatory agency having jurisdiction.
  
- .6 Each non-compliance notification issued is given a numerical rating based on a three level numbering system. Each level is progressive in nature to reflect:
  - .1 The seriousness of the infraction as viewed by the Departmental Representative.
  - .2 The degree of disciplinary action which will be taken by the Departmental Representative.
  
- .7 Numerical ratings are as follows:
  - .1 Non-compliance Notification-Level No.1 Rating:
    - .1 Situation: occurrence of a first time infraction by a person or party on site.

- .2 Action: verbal warning to General Contractor, documented in Departmental files and copy sent to the General Contractor.
- .2 Non-compliance Notification-Level No.2 Rating:
  - .1 Situation:
    - .1 The second occurrence of a previous infraction by the same person or party on site or;
    - .2 Accumulation of several level-1 notifications for different infractions by the same person or party on site or;
    - .3 Non-action on the part of the Contractor or subcontractor to rectify non-compliance infractions previously identified in one or several level-1 notifications or;
    - .4 Violation or non-observance of a Federal or Provincial safety Law or Regulation by subcontractor or Contractor or;
    - .5 Negligence by a person or party resulting in injury or major property damage.
  - .2 Action: written notice to General Contractor complete with an order for immediate remedial action to be taken. Depending on the severity of the offense, the order may include request for the immediate removal of the offending person or party from site.
- .3 Non-compliance Notification-Level No.3 Rating:

- .1 Situation:
  - .1 Continued and repeated non-compliance with health and safety requirements by the General Contractor or by subcontractor(s) or;
  - .2 The occurrence of a serious accident on site resulting in serious bodily injury or death.
- .2 Action:
  - .1 Formal letter issued to General Contractor with an order to "Immediately Stop Work" until so notified to proceed.
  - .2 Review of all non-compliance and/or accident occurrences in the project with possible investigation by DFO.
  - .3 Based on outcome of the review/investigation, Work could be suspended or taken out of the Contractor's hands in accordance with the General Conditions.
- .3 The term "serious accident" used herein shall have the same meaning as defined in the Canadian Dictionary of Safety Terms - 1987 issue from the Canadian Society of Safety Engineers (C.S.S.E).
- .8 Decision on which rating level to be placed on any given Non-Compliance Notification will be determined solely by Departmental Representative.

- .9 Further details on the disciplinary system will be provided at the pre-construction Health and Safety meeting after Contract award.
- .10 Be responsible to fully brief workers and subcontractors on the operation and importance of this system.

1.24 DIVING OPERATIONS

- .1 All diving work to comply fully with the requirements of CSA Z275.2-11, "Occupational Safety Code for Diving, Operations", CSA Z275.4-12, "Competency Standards for Diving Hyperbaric Chamber, and Remotely Operated Vehicle Operations" and CSA Z180.1-13, "Compressed Breathing Air and Systems."
- .2 Dive personnel must meet the minimum competency requirements of the CSA Z275.4-12 and all divers must possess a valid Category 1 Diving Certificate or an Unrestricted Surface-supplied Certificate.
- .3 Diving in free-swim mode is not permitted at the work site.
- .4 Divers must have a current less than one year validated medical examination certificate(s) from a licensed Diving Physician in Nova Scotia who is knowledgeable and competent in diving and hyperbaric medicine, for all dives.

1.1 References

- .1 Canada Shipping Act, 2001, amended 2013-12-01; Transport Canada
- .2 Canadian Coast Guard Regulations, Fisheries and Oceans Canada
- .3 Canadian Environmental Protection Act, 1999, amended 2014-03-28; Environment and Climate Change Canada
- .4 Canadian Navigable Waters Act, 2019-08-28; Transport Canada
- .5 Fisheries Act, 1985, amended 2019-06-21; Fisheries and Oceans Canada
- .6 Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, 1998; Fisheries and Oceans Canada
- .7 Impact Assessment Act, 2019-08-28; Environment and Climate Change Canada
- .8 Migratory Birds Convention Act, 1994, amended 2010-12-10; Environment and Climate Change Canada
- .9 Nova Scotia - Environment Act
- .10 Species at Risk Act, 2002, amended 2013-03-08; Environment and Climate Change Canada and Fisheries and Oceans Canada
- .11 The Federal Policy on Wetland Conservation, 1991; Environment and Climate Change Canada
- .12 Transportation of Dangerous Goods Act, 1992, amended 2009-06-16; Transport Canada

- .13 Workplace Hazardous Materials Information System; Health Canada.

1.2 Definitions

- .1 Archaeological resources: all tangible evidence of human activity that is of historical, cultural or scientific interest. Examples include features, structures, archaeological objects or remains at or from an archaeological site, or an object recorded as an isolated archaeological find.
- .2 Buffer zone: a vegetated land that protects watercourses from adjacent land uses. It refers to the land adjacent to watercourses, such as streams, rivers, lakes, ponds, oceans, and wetlands, including the floodplain and the transitional lands between the watercourse and the drier upland areas.
- .3 Deleterious substance: (a) any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water, or (b) any water that contains a substance in such quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water.

- .4 Fish habitat: spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes.
- .5 Hazardous material: product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .6 Invasive or alien species: refers to a species or subspecies introduced outside its normal distribution whose establishment and spread threaten ecosystems, habitats or species with economic or environmental harm.
- .7 Navigable water: a canal and any other body of water created or altered as a result of the construction of any work.
- .8 Surface watercourse: refers to the bed and shore of a river, stream, lake, creek, pond, marsh, estuary or salt-water body that contains water for at least part of each year.
- .9 Wetlands: land where the water table is at, near or above the surface or which is saturated for a long enough period to promote such features as wet-altered soils and water tolerant vegetation. Wetlands include organic wetlands or "peatlands," and mineral wetlands that are influenced by excess water but produce little or no peat.

1.3 Transportation

- .1 Transport hazardous materials and hazardous waste in compliance with the *Transportation of Dangerous Goods Act*.
- .2 All vessels and barges used in the work must comply with all *Canada Shipping Act* requirements for inspection, which includes certification of the vessel and adequate training and appropriate certificate of competency for the operators and codes and standards of practice for shipping.
- .3 Vessels are to be permitted safe access through the worksite at all times, and assisted as necessary.
- .4 All materials and equipment used in construction must be marked in accordance with the Collision Regulations of the *Canada Shipping Act, 2001* when located on the waterway.
- .5 Work activities must comply with all / any conditions of the *Canadian Navigable Waters Act* issued by Transport Canada
- .6 Maintain trucks clean and free of excessive mud, dirt, dredged material and other foreign matter.
- .7 All trucks to have watertight seals in their boxes to prevent leakage during loading and transporting dredge material.
- .8 Secure contents against free board spillage when excavating, loading and hauling material, including dredged material. Do not overload trucks when hauling material and avoid potential release of contents,

and of any foreign matter onto highways, roads and access routes used for the work. Immediately clean any ground spills and soils to extent as directed by authority having jurisdiction

1.4 Work Site Access

- .1 Contractor shall install silt curtain at the extent of the dredging works at the start of the project and leave in place during full duration of the project. Contractor to continually monitor and address required repairs and/or repositioning as required.
- .2 It will be the Contractor's responsibility to gain access to all areas of the work site, including dredge areas. Temporary in-water access roads or causeways will require approval from Departmental Representative.
- .3 Dredge material will be disposed of within containment berm onsite as shown on the drawings.
- .4 Prior to commencement of work, advise and obtain approval from the Departmental Representative of the existing roads and temporary routes / roads proposed to be used to access work areas and to haul material to and from the site, including roads to the dredge material disposal site.
- .5 Contractor to use public roadways and established access routes whenever possible and must provide appropriate signage and traffic control personnel as required.
- .6 Contractor must ensure that public and private road surfaces remain

free from dredge spoils, clay, mud, etc. throughout the hauling activities.

- .7 Any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in navigable water are not to remain in place after the completion of the project.
- .8 Work activities must comply with all / any conditions of the Canadian Navigable Waters Act approval issued by Transport Canada.

1.5 Operation of Machinery

- .1 Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- .2 Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of a water body.
- .3 Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
- .4 Do not perform cleaning and wash down within a 30-metre buffer zone of a wetland, watercourse or other identified environmentally sensitive area.

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- 1.6 Containment and Spill Management
- .1 Comply with Federal (CEPA Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations) and provincial regulations, codes, standards and guidelines for the storage of fuel and petroleum products on site.
  - .2 In the event of a petroleum spill and release into the environment, stop work and immediately notify the Departmental Representative and the Canadian Coast Guard 24-Hour Environment Emergencies Report System (1-800-565-1633). Contain spill and perform clean-up in accordance with all regulations and procedures stipulated by authority having jurisdiction.
  - .3 Do not dump petroleum products or any other deleterious substances on ground or in the water.
  - .4 Be diligent and take all necessary precautions to avoid spills and contamination of the soil and water (both surface and subsurface) when handling petroleum products on the site and during fuelling and servicing of vehicles and equipment.
  - .5 Maintain on site appropriate emergency spill response equipment consisting of at least one 250-litre (55 gallon) overpack spill kit for containment and clean-up of spills.
  - .6 Maintain vehicles and equipment in good working order to prevent leaks on site. Hoses, couplings and tanks are to be inspected on a regular basis to prevent fractures and breaks.

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- .7 All equipment to be used in or over the marine environment is to be free from leaks or coatings of hydrocarbon-based fluids and/or lubricants harmful to the environment. Hoses and tanks are to be inspected on a regular basis to prevent fractures and breaks.
  - .8 Materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals are not to enter the watercourse.
  - .9 Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.
  - .10 If heavy machinery is being operated from a barge, on-site crews must have emergency spill clean-up equipment, adequate for the activity involved, on the barge. Spill equipment will include, as a minimum, at least one 250 L (i.e. 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. Take appropriate measures to contain and clean up any spills and all releases into the marine environment must be promptly reported to the 24-Hour Environment Emergencies Reporting System (1-800-565-1633).
- 1.7 Hazardous Material Handling
- .1 Store and handle hazardous materials in accordance with applicable federal and provincial regulations, codes, standards and guidelines. Store in location that will prevent spillage into the environment.

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- .2 Label containers to Workplace Hazardous Materials Information System (WHMIS) requirements and keep MSDS data sheets on site for all hazardous materials.
  - .3 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when stored.
  - .4 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada.
  - .5 Workers in contact with hazardous materials must be provided with, and use regulated Personal Protective Equipment (PPE) and must have the necessary training to know how to handle the different hazardous materials in accordance with applicable health and safety and environmental regulations.
- 1.8 Disposal of Wastes
- .1 Do not bury construction and demolition-related debris (e.g., concrete, creosote timbers, steel, impacted soil, etc.) or other waste materials on site.
  - .2 Dispose and recycle construction and demolition-related debris and waste materials in accordance with provincial waste management regulations and the project waste management requirements specified in Section 01 74 21.
  - .3 Do not dispose of hazardous wastes (e.g., paints, batteries, cleaners, acids, etc.) including volatile materials (e.g., solvents, mineral spirits, aerosol cans, etc.) and petroleum products on the ground or into waterways, storm or sanitary

sewers or in waste landfill sites. Dispose of hazardous wastes in accordance with applicable federal and provincial, regulations, codes, standards and guidelines.

- .6 Install approved floating silt boom around the complete perimeter of the dredging area as per Section 02 41 16. Conduct daily clean-up of floating or sinking construction materials, litter, and other debris arising from the work site to ensure protection of the marine environment. Any construction debris/ material that enters the marine environment must be removed immediately and be disposed of in a provincially approved manner.
- .5 Concrete waste:
  - .1 Perform dumping of residual material and truck cleaning operations off site or as directed by the *Departmental Representative*.
  - .2 Do not perform washing and cleaning of concrete vehicles within 30 meters of a wetland, watercourse or other identified environmentally sensitive area.
  - .3 Immediately clean any accidental release of concrete on site prior to solidification.
  - .4 Follow environmental regulations and good practices as approved by the provincial Departments of the Environment and other authorities having jurisdiction.

1.9 Water Quality

- .1 Contractor is responsible to develop and implement an **Erosion and Sediment Control Plan** for the work site that will minimize the risk of entry or

re-suspension of sediment in a water body during all phases of the work. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the water body or settling basin and runoff water is clear

- .2 The Plan is to be submitted as per Section 01 33 00, for review by the Departmental Representative and should, where applicable, include:
  - .1 Effective sediment control measures (e.g. silt fencing, check dams, etc.) as an initial step in the construction sequence.
  - .2 Measures for managing water flowing onto the site, as well as water being pumped / diverted from the site such that sediment is filtered out prior to entering a water body (e.g., pumping / diversion of water to a vegetated area, construction of a settling pond or other filtration system). The water can be pumped into a settling pond or filter bag to ensure that the concentration of sediment is below regulated discharged criteria before it reaches a water body.
  - .3 Measures for containing and stabilizing waste material (e.g., dredged material, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris, etc.) above the high water mark of nearby water bodies to prevent re-entry.

- .4 Regular inspection and reporting details for sediment control measures to ensure they are functioning properly.
  - .5 Repair methodology for erosion and sediment control measures and structures if damage occurs.
  - .6 Removal methodology of non-biodegradable erosion and sediment control materials once site has been stabilized. Upon completion of use, these control measures must be removed in a way so as to prevent the escape of settled sediments.
  - .7 Methodology for monitoring weather, specifically rainfall and storms and altering work plans and contingency measures as a result of inclement weather.
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- .3 Where work may affect water quality, schedule work in cooperation with the Harbour Authority as directed by Departmental Representative to minimize interference and impact on harbour users.
  - .4 Where work may affect the water quality adjacent to water intake lines used by lobster holding facilities, fish processing facilities or other harbour users, schedule work in cooperation with the Harbour Authority, facility owners and as directed by Departmental Representative to minimize interference and impact to harbour users.
  - .5 All material used for infills must be clean and free from excessive fines, organics, debris and non-toxic (i.e.,

free of fuel, oil, grease and/or any other contaminants), non-ore bearing and from a provincially approved, non-water source.

- .6 For dredging operations, conduct work in such a manner to limit turbidity and minimize sediment resuspension in the water to an absolute minimum at all times:
  - .1 Maintain appropriate production speed and momentum of the excavation equipment. Make adjustments as required and as approved by Departmental Representative.
  - .2 Strategically position excavation equipment and trucks to minimize over the water swings of dredged material whenever possible.
  - .3 Avoid overfilling of the dredge bucket.
  - .4 Minimize wash downs of equipment and wharf deck.
  - .5 Restrict the volume of material dredged to the areas and depths in the contract, unless otherwise directed by the Departmental Representative.
  - .6 No bottom stockpiling, dragging or side casting of material on the ocean floor is permitted during dredging operations.
  
- .7 To prevent water contamination by preservative treated wood:
  - .1 Wood treated with Chromate Copper Arsenate (CCA) or Ammoniac Copper Zinc Arsenate (ACZA) must be Canadian Standards Association (CSA) or

- American Wood Preserver Association (AWPA) approved.
- .2 Preservative treated lumber and timber, whether plant or field treated, shall be cured for a minimum of 30 days from date of the treatment application before their installation in areas which will be in contact with the water.
  - .3 Do not field cut or bore treated timber and lumber over the surface of a watercourse or wetland.
  - .4 Do not allow sawdust or shavings from field cutting and boring of treated timber and lumber to get washed or blown into a watercourse or wetland.
  - .5 Take extra precautions to prevent dripping of product when using liquid applied preservative products over the surface of a watercourse.
  - .6 Do not use timber and lumber treated with creosote, pentachlorophenol or other petroleum-based products for timber that will be in contact with the water.
- .8 To prevent water contamination during concrete placement:
- .1 Concrete placement should stop in moderate to heavy rain [2.6-7.6 mm/hr or more] to prevent leaching contaminants into aquatic environment.
  - .2 Forms will have sealed corners to prevent leakage.
  - .3 Any accidental release of concrete will be removed prior to solidification.

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- .4 Work will cease until the spill is contained and the source of the leak can be identified.
- .5 Contractor must notify the *Departmental Representative* of all accidental releases of concrete into fish bearing waters and contact applicable federal and provincial regulators immediately.
- 1.10 Socioeconomic Restrictions
- .1 Abide by municipal and provincial regulations for any restrictions on work performed during the night time and with flood lighting of the site. Obtain applicable permits.
- .2 Work equipment and machinery must be adequately equipped with mufflers to reduce noise on site to lowest possible level. Maintain mufflers in good operating condition at all times.
- .3 Place flood lights in opposite direction of adjacent residential and business areas. Use LED lights instead of other types of lights, where possible. LED light fixtures are less prone to light trespass (i.e., are better at directing light where it needs to be, and do not bleed light into the surrounding area).
- .4 Contractor to coordinate with the local Harbour Authority prior to commencement of the project activities such that the schedule with the least possible conflicts will be implemented.
- 1.11 Fish and Fish Habitat Protection
- .1 Monitor and assess weather forecast on a daily basis to determine the risk of extreme weather. Avoid work

during periods for which Environment and Climate Change Canada has issued rainfall, storm surge or other weather warnings for the work area.

- .2 Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.
- .3 The release of deleterious substances into the watercourse is strictly prohibited. In the event of a release of a deleterious substance, stop work, contain sediment-laden water or other deleterious substances and prevent their further migration into the watercourse. Immediately report any spills or releases of sewage, oil, fuel or other deleterious material, whether near or directly into a water body.

1.12 Invasive Species

- .1 Be aware of the risk for contamination of the fish habitat at the site as a result of invasive (or alien species) being introduced into the marine environment.
- .2 To minimize the possibility of fish habitat contamination and the spread of aquatic invasive species, all construction equipment that will be immersed into the water of a watercourse, or has the possibility of coming into contact with such water during the course of the work, must be cleaned and washed to ensure that they are free of marine growth and invasive species prior to mobilization to the site.
  - .1 Equipment shall include boats, barges, scows, cranes, excavators, haul trucks, pumps,

pipe lines and other all  
miscellaneous tools and equipment  
previously used in a marine  
environment.

- .3 Cleaning and washing of equipment shall be performed immediately upon their arrival at the site and before use in or over the water body.
- .4 Conduct cleaning and washing operations as follows:
  - .1 Scrape and remove heavy accumulation of mud and dispose appropriately.
  - .2 Wash all surfaces of equipment by use of a pressurized fresh water supply.
  - .3 Immediately follow with application of a heavy sprayed coating of undiluted vinegar or other environmentally approved cleaning agent to thoroughly remove all plant matter, animals and sediments.
  - .4 Check and remove all plant, animal and sediment matter from all bilges and filters.
  - .5 Drain standing water from equipment and let fully dry before use.
  - .6 Upon removal from the water, drain standing water from equipment and let fully dry before removal off the site.
- .5 Record of Assurance Logbook:
  - .1 Maintain an on-going log of past and present usage and washdowns of all equipment to illustrate mitigation measures undertaken against fish habitat contamination by alien species.

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- .2 Write data in a hard cover bound logbook to include the following:
    - .1 Date and location where equipment was previously used in a watercourse or wetland;
    - .2 Type of work performed.
    - .3 Dates of wash down for each piece of equipment;
    - .4 Cleaning method and cleaning agent(s) used.
  - .3 Keep Record of Assurance Logbook updated from project to project. Upon request, submit logbook to Departmental Representative for review.
  - .4 The Departmental Representative has the right to request a video inspection of the equipment, including hulls, to ensure that they are free of marine growth and invasive species prior to mobilization to the site.
- 1.13 Bird and Bird Habitat
- .1 Become knowledgeable with and abide by the Migratory Birds Convention Act (MBCA) in regards to the protection of migratory birds, their eggs, nests and their young encountered on site and in the vicinity.
  - .2 Minimize disturbance to all birds on site and adjacent areas during the entire course of the Work.
  - .3 Do not approach concentrations of seabirds, waterfowl and shorebirds when anchoring equipment, accessing wharves or ferrying supplies.
  - .4 During night time work, position flood lights in opposite direction of nearby bird nesting habitat.

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- .5 Do not use beaches, dunes and other natural previously undisturbed areas of the site to conduct work unless specifically approved by the Departmental Representative.
  - .6 Should nests of migratory birds in wetlands be encountered during work, immediately notify Departmental Representative for directives to be followed.
    - .1 Do not disturb nest site and neighbouring vegetation until nesting is completed.
    - .2 Minimize work immediately adjacent to such areas until nesting is completed.
    - .3 Protect these areas by following recommendations of Canadian Wildlife Service.
  - .7 All machinery must be well muffled. If necessary, trucks may be required to avoid the use of engine brakes along specific sections of the route.
- 1.14 Species at Risk and Marine Mammals
- .1 A safety zone for leatherback sea turtles and marine mammals must be established at the work site. The safety zone shall consist of a circle with a radius of at least 500 meters as measured from the center of the work site.
  - .2 Maintain periodic visual surveys for leatherback sea turtles and marine mammals within the safety zone.
  - .3 If leatherback sea turtles or marine mammals are observed within the safety zone while in-water activities are underway, all in-water activities must cease until the animals leave the safety zone and are not observed within the safety zone for a minimum period of 30 minutes.

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- .4 Work may start or restart if marine mammals are not observed within the safety zone within the 30-minute period.
- 1.15 Air Quality
- .1 Keep airborne dust and dirt resulting from the work on site to an absolute minimum.
- .2 Dust suppression by the application of water must be employed, when required. Apply dust control measures to roads, parking lots and work areas. The Departmental Representative shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil or any other petroleum products must not to be used for dust control under any circumstances.
- .3 Spray surfaces with water or other environmentally approved product. Use purposely suited equipment or machinery and apply in sufficient quantity and frequency to provide effective result and continued dust control during the entire course of the work.
- 1.16 Fires
- .1 Fires and burning of rubbish on site is not permitted.
- 1.17 Archaeological
- .1 All construction personnel are responsible for reporting any unusual materials unearthed during construction to the construction supervisor. If the find is believed to be an archaeological resource, the Construction Supervisor will immediately stop work in the vicinity of the find and notify the Departmental Representative.

- .2 If an archaeological and / or historically significant item is discovered during the work activities, work in the area will be stopped immediately and the Departmental Representative will be contacted as well as the provincial Archaeological Services unit.
  - a) Nova Scotia - NS Department of Communities, Culture and Heritage, Special Places Program, telephone: (902) 424-6475.
- .3 Work can only resume in the vicinity of the find when authorized by the Departmental Representative and Construction Supervisor, after approval has been granted by the Nova Scotia Department of Communities, Culture and Heritage.
- .4 In the event of the discovery of human remains or evidence of burials, excavation work will immediately cease and nearest law enforcement agency must be contacted immediately by the Departmental Representative and/or the Construction Supervisor.

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Tests and mix designs.
- .3 Mock-ups.
- .4 Mill tests.
- .5 Equipment and system adjust and balance.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Submittals.

1.3 INSPECTION

- .1 Facilitate Departmental Representative's access to Work. If part of Work is being fabricated at locations other than construction site, make preparations to allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.
- .3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to

proceed. Pay costs to uncover and make good such Work.

- .4 In accordance with the General Conditions, Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.

1.4 INDEPENDENT  
INSPECTION AGENCIES

- .1 Departmental Representative will engage and pay for service of Independent Inspection and Testing Agencies for purpose of inspecting and testing portions of Work except for the following which remain part of Contractor's responsibilities:
- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
  - .2 Inspection and testing performed exclusively for Contractor's convenience.
  - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
  - .4 Mill tests and certificates of compliance.
  - .5 Tests as specified within various sections designated to be carried out by Contractor under the supervision of Departmental Representative.
  - .6 Additional tests specified in Clause 1.4.2.
- .2 Where tests or inspections by designated Testing Agency reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Departmental

Representative may require to verify acceptability of corrected work.

- .3 Employment of inspection and testing agencies by Departmental Representative does not relax responsibility to perform Work in accordance with Contract Documents.

1.5 ACCESS TO WORK

- .1 Furnish labour and facility to provide access to the work being inspected and tested.
- .2 Co-operate to facilitate such inspections and tests.
- .3 Make good work disturbed by inspections and tests.

1.6 PROCEDURES

- .1 Notify Departmental Representative sufficiently in advance of when work is ready for tests, in order for Departmental Representative to make attendance arrangements with Testing Agency. When directed by Departmental Representative, notify such Agency directly.
- .2 Submit representative samples of materials specified to be tested. Deliver in required quantities to Testing Agency. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 Provide labour and facilities to obtain and handle samples on site. Provide sufficient space on site for Testing Agency's exclusive use to store equipment and cure test samples.

1.7 REJECTED WORK

- .1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.
- .2 Make good damages to existing or new work, including work of other Contracts, resulting from removal or replacement of defective work.

1.8 TESTING BY  
CONTRACTOR

- .1 Provide all necessary instruments, equipment and qualified personnel to perform tests designated as Contractor's responsibilities herein or elsewhere in the Contract Documents.
- .2 At completion of tests, turn over 2 copies of fully documented test reports to Departmental Representative. Additionally, obtain other copies in sufficient quantities to enable one complete set of test reports to be placed in each of the maintenance manuals specified in Section 01 78 00.
- .3 Submit mill test certificates and other certificates as specified in various sections.
- .4 Furnish test results and mix designs as specified in various sections.

1.9 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in various trade sections. Include in each mock-up all related work components representative of final assembly.

- .2 Construct in locations acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when directed by Departmental Representative unless approval is given to remain as part of Work.

1.1 ACCESS

- .1 Provide and maintain adequate access to project site.
- .2 Maintain access roads for duration of contract and make good damage resulting from Contractors' use of roads.

1.2 CONTRACTOR'S SITE OFFICE

- .1 Be responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Departmental Representative.

1.3 DEPARTMENTAL REPRESENTATIVE'S SITE OFFICE

- .1 Provide or construct a separate site office for the use of the Departmental Representative and the Site Representative. The building must be in place prior to commencement of work.
- .2 Provide heating system to maintain 22°C inside temperature at -20°C outside temperature.
- .3 The building will be approximately 2400mm x 3600mm. It will have a suitable frame covered with a weatherproof siding and lined with plywood or other approved material. The floor will be of 19mm thick material. It will be provided with suitable window with at least 1m<sup>2</sup> of glass and arranged to provide at least 0.5m<sup>2</sup> of screened opening. The door will be fitted with a lockset and 2 keys.
- .4 The office will be equipped with a drafting chair and a 900mm x 1500mm table having a hinged, smooth wooden top suitable for drafting.

- .5 Install electrical lighting system to provide minimum 750 lux using surface mounted, shielded commercial fixtures with 10% upward light component.
- .6 Maintain office in clean condition.
- .7 Arrange and pay for telephone and facsimile machine in the Departmental Representative's Office for Site Representative's exclusive use. Contractor shall include long distance plan for Departmental Representative's use.
- .8 Contractor may, on approval of Departmental Representative, provide cellular or mobile phone. If approval to use cellular or mobile phone is granted, be responsible for all services, airtime, license and network access fees, and all other fees or charges required to utilize the phone as intended by the manufacturer.
- .9 Upon award, contractor shall begin making arrangements for telephone and facsimile immediately. Construction should not begin without clear line of communication to site.

1.4 SANITARY  
FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.5 POWER

- .1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.
- .2 Supply and install all temporary facilities for power such as pole lines and underground cables to approval of local power supply authority.

1.6 WATER SUPPLY

- .1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.

1.7 SCAFFOLDING

- .1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2-M87 (R2003).
- .2 Erect scaffolding independent of walls. Remove when no longer required.

1.8 CONSTRUCTION SIGN AND NOTICES

- .1 Contractor or subcontractor advertisement signboards are not permitted on site.
- .2 Only notices of safety or instructions are permitted on site.
- .3 Safety and Instruction Signs and Notices:
  - .1 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321-96 (R2001).

- .4 Maintenance and Disposal of Site Signs:
  - .1 Maintain approved signs and notices in good condition for duration of project and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

1.9 REMOVAL OF  
TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by Departmental Representative.

PART 1 - GENERAL

- 1.1 SECTION INCLUDES .1 Barriers.
- .2 Traffic Controls.
- 1.2 INSTALLATION AND REMOVAL .1 Provide temporary controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.
- 1.3 HOARDING .1 Erect temporary site enclosure using new 1.2m high snow fence wired to rolled steel "T" bar fence posts spaced at 2.4m centres. Provide one lockable truck gate. Maintain fence in good repair.
- 1.4 GUARD RAILS AND BARRICADES .1 Provide secure, rigid guard rails and barricades around open excavations.
- .2 Provide barricades along wharf structure when wheelguard is removed.
- .3 Provide as required by governing authorities.
- 1.5 ACCESS TO SITE .1 Provide and maintain access to adjacent harbour facilities.
- 1.6 PUBLIC TRAFFIC FLOW .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect the public.

1.7 FIRE ROUTES

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of work.
- .2 Be responsible for damage incurred.

1.1 GENERAL

- .1 Use new material and equipment unless otherwise specified.
- .2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
  - .1 name and address of manufacturer;
  - .2 trade name, model and catalogue number;
  - .3 performance, descriptive and test data;
  - .4 manufacturer's installation or application instructions;
  - .5 evidence of arrangements to procure;
  - .6 evidence of manufacturer delivery problems or unforeseen delays.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 PRODUCT QUALITY  
AND REFERENCED  
STANDARDS

- .1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.
- .2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions.

1.3 ACCEPTABLE  
MATERIALS AND  
ALTERNATIVES

- .1 Acceptable Materials: When materials specified include trade names or trade marks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.
- .2 Alternative Materials: Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.
- .3 Substitutions: After acceptance of bid, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.4 MANUFACTURERS  
INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure

provided with products. Obtain written instructions directly from manufacturers.

- .2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturers instructions, so that Departmental Representative will designate which document is to be followed.

1.5 AVAILABILITY

- .1 Immediately notify Departmental Representative in writing of unforeseen or unanticipated material delivery problems by manufacturer. Provide support documentation as per Clause 1.1.2 above.

1.6 WORKMANSHIP

- .1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Remove unsuitable or incompetent workers from site as stipulated in General Conditions.
- .3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.
- .4 Coordinate work between trades and subcontractors.
- .5 Coordinate placement of openings, sleeves and accessories.

1.7 FASTENINGS -  
GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which

they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.

- .2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.
- .3 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- .4 Fastenings which cause spalling or cracking of material to which anchorage is made, are not acceptable.
- .5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See Section 01 35 28 on Health and Safety in this regard.

1.8 FASTENINGS -  
EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and, use resilient washers with stainless steel.

1.9 STORAGE, HANDLING AND PROTECTION .1

Deliver, handle and store materials in manner to prevent deterioration and soiling and in accordance with manufacturer's instructions when applicable. Provide same degree of protection to materials supplied by Canada.

.2 Store packaged or bundled materials in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work. Provide additional cover where manufacturer's packaging is insufficient to provide adequate protection.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Immediately remove damaged or rejected materials from site.

- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.10 CONSTRUCTION  
EQUIPMENT AND PLANT

- .1 On request, prove to the satisfaction of Departmental Representative that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.
- .2 Maintain construction equipment and plant in good operating order. Prevent oil and other contaminant leaks. Should any contaminant leak onto ground or into the water, take immediate and appropriate measures to contain, cleanup and dispose in an environmentally responsible manner.

PART 1 - GENERAL

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Prevent accumulation of wastes which create hazardous conditions.
- .4 Provide adequate ventilation during use of volatile or noxious substances.

1.2 MATERIALS

- .1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 CLEANING DURING CONSTRUCTION

- .1 Maintain project grounds and public properties in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Provide on-site garbage containers for collection of waste materials and debris.
- .3 Remove waste materials and debris from site on a daily basis.

1.4 FINAL CLEANING

- .1 In preparation for acceptance of the Work perform final cleaning.
- .2 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.

- .3 Broom clean exterior paved and  
concrete surfaces; rake clean other  
surfaces of grounds.

- 1.1 RELATED SECTIONS .1 Section 01 35 44 - Environment Procedures.
- .2 Section 03 30 00 - Cast-in-Place Concrete.
- 1.2 WASTE MANAGEMENT PLAN .1 Prior to commencement of work, prepare Waste Management Workplan.
- .2 Workplan to include:
- .1 Waste audit.
  - .2 Waste reduction practices.
  - .3 Material source separation process.
  - .4 Procedures for sending recyclables to recycling facilities.
  - .5 Procedures for sending non-salvageable items and waste to approved waste processing facility or landfill site.
  - .6 Training and supervising workforce on waste management at site.
- .3 Workplan to incorporate waste management requirements specified herein and in other sections of the Specifications.
- .4 Develop Workplan in collaboration with all subcontractors to ensure all waste management issues and opportunities are addressed.
- .5 Implement and manage all aspects of Waste Management Workplan for duration of work.
- .6 Revise Plan as work progresses addressing new opportunities for diversion of waste from landfill.

1.3 WASTE AUDIT

- .1 At project start-up, conduct waste audit of:
  - .1 Site conditions identifying salvageable and non-salvageable items and waste resulting from demolition and removal work.
  - .2 Projected waste resulting from product packaging and from material leftover after installation work.
- .2 Develop written list. Record type, composition and quantity of various salvageable items and waste anticipated, reasons for waste generation and operational factors which contribute to waste.

1.4 WASTE REDUCTION

- .1 Based on waste audit, develop waste reduction program.
- .2 Structure program to prioritize actions, with waste reduction as first priority, followed by salvage and recycling effort, then disposal as solid waste.
- .3 Identify materials and equipment to be:
  - .1 Protected and turned over to Departmental Representative when indicated.
  - .2 Salvaged for resale by Contractor.
  - .3 Sent to recycling facility.
  - .4 Sent to waste processing/landfill site for their recycling effort.
  - .5 Disposed of in approved landfill site.
- .4 Reduce construction waste during installation work. Undertake practices which will minimize waste and optimize full use of new materials on site, such as:

- .1 Use of a central cutting area to allow for easy access to off-cuts;
- .2 Use of off-cuts for blocking and bridging elsewhere.
- .3 Use of effective and strategically placed facilities on site for storage and staging of left-over or partially cut materials to allow for easy incorporation into work whenever possible avoiding unnecessary waste.

- .5 Develop other strategies and innovative procedures to reduce waste such as minimizing the extent of packaging used for delivery of materials to site, etc.

1.5 MATERIAL SOURCE  
SEPARATION PROCESS

- .1 Develop and implement material source separation process at commencement of work as part of mobilization and waste management at site.
- .2 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable and recyclable materials.
  - .1 Use suitable containers for individual collection of items based on intended purpose.
  - .2 Locate to facilitate deposit but without hindering daily operations of existing building tenants.
  - .3 Clearly mark containers and stockpiles as to purpose and use.
- .3 Perform demolition and removal of existing structure components and equipment following a systematic deconstruction process.

- 
- .1 Separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:
    - .1 Reinstallation into the work where indicated.
    - .2 Salvaging reusable items not needed in project which Contractor may sell to other parties. Sale of such items not permitted on site.
    - .3 Sending as many items as possible to locally available recycling facility.
    - .4 Segregating remaining waste and debris into various individual waste categories for disposal in a "non-mixed state" as recommended by waste processing/landfill sites.
  - .4 Isolate product packaging and delivery containers from general waste stream. Send to recycling facility or return to supplier/manufacturer.
  - .5 Send leftover material resulting from installation work for recycling whenever possible.
  - .6 Establish methods whereby hazardous and toxic waste materials, and their containers, encountered or used in the course work are properly isolated, stored on site and disposed in accordance with applicable laws and regulations from authorities having jurisdiction.
  - .7 Isolate and store existing materials and equipment identified for re-incorporation into the Work. Protect against damage.

- 1.6 WORKER TRAINING AND SUPERVISION
- .1 Provide adequate training to workforce, through meetings and demonstrations, to emphasize purpose and worker responsibilities in carrying out the Waste Management Plan.
  - .2 Waste Management Coordinator: designate full-time person on site, experienced in waste management and having knowledge of the purpose and content of Waste Management Plan to:
    - .1 Oversee and supervise waste management during work.
    - .2 Provide instructions and directions to all workers and subcontractors on waste reduction, source separation and disposal practices.
  - .3 Post a copy of Plan in a prominent location on site for review by workers.
- 1.7 CERTIFICATION OF MATERIAL DIVERSION
- .1 Submit to Departmental Representative, copies of certified weigh bills from authorized waste processing sites and sale receipts from recycling/reuse facilities confirming receipt of building materials and quantity of waste diverted from landfill.
  - .2 Submit data at pre-determined project milestones as determined by Departmental Representative.
  - .3 Compare actual quantities diverted from landfill with projections made during waste audit.
- 1.8 DISPOSAL REQUIREMENTS
- .1 Burying or burning of rubbish and waste materials is prohibited.

- .2 Disposal of waste, volatile materials, mineral spirits, oil, paint, paint thinner or unused preservative material into waterways, storm, or sanitary sewers is prohibited.
- .3 Do not dispose of preservative treated wood through incineration.
- .4 Do not dispose of preservative treated wood with other materials destined for recycling or reuse.
- .5 Dispose of treated wood, end pieces, wood scraps and sawdust at a sanitary landfill.
- .6 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.
- .7 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.
- .8 Transport waste intended for landfill in separated condition, following rules and recommendations of Landfill Operator in support of their effort to divert, recycle and reduce amount of solid waste placed in landfill.
- .9 Collect, bundle and transport salvaged materials to be recycled in

separated categories and condition  
as directed by recycling facility.  
Ship materials only to approved  
recycling facilities.

- .10 Sale of salvaged items by Contractor  
to other parties not permitted on  
site.

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- 1.1 SECTION INCLUDES
- .1 Project Record Documents as follows:
    - .1 As-built drawings;
    - .2 As-built specifications;
  - .2 Reviewed shop drawings.
- 1.2 PROJECT RECORD DOCUMENTS
- .1 Departmental Representative will provide two white print sets of contract drawings and two copies of Specifications Manual specifically for "as-built" purposes.
  - .2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.
  - .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative at any time during construction.
  - .4 As-Built Drawings:
    - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set (also by use of red ink). Submit both sets to Departmental Representative. All drawings of both sets shall be stamped "As-Built Drawings" and be signed and dated by Contractor.
    - .2 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
    - .3 Record following information:
      - .1 Horizontal and vertical location of various elements in relation to Chart Datum.

- .2 Field changes of dimension and detail.
  - .3 All design elevations, sections, and details dimensioned and marked-up to consistently report finished installation conditions.
  - .4 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings must also be marked-up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document.
  - .5 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.
- .5 As-built Specifications: legibly mark in red each item to record actual construction, including:
- .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.
  - .2 Changes made by Addenda and Change Orders.
  - .3 Mark up both copies of specifications; stamp "as-built", sign and date similarly to drawings as per above clause.
- .6 Maintain As-built documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis.

Frequency of reviews will be subject to Departmental Representative's discretion. Failure to maintain as-builts current and complete to satisfaction of the Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.

1.3 REVIEWED SHOP  
DRAWINGS

- .1 Compile 2 full sets of all reviewed shop drawings.

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PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for demolishing and removing wholly or in part various items designated to be removed or partially removed.
- .2 Demolition and removal will consist of, but not necessarily be limited to, the following:
  - .1 Partial demolition of the existing armour stone revetment and corestone berm to facilitate installation of the new retaining wall. Armourstone to be salvaged on site as directed by the Departmental Representative.

1.2 GENERAL REQUIREMENTS

- .1 A Notice to Shipping is to be issued prior to commencement and upon completion of work.
- .2 During construction, any vessels or barges utilized must be marked in accordance with the provisions of the Canada Shipping Act Collision Regulations.
- .3 Upon completion of the project, a written Notice to Mariners must be issued.

1.3 PROTECTION

- .1 Protect existing objects designated to remain. In event of damage, immediately replace or make repairs to approval of and at no additional cost to Canada.
- .2 Place a floating boom around entire demolition site to prevent loss of any materials.
- .3 Remove all floating debris from water on a routine and timely basis.

- .4 Removal of floating debris from water shall not be carried out utilizing designated safety boat. Contractor shall use separate vessel for debris cleaning, leaving the designated safety boat available for emergency operations at all times.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 EXECUTION

- .1 Inspect site and verify with Departmental Representative objects designated for removal.
- .2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.

3.2 REMOVAL

- .1 Remove in their entirety all materials and objects specified for removal.
- .2 Do not disturb adjacent work designated to remain in place. Take extreme caution when excavating adjacent to the existing approach slab.

3.3 DISPOSAL OF MATERIAL

- .1 All demolished materials, except materials designated to be reused, will become property of contractor and will be removed from site and disposed of to satisfaction of Departmental Representative and in accordance with environmental guidelines. It is the sole responsibility of the contractor to dispose of all demolished materials

at an approved disposal site. Ensure that disposal site is approved and willing to accommodate any materials disposed of from work site.

- .2 Contractor shall obtain and pay for all necessary permits and disposal fees for use of an approved waste disposal site.

#### 3.4 RESTORATION

- .1 Upon completion of work, remove debris, trim surfaces and leave work site in clean condition.
- .2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 03 20 00 - Concrete Reinforcing.
  - .2 Section 03 30 00 - Cast-in-Place Concrete.
  - .3 Section 07 92 10 - Joint Sealing.
- 1.2 REFERENCES
- .1 Canadian Standards Association (CSA)
    - .1 CAN/CSA-A23.1 latest edition, Concrete Materials and Methods of Concrete Construction.
    - .2 CAN/CSA-O86 latest edition), Engineering Design in Wood (Limit States Design).
    - .3 CSA O121 latest edition, Douglas Fir Plywood.
    - .4 CSA O151 CAC latest edition, Canadian Softwood Plywood.
    - .5 CSA O153 latest edition, Poplar Plywood.
    - .6 CAN3-O188.0 latest edition, Standard Test Methods for Mat-Formed Wood Particleboards and Waferboard.
    - .7 CSA O437 Series latest edition, Standards for OSB and Waferboard.
    - .8 CSA S269.1 latest edition, Falsework for Construction Purposes.
    - .9 CAN/CSA-S269.3 latest edition, Concrete Formwork.
- 1.3 SHOP DRAWINGS
- .1 Submit shop drawings for formwork and falsework in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes,

ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings Comply with CAN/CSA-S269.3 for formwork drawings.

- .3 Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.
- .4 Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.
- .5 Each shop drawing submission shall bear stamp and signature of qualified Professional Engineer registered or licensed in Province of Nova Scotia, Canada.

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 and the Waste Reduction Workplan.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away from children.
- .4 Use sealers, form release and stripping agents that are non-toxic, biodegradable and have zero or low VOC's.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Formwork materials:
  - .1 Use formwork materials to CAN/CSA-A23.1.
- .2 Form ties:
  - .1 Removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25mm diameter in concrete surface.
- .3 Form release agent: non-toxic, chemically active release agents containing compounds that react with free lime present in concrete to provide water insoluble soaps, preventing set of film of concrete in contact with form.
- .4 Falsework materials: to CSA-S269.1.
  - .1 Materials required to bear grade marks, or be accompanied with certificates, test reports or other proof of conformity.
- .5 Premoulded joint fillers:
  - .1 Bituminous impregnated fibreboard to ASTM D1751.
- .6 Bond Breaker:
  - .1 Impermeable tube formed of polyvinylchloride, rubber or similar material to the approval of the Departmental Representative. Internal diameter equal to dowels.
- .7 Sealant: to Section 07 92 10 - Joint Sealing.

PART 3 - EXECUTION

3.1 FABRICATION AND  
ERECTION

- .1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.
- .3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .4 Fabricate and erect falsework in accordance with CSA S269.1.
- .5 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1.
- .6 Align form joints and make watertight. Keep form joints to minimum.
- .7 Use 25mm chamfer strips on external corners and/or 25mm fillets at interior corners, joints, unless specified otherwise.
- .8 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .9 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

- .10 Clean formwork in accordance with CAN/CSA-A23.1, before placing concrete.
- 3.2 REMOVAL AND RESHORING
- .1 Leave formwork in place for following minimum periods of time after placing concrete.
- .1 7 days for walls and sides of beams.
  - .2 7 days for columns.
  - .3 5 days for beam soffits, slabs, decks and other structural members, or 3 days when replaced immediately with adequate shoring to standard specified for falsework.
  - .4 5 days for footings and abutments.
- .2 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.
- .3 Provide all necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.
- .4 Space reshoring in each principal direction at not more than 3000 mm apart.
- .5 Re-use formwork and falsework subject to requirements of CAN/CSA-A23.1.
- 3.3 JOINT FILLERS
- .1 Locate and form expansion joints as indicated. Install joint filler in all joints.

- .2 Use 13mm thick joint filler to separate slab-on-grade and extend joint filler from bottom of slab to within 25mm of finished slab surface unless indicated otherwise.

#### 3.4 JOINT SEALANT

- .1 Fill expansion and control joints with sealer as per manufacturer instructions.

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PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 03 10 00 - Concrete Forming and Accessories.
  - .2 Section 03 30 00 - Cast-in-Place Concrete.
- 1.2 REFERENCES
- .1 American Concrete Institute (ACI)
    - .1 ACI 315R latest edition, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.
  - .2 American National Standards Institute/American Concrete Institute (ANSI/ACI)
    - .1 ANSI/ACI 315 latest edition, Details and Detailing of Concrete Reinforcement.
  - .3 Canadian Standards Association (CSA)
    - .1 CAN/CSA-A23.1 latest edition, Concrete Materials and Methods of Concrete Construction.
    - .2 CSA-A23.3 latest edition, Design of Concrete Structures for Buildings.
    - .3 CSA G30.3 latest edition, Cold Drawn Steel Wire for Concrete Reinforcement.
    - .4 CSA G30.5 latest edition, Welded Steel Wire Fabric for Concrete Reinforcement.
    - .5 CSA G30.14 latest edition, Deformed Steel Wire for Concrete Reinforcement.
    - .6 CSA G30.15 latest edition, Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
    - .7 CAN/CSA-G30.18 latest edition, Billet-Steel Bars for Concrete Reinforcement.
    - .8 CAN/CSA-G40.21 latest edition, Structural Quality Steels.

.9 CSA W186 latest edition,  
Welding of Reinforcing Bars in  
Reinforced Concrete Construction.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings including placing of reinforcement in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacings and locations of chairs, spacers and hangers. Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada. ANSI/ACI 315 and ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.

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 and the Waste Reduction Workplan.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Departmental Representative.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .3 Reinforcing steel: weldable low alloy steel deformed bars to CAN/CSA-30.18.
- .4 Cold-drawn annealed steel wire ties: to CSA G30.3.
- .5 Welded steel wire fabric: to CSA G30.5. Provide in flat sheets only.
- .6 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1.
- .7 Mechanical splices: subject to approval of Departmental Representative.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada. ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures unless indicated otherwise.
- .2 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on placing drawings.

- .3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

- .1 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 2 weeks prior to commencing reinforcing work.
- .2 Upon request inform Departmental Representative of proposed source of material to be supplied.

PART 3 - EXECUTION

3.1 FIELD BENDING

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars which develop cracks or splits.

3.2 PLACING REINFORCEMENT

- .1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CAN/CSA-A23.1.
- .2 Use approved type chairs to locate the reinforcing steel at the proper grade.
- .3 Tie reinforcement where spacing in each direction is:

- .1 Less than 300mm: tie at alternate intersections.
- .2 300mm or more: tie at each intersection.

.4 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.

.5 Ensure cover to reinforcement is maintained during concrete pour.

### 3.3 CLEANING

- .1 Clean reinforcing before placing concrete to CAN/CSA-A23.1.

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PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies requirements for supply, placing, finishing, protecting and curing cast-in-place concrete for abutments.
- 1.2 RELATED SECTIONS .1 Section 03 10 00 - Concrete Forming and Accessories.  
.2 Section 03 20 00 - Concrete Reinforcing.
- 1.3 REFERENCES .1 American Society for Testing and Materials (ASTM)  
.1 ASTM C109/C109M latest edition, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50mm Cube Specimens).  
.2 ASTM C260 latest edition, Specification for Air-Entraining Admixtures for Concrete.  
.3 ASTM C494/C494M latest edition, Specification for Chemical Admixtures for Concrete.  
.2 Canadian General Standards Board (CGSB)  
.1 CAN/CGSB-51.34 latest edition, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.  
.3 Canadian Standards Association (CSA)  
.1 CAN/CSA-A3000 latest edition.  
.2 CAN/CSA-A23.1 latest edition, Concrete Materials and Methods of Concrete Construction.  
.3 CAN/CSA-A23.2 latest edition, Methods of Test for Concrete.

1.4 CERTIFICATES

- .1 Submit certificates in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Minimum 2 weeks prior to starting concrete work submit to Departmental Representative manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:
  - .1 Portland cement.
  - .2 Blended hydraulic cement.
  - .3 Supplementary cementing materials.
  - .4 Grout.
  - .5 Admixtures.
  - .6 Aggregates.
  - .7 Water.
  - .8 Joint filler.
  - .9 Joint Sealant.
- .3 Provide certification sealed by a professional engineer registered to practice in the Province of Nova Scotia, that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA-A23.1.
- .4 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1.

1.5 STORAGE OF MATERIALS

- .1 Store materials to prevent contamination or deterioration.
- .2 Provide adequate storage facilities for materials to ensure a continuous supply of these materials during batching operations.

- .3 Store cement in weathertight facility.
- 1.6 QUALITY ASSURANCE
- .1 Minimum 2 weeks prior to starting concrete work, submit proposed quality control procedures to Departmental Representative for the following items:
    - .1 Cold weather concrete.
    - .2 Curing.
    - .3 Finishes.
    - .4 Formwork removal.
    - .5 Joints.
- 1.7 WASTE MANAGEMENT AND DISPOSAL
- .1 Use trigger operated spray nozzles for water hoses.
  - .2 Designate a cleaning area for tools to limit water use and runoff.
  - .3 Carefully coordinate the specified concrete work with weather conditions.
  - .4 Ensure emptied containers are sealed and stored safely for disposal away from children.
  - .5 Prevent plasticizers, water-reducing agents and air-entraining agents from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with an inert, noncombustible material and remove for disposal. Dispose of all waste in accordance with applicable local, provincial and national regulations.
  - .6 Choose least harmful, appropriate cleaning method which will perform adequately.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Cement as required to produce concrete with specified exposure class.
- .2 Supplementary cementing materials: to CAN/CSA-A3001.
- .3 Cementitious hydraulic slag: to CAN/CSA-A3001.
- .4 Water: to CAN/CSA-A23.1.
- .5 Aggregates: to CAN/CSA-A23.1. Coarse aggregates to be normal density.
- .6 Air entraining admixture: to ASTM C260.
- .7 Chemical admixtures: to ASTM C494/C494M. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .8 Concrete retarders: to ASTM C494/C494M. Do not allow moisture of any kind to come in contact with the retarder film.
- .9 Curing compound: curing compounds are not to be used.
- .10 Premoulded joint fillers:
  - .1 Sponge rubber: to ASTM D1752, Type I, flexible grade.

2.2 MIXES

- .1 Proportion concrete in accordance with CAN/CSA-A23.1, Clause 4.3.

- .2 Proportion concrete to comply with Alternate 1, Table 2 in CAN/CSA-A23.1 and following requirements:
  - .1 Cement:
    - .1 Type GUb or otherwise required to produce concrete with specified exposure class.
    - .2 Minimum compressive strength: 35 MPa at 28 days.
    - .3 Class of exposure: C1.
    - .4 Minimum cement content: 385 kg/m<sup>3</sup> of concrete.
    - .5 20 mm nominal size coarse aggregate.
    - .6 Air content 5% to 8%.
    - .7 Density of air-dry concrete in range of 2240 kg/m<sup>3</sup> to 2400 kg/m<sup>3</sup>.
    - .8 Slump at time and point of Discharge 50mm to 100mm.
- .3 When the Contractor wishes to purchase concrete from a ready mix concrete supplier, submit a letter from the supplier certifying the following:
  - .1 That plant and equipment is certified and all materials to be used in the concrete comply with the requirements of CAN/CSA-A23.1.
  - .2 That the mix proportions selected will produce concrete of the specified quality and yield. Indicate mix proportions and sources of all materials.
  - .3 That the strengths will comply with the strengths specified herein.
- .4 When the Contractor wishes to mix concrete on site, identify the source of aggregates and submit samples of fine and coarse aggregates to a testing laboratory for testing and trial mixes in order to determine a suitable mix design. The testing laboratory, at

Contractor's cost, will test the trial mix for slump, air content, density and strength. The results of these tests will be submitted to the Departmental Representative to be reviewed for compliance with the specification. This review must be completed before permission to place concrete is given.

.1 The sand, gravel, water and air entraining agent should be mixed prior to the addition of cement and water reducer.

.5 Weigh aggregates, cement, water and admixture when batching. No alternative methods of measuring will be permitted.

.6 Do not use calcium chloride.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

.1 Obtain Departmental Representative's approval before placing concrete. Provide 24 hour notice prior to placing of concrete.

.2 Pumping of concrete is permitted only after approval of equipment and mix.

.3 Ensure reinforcement and inserts are not disturbed during concrete placement.

.4 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather.

- .5 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .6 Do not place load upon new concrete until authorized by Departmental Representative.

### 3.2 CONSTRUCTION

- .1 Comply with additional requirements of CAN/CSA-A23.1, Clause 4.1.1.5, for concrete exposed to seawater environments.
- .2 Minimum concrete cover over reinforcing steel bars to be 75 mm.
- .3 Place concrete in hot weather to CAN/CSA-A23.1.
- .4 Place concrete in cold weather to CAN/CSA-A23.1.
- .5 Keep concrete surfaces moist continually during protection stage.
- .6 Place, consolidate, finish, cure and protect concrete to CAN/CSA-A23.1.
- .7 Do not commence placing concrete until Departmental Representative has inspected and approved forms, foundations, reinforcing steel, joints, conveying, spreading, consolidation and finishing equipment and curing and protective methods.

### 3.3 FORMWORK

- .1 Install and strip formwork to CAN/CSA-A23.1 and Section 03 10 00.

- 3.4 INSERTS .1 Position and secure anchor bolts in formwork to maintain line and grades.
- 3.5 PLACING CONCRETE .1 Place and consolidate concrete to CAN/CSA-A23.1.
- .2 Do not place concrete on or against frozen material.
- .3 Place concrete continuously from joint to joint.
- .4 Place concrete in a uniform heading, normal to the centreline. Limit rate of placing to that which can be finished before beginning of initial set.
- 3.6 STRIKE OFF AND CONSOLIDATION .1 High speed internal poker vibrators shall be used to consolidate the concrete during placing. Final compaction of the surfaces shall be done by beam-type vibratory air screed as approved by Departmental Representative. A surcharge of approximately 65mm of concrete will be maintained at the screed face during consolidation.
- .2 Strikeoff and consolidation must be completed before excess water bleeds to the surface.
- .3 Ensure that the concrete deck conforms to the elevations and slopes as shown on the drawings so that satisfactory drainage will result.
- 3.7 FINISHING .1 Only ACI certified or other pre-approved concrete finishers are to be utilized in finishing all concrete works. All work is to be

finished to CAN/CSA-A23.1, and as specified below.

- .2 Strike off the surface with a straight edge.
- .3 The surface shall be true and accurate to a maximum tolerance of 1mm in 500mm.

3.8 PROTECTION AND CURING

- .1 Cure to CAN/CSA-A23.1.
- .2 Cure concrete by protecting it against loss of moisture, rapid temperature change and mechanical injury for at least 7 days after placement. After finishing operations have been completed, the entire surface of the newly placed concrete shall be covered by whatever curing medium is applicable to local conditions and approved by the Departmental Representative. The edges of concrete slabs exposed by removal of forms shall be protected with continuous curing treatment equal to the method selected for curing the slab and curb surfaces. Cure to CAN/CSA-A23.1. Have the equipment needed for adequate curing at hand and ready to install before actual concrete placement begins.
- .3 When air temperature is at or below 5°C or when there is a probability of its falling to that limit within 24 hours of placing (as forecast by the nearest official meteorological office) cold weather protection as per CAN/CSA-A23.1 will be provided and the following:
  - .1 Housing - Protect concrete by a windproof shelter of canvas or other material to allow free circulation

of inside air around fresh touch formwork and provide sufficient space for removal of formwork for finishing. Supply approved heating equipment capable of keeping inside air at a constant temperature sufficiently high to maintain concrete at following curing temperatures.

.1 For initial 3 days at a temperature of not less than 15°C nor more than 27°C at surface.

.2 Maintain concrete at 10°C for an extra 4 days plus the initial 3 days.

### 3.9 TESTING

- .1 Departmental Representative will appoint a concrete testing company to test all work under this section of specification as per CAN/CSA-A23.1.
- .2 Cost of compressive strength tests shall be paid for by the Departmental Representative.
- .3 Testing company shall issue reports to Departmental Representative on quality of test cylinders.
- .4 Notify Departmental Representative at least 7 days prior to start of placing concrete. Provide for testing purposes an adequate quantity of approved test cylinders.
- .5 At least 1 set of 3 cylinders each shall be taken from 25m<sup>3</sup> or fraction thereof of each day's pour, whichever is less. 1 cylinder shall be tested at 7 days and other 2 tested at 28 days.

- .6 Crate cylinders and deliver to the testing laboratory within 48 hours after casting in accordance with CAN/CSA-A23.1. Contractor will pay for crating and delivery of cylinders to the laboratory.
- .7 If strength tests of test cylinder for any portion of the work falls below the specified compressive strength at 28 days, the Departmental Representative reserves the right to determine the acceptability of the concrete by performing additional field testing as outlined in CAN/CSA-A23.1.
- .8 If concrete does not conform to drawings or specifications, take measures as directed to correct the deficiency. All costs of correctional measures will be at the expense of the Contractor.

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A 53/A53M-latest edition, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
  - .2 ASTM A 269-latest edition, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.181-latest edition, Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-G40.20/G40.21-latest edition, General Requirements for Rolled or Welded Structural Quality Steel.
  - .2 CAN/CSA-G164-latest edition, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CAN/CSA-S16.1-latest edition, Limit States Design of Steel Structures.
  - .4 CSA W48-latest edition, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5 CSA W59-latest edition, Welded Steel Construction (Metal Arc Welding).

1.3 SUBMITTALS

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
    - .1 For finishes, coatings, primers and paints.
- .2 Shop Drawings:
  - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 QUALITY ASSURANCE

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
  - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Storage and Protection:
  - .1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply

strippable plastic coating, before shipping to job site.

.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Steel shapes: CSA G40.21, Grade 350W or better; hollow structural sections: CSA G40.21, Grade 350W Class C; plates: to CSA G40.21, Grade 300W or better, All galvanized finish.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A325.

### 2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

### 2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600g/m<sup>2</sup> to CAN/CSA-G164. All steel used shall be hot dipped galvanized.

- .2 Shop coat primer: to CAN/CGSB-1.40.
- .3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

2.4 STEEL STRONGARM

- .1 Sizes and shapes as indicated.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .4 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .5 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .7 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

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PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 01 33 00 - Submittal Procedures.
- 1.2 REFERENCES
- .1 Latest edition of CAN3-S157 Strength Design in Aluminum.
- .2 Latest edition of AWS D1.2 Structural Welding Code - Aluminum.
- .3 Canadian Standards Association (CSA International)
- .1 Latest edition of CAN/CSA-S6 Canadian Highway Bridge Design Code.
- .2 Latest edition of CSA W47.2 Certification of Companies for Fusion Welding of Aluminum.
- .3 Latest edition of CSA W59.2 Welded Aluminum Construction.
- .4 Latest edition of The Aluminum Association - Aluminum Design Manual.
- .5 Latest edition of AASHTO - LRFD Guide Specifications for the Design of Pedestrian Bridges.
- 1.3 SUBMITTALS
- .1 Shop Drawings
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. All shop drawings shall be stamped by a Professional Engineer licensed to practice in the province of Nova Scotia.
- .2 Company and Welder Certifications and Welding Procedures
- .1 Submit proof of company W47.2 certification at with shop drawings.
- .2 Submit welder performance qualification within a minimum of two weeks prior to starting welding.

1.4 DELIVERY, STORAGE, .1  
AND HANDLING

Packing, Shipping, Handling and Unloading:

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Protect gangway from damage until completion of the work. Any damage to the gangway shall be repaired by the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Gangway shall be constructed of aluminum structural shapes, tubing, plates and bars of CSA aluminum alloy number GS11N (Alcan alloy 6061-T6) or have an equivalent yield strength of 240 MPa in the pre-welded condition and 110 MPa in the heat affected zone.

.2 Aluminum sawtooth grating for gangway walking surface shall be capable of spanning 1.2 m under an unfactored live load of 4.8 kPa. Submit load tables for proposed grating.

.3 Bolts connecting gangway to strongarm to Section 05 50 00 - Metal Fabrications.

2.2 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Do aluminum welding work in accordance with the latest edition of CSA W59.2 or AWS D1.2.

.3 Companies and individuals doing welding shall be certified under the latest edition of CSA W47.2.

- .4 Welds exposed to view shall be continuous and meet the visual acceptance criteria of CSA W59.2.
- .5 Welding electrodes shall be in conformance with ANSI/AWS Standard A5.10, alloy type 5356 and shall be certified by the Canadian Welding Bureau (CWB).

### PART 3 - EXECUTION

#### 3.1 ERECTION

- .1 Erect gangway and connections to steel strongarms in accordance with the design drawings and approved shop drawings. Provide neoprene isolation gaskets between aluminum and steel connection points.

PART 1 - GENERAL

1.1 REFERENCES

- .1 American Wood-Preservers' Association (AWPA)
  - .1 Latest edition of AWPA M2, Standard Inspection of Treated Wood Products.
  - .2 Latest edition of AWPA M4, Standard for the Care of Preservative-Treated Wood Products.
- .2 Canadian Standards Association (CSA)
  - .1 Latest edition of CSA O80 Series, Wood Preservation.
  - .2 Latest edition of CSA O80.201, Standard for Hydrocarbon Solvents for Preservatives. This Standard covers hydrocarbon solvents for preparing solutions of preservatives. This is not stand alone specification
  - .3 Latest edition of CSA O322, Procedure for Certification of Pressure-Treated Wood Materials for Use in Preserved Wood Foundations.

1.2 QUALITY ASSURANCE

- .1 Testing of products treated with preservative by pressure impregnation will be carried out by the manufacturer's testing laboratory to AWPA M2, and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.
- .2 Inspection and testing of timber materials will be carried out by the manufacturer.

1.3 CERTIFICATES AND ASSAY RETENTION RESULTS

- .1 Submit certificates and assay retention results in accordance with Section 01 33 00 - Submittal Procedures.

- .2 For products treated with preservative by pressure impregnation submit following information certified by authorized signing officer of treatment plant:
  - .1 Information listed in AWPA M2 and revisions specified in CSA O80 Series, Supplementary Requirement to AWPA M2 applicable to specified treatment.
  - .2 Moisture content after drying following treatment with water-borne preservative.
  - .3 Assay retentions results representing each treated batch of supplied timber.
  - .4 Acceptable types of paint, stain, and clear finishes that may be used over treated materials to be finished after treatment.

1.4 WASTE MANAGEMENT  
AND DISPOSAL

- .1 Do not dispose of preservative treated wood through incineration.
- .2 Do not dispose of preservative treated wood with other materials destined for recycling or reuse.
- .3 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Departmental Representative.
- .4 Dispose of unused wood preservative material at official hazardous material collections site approved by Departmental Representative.
- .5 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in other location where they will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Preservative: to CSA-080 Series.
- .2 Solvent: to CSA-080.201.

2.2 PRESERVATIVE TREATMENTS

- .1 Treat to CSA 080, commodity standard 080.18, Table 1 and its referenced standards, with the following minimum assay retentions:

<u>Species</u>	<u>CCA</u> <u>kg/m3</u>	<u>ACA</u> <u>kg/m3</u>
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Dimension Timber

-Coast Douglas Fir 24 24

-Western/Eastern

Hemlock 24 24

-Hemlock, Douglas Fir

(Wheelguard, Wheelguard

Blocking) 10 10

-Birch or Maple Treat to Refusal

Note: Birch or maple must be air dried for six (6) months in weather protected environment or kiln dried.

PART 3 - EXECUTION

3.1 FIELD TREATMENT

- .1 Handle pressure treated material in a manner that will avoid damage which may expose untreated material. Rejection of any damaged material may result and replacement will be at the Contractor's expense.
- .2 Fill all bored bolt holes with preservative immediately after boring. Use a pressurized container with hose to apply preservative, or some alternate method acceptable to the Departmental Representative.

- .3 Fill all unused bored holes and spike holes with tight fitting treated wooden plugs.

### 3.2 CUTTING

- .1 Field cuts, if authorized, are to receive three (3) liberal coats of the applicable preservative applied to dry wood on each application.

### 3.3 FIELD QUALITY

- .1 Timber which contain rot, splits exposing untreated wood, excessive wane, or timbers which cannot be fastened in the work so as to be structurally sound are unacceptable.
- .2 The Departmental Representative reserves the right to carry out field testing of treated timber for penetration and retention of preservative. Timber not meeting the requirements of the specification may be rejected for use under the contract.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 01 35 43 - Environmental Procedures.
- 1.2 REFERENCES .1 American Society for Testing and Materials (ASTM)
- .1 ASTM C117 latest edition, Standard Test Method for Material Finer Than 0.075mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C136 latest edition, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D422 latest edition, Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D698 latest edition, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbs/ft<sup>3</sup>) (600kN-m/m<sup>3</sup>).
  - .5 ASTM D4318 latest edition, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-8.1 latest edition, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2 latest edition, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA)
- .1 CAN/CSA-A23.1 latest edition, Concrete Materials and Methods of Concrete Construction.
- 1.3 DEFINITIONS .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

- .1 Rock : any solid material in excess of 0.25m<sup>3</sup> and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15m<sup>3</sup> bucket. Frozen material not classified as rock.
- .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .4 Unsuitable materials:
- .1 Weak and compressible materials under excavated areas.
- .2 Frost susceptible materials under excavated areas.
- .3 Frost susceptible materials:
- .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1.
- .2 Table
- | <u>Sieve Designation</u> | <u>% Passing</u> |
|--------------------------|------------------|
| 2.00mm                   | 100              |
| 0.10mm                   | 45 - 100         |
| 0.02mm                   | 10 - 80          |
| 0.005mm                  | 0 - 45           |
- .3 Coarse grained soils containing more than 20% by mass passing 0.075mm sieve.
- .5 Unshrinkable fill: very weak mixture of Portland cement, concrete

aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Type 1 and Type 2 Fill: crushed and screened rock or gravel. Material shall consist of hard and durable stone particles. Gradation shall be dense, well graded and within limits specified when tested to ASTM C 136 and as follows:

.1 Type 1:

<u>Sieve Size, <math>\mu\text{m}</math></u>	<u>Percent Passing</u>
20 000	100
14 000	50-85
5 000	20-50
160	5-12
80	3-8

.2 Type 2

<u>Sieve Size, <math>\mu\text{m}</math></u>	<u>Percent Passing</u>
80 000	100
56 000	70-100
28 000	50-80
14 000	35-65
5 000	20-50
160	3-10
80	0-7

- .2 Type 1 and Type 2 Fill shall have a fractured particle content of 50% per one face (minimum). The fractured particles shall have at least one well defined fresh face resulting from fracture, with the face comprising no less than 20% of the particle surface area. Particles with smooth faces and rounded edges, or with only small chips removed, are not considered fractured.

PART 3 - EXECUTION

- 3.1 SITE PREPARATION .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- 3.2 EXCAVATION .1 Excavate to lines, grades, elevations and dimensions as indicated.
- .2 Excavation must not interfere with bearing capacity of adjacent foundations.
- .3 Dispose of surplus and unsuitable excavated material in approved location off site.
- .4 Do not obstruct flow of surface drainage.
- .5 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .6 Notify Departmental Representative when bottom of excavation is reached.
- .7 Obtain Departmental Representative's approval of completed excavation.
- 3.3 FILL TYPES AND COMPACTION .1 Use fill of types as indicated.
- .2 Only Type 1 and Type 2 fill material approved by Departmental Representative will be placed. Material will be placed uniformly across full cross-section in layers not exceeding 150mm loose depth.
- .3 Use suitable earth moving and surface grading equipment to place

and spread fill in continuous and uniform horizontal layers.

- .4 Compact Type 1 and Type 2 fill after each 150mm lift (maximum).
- .5 Place type 1 and type 2 fill after sub-base surface is inspected and approved by Departmental Representative.
- .6 Placing:
  - .1 Construct Type 1 and Type 2 fill to depth and grade in area indicated.
  - .2 Ensure no frozen material is placed.
  - .3 Place material only on clean unfrozen surface, free from snow and ice.
  - .4 The contractor shall place all Type 1 and Type 2 fill in such a manner as to prevent contamination by other materials and to prevent segregation. If, in the opinion of the Departmental Representative, the methods and techniques used by the Contractor cannot overcome contamination or segregation, then the Departmental Representative may direct a modification in these methods which may require the use of an approved spreader box or other acceptable device.
  - .5 All Type 1 and Type 2 fill shall be placed in uniform layers such that the thickness of the compacted layer does not exceed 50mm.
  - .6 Prior to closing down operations for each working day, all granular materials shall be bladed and compacted to the specified density.
  - .7 The materials shall be sprayed with water when and as directed by

the Departmental Representative, either to aid compaction or reduce dust nuisance or both. When water is added to aid compaction, it shall be applied immediately ahead of the compacting unit.

.8 Each layer of Type 1 and Type 2 fill shall be bladed shaped and compacted as necessary to produce the required profile and cross-section. The finished surface shall not deviate at any place on a 3 m straight edge by more than 10mm. The upper layer shall be maintained to these tolerances and to the specified density until compaction of the contract. This may require keeping the moisture content at the appropriate value during periods of dry weather in addition to regarding and re-compacting as frequently as may be deemed necessary by the Departmental Representative.

.7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.8 Compaction Equipment:

.1 Compaction equipment to be capable of obtaining required material densities.

.9 Compacting:

.1 All Type 1 and Type 2 fill shall be compacted to not less than 100% of the maximum Standard Proctor Dry Density ASTM D698-07e1 Method D.

.2 Compaction operations shall be carried out as closely as possible behind the placing and spreading operation. At the end of each working day, all materials placed shall have been compacted to the specified density.

.3 Each layer of material shall be

graded and compacted as specified before the next layer is placed.

.4 Where necessary to obtain the required compaction, the contractor shall apply sufficient water by means of an approved distributor.

### 3.4 BACKFILLING

- .1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations.
  - .1 Place bedding and surround material as specified elsewhere.
  - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
  - .3 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 1.0m.

### 3.5 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.

- .2 Clean and reinstate areas affected by Work as directed by Departmental Representative.
- .3 Restore site to its normal state prior to excavation.

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies the requirements for the supplying, producing, placing, and compaction of Levelling Course in the areas as indicated, as well as the reinstatement of corestone berm material.

1.2 REFERENCES

- .1 ASTM C 117 latest edition, Test method for material finer than 0.075 mm sieve in mineral aggregates by washing.
- .2 ASTM C 131 latest edition. Test method for resistance to degradation of small size coarse aggregate by abrasion and impact in the Los Angeles machine.
- .3 ASTM C 136-6 latest edition, Method for sieve analysis of fine and coarse aggregates, CAN/CGSB-8.2 latest edition, Sieves testing, woven wire, metric.

1.3 DELIVERY, STORAGE  
AND HANDLING

- .1 Deliver and stockpile aggregates as directed by Departmental Representative.

PART 2 - PRODUCTS

2.1 LEVELING COURSE

- .1 Leveling course will consist of clean, hard, durable crushed gravel or stone, free from shale clay, friable materials, organic matter and other deleterious substances and graded within the following limits when tested to ASTM C136-84 and ASTM C117-87 and giving a smooth curve without sharp breaks when plotted on a semi-log chart.

<u>ASTM Sieve Designation</u>	<u>% Passing Leveling Course</u>
28mm	-100
25.4mm	-
19.0mm	90-100
10mm	0-40
5mm	0-10

Physical Requirements for:

- Los Angeles Abrasion\* (Loss % Maximum) ASTM C131-89 35, C535-89 35
- Percent Crushed (% Minimum) 50
- Plasticity Index ASTM D4318-84 0
- Petrographic Number (max) ASTM CSA 23-2-M90 150

PART 3 - EXECUTION

3.1 PLACING ROCK FILL

- .1 Only rock fill material approved by Departmental Representative will be placed. Material will be placed uniformly across full cross-section in layers not exceeding 300mm loose depth.
- .2 Rock Fill materials placed underwater should be placed in a manner to minimize segregation. (i.e., end dumping will not be acceptable).
- .3 Above water level, use suitable earth moving and surface grading equipment to place and spread backfill in continuous and uniform horizontal layers.
- .4 Above water level, compact rock fill after each 300 mm lift with a 10 tonne (minimum) steel drum vibratory roller making a minimum of 6 passes. Compaction within 2 m of a

structural member or wharf face should be performed by static rolling only.

3.2 LEVELING COURSE

- .1 Place leveling course to thickness indicated on drawings.
- .2 Do not place leveling course until the rock mattress has been accepted by the Department Representative.
- .3 Level top surface to specified grade.
- .4 Contractor to provide plan and cross sections with elevation shots at 1.5 m intervals in each direction on the top of the leveling course prior to installation of the precast footing. Surface of leveling course to be within 40 mm of elevation indicated on drawings.

3.3 PROTECTION

- .1 Maintain finished base in condition conforming to this section until succeeding material is applied or until acceptance by Departmental Representative.

3.4 CO-OPERATION AND ASSISTANCE TO DEPARTMENTAL REPRESENTATIVE

- .1 Co-operate with Departmental Representative on inspection of work and provide assistance requested.
- .2 On request of Departmental Representative, furnish use of such boats, equipment, labour and materials forming ordinary and usual part of excavating plant as may be reasonably necessary to inspect and supervise work.

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PART 1 - GENERAL

- 1.1 SECTION INCLUDES .1 Materials and installation of polymeric geotextiles used in breakwaters, retaining wall structures, filtration, drainage structures and roadbeds, purpose of which is to:
- .1 Separate and prevent mixing of granular materials of different grading.
  - .2 Act as hydraulic filters permitting passage of water while retaining soil strength of granular structure.
- 1.2 RELATED WORK .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 31 23 10 - Excavating, Trenching and Backfilling.
- .4 Section 31 23 26 - Rock Fill.
- 1.3 REFERENCES .1 ASTM International
- .1 ASTM A123/A123M latest edition, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2 ASTM D4491 latest edition, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  - .3 ASTM D4595 latest edition, Standard Test Method for Tensile Properties of Geotextiles by the Wide- Width Strip Method.

- .4 ASTM D4716 latest edition,  
Standard Test Method for  
Determining the (In- Plane)  
Flow Rate Per Unit Width  
and Hydraulic Transmissivity of  
a Geosynthetic Using a Constant  
Head.
- .5 ASTM D4751 latest edition,  
Standard Test Method for  
Determining Apparent  
Opening Size of a Geotextile.
- .2 Canadian General Standards Board  
(CGSB)
  - .1 CAN/CGSB-4.2 No. 11.2,  
Textile Test Methods - Bursting  
Strength - Ball Burst Test  
(Extension of September 1989).
  - .2 CAN/CGSB-148.1, Methods of  
Testing Geotextiles and  
Complete Geomembranes.
    - .1 No.2, Methods of Testing  
Geosynthetics - Mass per Unit  
Area.
    - .2 No.3, Methods of Testing  
Geosynthetics - Thickness of  
Geotextiles.
    - .3 No.6.1, Methods of Testing  
Geotextiles and Geomembranes -  
Bursting Strength of  
Geotextiles Under No  
Compressive Load.
    - .4 No.7.3, Methods of Testing  
Geotextiles and Geomembranes -  
Grab Tensile Test for  
Geotextiles.
    - .5 No. 10, Methods of Testing  
Geosynthetics - Geotextiles -  
Filtration Opening Size.
- .3 CSA International
  - .1 CSA G40.20/G40.21 latest  
edition, General Requirements  
for Rolled or Welded Structural  
Quality Steel/Structural Quality  
Steel.

- 1.4 SAMPLES
- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit to Departmental Representative the following samples at least 2 weeks prior to commencing work.
    - .1 Methods of joining.
- 1.5 MILL CERTIFICATES
- .1 Submit to Departmental Representative a copy of mill test data and certificate at least 2 weeks prior to start of work.
- 1.6 DELIVERY AND STORAGE
- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.
- 1.7 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
  - .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
  - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and packaging material, in appropriate on-site bins, for recycling in accordance with Waste Management Plan.
  - .4 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 MATERIAL

- .1 Geotextile: woven or non-woven synthetic fibre fabric, supplied in rolls.
  - .1 Width: 3.5m minimum.
  - .2 Length: 50m minimum.
  - .3 Composed of: minimum 85% by mass of polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.
  
- .2 Physical properties:
  - .1 Thickness: to CAN/CGSB-148.1, No.3, minimum 2.5mm.
  - .2 Mass per unit area: to CAN/CGSB-148.1, No. 2, minimum 400g/m<sup>2</sup>.
  - .3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
    - .1 Tensile strength: minimum 1200 N, wet condition.
    - .2 Elongation at break: 50 to 100 percent.
    - .3 Seam strength: equal to or greater than tensile strength of fabric.
  - .4 Mullen burst strength: to CAN/CGSB-4.2, method 11.1, minimum 3100 kPa.
  
- .3 Hydraulic properties:
  - .1 Apparent opening size (AOS): to ASTM D4751, 50 to 150 micrometres.
  
  - .2 Permittivity: to ASTM D4491, 0.25 cm per second.
  
- .4 Securing pins and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m<sup>2</sup> to CAN/CSA G164.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Place geotextile material as indicated on the drawings.
- .2 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with securing pins and washers.
- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .5 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .7 After installation, cover with overlying layer within 4 hours of placement.
- .8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .9 Place and compact rock fill in accordance with Section 31 23 26 - Rock Fill.

3.2 CLEANING

- .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner.

3.3 PROTECTION

- .1 Vehicular traffic not permitted  
directly on geotextile.

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for supply and installation of structural timber as follows:
  - .1 Supply and installation of treated dimension timber floating docks, and associated painting, hardware and galvanizing.

1.2 RELATED WORK

- .1 Section 06 05 73 - Wood Treatment.
- .2 Section 05 50 00 - Metal Fabrications.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
  - .1 ASTM A3125, Specification for Steel Bolts, 120,000 PSI Tensile.
- .2 American Wood-Preserver's Association (AWPA)
  - .1 Latest edition of AWPA M4, Standard for the Care of Preservation - Treated Wood Products.
- .3 Canadian Standards Association (CSA International)
  - .1 Latest edition of CSA B111, Wire Nails, Spikes and Staples.
  - .2 Latest edition of CAN/CSA-G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Steel.
  - .3 Latest edition of CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .4 Latest edition of CAN/CSA-O80 Series, Wood Preservation.

- .4 Canadian Wood Council
  - .1 Wood Design Manual.
- .5 National Lumber Grades Authority (NLGA)
  - .1 Latest edition of Standard Grading Rules for Canadian Lumber.
  
- 1.4 DIMENSIONS
  - .1 Check existing site dimensions and report discrepancies to Departmental Representative before commencing work.
  
- 1.5 PROTECTION
  - .1 Avoid dropping, bruising or breaking of wood fibres.
  - .2 Avoid breaking surfaces of treated timber.
  - .3 Do not damage surfaces of treated timber by boring holes or driving nails or spikes into them to support temporary material or staging.
  - .4 Treat cuts, breaks or abrasions on surfaces of treated timber with 3 brush coats of preservative to CSA 080.
  - .5 Treat bolt holes, cutoffs and field cuts in accordance with CSA 080.
  
- 1.6 DELIVERY AND STORAGE
  - .1 Store timber horizontally, evenly supported and open piled permit circulation when stored for prolonged period.
  - .2 When handling long timber, provide support at sufficient number of points, properly located to prevent damage due to excessive bending.

- .3 Handle treated timber with hemp, manila or sisal rope slings or other approved means of support that will not damage surface.
- .4 Do not use sharp pointed tools to handle treated timber. Any timber so handled will be rejected and be replaced at Contractor's expense.

1.7 SUBMITTALS

- .1 Submit shop drawings for buoyancy compartment shells and foam filler.

PART 2 - PRODUCTS

2.1 TIMBER MATERIALS

- .1 Timber: Use timber graded and stamped in accordance with applicable grading rules and standards of associations or agencies approved to grade lumber by Canadian Lumber Standards Administration Board of CSA.
- .2 Species
  - .1 Wheelguard, wheelguard blocks, floating dock and cribwork timbers: Hemlock or Douglas Fir (CCA or ACA treated).
- .3 Grade: No. 1 Structural Grade
- .4 Grading Authority: NLGA
- .5 Preservative Treatment: Treat to CSA 080, for coastal waters and Section 06 05 73. Timbers will be treated in the lengths required. Unnecessary field cutting will not be permitted.
- .6 Primer: Alkyd undercoat, exterior oil wood primer, similar to Pittsburgh 6-9.

- .7 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "Safety Yellow" Product ID 7-808. Paint to conform to latest edition of CAN/CGSB-1.61.
- .8 Plywood: pressure treated douglas fir plywood to latest edition of CSA O141.

2.2 MISCELLANEOUS  
STEEL AND FASTENINGS

- .1 Miscellaneous Steel: All steel and fastenings to be CSA G40.21, Grade 300W, galvanized.
- .2 Nails and Spikes: to CSA B111.
- .3 Machine Bolts and Nuts: to ASTM A325. All machine bolts and nuts to be galvanized.
- .4 Drift Bolts: to G40.21 from round stock button head and diamond or wedge point. All drift bolts to be galvanized.
- .5 Washers:
  - .1 Round Plate Washers: for 16mm machine bolts will be 76mm diameter by 6.4mm thick, for 19mm machine bolts will be 79mm diameter by 7.9mm thick and have a hole diameter of 18mm and 21mm diameter respectively. Washers to conform to G40.21. All washers to be galvanized.
  - .2 Plain Washers: to CSA B19.1, Class 2. All washers to be galvanized.
  - .3 Square washers are not permitted.
- .6 Galvanizing: will conform to CSA G164 "Hot Dip Galvanizing of Irregularly Shaped Articles." Unless otherwise specified, minimum weight of zinc coating will be as stated in

Table 1 of this standard. Fabricator is to adhere to recommendations of CSA G164.

- .7 Welding in accordance with CSA Standards. The welders will be qualified to the appropriate classification as stated in CSA W47.1 "Certification of Companies for Fusion Welding of Steel Structures." Conform welding to all appropriate requirements and recommendations of CSA Standard W59 "Welded Steel Construction" (metal arc welding).

2.3 BUOYANCY  
COMPARTMENTS

- .1 Buoyancy compartment shells to be manufactured from linear virgin polyethylene resin containing UV ray inhibitors and carbon black pigment to protect against ultra-violet deterioration. Shells shall be rotationally molded for seamless, one piece construction with a 3.2 mm wall thickness.
- .2 Buoyancy compartment shells to be filled with urethane foam with a maximum density of 32 kg/m<sup>3</sup>.

PART 3 - EXECUTION

3.1 FLOATING DOCK  
TIMBER

- .1 Install floating dock timbers and all other floating dock components as indicated on drawings.
- .2 Dress timber decking on bottom side to ensure uniform thickness and level walking surface.

### 3.2 PAINTING

- .1 Paint wheelguard and wheelguard blocking as directed by the Departmental Representative.
- .2 Use one (1) coat of exterior oil wood primer and two (2) coats of alkyd/oil resin paint as specified. Paint materials for each coat to be product of a single manufacturer as specified. Ensure previous coat of primer or paint is dry before second coat is applied.

### 3.3 BOLT SIZING

- .1 Drift Bolts: Drift bolts used in the work will have a length equal to thickness of timbers being fastened less 50mm unless otherwise specified. Holes for drift bolts will be bored 2mm smaller diameter than size of steel used and for full length of bolts.
- .2 Machine Bolts: Machine bolts used in work will have a length equal to thickness of timbers being fastened plus thickness of washers plus 40mm. Where bolts are countersunk, the length will be as above less depth of countersinking. Machine bolts will be threaded for 64mm. Holes will be drilled same diameter as bolt.
- .3 Lag Screws: All lag screws used in the work will have a length equal to thickness of timbers being fastened less 50mm and depth of countersinking. Holes for lag screws to be drilled same diameter as shank portion of screw and to inside thread diameter for threaded portion of screw and for full length. All lag screws will be countersunk,

screwed, not driven in place, and will have one (1) standard washer under the head.

- .4 Countersink drift bolts and/or lag screws in ladders to the extent that the minimum distance from face of timber to head of bolt is 12mm.
- .5 Bolting of timbers without properly drilled bolt holes will not be accepted.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Definitions:
- .1 Average of Instantaneous Plan: hydrographic survey plan in which average sounding in an appropriate group of matrix blocks is plotted.
  - .2 Box Cut: excavating channel area with vertical side slopes and allowing side slope of excavation collapse to a natural equilibrium slope.
  - .3 Class A Material: solid rock requiring drilling and blasting to loosen, and boulders or rock fragments of individual volumes 1.5 m<sup>3</sup> or more.
  - .4 Class B Material: loose or shale rock, silt, sand, quick sand, mud, shingle, gravel, clay, sand, gumbo, boulders, hardpan and debris of individual volumes less than 1.5 m<sup>3</sup>.
  - .5 Chart Datum: permanently established plane from which soundings or tide heights are referenced, usually Lowest Normal Tide (LNT).
  - .6 Cleared Area: area of excavating accepted as complying with plans and specifications.
  - .7 Co-ordinates:
    - .1 U.T.M.: Universal Transverse Mercator projection.
    - .2 M.T.M.: Modified Transverse Mercator projection.
    - .3 U.T.M. or M.T.M. Co-ordinates: plane rectangular co-ordinates used in grid system in which grid network is applied to U.T.M. or M.T.M. projection. Horizontal control information as indicated.

- .8 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.
- .9 Excavating: excavating, transporting and disposing of underwater materials.
- .10 Estimated Quantity:
  - .1 Volume of material calculated to be above sub-grade and within specified side slopes unless otherwise specified.
  - .2 Areas in square metres of material calculated horizontally to exist above grade and within excavation limits, unless otherwise specified.
- .11 Grade: plane above which material is to be excavated.
- .12 Hydraulic Excavating Plant: equipment that uses the movement of water to excavate and transport underwater materials such as cutter suction excavator, suction excavator or trailing suction hopper excavator.
- .13 Instantaneous Mode: mode of operation of hydrographic survey equipment where only sounding observed at predetermined distance interval is retained in memory.
- .14 Least of Minimum Plan: hydrographic survey plan in which least sounding in grouping of matrix blocks is plotted.
- .15 Lowest Normal Tide (LNT): plane so low that tide will seldom fall below it.

- .16 Matrix Block: each excavated area is presented as number of 1.2 x 10 m long blocks. Dependent on position of sounding, block may have 0 to 4 soundings contained within it.
- .17 Mechanical Excavation Plant: equipment comprising of the following: clamshell, dragline, dipper or backhoe excavate with dump scows.
- .18 Mechanical Sweep: clearing excavated areas to grade depth using a mechanical device suspended from barge.
- .19 Minimum Mode: mode of operation of hydrographic survey equipment where minimum sounding over length of travel between position updates will be retained in memory. Soundings taken in this mode may be shallower than actual bottom elevations due to variations in water depths due to wave action.
- .20 Obstructions: material other than class A, having individual volumes of 1.5 m<sup>3</sup> or more.
- .21 Side slope: inclined surface or plane from subgrade at side limit of excavation area to intersect original ground line outside of side limit and to be expressed as ratio of horizontal to vertical.
- .22 Sub-grade: plane parallel to and 300 mm below grade.
- .23 Universal Transverse Mercator Projection (UTM) or Modified Transverse Mercator Projection (MTM) Co-ordinates: plane rectangular coordinates used in grid system in which grid network is applied to UTM. or MTM. projection. Horizontal

control information as indicated.

.2 Reference Standards:

- .1 Justice Canada
  - .1 Canada Shipping Act - Collision Regulations (C.R.C., c.1416).

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination:

- .1 Location:
  - .1 Work comprises excavating/dredging of area in front of the new floating docks to allow for berthing.
- .2 Erosion and Sedimentation Control Plan:
  - .1 Prepare and submit and erosion and sedimentation control plan for review in accordance with Section 01 35 43-Enivironmental Procedures, Section 1.9, for the containment of suspended sediment when conducting work in water.

.2 Navigation co-ordination:

- .1 Perform Work in accordance with the Collision Regulations do not obstruct navigation during progress of Work.
- .2 Observe vessel movements and fishery activities in area affected by excavating operations including movement of vessels at adjacent wharves.
- .3 Plan and execute Work in manner that will not interfere with fishing operations, marina operations, construction activities at wharf sites, or access to wharves by land or water.

- .4 Departmental Representative will not be responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in harbour or due to other Contractor's operations.
  - .5 Keep Watchkeeper Operations Centre, District Manager, Canadian Coast Guard (CCG), Fisheries and Oceans, informed of excavation operations in order that necessary Notices to Mariners will be issued.
  - .6 Make arrangements with CCG to relocate and replace buoys for execution of work. Advise nearest Coast Guard Base of any requirements to relocate channel markers/buoys within excavation area.
  - .7 Arrange operations to minimize interference with recreational boaters using harbour.
  - .8 Maintain a minimum 10 m clear width of channel for passage of recreational boaters at all times. Provide and locate necessary buoys to indicate temporary channel for passage.
- .3 Scheduling:
- .1 Submit to Departmental Representative within 2 weeks after award of Contract, schedule of work including time periods during which each operation involved in Work will be undertaken. At time of submission of schedule, meet with Departmental Representative to review schedule.

- .2 Adhere to schedule and take immediate action to correct any slippage by effectively altering existing excavating operations or mobilizing other equipment. Notify Departmental Representative of corrective action to be taken.

1.3 ACTION AND  
INFORMATIONAL  
SUBMITTALS

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

1.4 QUALITY ASSURANCE

- .1 Regulatory agency sustainability approvals:
  - .1 Comply with municipal, provincial and national codes and regulations relating to project.
  - .2 Mark floating equipment with lights in accordance Collision Regulations and Notice to Mariners.
    - .1 Maintain VHF marine radio (Channel 16) on board floating equipment.
- .2 Floating plant:
  - .1 Dredges or other floating plants to be employed on this Work, to be of Canadian registry, make or manufacture, or, must receive certificate of qualification from Industry Canada, Aerospace, Defence and Marine Branch and this certificate to accompany Tender submission.
  - .2 Requests for certification in format of attached questionnaire to be directed to Director Aerospace, Defense and Marine Branch, Industry Sector,

Industry Canada, 235 Queen Street, 7th Floor, East Tower, Ottawa, Ontario, K1A 0H5, and to be received there not less than 14 days prior to bid closing.

1.5 SITE CONDITIONS

- .1 Contractor to visit and inspect work site and become thoroughly familiar with extent and nature of Work and conditions affecting Work before tendering.
- .2 Material to be excavated consists of Class B material.
- .3 Existing borehole information of the upland area is included in Appendix B.
- .4 Results of most recent soundings completed in 2017 are shown on drawings. Data is available for bidding purposes. Data may differ from present site conditions. Take this into consideration when submitting bid.
- .5 Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area.
- .6 Survey requirements:
  - .1 Provide, at own expense, survey vessel, equipment and crew to set up and maintain control for location of excavation limits and to sound areas immediately after excavating to verify that grade depth has been attained. Areas are to be sounded to provide sounding printout display of at least UTM 5 x 5m grid to approval of Departmental Representative.

1.6 EXCAVATION SEQUENCE .1 Supply Departmental Representative with plan of excavating sequence and stages.

1.7 EXCAVATING PLANT .1 Excavating plant used for work to be mechanical type of sufficient capacity and in good operating condition to satisfactory complete Work within time schedule and in accordance with specifications.

PART 2 - PRODUCTS

2.1 EXCAVATING EQUIPMENT .1 Contractor to determine required equipment necessary to excavate material specified and to dispose of excavated material in the adjacent containment berm on site.

PART 3 - EXECUTION

3.1 EXAMINATION .1 Verification of location:  
.1 Work comprises excavating/dredging of areas as indicated on drawings  
.2 Surveys and acceptance of work:  
.1 Contractor to re-excavate as necessary to remove all material within excavation areas which is found to be above grade.  
.2 All elevations obtained in minimum mode within specified areas of excavating must be confirmed to have reached the dredged depth indicated on the drawings before area will be considered completed.

3.2 LAYOUT OF WORK .1 Immediately upon entering site for purpose of beginning work on this project, locate reference points and take proper action necessary to prevent their disturbance.

- .2 Contractor will be responsible to establish horizontal control consisting of a baseline, co-ordinate system with reference control monuments and vertical control consisting of water level gauge and benchmark to define Work and disposal area.
- .3 Maintain established horizontal and vertical control and lay out work from these established references. Be responsible for accuracy of work relative to established references. Provide and maintain electronic position fixing and distance measuring equipment as required for accurate excavation control. Provide at own expense, survey vessel, equipment and crew to set up and maintain control for location of excavation limits.
- .4 Contractor's electronic positioning system must be made accessible to Departmental Representative or their representative upon request. It must provide a continuous automatic update of position in all weather conditions. Minimum accuracy of positioning to be  $\pm 1$  metre. An on-line graphics display of position and hard copy capability is required. Positioning system is subject to Departmental Representative's approval.
- .5 Install and maintain tide boards in vicinity of worksite in order that proper depth of excavation can be determined. Locate tide boards so as to be clearly visible.
- .6 Establish and maintain additional on-land temporary targets, markers and buoys for location and definition of designated excavation

area limits as required. Remove on completion of work.

### 3.3 EXCAVATION

- .1 Mark floating equipment with lights in accordance with Collision Regulations and maintain VHF (Channel 16) radio watch on board.
- .2 Place and maintain buoys, markers and lights required to define work areas.
- .3 Lay out Work from bench marks and base lines established by Departmental Representative. Be responsible for accuracy of Work relative to established bench marks and baseline. Provide and maintain electronic position fixing and distance measuring equipment, laser transits and such other equipment as normally required for accurate excavating control.
- .4 Areas to be excavated are to be referenced to vertical bench marks for each location of excavation as indicated.
- .5 Establish and maintain tide boards in order that proper depth of excavation can be determined. Locate tide boards so as to be clearly visible.
- .6 Establish and maintain on-land targets for location and definition of designated excavation area limits. Targets to be suitable for control of excavating operations and locating soundings. Remove targets on completion of Work.
- .7 Excavate to limits as indicated on drawings.

- .8 Excavation side slopes as noted on drawings.
  - .9 Remove materials above specified grade depths, within limits indicated. Material removed from below subgrade depth or outside specified area or side slope is not part of Work. Do not over excavate. Average over excavating not to exceed 0.3 metres.
  - .10 Remove spillage or shoaling which occurs as result of Work at no expense to Departmental Representative.
  - .11 Remove material cast-over on surrounding area and dispose of it as excavated material. Do not cast-over material unless authorized in writing by Departmental Representative.
  - .12 Remove infilling in excavation areas which occurs prior to acceptance by Departmental Representative.
  - .13 Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass object after clearly marking its location and continue Work.
- 3.4 SOUNDING SURVEYS .1 Contract drawings are based on latest soundings taken in August 2017. Estimated quantity shown on Unit Price Table are based on this survey.
- 3.5 DISPOSAL OF EXCAVATED MATERIAL .1 Dispose of excavated material by depositing in the containment berm onsite, as shown on the drawings.

- .2 Deposit excavated material evenly throughout entire disposal site. Do not concentrate in one area.
  - .3 Limits of disposal to be verified on site prior to start of work. Restrict disposal activities to those areas indicated.
  - .4 Grade disposal site as designated.
  - .5 Maintain dyke roadways and transfer area in a clean manner throughout duration of contract. Repair damages caused by Contractor's operation at no additional cost. Restore surfaces to original condition upon completion of work.
- 3.6 DISPOSAL OF DEBRIS
- .1 Do not dispose of debris in open lakes or streams.
  - .2 Dispose of debris at approved land disposal site.
- 3.7 EXCAVATING IN VICINITY OF STRUCTURES
- .1 Do not excavate material from basin areas lying within 2 metres of existing structure, excluding side slope areas, unless otherwise shown on drawing or unless authorized in writing by Departmental Representative.
- 3.8 SWEEPING AND ACCEPTANCE OF WORK
- .1 On completion of excavating Contractor will conduct in presence of Departmental Representative a mechanical sweep of excavated areas to confirm that grade depth has been achieved. Provide details of sweep system including horizontal and vertical control methods within 15 days after contract award.
  - .2 Sweeping equipment to consist of heavy steel beam suspended from a

barge at required depth. Beam to be capable of adjustment and calibration.

- .3 Provide a minimum of 48 hours notice to Departmental Representative for commencement of mechanical sweeping of site.

3.9 RE-EXCAVATING

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

3.10 SITE QUALIYY CONTROL

- .1 Site test and inspections:
  - .1 Co-operate with Departmental Representative on inspection of Work and provide assistance requested.
  - .2 Upon request of Departmental Representative, furnish use of such boats, equipment, labour and materials forming ordinary and usual part of excavating plant as may be reasonably necessary to inspect and supervise Work.
  - .3 Provide approved duty boat to transport Departmental Representative and PWGSC Inspectors to and from the dredging site.
  - .4 Sweep excavated areas on completion of dredging to confirm that grade depth has been achieved.
  - .5 Sweeping equipment to consist of heavy steel beam suspended from scow at required grade depth. Beam to be capable of adjustment and calibration and approved by Departmental Representative.

- .2 Non-conforming work:
  - .1 If, as result of incomplete Work, additional verification of depths by sounding or sweeping becomes necessary, additional costs involved shall be paid by Contractor.
  - .2 Re-excavate unsatisfactory Work and verify depths with additional sounding or sweeping to approval of Departmental Representative.

### 3.11 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 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 recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
  - .2 Contaminated sediments must be disposed of in confined disposal facility.
  - .3 Metals, wood and recyclable materials removed during the excavating activities must be diverted appropriate recycling facilities.

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PART 1 - GENERAL

1.1 RELATED  
REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 31 32 21 - Geotextiles.

1.2 REFERENCES

- .1 American Association of State Highway and Transportation Officials (AASHTO) / Standard Specifications for Transportation Materials and Methods of Sampling and Testing, 25th Edition, 2005.
  - .1 AASHTO M 288 latest edition, Geotextile Specification for Highway Applications.
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C117 latest edition, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C127 latest edition, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
  - .3 ASTM C535 latest edition, Standard Test Method for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .4 ASTM C136 latest edition, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .5 ASTM D698 latest edition, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using

Standard Effort (12,400 ft-  
lbf/f3 (600kN-m/m3)).

- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-8.1 latest edition, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2 latest edition, Sieves, Testing, Woven Wire, Metric.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 No new materials are required for this project. This section applies to salvage and reinstatement of the existing armour stone material to facilitate installation of the new concrete retaining wall.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- .1 The Contractor shall remove and reinstate armour stone protection system as indicated in the Contract Documents.
- .2 The Contractor shall verify the existing grades and shall notify the Departmental Representative if reshaping is required.

- .3 The Contractor shall maintain the grades and Slopes of the underlying material to ensure that the Work Area is cleared of all driftwood, debris, snow, ice and all other objectionable materials in the area of the Work.
  - .1 The armour stone protection shall be placed in conjunction with the construction of the retaining wall, so that the retaining wall is fully protected as soon after placement as practical.
  
- .4 Control of the gradation shall be by visual examination.
  - .1 Any difference in opinion between the Department Representative and the Contractor shall be resolved by testing in accordance with ASTM D5519.
  - .2 The Contractor shall provide the Equipment, a sorting site and the labour required to undertake the testing required.
  
- .5 The Contractor shall place the armour stone protection such that the underlying materials and any abutting Structures are not damaged.
  - .1 The Contractor shall be responsible at his/her own expense to repair any such damage to the Work.
  
- .6 The Contractor shall be responsible for any Work or materials required to repair damage which is a result of water level variations, waves or weather conditions.

3.2 ARMOUR STONE

- .1 Place armour stone to lines, grades and dimensions as indicated.
- .2 Reinstate armour stone in two courses to total layer thickness matching existing conditions.
- .3 Armour stone protection shall be placed such that each rock is stable, secure and supported by rocks below and the placement shall be controlled to ensure that a uniform and continuous cover results.
  - .1 The Contractor shall ensure that during placement the larger rocks shall be dispersed throughout the entire armour stone protection mass.
  - .2 The Contractor shall place the individual rock in such a manner that the whole structure shall be bound and consolidated to as great an extent as the nature of the rock will allow.
- .4 No pushing or dumping of armour stone protection shall be permitted during placement.
- .5 Any remaining armour stone material not required at the new concrete retaining wall is to be salvaged on site as directed by the Departmental Representative.

3.4 TOLERANCES

- .1 Completed component layer to be within following tolerances of lines and grades as indicated:
  - .1 Armour: plus or minus 100 mm.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 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.