

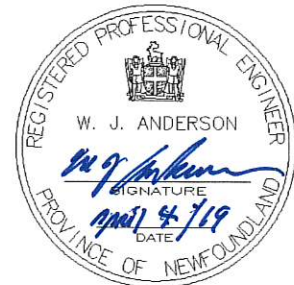
SPECIFICATION
SLIPWAY RECONSTRUCTION
RIVER OF PONDS, NL
Project No.: 722303

PREPARED FOR:

Fisheries and Oceans Canada
Small Craft Harbours

DATE:

April 2019



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PART 1 - GENERAL

1.1 SCOPE

- .1 The scope for this project includes, but is not limited to, the provision of construction activities, removal of existing (1375 m²) wooden slipway. Construction of a new (1316 m²) timber slipway complete with a 200 mm thick concrete apron and a 41.2 LM boat launch way concrete ramp. The work covered consists of the furnishing of all plant, labour, equipment and materials for these improvements at River of Ponds, NL, Great Northern Peninsula, Newfoundland and Labrador, in strict accordance with specifications and accompanying drawings and subject to all terms and conditions of the 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 Demolition, removal and disposal of all existing hardwood timber decking members and PT support beams.
 - .2 Demolition of all concrete supports and reuse these supports in the backfill of the new work to be completed.
 - .3 Demolition, removal and disposal of the existing steel support beams, brackets and associated steel items as indicated on drawings.
 - .4 Demolition, removal and disposal of the existing asphalt pavement as indicated on the accompanying drawings.
 - .5 Construct a new timber slipway complete with rock fill, concrete footings, timber cribs, concrete piers, timber beams, hardwood runners and timber wood decking as indicated on accompanying drawings.
 - .6 Construct a new concrete boat launchway ramp 41.2 m long x 4.9 m wide complete with wheel guard.
 - .7 Construction of new reinforced concrete upland apron along the top edge of the new slipway as shown on drawings.
 - .8 Supply and installation of new armor stone along the new launchway as shown on drawings.
- .2 All as indicated on accompanying drawings and specifications hereto.

- 1.3 SITE OF WORK .1 Work will be carried out at River of Ponds, Great Northern Peninsula, Newfoundland and Labrador in the location as shown on the accompanying drawings.
- 1.4 DATUM .1 Datum used for this project is Lowest Normal Tides (LNT) and is assumed to be +5.773 metres. PWC 9801, nail ramset in concrete as shown on accompanying drawings.
- .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, bidders can visit the site and its surroundings at their own expense and schedule 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 29 - 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, FCC Standard 373 - Standard for Piers and Wharves 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.

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- 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.
- .4. All work items not designated in the unit price table as a measurement for payment, are to be included in the lump sum arrangement, as noted on the Bid and Acceptance Form.
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1.10 WORK SCHEDULE

- .1 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.
- .2 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.
- .3 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.
- .4 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.
- .5 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.
- .6 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

1.11 ABBREVIATIONS
(Cont'd)

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.

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- 1.15 PROTECTION (Cont'd)
- .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 DOCUMENTS REQUIRED
- .1 Maintain at job site, one copy of the following:
- .1 Contract Drawings
 - .2 Specifications
 - .3 Addenda
 - .4 Reviewed Shop Drawing
 - .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.
- 1.17 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 advise 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.
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- 1.18 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. This includes patching of openings in existing work resulting from removal of existing services.
 - .3 Do not cut, bore, or sleeve load-bearing members.
 - .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- 1.19 EXISTING SUB-SURFACE CONDITIONS
- .1 Information pertaining to the existing sub-surface conditions may be available by contacting the Departmental Representative.
 - .2 Contractors are cautioned that any previous investigations that may be available for review, were intended to provide general site information only. Any interpolation and/or assumptions made relative to any previous investigations is the Contractor's responsibility.
- 1.20 LOCATION OF EQUIPMENT
- .1 Location of cleats, ladders, jib crane, electrical pedestals, and utility light poles, fixtures, 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 Inform Departmental Representative when impending installation conflicts with other new or existing components. Follow directives for actual location.
 - .3 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 and in accordance with authorization for work or undertakings affecting fish habitat.
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- 1.21 FISH HABITAT .2 Contact the Department of Fisheries and Oceans
(Cont'd) Protection Program and Infrastructure Unit at (709)
772-3521 at least 10 days in advance of starting any
work on site.
- 1.22 NOTICE TO .1 Notify the Marine Communications and Traffic
SHIPPING/MARINERS Services' Centre, of Fisheries and Oceans Canada, at
(709) 695-2168, 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 .1 Responsible for coordinating the work of the various
COORDINATION 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
those trades 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.
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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.
- .2 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.

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 .1
OF DOCUMENTS

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 SECTION INCLUDES .1 Inspecting and testing by inspecting firms or testing laboratories designated by Departmental Representative.
- 1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various sections.
- 1.3 APPOINTMENT AND PAYMENT .1 Departmental Representative will appoint and pay for services of testing laboratory except for the following:
.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 Mill tests and certificates of compliance.
.4 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
.5 Tests requested by Departmental Representative to confirm material specifications when the applicable manufacturer's documentation or test results are unavailable.
.6 Additional tests specified in the following paragraph.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental 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.

1.4 CONTRACTOR'S
RESPONSIBILITIES
(Cont'd)

- .1 (Cont'd)
 - .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, sar 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 are co-ordinated.

1.2 SUBMITTAL
GENERAL
(Cont'd)

- .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 Submit 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 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.
- .3 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.

1.3 SHOP DRAWINGS
AND PRODUCT DATA
(Cont'd)

- .3 (Cont'd)
 - .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.
 - .4 Allow 15 calendar days for Departmental Representative's review of each submission.
 - .5 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.
 - .6 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.
 - .7 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .8 Submissions include:
 - .1 Date and revision dates.

- 1.3 SHOP DRAWINGS .8 (Cont'd)
AND PRODUCT DATA
(Cont'd)
- .2 Project title and 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.
 - .9 After Departmental Representative's review, distribute copies.
 - .10 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 the Departmental Representative 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 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 SCHEDULE,
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

PART 1 - GENERAL

- 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 29 - Health and Safety Requirements.
- 1.3 REFERENCES .1 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
.1 FCC No. 301-June 1982 Standard for Construction Operations (http://ccinfoweb2.ccohs.ca/legislation/documents/fpfcstde/fc301_e.htm).
.2 FCC No. 302-June 1982 Standard for Welding and Cutting (http://ccinfoweb2.ccohs.ca/legislation/documents/fpfcstde/fc302_e.htm).
.2 National Fire Code 2015.
.3 National Building Code 2015.
- 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.
.4 Use of open flame torches such as for roofing work.
- 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-Submittal Procedures.

1.6 FIRE SAFETY
REQUIREMENTS

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Fire Code, 2015
 - .2 Fire Protection Standards FCC 301 and FCC 302.
 - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29 - Health and Safety Requirements.
- .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.

- 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 29 -Health and Safety Requirements.
 - .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 carryout 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 29 Health and Safety Requirements.
 - .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 29 - Health and Safety Requirements.
- 1.9 HOT WORK PERMIT
- .1 Hot Work Permit to include, as a minimum, the following data:

- 1.9 HOT WORK PERMIT
(Cont'd)
- .1 (Cont'd)
- .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 FIRE PROTECTION AND ALARM SYSTEMS
ALARM SYSTEMS
- .1 Fire protection and alarm systems shall not be:
- .1 Obstructed.
 - .2 Shut-off, unless approved by Departmental Representative.
 - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

1.10 FIRE
PROTECTION AND
ALARM SYSTEMS
(Cont'd)

- .3 Costs incurred, from the fire department, Facility owner (and tenants), resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.

1.11 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.

PART 1 - GENERAL

- 1.1 SECTION INCLUDES .1 Procedures to isolate and lockout electrical facility or other equipment from energy source.
- 1.2 RELATED WORK .1 Section 01 35 24 - Special Procedures On Fire Safety Requirements.
.2 Section 01 35 29- Health and Safety Requirements.
- 1.3 REFERENCES .1 C22.1-15 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
.2 CAN/CSA C22.3 No. 1-15 - Overhead Systems.
.3 CAN/CSA C22.3 No. 7-15 - Underground Systems.
.4 COHS, Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- 1.4 DEFINITIONS .1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
.2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment is isolated.
.3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
.4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.

1.4 DEFINITIONS
(Cont'd)

- .5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.
- .6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

1.5 COMPLIANCE
REQUIREMENTS

- .1 Perform lockouts in compliance with:
 - .1 Canadian Electrical Code 2015.
 - .2 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29 - Health and Safety Requirements.
 - .3 Regulations and code of practice as applicable to mechanical equipment or other machinery being de-energized.
 - .4 Procedures specified herein.
- .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.

1.6 SUBMITTALS

- .1 Submit copy of proposed Lockout Procedures and sample form of lockout permit or lockout tags for review.
- .2 Submit documentation within 7 calendar days of acceptance of bid. Do not proceed with work until submittal has been reviewed by Departmental Representative.
- .3 Submit above documents in accordance with the submittal requirements specified in Section 01 33 00- Submittal Procedures.
- .4 Resubmit Lockout Procedures with noted revisions as may result from Departmental Representative's review.

1.7 ISOLATION OF
EXISTING SERVICES

- .1 Obtain Departmental Representative's written authorization prior to conducting work on an existing active, energized service or facility required as part of the work and before proceeding with lockout of such services or facility.
- .2 To obtain authorization, submit to Departmental Representative the following documentation:
 - .1 Written Request for Isolation of the service or facility and;
 - .2 Copy of Contractor's Lockout Procedures.
- .3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, and as follows:
 - .1 Fill-out standard forms in current use at the Facility when so directed by Departmental Representative or;
 - .2 Where no form exist at Facility, make request in writing identifying:
 - .1 Identification of system or equipment to be isolated, including it's location;
 - .2 Time duration, indicating Start time and date, and Completion time and date when isolation will be in effect;
 - .3 Voltage of service feed to system or equipment being isolated;
 - .4 Name of person making the request.
 - .3 Document to be in typewritten format.
- .4 Do not proceed until receipt of written notification from Departmental Representative granting the Isolation Request and authorizing to proceed with the isolation of designated equipment or facility. Departmental Representative may designate other individual at the Facility as the person authorized to grant the Isolation Request.
- .5 Conduct safe, orderly shut down of equipment or facilities, de-energize and isolate power and other sources of energy and lockout items in accordance with requirement of clause 1.8 below.
- .6 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of facility operations.

1.7 ISOLATION OF
EXISTING SERVICES
(Cont'd)

- .7 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require a Request for Isolation. Follow Departmental Representative's directives in this regard.
- .8 Conduct hazard assessment as part of the planning process of isolating existing equipment and facilities. Hazard Assessments to conform with requirements of Health and Safety Section 01 35 29 - Health and Safety Requirements.

1.8 LOCKOUTS

- .1 Isolate and lockout electrical facilities, mechanical equipment and machinery from all potential energy sources prior to starting work on such items.
- .2 Develop and implement lockout procedures to be followed on site as an integral part of the Work.
- .3 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
- .4 Use industry standard lockout tags.
- .5 Provide appropriate safety grounding and guards as required.
- .6 Prepare Lockout Procedures in writing. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tagout facilities and equipment.
- .7 Include within procedures a system of worker request and issuance of individual lockout permit by a person, employed by Contractor, designated to be "in-charge" and being responsible for:
 - .1 Controlling issuance of permits or tags to workers.
 - .2 Determining permit duration.
 - .3 Maintaining record of permits and tags issued.
 - .4 Submitting a Request for Isolation to Departmental Representative when required in accordance with Clause 1.7 above.
 - .5 Designating a Safety Watcher, when one is required based on type of work.

1.8 LOCKOUTS
(Cont'd)

- .7 (Cont'd)
 - .6 Ensuring equipment or facility has been properly isolated, providing a Guarantee of Isolation to worker(s) prior to proceeding with work.
 - .7 Collecting and safekeeping lockout tags, returned by workers, as a record of the event.
- .8 Clearly establish, describe and allocate, within procedures, the responsibilities of:
 - .1 Workers.
 - .2 Designated person controlling issuance of lockout tags/permits.
 - .3 Safety Watcher.
 - .4 Subcontractors and General Contractor.
- .9 Procedures shall meet the requirements of Codes and Regulations specified in clause 1.5 above.
- .10 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the procedures applicable to this contract.
 - .1 Incorporate site specific rules and procedures established by Facility Manager and in force at site. Obtain such procedures through Departmental Representative.
- .11 Procedures to be in typewritten format.
- .12 Submit copy of Lockout Procedures to Departmental Representative, in accordance with submittal requirements of clause 1.6 herein, prior to commencement of work.

1.9 CONFORMANCE

- .1 Ensure that lockout procedures, as established for project on site, are stringently followed. Enforce use and compliance by all workers.
- .2 Brief all persons working on electrical facilities, mechanical and other equipment fed by an energy source on requirements of this section.
- .3 Failure to perform lockouts in accordance with regulatory requirements or follow procedures specified herein 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 29 - Health and Safety Requirements.

1.10 DOCUMENTS ON
SITE

- .1 Post Lockout Procedures on site in common location for viewing by workers.
- .2 Keep copies of Request for Isolation submitted to Departmental Representative and lockout permits or tags issued to workers during the course of work for full project duration.
- .3 Upon request, make such data available to Departmental Representative or to authorized safety representative for inspection.

PART 1 - GENERAL

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 DEFINITIONS

- .1 COHS: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
 - .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
 - .2 Knowledge about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
 - .3 Knowledgeable about potential or actual danger to health and safety associated with the Work.
- .3 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.
- .4 PPE: personal protective equipment.
- .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Closeout Submittals.
 - .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
 - .1 Submit within 10 work days of notification of Bid Acceptance. Provide 3 copies. Allow for 5-10 days for Departmental Review and recommendations prior to the commencement of work.
-

1.3 SUBMITTALS
(Cont'd)

- .2 (Cont'd)
- .2 Departmental Representative will review Health and Safety Plan and provide comments.
 - .3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
 - .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
 - .3 Submit name of designated Health & Safety Site Representative and support documentation specified in the Safety Plan.
 - .4 Submit building permit, compliance certificates and other permits obtained.
 - .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
 - .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
 - .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
 - .7 Submit copies of incident reports.
 - .8 Submit WHMIS MSDS - Material Safety Data Sheets.

1.4 COMPLIANCE
REQUIREMENTS

- .1 Comply with the Occupational Health and Safety Act for the Province of Newfoundland and Labrador, and the Occupational Health and Safety Regulations made pursuant to the Act.
 - .2 Comply with Canada Labour Code Part II, (entitled Occupational Health and Safety) and the Canada Occupational Safety and Health Regulations (COSH) as well as any other regulations made pursuant to the Act.
 - .1 The Canada Labour Code can be viewed at: <http://laws.justice.gc.ca/eng/L-2/>.
 - .2 COSH can be viewed at: <http://laws.justice.gc.ca/eng/SOR-86-304/ne.html>.
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1.4 COMPLIANCE
REQUIREMENTS
(Cont'd)

- .2 (Cont'd)
 - .3 A copy may be obtained at: Canadian Government Publishing Public & Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: (819) 956-4800 (1-800-635-7943) Publication No. L31-85/2000 E or F).
- .3 Treasury Board of Canada Secretariat (TBS):
 - .1 Treasury Board, Fire Protection Standard April 1, 2010
www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316§ion=text.
- .4 Canadian Standards Association (CSA):
 - .1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.
- .5 Observe construction safety measures of:
 - .1 Part 8 of National Building Code 2015.
 - .2 Provincial Worker's Compensation Board.
 - .3 Municipal by-laws and ordinances.
- .6 In case of conflict or discrepancy between any specified requirements, the more stringent shall apply.
- .7 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter of Good Standing.
- .8 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.

1.5 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of the Work.
- .2 Comply with and 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 by-laws, regulations, and ordinances, and with site specific Health and Safety Plan.

1.6 SITE CONTROL
AND ACCESS

- .1 Control the work and entry points to Work Site. Approve and grant access only to workers and authorized persons.
 - .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter onto Work Site and will ensure that such authorized personnel have the required knowledge and training on Health and Safety pertinent to their reason for being at the site, however, Contractor remains responsible for the health and safety of authorized persons while at the Work Site.
- .2 Isolate work site from other areas of the premises by use of appropriate means.
 - .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment.
 - .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
 - .3 Use professionally made signs with bilingual message in the 2 official languages or international know graphic symbols.
- .3 Provide safety orientation session to persons granted access to Work site. Advise of hazards and safety rules to be observed while on site.
- .4 Ensure persons granted site access wear appropriate personal protective equipment (PPE). Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
- .5 Secure Work Site against entry when inactive or unoccupied and to protect persons against harm. Provide security guard where adequate protection cannot be achieved by other means.

1.7 PROTECTION

- .1 Give precedence to safety and health of persons and protection of environment over cost and schedule considerations for Work.

-
- 1.7 PROTECTION
(Cont'd)
- .2 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.
- 1.8 FILING OF NOTICE
- .1 File Notice of Project with pertinent provincial health and safety authorities prior to beginning of Work.
.1 Departmental Representative will assist in locating address if needed.
- 1.9 PERMITS
- .1 Post permits, licenses and compliance certificate, specified in section 01 10 10, at Work site.
- .2 Where particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed prior to carrying out application portion of work.
- 1.10 HAZARD ASSESSMENTS
- .1 Perform site specific health and safety hazard assessment of the work and its site.
- .2 Carry out initial assessment prior to commencement of work with further assessments as needed during progress of work, including when new trades and subcontractors arrive on site.
- .3 Record results and address in Health and Safety Plan.
- .4 Keep documentation on site for entire duration of the Work.
- 1.11 PROJECT/SITE CONDITIONS
- .1 The following are known or potential project related safety hazards at site:
.1 The following are known or potential project related safety hazards at site:
.1 Working in close proximity of water.
.2 Wet and slippery conditions.
.3 Inclement weather.
-

- 1.11 PROJECT/SITE .1 (Cont'd)
CONDITIONS .1 (Cont'd)
(Cont'd)
- .4 Rock moving activities involving large armour stone.
 - .5 Heavy equipment activity.
 - .6 Heavy lifting.
 - .7 Working at heights.
 - .8 Cutting tools and other construction power tools.
 - .9 Overhead and underground power/utility lines.
 - .10 Risk of electric shock.
 - .11 Vehicular and pedestrian traffic.
 - .12 Hot/cold temperature extremes.
 - .13 Work with hazardous products.
- .2 Above list shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work.
- .3 Include above items into hazard assessment process.
- .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.
- 1.12 MEETINGS .1 Attend pre-construction health and safety meeting, convened and chaired by Departmental Representative, prior to commencement of Work, at time, date and location determined by Departmental Representative. Ensure attendance of:
- .1 Superintendent of work.
 - .2 Designated Health and Safety Site Representative.
 - .3 Subcontractors.
- .2 Conduct regularly schedule tool box and safety meetings during the work in conformance with occupational Health and Safety Regulations.
- .3 Keep documents on site.
- 1.13 HEALTH AND SAFETY PLAN .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.

1.13 HEALTH AND
SAFETY PLAN
(Cont'd)

- .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified.
 - .3 On-Site Contingency and Emergency Response Plan as specified below.
 - .4 On-Site Communications Plan as specified below.
 - .5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.
 - .6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.
- .3 On-site Contingency and Emergency Response Plan shall include:
 - .1 Operational Procedures, evacuation measures and communication process to be implemented in the event of an emergency.
 - .2 Evacuation Plan: site and floor plan layouts showing escape routes, marshaling areas. Details on alarm notification methods, fire drills, location of fire fighting equipment and other related data.
 - .3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.
 - .4 Emergency Contacts: name and telephone number of officials from:
 - .1 General Contractor and subcontractors.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
 - .5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name or DFO and Facility Management Contacts.
- .4 On-site Communication Plan:
 - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
 - .2 List of critical work activities to be communicated with Facility manager which have a risk of endangering health and safety of Facility users.

1.13 HEALTH AND
SAFETY PLAN
(Cont'd)

- .5 Address all work activities of the work including those of subcontractors.
- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor arrive at Work Site.
- .7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.
- .8 Post copy of Plan and updates, prominently on work site.

1.14 SAFETY
SUPERVISION

- .1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.
- .2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
 - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work.
 - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
 - .3 Conduct site safety orientation session to persons granted access to Work Site.
 - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
 - .5 Stop the Work as deemed necessary for reasons of health and safety.
- .3 Health & Safety Site Representative must:
 - .1 Be qualified and competent person in occupational health and safety.
 - .2 Have site-related working experience specific to activities of the Work.
 - .3 Be on Work Site at all times during execution of the Work.
 - .4 All supervisory personnel assigned to the Work shall also be competent persons.
 - .5 Inspections:

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- 1.14 SAFETY SUPERVISION (Cont'd)
- .3 (Cont'd)
 - .5 (Cont'd)
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
 - .2 Conduct formal inspections on a minimum monthly basis. Use standardized safety inspection forms. Distribute to subcontractors.
 - .3 Follow-up and ensure corrective measures are taken.
 - .6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
 - .7 Keep inspection reports and supervision related documentation on site.
- 1.15 TRAINING
- .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
 - .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.
 - .3 When unforeseen or peculiar safety-related hazard, or condition occur during performance or Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.
- 1.16 MINIMUM SITE SAFETY RULES
- .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, ensure the following minimum safety rules are obeyed by persons granted access to Work Site:
 - .1 Wear appropriate personnel protective equipment (PPE) pertinent to the work or assigned task; minimum being hard hat, safety footwear, safety glasses and hearing protection.
 - .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
 - .3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
 - .4 Obey warning signs and safety tags.
-

- 1.16 MINIMUM SITE SAFETY RULES (Cont'd) .2 Brief persons of disciplinary protocols to be taken for non-compliance. Post rules on site.
- 1.17 CORRECTION OF NON-COMPLIANCE .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative will stop Work if non-compliance of health and safety regulations is not corrected in a timely manner.
- 1.18 INCIDENT REPORTING .1 Investigate and report the following incidents to Departmental Representative:
- .1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
- .2 Medical aid injuries.
- .3 Property damage in excess of \$10,000.00.
- .4 Interruptions to Facility operations resulting in an operational loss to a Federal Department in excess of \$5000.00.
- .2 Submit report in writing.
- 1.19 HAZARDOUS PRODUCTS .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site.
- .1 Post on site.
- .2 Submit copy to Departmental Representative.
- 1.20 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.
-

1.20 TOOLS AND
EQUIPMENT SAFETY
(Cont'd)

- .3 Tag and immediately remove from site items found faulty or defective.

1.21 BLASTING

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

1.22 POWDER
ACTUATED DEVICES

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

1.23 CONFINED
SPACES

- .1 Abide by occupational health and safety regulations regarding work in confined spaces.
- .2 Obtain an Entry Permit in accordance with Part XI of the Canada Occupational Health and Safety Regulations for entry into an existing identified confined space located at the Facility of premises of Work.
 - .1 Obtain permit from Facility Manager.
 - .2 Keep copy of permit issued.
 - .3 Safety for Inspectors:
 - .1 Provide PPE and training to Departmental Representative and other persons who require entry into confined space to perform inspections.
 - .2 Be responsible for efficacy of equipment and safety of persons during their entry and occupancy in the confined space.

1.24 SITE RECORDS

- .1 Maintain on work site a copy of safety regulated documentation and reports stipulated to be produced in compliance with Acts and Regulations of authorities having jurisdiction and of those documents specified herein.
- .2 Upon request, make available to Departmental Representative, or authorized safety officer for inspection.

1.25 POSTING OF
DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post other documents as specified herein, including:
 - .1 Site specific Health and Safety Plan.
 - .2 WHMIS data sheets.

1.26 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 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 Newfoundland and Labrador who is knowledgeable and competent in diving and hyperbaric medicine, for all dives.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- 1.2 DEFINITIONS .1 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.
- 1.3 FIRES .1 Fires and burning of rubbish on site are not permitted.
- 1.4 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS .1 All creosote/CCA or preservative treated timber obtained from the demolition of the existing structure is to be transported and disposed of at an approved Waste Disposal Facility and in accordance with applicable federal/provincial and municipal legislation and regulations. Refer to Appendix A - Project Effects Determination Report.
- .2 Reuse/storage of creosote/CCA or preservative treated timbers outside of the work site is strictly prohibited.
- .3 Dispose of construction waste materials and demolition debris, resulting from work, at approved landfill sites only. Carryout such disposal in strict accordance with provincial and municipal rules and regulations. Separate out and prevent improper disposal of items banned from landfills.
- .4 Do not bury rubbish and waste materials on site. Dispose at approved landfill sites as specified in Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .5 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.

1.4 DISPOSAL OF
WASTES AND
HAZARDOUS MATERIALS
(Cont'd)

- .6 Store, handle and dispose of hazardous materials and hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.
- .7 Establish methods and undertake construction practices which will minimize waste and optimize use of construction materials. Separate at source all construction waste materials, demolition debris and product packaging and delivery containers into various waste categories in order to maximize recycling abilities of various materials and avoid disposal of debris at landfill site(s) in a "mixed state". Where recycling firms, specializing in recycling of specific materials exist, transport such materials to the recycling facility and avoid disposal at landfill sites.
- .8 Communicate with landfill operator prior to commencement of work, to determine what specific construction, demolition and renovation waste materials have been banned from disposal at the landfill and at transfer stations.

1.5 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing regulations and requirements.
- .4 Pumped water must meet applicable federal, provincial, and municipal standards before it can be discharged to a surface water body. If regulatory guidelines exceedences are noted, the Departmental Representative has the right to issue stop pumping instructions to the Contractor. Contractor will not be compensated for any delays associated with retrofitting equipment to meet guidelines.
- .5 Provide control devices such as filter fabrics, sediment traps and settling ponds to control drainage and prevent erosion of adjacent land. Maintain in good order for duration of work.

-
- 1.6 PERMIT .1 All guidelines and instructions stated on permits must be strictly adhered to.
- 1.7 WORK ADJACENT TO WATERWAYS .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial and federal environmental regulations.
- .5 Do not skid logs or construction materials across waterways.
- .6 Do not refuel any type of equipment within 100 m of a water body. Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.
- 1.8 POLLUTION CONTROL .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and around entire construction site.
- .5 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.
-

1.8 POLLUTION
CONTROL
(Cont'd)

- .6 Have emergency spill response equipment and rapid clean-up kit, appropriate to work, at site. Locate adjacent to work and where hazardous materials are stored. Provide personal protective equipment as required for clean-up.
- .7 Report, to Federal and Provincial Department of the Environment, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment. Also notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.
- .8 Provide a floating debris containment boom whenever any of the Contractors methods of work allow for the potential of floating debris.

1.9 WILDLIFE
PROTECTION

- .1 Should nests of migratory birds be encountered during work, immediately notify Departmental Representative for directives to be followed.
 - .1 Do not disturb nest site and neighbouring vegetataion 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.

PART 1 - GENERAL

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 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.

1.6 PROCEDURES
(Cont'd)

- .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 test, 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 - Closeout Submittals.
- .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.

1.9 MOCK-UPS
(Cont'd)

- .2 Construct in locations acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in 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 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 schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative unless approval is given to remain as part of Work.

PART 1 - GENERAL

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 2400 mm x 3600 mm. It will have a suitable frame covered with a weatherproof siding and lined with plywood or other approved material. The floor will be of 19 mm thick material. It will be provided with suitable window with at least 1 m² of glass and arranged to provide at least 0.5 m² 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 900 mm x 1500 mm 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.

1.3 DEPARTMENTAL
REPRESENTATIVE'S
SITE OFFICE
(Cont'd)

- .7 Arrange and pay for telephone, internet and facsimile machine in the Departmental Representative's Office for Site Representative's exclusive use. Long distance calls or faxes placed on this phone by the Departmental Representative or the Site Representative will be paid by the Departmental Representative.
- .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.

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 Z797-09 (R2014).
- .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 (R2006).
 - .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 enclosures using 1.8 m high x 2.4 m long welded wire galvanized mesh panel with end post of 32 mm dia. galvanized tubes. Each panel shall have a "hook" end of clamp system to engage the top of the adjoining panel post. Panel support base plate of 12 ga. galvanized steel plate with double "stems" to engage and support tube frame ends.
- .2 Provide (2) swing frame gates using galvanized steel tube 50 mm and vertical and horizontal bars rigid frame wire mesh to match fence panels. Provide hinge to structurally support all gates without deformation gravity system that is self-latching. Provide one drop bar to secure in closed position and padlock for night security. Keys to be supplied to Departmental Representative.
- .3 Secure fencing at established boundary lines inside property lines as shown on drawings and/or determined by Departmental Representative. Second base plates to ground with 15 mm x 250 mm long (2 pen plate) lag screws placed into existing asphalt. After removal, fill holes with cold patch.

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 not in place.
- .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.

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for board, lodgings and related services to be provided by the Contractor for the Inspector.
- .2 Due to the location of this site, it is a requirement of this contract that the Contractor provide and pay for all board and lodgings for the Inspector's sole use for the duration of the project. Provide for and maintain acceptable living accommodations for the Inspector's sole use. The minimum requirement would be a self-contained unit with private sleeping accommodation and shower or bath or other arrangement approved by the Inspector.

1.2 BOARD AND LODGINGS

- .1 For the purpose of this contract board and lodgings shall include but not necessarily be limited to: sleeping accommodation, meals and dining facilities, washroom facilities, laundry facilities, electrical and heating service, linens and bedding, etc. and any reasonable service as directed by the Inspector.
- .2 Board and lodgings must be approved by the Inspector and Contractor will cooperate in providing all services required to maintain an acceptable standard of living during construction period.
- .3 The Contractor shall include all calendar days, including weekends and statutory holidays in determining the cost.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Comply with any or all applicable Agencies regulation of the Province of Newfoundland and Labrador, relating to the set up, servicing and maintenance of accommodations for the Inspector.

1.4 MEASUREMENT FOR PAYMENT

- .1 No measurement for payment to be made under this section including all cost of this section in the lump sum items of this contract.

PART 1 - GENERAL

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 classifications 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.

1.3 ACCEPTABLE
MATERIALS AND
ALTERNATIVES
(Cont'd)

- .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 29 - Health and Safety Requirements 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. 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.
- .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.

1.9 STORAGE,
HANDLING AND
PROTECTION

(Cont'd)

- .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.

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.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 02 41 16 - Sitework, Demolition and Removal.

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.

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.
-

1.4 WASTE REDUCTION
(Cont'd)

- .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 MATERIALS
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 components and equipment following a systematic deconstruction process.
-

1.6 WORKER
TRAINING AND
SUPERVISION
(Cont'd)

- .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 All creosote/CCA or preservative treated timber obtained from the demolition of the existing structure is to be transported and disposed of at an approved Waste Disposal Facility and in association with applicable federal/provincial and municipal legislation and regulations. Refer to Appendix A - Project Effects Determination Report.
- .2 Reuse/storage of creosote/CCA or preservative treated timbers outside of the work site is strictly prohibited.
- .3 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.
- .4 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.
- .5 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.

1.8 DISPOSAL
REQUIREMENTS
(Cont'd)

- .6 Dispose of treated wood, end pieces, wood scraps and sawdust at a sanitary landfill.
- .7 Do not dispose of preservative treated wood through incineration.
- .8 Disposal of waste, volatile materials, mineral spirits, oil, paint, paint thinner or unused preservative material into waterways, storm, or sanitary sewers is prohibited.
- .9 Burying or burning of rubbish and waste materials is prohibited.
- .10 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.
- .11 Sale of salvaged items by Contractor to other parties not permitted on site.

PART 1 - GENERAL

1.1 SECTION
INCLUDES

- .1 Project Record Documents as follows:
 - .1 As-built drawings;
 - .2 As-built specifications;
 - .3 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 CHS 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.

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- 1.2 PROJECT RECORD .4 (Cont'd)
DOCUMENTS .3 (Cont'd)
(Cont'd)
- .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.
- .7 Record information concurrently with construction progress.
- .1 Do not conceal Work until required information is recorded.
- .8 Provide digital photos, if requested, for site records.
- 1.3 EQUIPMENT AND .1 For each item of equipment and each system include
SYSTEMS description of unit or system and component specifications.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communication.
- .3 Include installed colour coded wiring diagrams.
-

- 1.4 WARRANTIES AND BONDS
(Cont'd)
- .4 (Cont'd)
- .2 List subcontractor, supplier and manufacturer with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- .4 Retain warranties and bonds until time specified for submittal.
- .5 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .6 Respond in a timely manner to oral or written notification of required construction warranty repair work.
- 1.5 REVIEWED SHOP DRAWINGS
DRAWINGS
- .1 Compile 2 full sets of all reviewed shop drawings.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.2 DESCRIPTION

- .1 This section specifies requirements for demolishing and removing wholly or in part various items designated to be removed or partially removed.

1.3 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.

1.4 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.

1.5 MEASUREMENT FOR
PAYMENT

- .1 All cost for items in this section is to be measured in fixed price items including all plant, labour, material required to complete this work as indicated on drawings and specifications.
-

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 Demolition, removal and disposal of all existing hardwood timber decking members and PT support beams.
- .2 Demolition of all concrete supports and reuse these supports in the backfilling of the new work to be completed.
- .3 Demolition, removal and disposal of existing steel support beams, brackets and associated steel items as indicated on drawings.
- .4 Demolition, removal and disposal of the existing asphalt that is indicated for removal on the accompanying drawings.

3.3 DISPOSAL OF MATERIAL

- .1 All demolished materials, except materials designated to be reused or turned over to owner, 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. Refer to Sections 01 35 43 - Environmental Procedures and Section 01 74 21 - Construction/Demolition Waste Management and Disposal for disposal requirements.
- .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-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction.
 - .2 CAN/CSA-O86-14, Engineering Design in Wood.
 - .3 CSA O121-08 (R2013), Douglas Fir Plywood.
 - .4 CSA O151-09 (R2014), Canadian Softwood Plywood.
 - .5 CSA O153-M13, Poplar Plywood.
 - .6 CAN3-0188.0-M78, Standard Test Methods for Mat-Formed Wood Particleboards and Waferboard.
 - .7 CSA O437 Series-93 (R2011), Standards for OSB and Waferboard.
 - .8 CSA S269.1-16, Formwork and Falsework.

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 S269.1-16, for falsework drawings Comply with CAN/CSA-S269.1-16 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 Newfoundland and Labrador, 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-A23.1-16.
- .2 Form ties:
 - .1 Removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm 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-S269.1-16.
 - .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 fiberboard 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 S269.1-16.
- .5 Fabricate and erect formwork in accordance with CAN/CSA-S269.1-16 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-S269.1-16.
- .6 Align form joints and make watertight. Keep form joints to minimum.
- .7 Use 25 mm chamfer strips on external corners and/or 25 mm 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/A23.2, before placing concrete.

3.2 REMOVAL AND
RESHORING

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 5 days, slabs, supports, decks and other structural members, or 3 days when replaced immediately with adequate shoring to standard specified for falsework.

3.2 REMOVAL AND
RESHORING
(Cont'd)

- .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/A23.2.

3.3 JOINT FILLERS

- .1 Locate and form expansion joints as indicated. Intall joint filler in all joints.
- .2 Use 13 mm thick joint filler to separate slab-on-grade and extend joint filler from bottom of slab to within 25 mm of finished slab surface unless indicated otherwise.

3.4 JOINT SEALANT

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

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 SP-66-04, ACI Detailing Manual 2004.
 - .1 ACI 315-99, Details and Detailing of Concrete Reinforcement.
 - .2 ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
 - .2 ASTM International
 - .1 ASTM A1064/A1064M-16b, Standard for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
 - .2 ASTM A143/A143M-07(2014), Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
 - .3 ASTM A775/A775M-16, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
 - .4 ASTM-A123/A123M-15, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 CSA International
 - .1 CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CSA-A23.3-14, Design of Concrete Structures.
 - .3 CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA G40.20-13/G40.21-13, General Requirement for Rolled or Welded Structural Quality Steels/Structural Quality Steel.
 - .5 CSA W186-M1990 (R2012), Welding of Reinforcing Bars in Reinforced Concrete Construction.
 - .4 Reinforcing Steel Institute of Canada (RSIC)
 - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.3 ACTION AND
INFORMATIONAL
SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 -
Submittal Procedures.
- .2 Prepare reinforcement drawings in accordance
with RSIC Manual of Standard Practice and ACI 315.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by
professional engineer registered or licensed in
Newfoundland and Labrador.
 - .1 Indicate placing of reinforcement and:
 - .1 Bar bending details.
 - .2 Lists.
 - .3 Quantities of reinforcement.
 - .4 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.
 - .5 Indicate sizes, spacings and
locations of chairs, spacers and
hangers.
 - .2 Detail lap lengths and bar development
lengths to CSA-A23.3.

1.4 QUALITY
ASSURANCE

- .1 Submit in accordance with Section 01 45 00 -
Quality Control and as described in PART 2 -
SOURCE QUALITY CONTROL.
 - .1 Mill Test Report: Upon request, provide
Departmental Representative with certified copy of
mill test report of reinforcing steel, minimum 4
weeks prior to beginning reinforcing work.
 - .2 Upon request submit in writing to
Departmental Representative proposed source of
reinforcement material to be supplied.

1.5 DELIVERY,
STORAGE AND
HANDLING

- .1 Deliver, store and handle materials in accordance
with Section 01 61 00 - Common Product
Requirements and with manufacturer's written
instructions.
- .2 Delivery and Acceptance Requirements: deliver
materials to site in original factory packaging,
labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:

- 1.5 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)
- .3 (Cont'd)
- .1 Store materials off ground, indoors, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

- 1.6 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-G30.18.
 - .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.

- 2.2 FABRICATION
(Cont'd)
- .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 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 300 mm: tie at alternate intersections.
.2 300 mm 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.

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies requirements for supply, placing, finishing, protecting and curing cast-in-place concrete or reinforced concrete apron, concrete support piers, and concrete boat launch ramp.
- 1.2 RELATED SECTIONS .1 Section 03 10 00 - Concrete Forming and Accessories.
.2 Section 03 20 00 - Concrete Reinforcing.
.3 Section 32 11 23 - Aggregate Base Course.
.4 Section 03 37 26 - Underwater Placed Concrete.
- 1.3 REFERENCES .1 ASTM International
.1 ASTM C109/C109M-16a, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens).
.2 ASTM C260/C260M-10a (2016), Standard Specification for Air-Entraining Admixtures for Concrete.
.3 ASTM C494/C494M-16, Standard Specification for Chemical Admixtures for Concrete.
.4 ASTM C1017/C1017M-e1, Standard Specification for Preformed Chemical Admixtures for Use in Producing Flowing Concrete.
.5 ASTM D1751-04 (2013e1), Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
.6 ASTM D1752-04a (2013), Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
- .2 Canadian Standards Association (CSA International)
.1 CAN/CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
.2 CSA A283-06 (R2016), Qualification Code for Concrete Testing Laboratories.
.3 CSA-A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
.1 CSA-A3001-03, Cementitious Materials for Use in 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 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.
- .5 Shop Drawings:
 - .1 Submit shop drawings for the concrete panels to be reviewed and approved prior to manufacturing including product literature and data sheets for the concrete mix design, characteristics, sizes and finishes.

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.
- .4 Deliver and store concrete panels in a secure location and protect from damage.
- .5 Replace any defective or damaged panels with new.

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.

1.8 MEASUREMENT FOR
PAYMENT

- .1 Reinforced Concrete Apron: Supply and installation of reinforced concrete to be measured in square meters (m²) calculated from actual field measurement. Contractor to provide all plant, equipment, material, and labour including concrete, reinforcing steel, expansion and control joints.
- .2 Reinforced Concrete Footings: Supply and installation of reinforced concrete footings to be measured in (LM) linear meters. Contractors to provide all plant, equipment, materials and labour including concrete reinforcement and control joints.

1.8 MEASUREMENT FOR .3
PAYMENT
(Cont'd)

- Reinforced Concrete Piers: Supply and installation of reinforced concrete piers to be measured by the unit. Contractors to provide all plant, equipment, materials and labour including concrete reinforcement, anchor bolts and filler.
- .4 Boat Launchway
- .1 Reinforced cast-in-place launchway: Supply and installation of reinforced concrete cast-in-place boat launchway to be measured in square meters (m²) calculated from actual field measurements as specified, including reinforcing steel, anchor bolts, composite decking, control joints, false work, form work cement, plant and labour will be included in the price items for measurement purposes.
- .2 Reinforced concrete panels: Supply, placement, installation of reinforced concrete panels to be measured by the (unit). Size of each panel as identified in project drawings which includes reinforcing steel, steel bars, slab openings, grouting, composite decking, anchor bolts and panel anchoring system as detailed on project drawings.
- .3 Reinforced Concrete curb: Supply, placement, installation of reinforced concrete curb at the toe of the boat launchway to be measured by lump sum (LS). Work to include form work, false work, reinforcements, dowels, anchor rebar and tremie concrete to complete work as shown in construction drawings.
- .5 No separate payment will be made for any other ingredient or feature of concrete work, and all factors, including cold weather placement, reinforcing steel, formwork and falsework anchor bolts, joint filler for control joints, cement, plant and labour will be considered as being included in the unit price for item.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Cement: to CAN/CSA-A3001, Type GU.
- .2 Supplementary cementing materials: to CAN/CSA-A3001.
- .3 Cementitious hydraulic slag: to CAN/CSA-A3001.
- .4 Water: to CAN/CSA-A23.1.

2.1 MATERIALS
(Cont'd)

- .5 Aggregates: to CAN/CSA-A23.1. Coarse aggregate 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 Curling 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.
- .2 Proportion concrete to comply with Alternate 1, Table 2 in CAN/CSA-A23.1 and following requirements:
 - .1 Cement:
 - .1 Type GU Cement.
 - .2 Minimum compressive strength: 35 MPa at 28 days.
 - .3 Class of exposure: C2.
 - .4 20 mm nominal size coarse aggregate.
 - .5 Air content 5% to 8%.
 - .6 Density of air-dry concrete in range of 2240 kg/m³ to 2400 kg/m³.
 - .7 Slump at time and point of discharge 50 mm to 100 mm.
- .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.

2.2 MIXES
(Cont'd)

- .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.

2.3 PANEL
FABRICATED

- .1 Fabricate to CSA A23.A 4880 mm wide x 2740 mm length thick as indicated on drawings.
- .2 Finish: broom finish concrete perpendicular to traffic direction.
- .3 Provide precast anchor holes, lifting holes, in panels as indicated on project drawings.
- .4 Supply and install composite decking as indicated on drawings.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Obtain Departmental Representative's approval before placing concrete. Provide 24 hours 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.

3.1 PREPARATION
(Cont'd)

- .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.
- .7 Place tremie concrete to Section 03 37 26 - Underwater Placed Concrete.

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.
- .8 Install panels as indicated on drawings.
- .9 Secure panels in position by pre-drilling anchor holes and using adhesive capsules and 19 mm diameter stainless steel anchor rods (various lengths as required). Cut top of rods flush with top of panels. Grout all anchor holes above L.N.T.
- .10 Replace damaged or defective panels as directed by Departmental Representative.
- .11 Concrete curb to be installed after placement of the first concrete panel.

-
- 3.2 CONSTRUCTION
(Cont'd)
- .12 Place tremie concrete to Section 03 37 26 - Underwater Placed Concrete.
- .13 Remove form work 7 days after completion of the concrete placement.
- 3.3 FORMWORK
- .1 Install and strip formwork to CAN/CSA-A23.1 and Section 03 10 00 - Concrete Forming and Accessories.
- 3.4 INSERTS
- .1 Position and secure anchor bolts in formwork to maintain line and grades.
- 3.5 CONCRETE PANELS
ANCHOR ROD
- .1 To be 25 mm diameter HAS-R-316 stainless steel threaded rod complete with 100 mm diameter x 5 mm stainless steel washer and stainless steel nuts as required. Use epoxy adhesive capsule for anchorage rod to bedrock. Heavy duty two compound adhesive anchor consisting of a self-contained adhesive capsule. Install to manufacturer's instructions.
- 3.6 CONCRETE PIER
ANCHOR ROD
- .1 To be 19 mm diameter HAS-R-316 galvanized threaded rod x 500 mm long, 300 mm embedment into concrete pier. Rods to be complete with stainless steel nuts and washers. Countersink nuts into timberbeam and fill with elastomeric filler. See Section 07 92 10 - Joint Filler.
- 3.7 REBAR INSERTS
AND ANCHORING
- .1 Rebar for anchoring concrete piers and concrete curb to bedrock to be 20 mm rebar x 600 mm long (galvanized) with minimum embedment of 300 mm. Pre-drill hole and use heavy duty two compound adhesive capsules. Use to manufacturer's instructions.
- 3.8 CONTROL JOINTS
- .1 Construct control joints in locations shown on drawings or directed by Departmental Representative.
- .2 All joints will be centered over a support. Joints will be made in a perfectly straight line.
- .3 Cut control joint when concrete has hardened.
-

-
- 3.8 CONTROL JOINTS (Cont'd)
- .4 Fill saw cut with joint sealer as specified.
-
- 3.9 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.
-
- 3.10 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 65 mm 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.
-
- 3.11 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 The surface will be brought to the specified level by means of darbying or bull floating which will be carried out immediately following screeding and must be completed before any bleed water is present on the surface. Surface tolerance to be 8 mm under a 3 metre straight edge.
- .3 Provide slope as shown on the drawings to permit proper drainage of the concrete deck.
- .4 Finish slabs to elevations indicated on drawings.
- .5 Strike off the surface with a straight edge.
-

3.11 FINISHING
(Cont'd)

- .6 Hand tamp low slump concrete with jitterbug.
- .7 Darby or bull float the surface to smooth and level the concrete.
- .8 Allow bleed water or sheen to disappear.
- .9 Float the surface by means of power and/or hand float where the concrete has hardened enough for a man to leave only slight footprints on the surface.
- .10 Do not bring water and fines to the surface by over floating. Where extra floating is required the floating operation shall be repeated after the time interval necessary for any sheen to disappear and for concrete to set further.
- .11 Steel trowel the concrete surfaces by means of power and/or hand trowel. Do not leave any hard, smooth, polished or burnished surface area.
- .12 Do not bring water and fines to the surface by over trowelling.
- .13 After slight interval necessary for concrete to further harden, repeat the trowelling operation.
- .14 Lightly broom surface with a soft bristle broom obtaining a fine and even textured finish with a non-slip finish. All brush strokes to be perpendicular to the wharf face across the full width of deck to promote free draining of the deck finish.
- .15 The surface shall be true and accurate to a maximum tolerance of 1 mm in 500 mm.

3.12 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 In addition to the protective housing, the concrete must be cured as outlined in Clause 3.9.2 above.

3.13 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.

3.13 TESTING
(Cont'd)

- .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 25 m³ 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
REQUIREMENTS

- .1 Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCE
STANDARDS

- .1 American Concrete Institute (ACI)
.1 ACI 304R-00, Guide for Measuring, Mixing,
Transporting and Placing Concrete.
- .2 CSA International
.1 CSA A23.1/A23.2-09, Concrete Materials and
Methods of Concrete Construction/Test Methods and
Standard Practices for Concrete.

1.3 DEFINITIONS

- .1 Tremie concrete: concrete placed underwater
through tube called tremie pipe.
- .2 Tremie pipe: pipe has hopper at upper end and may
be open ended or may have foot valve, plug or
travelling plug to control flow of concrete. Pipe
has diameter of 200 mm minimum, constructed from
sections with flange couplings fitted with
gaskets.
.1 Concrete is placed in hopper and sufficient
head of concrete is maintained in tremie pipe to
provide desired rate of flow.
- .3 Pumped concrete method: method of placing concrete
underwater uses concrete pump with discharge line
used in similar manner to tremie pipe.
- .4 Bottom-dump bucket method: method of placing
concrete underwater requires use of bucket
designed to discharge from bottom after it has
contacted foundation or surface of previously
placed concrete.
- .5 Bagged concrete method: method of placing
underwater concrete consists of diver placing bags
partially filled with dry concrete mix.

1.4 ADMINISTRATIVE
REQUIREMENTS

- .1 Concrete pre-placement meeting; conduct
pre-placement meeting [2] weeks minimum before
tremie operation.

-
- 1.4 ADMINISTRATIVE .1 (Cont'd)
REQUIREMENTS .1 Ensure meeting includes as minimum attendees
(Cont'd) as follows:
- .1 General contractor.
 - .2 Ready-mix concrete supplier.
 - .3 Admixture supplier.
 - .4 Placing/formwork sub-contractor.
 - .5 Reinforcing sub-contractor.
 - .6 Testing agency representative.
 - .7 Structural engineer.
 - .8 Owners representative.
- .2 Distribute minutes to attendees including copies of concrete mix designs, aggregate physical properties, placing schedule, rate of delivery, testing program, and, contingency plan for delay and breakdown.
-
- 1.5 ACTION AND .1 Submit in accordance with Section 01 33 00 -
INFORMATIONAL Submittal Procedures.
SUBMITTALS
- .2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for concrete and include product characteristics, performance criteria, physical size, finish and limitations.
-
- 1.6 DELIVERY, .1 Deliver, store and handle materials in accordance
STORAGE AND with Section 01 61 00 - Common Product
HANDLING Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan, Waste Reduction Workplan related to Work of this Section.
-

- 1.6 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan, Waste Reduction Workplan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Concrete materials: to Section 03 30 00 - Cast-in-Place Concrete.
- 2.2 CONCRETE MIXES
- .1 Use type GU cement.
- .2 Minimum compressive strength at 28 days: 35 MPa.
- .3 Class of exposure: C2.
- .4 Maximum water cement ratio by mass: 0.45.
- .5 Nominal size of coarse aggregate: 20 mm.
- .6 Cement content for mixtures: 385 kg/m³ minimum.
- .7 Slump at point and time of submergence discharge: 65 to 110 mm.
- .8 Air dry density: 2240 kg/m³.
- .9 Admixtures: as approved in writing by Consultant. Use admixtures to correct deficiencies in mix or to improve placement of concrete.
- .1 Consultant may withdraw prior approval of admixture if conditions encountered during course of work indicate unsatisfactory results.
- .2 Do not use calcium chloride or materials containing calcium chloride.
- .3 Submit admixtures to produce self consolidating concrete to Departmental Representative for review.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for concrete placement installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

- .1 Where concrete must bond to existing surfaces, clean surfaces before starting concrete placement.
 - .1 Use water jets, mechanical scrapers or other means, and when quantities of mud or rock cuttings are present, remove by air lift.

3.3 INSTALLATION

- .1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete and Section 03 20 00 - Concrete Reinforcing and to CSA A23.1/A23.2. Testing for concrete to CSA A23.1/A23.2.
- .2 Where concrete placement extends above water surface, protect concrete from direct contact with air at temperature below 5 degrees C for 7 days.
- .3 Place concrete in one continuous operation to full depth required.
 - .1 Supply complete equipment for every phase of operation.
 - .2 Provide sufficient supply of concrete to complete pour without interruption.
- .4 Tremie method:
 - .1 Provide water-tight tremie pipe sized to allow free flow of concrete. Diameter of tremie pipe to be minimum 200 mm and minimum eight times maximum size of coarse aggregate.
 - .2 Provide hopper at top of tremie pipe and means to raise and lower tremie pipe.

3.3 INSTALLATION
(Cont'd)

- .4 (Cont'd)
 - .3 Provide plug or foot valve at bottom of tremie pipe to permit filling pipe with concrete initially.
 - .4 Provide minimum of one tremie pipe for every 30 m² of plan area and to maximum spacing of 6 m centre to centre. Do not move tremie pipes laterally through concrete.
 - .5 Start placement with tremie pipe full of concrete. Keep bottom of pipe buried minimum 300 mm in freshly placed concrete.
 - .6 If seal is lost, allowing water to enter pipe, withdraw pipe immediately. Refill pipe, and continue placing as specified.
 - .7 If tremie operation is interrupted so that horizontal construction joint has to be made, cut surface laitance by jetting, within 24 to 36 hours and remove loose material by pumping or air lifting before placing next lift.
 - .8 Do not place concrete in flowing water when current exceeds 3 m/min. Do not vibrate, disturb or puddle concrete after placement.
- .5 Pumped concrete method:
 - .1 Follow procedures as for tremie method in placing concrete using discharge line from concrete pump as tremie pipe.
 - .2 Pump discharge line diameter: 125 mm minimum.
- .6 Bottom-dump bucket method:
 - .1 Fill bucket with concrete, cover top surface and lower slowly through water to prevent backwash.
 - .2 Discharge concrete only when bucket is in contact with surface on which concrete is to be deposited.
 - .3 Withdraw bucket until it is above concrete to maintain still water at point of discharge to approval of Departmental Representative.

3.4 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.

3.4 CLEANING
(Cont'd)

- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

PART 1 - GENERAL

1.1 REFERENCES

- .1 American Wood-Preservers' Association (AWPA)
 - .1 AWPA M2-16, Standard Inspection of Treated Wood Products.
 - .2 AWPA M4-15, Standard for the Care of Preservative-Treated Wood Products.
- .2 Canadian Standards Association (CSA)
 - .1 CSA O80 Series-15 - Wood Preservation.
 - .2 CSA O80.201-97, Standard for Hydrocarbon Solvents for Preservatives. This Standard covers hydrocarbon solvents for preparing solutions of preservatives. This is not stand alone specification.
 - .3 CSA O322-15, 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:

Species	CCA kg/m ³	ACA kg/m ³
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 SECTION INCLUDES .1 Materials, preparation and application for caulking and sealants.
- 1.2 RELATED SECTIONS .1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 45 00 - Quality Control.
.3 Section 01 61 00 - Common Product Requirements.
.4 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
.5 Section 03 10 00 - Concrete Forming and Accessories.
.6 Section 03 30 00 - Cast-in-Place Concrete.
- 1.3 REFERENCES .1 Canadian General Standards Board (CGSB)
.2 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
.3 Department of Justice Canada (Jus)
.1 Canadian Environmental Protection Act, 1999 (CEPA).
.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).
.5 Transport Canada (TC)
.1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- 1.4 SUBMITTALS .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Manufacturer's product to describe.
.1 Caulking compound.
.2 Primers.
.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
-

1.4 SUBMITTALS
(Cont'd)

- .3 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.
.1 Instructions to include installation instructions for each product used.

1.5 DELIVERY,
STORAGE, AND
HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 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 packaging materials at appropriate recycling facilities.
.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material, in appropriate on-site bins, for recycling in accordance with Waste Management Plan.
.4 Place materials defined as hazardous or toxic in designated containers.
.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
.6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
.7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Departmental Representative.
.8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

PART 2 - PRODUCTS

- 2.1 SEALANT MATERIALS
- .1 Where sealants are qualified with primers use only these primers.
- 2.2 SEALANT MATERIAL DESIGNATIONS
- .1 Polyurethane Sealant:
- .1 Self-Leveling one part polyurethane sealant to CAN/CGSB-19.13 M87, Classification C-1-25-B-N, Premium Grade, colour to match concrete.
- .2 Non-Sag to CAN/CGSB-19.24, colour to match concrete.
- .3 Temperature range of -44 to 77°C.
- .2 Preformed Compressible and Non-Compressible back-up materials.
- .1 Polyethylene or Neoprene Foam.
- .1 Extruded closed cell foam backer rod.
- .2 Size: oversize 30 to 50%.
- .2 Neoprene or Butyl Rubber.
- .1 Round solid rod, Shore A hardness 70.
- .3 High Density Foam.
- .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.
- .4 Bond Breaker Tape.
- .1 Polyethylene bond breaker tape which will not bond to sealant.
- 2.3 SEALANT SELECTION
- .1 Expansion and control joints in exterior surfaces of poured-in-place concrete: Sealant type: acrylic terpolymer, elastomeric polyurethane.
- .2 Control and expansion joints in exterior surfaces of walls: Sealant type: elastomeric sealant.
- 2.4 JOINT CLEANER
- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

- .1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

- .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.
- .3 Cleanup.
 - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

PART 1 - GENERAL

- 1.1 SUMMARY .1 This section defines correction to maximum dry density to take into account aggregate particles larger than 19 mm.
- 1.2 REFERENCES .1 American Society for Testing and Materials (ASTM)
.1 ASTM C127-12 (2001), Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
.2 ASTM D698-12a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
.3 ASTM D1557-12, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
.4 ASTM D4253-00 (2006), Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
- 1.3 DEFINITIONS .1 Corrected maximum dry density is defined as:
.1 $D = (D1 \times D2) / ((F1 \times D2) + (F2 \times D1))$
.2 $D = (F1 \times D1) + (0.9 \times D2 \times F2)$
.3 Where: D = corrected maximum dry density kg/m³.
.1 F1 = fraction (decimal) of total field sample passing 19 mm sieve
.2 F2 = fraction (decimal) of total field sample retained on 19 mm sieve (equal to 1.00 - F1)
.3 D1 = maximum dry density, kg/m³ of material passing 19 mm sieve determined in accordance with Method A of ASTM D698.
.4 D2 = bulk density, kg/m³, of material retained on 19 mm sieve, equal to 1000G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127.
.4 For free draining aggregates, determine D1 (maximum dry density) to ASTM D4253 dry method when directed by Departmental Representative.
- 1.4 MEASUREMENT FOR PAYMENT .1 All work covered under this specification is considered to be incidental to the project and will not be measured for payment under the fixed price items.

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 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM D4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Allow continual sampling by Departmental Representative during production.
- .3 Provide Departmental Representative with access to source and processed material for sampling.
- .4 Install sampling facilities at discharge end of production conveyor, to allow Departmental Representative to obtain representative samples of items being produced. Stop conveyor belt when requested by Departmental Representative to permit full cross section sampling.
- .5 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.

1.4 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Divert unused granular materials from landfill to local quarry facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.

- 2.1 MATERIALS
(Cont'd)
- .2 Flat and elongated particles of coarse aggregate: to ASTM D4791.
 - .1 Greatest dimension to exceed five times least dimension.
 - .3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
 - .1 Natural sand.
 - .2 Manufactured sand.
 - .3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
 - .4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
 - .1 Crushed rock.
 - .2 Gravel and crushed gravel composed of naturally formed particles of stone.
 - .3 Light weight aggregate, including slag and expanded shale.

- 2.2 SOURCE QUALITY CONTROL
- .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling at least 2 weeks prior to commencing production.
 - .2 If, in opinion of Departmental Representative, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
 - .3 Advise Departmental Representative 2 weeks in advance of proposed change of material source.
 - .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

PART 3 - EXECUTION

- 3.1 PREPARATION
- .1 Aggregate source preparation

3.1 PREPARATION
(Cont'd)

- .1 (Cont'd)
 - .1 Prior to excavating materials for aggregate production, clear area to be worked, and strip unsuitable surface materials. Dispose of cleared unsuitable materials as directed by Departmental Representative.
 - .2 Where clearing is required, leave screen of trees between cleared area and roadways as directed.
 - .3 Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
 - .4 When excavation is completed dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.
 - .5 Trim off and dress slopes of waste material piles and leave site in neat condition.
- .2 Processing
 - .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
 - .2 Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, or particle shapes, as specified. Use methods and equipment approved by Departmental Representative.
 - .3 Wash aggregates, if required to meet specifications. Use only equipment approved by Departmental Representative.
 - .4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.
- .3 Handling
 - .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
- .4 Stockpiling
 - .1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Departmental Representative. Do not stockpile on completed pavement surfaces.
 - .2 Stockpile aggregates in sufficient quantities to meet Project schedules.
 - .3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
 - .4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.

3.1 PREPARATION
(Cont'd)

- .4 (Cont'd)
- .5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
- .6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.
- .7 Stockpile materials in uniform layers of thickness as follows:
 - .1 Max 1.5 m for coarse aggregate and base course materials.
 - .2 Max 1.5 m for fine aggregate and sub-base materials.
 - .3 Max 1.5 m for other materials.
- .8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
- .9 Do not cone piles or spill material over edges of piles.
- .10 Do not use conveying stackers.
- .11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.2 CLEANING

- .1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .2 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .3 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies supply, placement and compaction of rockfill and common fill as required or as directed by Departmental Representative.
- 1.2 RELATED REQUIREMENTS .1 Section 31 23 33.01 - Excavating, Trenching and Backfilling.
.2 Section 31 32 19.01 - Geotextiles.
- 1.3 REFERENCES .1 ASTM International
.1 ASTM D 698-07e1, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
.2 Underwriters' Laboratories of Canada (ULC)
- 1.4 MEASUREMENT FOR PAYMENT .1 Rock Fill (38 mm - 75 mm): Supply, placement, and compaction of rock fill will be measured by the cubic metre placed measure (CMPM). The volume of material will be determined in place from measurements taken prior to and at completion of the work. Include the cost of all plant, labour, equipment, and materials required to complete the work as specified.
.2 Rock Fill (75 mm - 150 mm): Supply, placement, and compaction of rock fill will be measured by the cubic metre placed measure (CMPM). The volume of material will be determined in place from measurements taken prior to and of completion of the work. Include the cost of all plant, labour, equipment, and materials required to complete the work as specified.
.3 Rock Fill (100 mm minus): Supply, placement of rock fill will be measured by the cubic metre placed measure (CMPM). Materials required for the backfill will be approved prior to supply and placement. The volume of material will be determined in place from measurements taken prior to and at completion of the work. Include the cost of all plant, equipment, and materials required to complete the work as specified.

- 1.4 MEASUREMENT FOR .4 Rock Fill (100 mm - 300 mm): Supply, placement,
PAYMENT and compaction of rock fill will be measured by
(Cont'd) the cubic metre placed measure (CMPM). The volume
of material will be determined in place from
measurements taken prior to and at completion of
the work. Include the cost of all plant, labour,
equipment, and materials required to complete the
work as specified.
- .5 Rock Fill (450 mm - 850 mm): Supply and placement
of rock fill will be measured by the cubic metre
placed measure (CMPM). The volume of material will
be determined in place from measurements taken
prior to and at completion of the work. Include
the cost of all plant, labour, equipment and
materials required to complete the work as
specified.

PART 2 - PRODUCTS

- 2.1 ROCK FILL .1 Rock fill (38 - 75 mm) material to following
requirements:
.1 Crushed quarry stone consisting of hard
durable particles free from clay lumps, frozen
material and other deleterious materials, and free
from splits, seams or defects likely to impair its
soundness during handling or under action of
water.
.2 Relative density: to ASTM C127, not less than
2.65.
.3 Rock size to be 85% - 95%, 75 mm to 150 mm
and with rock no greater than 200 mm dia.
- .2 Rock fill (75 mm - 150 mm) material to following
requirements:
.1 Crushed quarry stone consisting of hard
durable particles free from clay lumps, frozen
material and other deleterious materials, and free
from splits, seams or defects likely to impair its
soundness during handling or under action of
water.
.2 Relative density: to ASTM C127, not less than
2.65.
.3 Rock size to be 85% - 95% 75 mm - 150 mm and
with rock no greater than 200 mm dia.
- .3 Rock fill (100 mm minus):

2.1 ROCK FILL .3
(Cont'd)

- .1 Crushed quarry stone consisting of hard durable particles free from clay lumps, frozen material and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.
- .2 Relative density: to ASTM C127, not less than 2.65.
- .3 Having gradation which are within limits specified when tested to ASTM C136-84A and ASTM C117-87. Sieve size to CAN/CGSB-8.1-88.
- .4 When tested by means of laboratory sieves, it shall fulfill requirements as follows:

<u>Sieve Size</u>	<u>% by Weight Passing</u>
100 mm	85-100
75 mm	55-90
50 mm	35-65
38 mm	25-40
25 mm	15-25
19 mm	7-15
12 mm	3-15
10 mm	3

- .4 Rock fill (100 mm - 300 mm) material to following requirements:
 - .1 Crushed quarry stone consisting of hard durable particles free from clay lumps, frozen material and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.
 - .1 Relative density: to ASTM C127, not less than 2.65.
 - .2 Rock size to be 85% - 95% 100 mm - 300 mm and with rock no greater than 400 mm dia.
- .5 Rock fill (300 mm - 600 mm) material to following requirements:
 - .1 Crushed quarry stone consisting of hard durable particles free from clay lumps, frozen material and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.
 - .2 Relative density: to ASTM C127, not less than 2.65.
 - .3 Rock size to be 85% - 95% 400 mm - 600 mm and with rock no greater than 750 mm dia.

- 2.1 ROCK FILL
(Cont'd)
- .6 Rock Fill (450 mm - 850 mm) material to following requirements:
- .1 Crushed quarry stone consisting of hard particles free from clay lumps, frozen materials and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.
 - .2 Relative density: to ASTM C127 not less than 2.65.
 - .3 Rock size to be 450 mm - 850 mm and with rock no greater than 900 mm dia.

PART 3 - EXECUTION

- 3.1 EXAMINATION
- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or are acceptable for rough grading installation.
- .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of approval to proceed from Departmental Representative.

- 3.2 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 300 mm loose depth.
 - .2 Use suitable earth moving and surface grading equipment to place and spread rock fill in continuous and uniform horizontal layers.
 - .3 Compact rock fill after each 300 mm lift.
 - .4 Place rock fill to 300 mm below bottom of finished grade.
 - .5 All side slopes to be one (1) vertical to one and one half (1.5) horizontal.

3.3 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Rough grade to following depths below finish grades:
 - .1 50 mm for finished grader of Type 1 material.
- .3 Slope rough grade as indicated on drawings.
- .4 Grade ditches to depth required for maximum run-off as directed.
- .5 Prior to placing fill over existing ground, scarify surface to depth of 300 mm minimum before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .6 Compact filled and disturbed areas to corrected maximum dry density to ASTM D 698, as follows:
 - .1 95% under roadway and parking areas.

3.4 TESTING

- .1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by ULC. Costs of tests will be paid by Owner Departmental Representative in accordance with Sections 01 29 83 - Payment Procedures for Testing Laboratory Services.

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.
- .3 Waste Management: separate waste materials for reuse and 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.

3.6 PROTECTION

- .1 Protect bench marks, buildings, surface or underground utility lines which are to remain as directed by Departmental Representative. If damaged, restore to original or better condition unless directed otherwise.
- .2 Maintain access roads to prevent accumulation of construction related debris on roads.

PART 1 - GENERAL

1.1 RELATED
.2SECTIONS

- .1 Section 01 33 00 - Submittal Procedure.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 01 56 00 - Temporary Barriers and Enclosures.
- .4 Section 01 35 29 - Health and Safety Requirements.
- .5 Section 03 30 00 - Cast-in-Place Concrete.
- .6 Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .7 Section 31 22 13 - Rough Grading.

1.2 MEASUREMENT OF
PAYMENT

- .1 Rock Removal - will be measured in cubic meters. It is defined as all rock removal carried out for the placement of the concrete launchway. Quantities will be taken from cross-section showing original rock surface and specified grade line as set by Departmental Representative. The unit price for Rock Removal - shall include the cost to place and compact all suitable excavated material as fill in accordance with Section 31 22 13 - Rough Grading.

1.3 DEFINITION

- .1 Rock: any solid material in excess of 0.25 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket. Frozen material not classified as rock.
- .2 PPV: peak particle velocity.

1.4 SUBMITTALS

- .1 Blasting Operation
 - .1 Submit to Departmental Representative and local authorities having jurisdiction for approval, written proposal of operations for removal of rock by blasting, in accordance with Section 01 33 00 - Submittal Procedures.

-
- 1.4 SUBMITTALS (Cont'd)
- .1 (Cont'd)
- .2 Indicate proposed method of carrying out work, types and quantities of explosives to be used, loading charts and drill hole patterns, type of caps, blasting techniques, blast protection measures for items such as flying rock, vibration, dust and noise control. Include details on protective measures, time of blasting and other pertinent details.
- .3 Submit records to Departmental Representative at end of each shift. Maintain complete and accurate record of drilling and blasting operations.
-
- 1.5 QUALIFICATIONS
- .1 Retain licensed explosives expert to program and supervise blasting work, and to determine precautions, preparation and operations techniques.
-
- 1.6 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Collect and separate plastic, paper packaging, corrugated cardboard in accordance with Waste Management Plan.
- .3 Place materials defined as hazardous or toxic in designated containers.
- .4 Ensure emptied containers are sealed and stored safely.
-
- 1.7 BLASTING SURVEY AND MONITORING
- .1 Departmental Representative will visit property holders of adjacent buildings and structures to determine existing conditions and describe blasting and seismic recording operations and obtain their permission for setting up seismographs.
- .2 Seismographic monitoring will be conducted during entire progress of blasting operations.
-
- 1.8 BLASTING AND VIBRATION CONTROL
- .1 Reduce ground vibrations to avoid damage to structures or remaining rock mass.
-

1.8 BLASTING AND
VIBRATION CONTROL
(Cont'd)

- .2 Carry out trial blasting at the commencement of the blasting work in order to determine the amount of charge required to keep vibrations within safe limits, to the satisfaction of the Departmental Representative. Take seismograph recordings during such trial blastings and at any other time while blastings are in progress, as considered necessary by the Contractor for his own protection, or as may be directed by the Departmental Representative. Maximum acceleration during the blast must not exceed 50 mm per sec.
- .3 No increase in charges will be permitted without further trial blasting and seismograph recordings, as described above.
- .4 Repair any damage caused by blasting. Blasting may not be permitted or may be limited to such an extent as to ensure the safety of structures, if considered necessary by the Departmental Representative. For his own protection, the Contractor is advised to engage a qualified inspection company to carry out a pre-blasting survey.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Not used.

PART 3 - EXECUTION

3.1 PROTECTION

- .1 Prevent damage to surroundings and injury to persons in accordance with Section 01 56 00 - Temporary Barriers and Enclosures. Erect fencing, post guards, sound warnings and display signs when blasting is to take place.

3.2 ROCK REMOVAL

- .1 Co-ordinate this Section with Section 01 35 29 - Health and Safety Requirements.
- .2 Remove rock to alignments, profiles, and cross sections as indicated.
- .3 Explosive blasting is permitted at locations indicated.

3.2 ROCK REMOVAL
(Cont'd)

- .3 (Cont'd)
 - .1 Do blasting operations in accordance with local and provincial codes.
 - .4 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize overbreak, and to avoid damage to adjacent structures.
 - .5 Remove boulders and fragments which may slide or roll into excavated areas.

3.3 ROCK DISPOSAL

- .1 Relocate rock to service area for fill purposes.

PART 1 - GENERAL

1.1 RELATED
REQUIREMENTS

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 31 22 13 - Rough Grading.
- .4 Section 31 32 19.01 - Geotextiles.

1.2 MEASUREMENT
PROCEDURES

- .1 No measurement for payment to be made under this section. Include costs in unit prices for item for which excavating, trenching, and backfilling is required.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C 117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63 (2002), Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-12e, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbs/ft³) (600 kN-m/m³).
 - .5 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.4 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

1.4 DEFINITIONS
(Cont'd)

- .1 (Cont'd)
- .1 Rock: any solid material in excess of 0.25 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15m³ 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 compressive 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> |
|--------------------------|------------------|
| 2.00 mm | 100 |
| 0.10 mm | 45 - 100 |
| 0.02 mm | 10 - 80 |
| 0.005 mm | 0 - 45 |
- .3 Coarse grained soils containing more than 20% by mass passing 0.075 mm 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 fill: to the following requirements:
- .1 Crushed, pit run or screened stone, gravel or sand.
- .2 Gradations to be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.1.

Sieve Designation	% Passing
	Type 1
101.6 mm	100
50 mm	75-100
4.75 mm	25-55
1.2 mm	10-35
0.3 mm	5-20
0.075 mm	0-12

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 Remove all cribwork and other obstructions encountered during excavation in accordance with Section 02 41 16 - Sitework, Demolition and Removal.
- .3 Excavation is required for the area shown at the existing parking lot as outlined in the project drawings.
- .4 Excavation for water line installation as shown on project drawings.
- .5 Excavation as required for the installation of new storm drainage system as shown on project drawings.
- .6 Excavation must not interfere with bearing capacity of adjacent foundations.
- .7 Dispose of surplus and unsuitable excavated material in approved location off site. Refer to Section 01 35 43 - Environmental Procedures.
- .8 Do not obstruct flow of surface drainage.
- .9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

3.2 EXCAVATION
(Cont'd)

- .10 Notify Departmental Representative's approval of excavation is reached.
- .11 Obtain Departmental Representative's approval of completed excavation.
- .12 Excavated materials from the project site are to be disposed of at an approved provincial landfill only.

3.3 FILL TYPES AND
COMPACTION

- .1 Use fill of types as indicated.

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 150 mm 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 1.0 m.

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 SECTION
INCLUDES

- .1 Materials and installation of polymeric geotextiles used in 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 22 13 - Rough Grading.
- .4 Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .5 Section 31 53 13 - Treated Timber Cribwork.

1.3 REFERENCES

- .1 ASTM Society for Testing and Materials (ASTM)
 - .1 ASTM D4491-99a(2004)e1, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D 4595-05, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D 4716-04, Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .4 ASTM D 4751-04, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2-M88, Textile Test Methods.
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Geomembranes.
 - .1 No.2-M85, Mass per Unit Area.
 - .2 No.3-M85, Thickness of Geotextiles.
 - .3 No.7.3-92, Grab Tensile Test for Geotextiles.

- 1.8 MEASUREMENT FOR PAYMENT .1 Geotextiles: Measurement for payment under this section will be measured by the square metre (m²). Include cost in unit price of all plant, labour, equipment required to complete the work as specified.

PART 2 - PRODUCTS

- 2.1 MATERIAL .1 Non-woven, mechanically bounded, needle punched polyester membrane, suitable for use in seawater environment.
- .2 Physical properties:
- .1 Thickness: to CAN/CGSB-148.1, No.3, minimum 4.7 mm.
 - .2 Mass per unit area: to CAN/CGSB-148.1, No.2, minimum 400 g/m².
 - .3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
 - .1 Tensile strength: minimum 1180 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 3850 kPa.
 - .5 Tear propagation (CAN-12-2) 530N.
- .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/m² to CAN/CSA G164.

PART 3 - EXECUTION

- 3.1 INSTALLATION .1 Place one (1) layer of geotextile material as indicated on 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.

3.1 INSTALLATION
(Cont'd)

- .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 Join successive strips of geotextile by sewing.
- .7 Pin successive strips of geotextile with securing pins at 300 mm interval at mid point of lap as indicated.
- .8 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .9 After installation, cover with overlying layer within 4 hours of placement.
- .10 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .11 Place and compact soil layers in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.

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 treated timber and necessary fastenings for fabrication, placing, and ballasting of timber cribwork.
- 1.2 RELATED SECTIONS .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Section 06 05 73 - Wood Treatment.
- 1.3 MEASUREMENT FOR PAYMENT .1 Treated Timber Cribwork - (Supply and Install): to be measured in cubic metres (m³) of completed work which include ballast stone, gravel, treated timber, end of wharf blocking, fastenings, and all plant, labour, materials and equipment to perform work.
- .2 Measure timber cribwork in cubic metres determined by product. Use following dimensions measured in place:
- .1 Height: average of measurements taken at each vertical from bottom of lowest timber to top side of uppermost course of timber.
- .2 Width: average of measurements between outside faces of exterior longitudinal timbers, each width measured on top ties of each row of cross ties.
- .3 Length: measured horizontally along centre-line of crib between outside faces of exterior cross ties.
- .3 Cribwork below step will be determined by product of following dimensions measured in place:
- .1 Height: average of measurements taken at each vertical from bottom of lowest timber to top side of uppermost course of timber.
- .2 Width: average of measurements between outside faces of exterior longitudinal timbers, measured at each crosstie at low water elevations.
- .3 Length: measured horizontally along centre-line of crib and parallel to level water surface between outside faces of exterior cross ties.
- .4 Cribwork above step will be determined by product of following dimensions measured in place:

1.3 MEASUREMENT FOR .4
PAYMENT
(Cont'd)

(Cont'd)
.1 Height: average of measurements taken at each vertical from top of step crib to top of top course of timber.
.2 Width: average of measurements between outside faces of exterior longitudinal timbers, each width measured on top tier of each row of crossties.
.3 Length: measured horizontally along centre-line of crib and parallel to level water surface between outside faces of exterior cross ties.

.5 Measurements of the vertical lengths, widths and lengths of cribwork, will be taken in the presence of both the Contractor and the Departmental Representative and will be verified and signed by both parties on the site to avoid any disputes.

1.4 SAFETY .1
REQUIREMENTS

Worker protection:
.1 Workers must wear gloves, respirators, dust masks, long sleeved clothing, eye protection, protective clothing when handling, drilling, sawing, cutting or sanding preservative treated wood and applying preservative materials.
.2 Workers must not eat, drink or smoke while applying preservative material.
.3 Clean up spills of preservative materials immediately with absorbent material. Safely discard of absorbent material to sanitary landfill.

1.5 REFERENCES .1

American Society for Testing and Materials (ASTM International)
.1 ASTM A307-12, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
.2 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
.3 ASTM-A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products).
.4 ASTM F1667-13, Standard Specification for Driven Fasteners: Nails, Spikes and Staples).
.2 American Wood-Preserver's Association (AWPA)
.1 AWPA M4-11, Standard for the Care of Preservation - Treated Wood Products.
.3 Canadian Standards Association (CSA International)
.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

1.5 REFERENCES
(Cont'd)

- .3 (Cont'd)
- .2 CAN/CSA-G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Steel.
- .3 CAN/CSA-O80 Series-00 (R2012), Wood Preservation.
- .4 Canadian Wood Council
 - .1 Wood Design Manual.
- .5 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2014 edition.

1.6 SUBMITTALS

- .1 Ballast:
 - .1 Submit proposed placing method to Departmental Representative for approval, prior to placing of ballast.

1.7 WASTE
MANAGEMENT

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of all corrugated cardboard and polystyrene plastic packaging material in appropriate on-site bin for recycling.
- .3 Place materials defined as hazardous or toxic in designated containers.
- .4 Ensure emptied containers are sealed and stored safely.
- .5 Do not dispose of preservative treated wood through incineration.
- .6 Do not dispose of preservative treated wood with other materials destined for recycling or reuse.
- .7 Dispose of treated wood, end pieces, wood scraps and sawdust at a sanitary landfill.
- .8 Dispose of unused preservative material at an official hazardous material collections site. Do not dispose of unused preservative material into sewer system, streams, lakes, on ground or in any other location where they will pose a health or environmental hazard.

PART 2 - PRODUCTS

2.1 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 Accreditation Board of CSA.
- .2 Species: Douglas Fir, Pacific Coast Hemlock and Eastern Hemlock.
- .3 Grade: No. 1 Structural.
- .4 Grading authority: NLGA.
- .5 Preservative treatment: To CSA O80 for coastal waters and Section 06 05 73 - Wood Treatment. Supply timbers in lengths required. Cut and field treat timbers only as may be necessary to suit site conditions. Contractor will have on site sufficient lengths and thickness of treated timber to permit levelling of cribs after ballasting operations.
- .6 Miscellaneous steel: Medium structural steel conforming to CSA Specification G40.21 "Structural Quality Steels".
 - .1 Hot dip galvanized: to ASTM - A123/A123M. Minimum weight of zinc coating as stated in Table 1 of this Standard. Fabricator to adhere to recommendations of Standard.
 - .2 Wire nails, spikes, staples: to CSA-B111 or ASTM F1667.
 - .3 Bolts, nuts, washers: to ASTM A307.
 - .4 Drift Bolts: to G40.21 from round stock, button head and diamond or wedge point.
 - .5 Washers:
 - .1 Round Plate Washers: for 19 mm diameter machine bolts, 79 mm diameter by 7.9 mm thick, with hole diameter of 21 mm. Washers to G40.21.
 - .2 Square washers not permitted to be used.
 - .6 All hardware galvanized.
- .7 Ballast for filling cribs to following requirements:
 - .1 Stone, consisting of hard durable particles free from clay lumps, organic material and other deleterious materials.
 - .2 Dry density in place: minimum 2600 kg per cubic metre.
 - .3 Ballast stone to be well graded with maximum sizes not exceeding 400 mm on any side and minimum size of not less than 250 mm on any side.

- 2.1 MATERIALS
(Cont'd)
- .8 Gravel: Evenly graded pit run or crushed stone, maximum size, 50 mm, with not more than 8% passing the 0.075 mm sieve.

PART 3 - EXECUTION

- 3.1 PREPARATION
- .1 Excavate area of crib base to elevation indicated on drawings or to hard bottom, approved by Departmental Representative.
- .2 Contractor to confirm with Departmental Representative that excavated cribseat is adequate for cribwork placement.
- .3 Before construction, stockpile sufficient ballast to completely fill cribs. Provide suitable plant and equipment to keep crib in proper position and alignment during sinking operations.
- .4 Take closely spaced accurate elevations, 1500 mm centre to centre or less, precisely located by template, to determine actual configuration of base area of crib. Construct crib bottom to match base configuration. Scribe cribwork to bedrock if required.
- .5 Cribs out of alignment or not correctly located to be replaced in correct position.

- 3.2 CRIB CONSTRUCTION
- .1 Levelling Pieces:
.1 Place treated timber levelling pieces beneath bottom timbers to conform to shape of base area.
.2 Place levelling pieces horizontally.
.3 Secure succeeding pieces at intersections of bottom timbers and vertical posts, and other levelling pieces with machine bolts.
- .2 Bottom timbers:
.1 Place bottom timbers lengthwise, and crosswise to form bottom three courses of cribs.
.2 Crosswise bottom timbers to be of one piece.
.3 Lengthwise bottom timbers to be of one piece.
.4 Secure three courses of bottom timbers together with machine bolts at every intersection with each other and with vertical posts.
- .3 Ballast floor:

3.2 CRIB
CONSTRUCTION
(Cont'd)

- .3 (Cont'd)
 - .1 Place ballast floor on pockets on bottom or middle course of bottom timbers.
 - .2 Ballast floor timber to be spaced evenly with no space greater than 100 mm.
 - .3 Secure each ballast floor timber to bottom timbers with drift bolts securing adjacent ballast floor timbers to same bottom timber.

- .4 Longitudinals:
 - .1 Longitudinals one length for individual cribs.
 - .2 Longitudinals minimum 6100 mm long.
 - .3 Where cribs are married together, longitudinals of sufficient length to span a minimum of a half a bay of one crib and one and a half bays of the adjacent crib.
 - .4 Butt join exterior and interior longitudinals a minimum distance of 600 mm from crosstie with joint in centre of a 1200 mm long joiner block.
 - .5 Secure block to lower timber with drift bolt at centre and secure longitudinals and splice at ends to block with drift bolts.
 - .6 Stagger joints in longitudinal timbers. Do not join in same bay or on same vertical post.
 - .7 Secure longitudinals to intersection of cross ties with drift bolt and to intersection of vertical posts with machine bolt every third course of longitudinals, along with the top course.
 - .8 Countersink machine bolts on exterior face.

- .5 Cross ties: one length across cribs.
 - .1 Secure cross ties to intersection of longitudinals with drift bolt and to intersection of vertical posts with machine bolt every third course of cross tie, along with the top course.

- .6 Vertical posts: one length from bottom of cribwork to top of cribwork. Locate one vertical post at corner of each crib and at intersection of crossties with longitudinals.

- .7 Blocking: install treated timber filler blocking as indicated on drawings.
 - .1 Cut blocking exact length to completely fill spaces and such that the total thickness of crossties and longitudinals carrying the bearing weight of the deck be a minimum of 600 mm if cribwork ends on a crosstie.
 - .2 If cribwork ends on a longitudinal one additional tier of blocking is required.
 - .3 Blocking of same size and material as crossties or longitudinals and fastened with 2 drift bolts into timber immediately below it.

3.2 CRIB
CONSTRUCTION
(Cont'd)

- .8 Levelling: treated timber required for levelling of cribwork after ballasting, must be full width continuous over entire length to be levelled.
- .9 Bolt Sizing and Holing:
 - .1 Drift Bolts: length of drift bolts equal to thickness of timbers fastened less 50 mm, unless otherwise specified. Bore holes for drift bolts 2 mm smaller diameter than bolt and for full length of bolt.
 - .2 Machine Bolts: length of machine bolts equal to thickness of timbers fastened plus thickness of washers plus 40 m. Where bolts are countersunk, the length, as noted above, less depth of countersink. Thread machine bolts for 64 mm. Bore holes for machine bolts to same diameter as bolts.

3.3 HANDLING
TREATED TIMBER

- .1 Handle treated material without damaging original treatment.
 - .1 Replace treated timber with major damage to original treatment, as instructed by Departmental Representative.
- .2 Field treatment: to CAN/CSA-080. Apply and saturate cuts, minor surface damage, abrasions, and nail and spike holes with preservative.
- .3 Ripping of treated timber not permitted without prior approval of Departmental Representative.

3.4 BALLAST

- .1 Place ballast to avoid damage to timber cribwork.
- .2 Place ballast so that differential height of fill between adjacent cells, at any time, will be less than 1 m.
- .3 Pockets of cribs ballasted within 150 mm of top of crib timbers.

3.5 TOLERANCES

- .1 1 in 300 in overall dimensions.
- .2 Locate cribs within 100 mm of location as indicated. Horizontal misalignment within 100 mm along the outside faces.
- .3 Space between ballasted cribs within 200 mm. No payment for this space will be made.

3.6 PROTECTION

- .1 Protect work from damage resulting from work on other sections and from damage resulting from environmental conditions.
- .2 Repair or replace portion or entire crib at no additional cost if damaged by work.

3.7 END OF WHARF
BLOCKING

- .1 Install end of wharf blocking as detailed on the drawings.

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 wheelguard, wheelguard blocking, and associated painting.
 - .2 Supply and installation of treated dimension timber support beams and associated blocking.
 - .3 Supply and installation of untreated dimension hardwood slipway runners and wood decking c/w associated fasteners.

1.2 RELATED WORK

- .1 Section 02 41 16 - Sitework, Demolition and Removal.
- .2 Section 03 30 00 - Cast-in-Place Concrete.
- .3 Section 06 05 73 - Wood Treatment.
- .4 Section 31 53 13 - Timber Cribwork.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A307-12, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
 - .2 ASTM-A123/A123M-13, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM F1667-13, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .2 American Wood-Preserver's Association (AWPA)
 - .1 AWPA M4-11, Standard for the Care of Preservation - Treated Wood Products.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Steel.
 - .3 CAN/CSA-O80 Series-08 (R2012), Wood Preservation.
- .4 Canadian Wood Council
 - .1 Wood Design Manual.

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- 1.3 REFERENCES
(Cont'd)
- .5 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian Lumber 2014 edition.
- 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 MEASUREMENT FOR
PAYMENT

- .1 Structural Timber (Supply and Install):
- .1 Treated Dimension Timber: The supply and installation of treated dimension timber for wheelguard, wheelguard blocking, support beams and decking will be measured by the cubic metre (m³) of timber secured in place, including all timber, fastenings, plant, material, equipment, labour, wheelguard bolt hole levelling sealant, painting of wheelguard and wheelguard blocking.
 - .2 Untreated Dimension Hardwood Timber: The supply and installation of untreated dimension hardwood timber for hardwood runners, as specified will be measured by the cubic metre (m³) of timber secured in place including all timber, fastenings, plant, material, equipment, and labour.
- .2 Payment for all dimension timber will be made on volume calculated from nominal sizes as indicated on drawing and specified, eg. 200mm x 200mm.

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, decking and beams: Hemlock or Douglas Fir (CCA or ACA treated).
 - .2 Hardwood runners: Birch or Maple untreated).
- .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 - Wood Treatment. 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 CAN/CGSB-1.61-2004.

2.2 MISCELLANEOUS
STEEL AND
FASTENINGS

- .1 Miscellaneous Steel: All steel and fastenings to be CSA G40.21, Grade 300 W, galvanized.
- .2 Nails and Spikes: to CSA B111 or ASTM F1667.
- .3 Machine Bolts and Nuts: to ASTM A307. 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 16 mm machine bolts will be 76 mm diameter by 6.4 mm thick, for 19 mm machine bolts will be 79 mm diameter by 7.9 mm thick and have a hole diameter of 18 mm and 21 mm 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 ASTM A123/A123M. Unless otherwise specified, minimum weight of zinc coating will be as stated in this standard. Fabricator is to adhere to recommendations of standard.
- .7 Lag Screws: to CSA B34, galvanized lag screw washers will conform to CSA B19.1
- .8 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 ANCHOR BOLTING
SYSTEM

- .1 Anchor bolts, where required, for anchoring beams and/or wheelguard to concrete footings, piers will be 19mm diameter resin cartridge anchors or heavy duty expansion anchors to required embedment.
- .2 Anchor rods where required for anchor beams to concrete support piers to be 19 mm diameter galvanized steel rods c/w galvanized nuts and washers.
- .3 Submit shop drawings and manufacturer's specification for anchor bolts for approval.

- 2.3 ANCHOR BOLTING SYSTEM
(Cont'd)
- .4 Anchor bolts to be installed with strict adherence to manufacture specifications.

PART 3 - EXECUTION

- 3.1 PREPARATION
- .1 Install structural timbers to details shown on drawings or as specified.

- 3.2 WHEELGUARD AND WHEELGUARD BLOCKING
- .1 Wheelguard timbers to be 150 mm x 150 mm or 200 mm x 200 mm and will be in minimum lengths of 6100 mm or as specially required with butt joints made over wheelguard blocking. Wheelguard timbers to be chamfered on top, 25 mm on each horizontal and vertical surface.
- .2 Wheelguard blocks will be installed at 1500 mm on centre or as required to support the wheelguard.
- .3 Wheelguard will be secured through wheelguard blocking, with two (2) 19 mm diameter bolts as shown on detail drawings.
- .4 The installation of wheelguard and wheelguard blocking as per detail.

- 3.3 BEAMS
- .1 Timber beams to be 200 mm x 200 mm and will be in minimum lengths of 6100 mm or as specially required to fit. Beam lengths and spacing as indicated on drawings.
- .2 Timber beams will be installed at 1525 mm spacings at the upper portion of the slipway and at 2400 mm spacing at the lower section.
- .3 Timber beams to be secured to footings and support piers as detailed on drawings, which includes hold down brackets, anchor bolts and anchor rods.
- .4 Timber beam to be secured to timber crib using 19 mm diameter x 750 mm long galvanized drift bolts. Countersink heads and see details.

3.4 DECKING

- .1 Decking timber to be 75 mm x 150 mm and will be in minimum lengths of 6100 mm or as specially required. Butt joints to alternate on timber beams.
- .2 Secure decking with 2 - 150 mm long galvanized spikes at each beam location.
- .3 Treat all saw cut butt joints.

3.5 HARDWOOD RUNNERS

- .1 Hardwood runners to be 100 mm x 150 mm and will be in minimum lengths of 6100 mm or as specially required to fit. Hardwood runners to be chamfered on top 25 mm on each side as shown drawings.
- .2 Hardwood runners will be installed at 900 mm on centre.
- .3 Hardwood runners will be secured to the timber beams with 2 - 12 mm diameters x 200 mm long galvanized lag screw at each beam location.
- .4 Countersink lag screw head flush with top of runner.

3.6 PAINTING

- .1 Paint four (4) sides of wheelguard, exposed sides of 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.

3.7 BOLT SIZING

- .1 Anchor Bolts: Anchor bolts used in the work will have a length as shown on drawings unless otherwise specified. Holes for anchor bolts will be bored 2 mm 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 40 mm. Where bolts are countersunk, the length will be as above less depth of countersinking. Machine bolts will be threaded for 64 mm. Holes will be drilled same diameter as bolt.

3.7 BOLT SIZING
(Cont'd)

- .3 Lag Screws: All lag screws used in the work will have a length equal to thickness of timbers being fastened less 50 mm 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 bolts in beams, runners, wheelguard, and slipway runners to the extent that the minimum distance from face of timber to head of bolt is 12 mm.
- .5 Bolting of timbers without properly drilled bolt holes will not be accepted.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 45 00 - Quality Control.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 31 05 17 - Aggregate Materials.

1.2 MEASUREMENT
PROCEDURES

- .1 Type 1 Granular Base: will be measured in cubic metres (m³). Supply, placement and compaction of Type 1 granular base including the cost of all plant, labour, equipment and materials required to complete the work as specified.
- .2 Type 2 Granular Sub Base: will be measured in cubic meters (m³). Supply, placement and compaction of Type 2 granular sub base including the cost of all plant, labour, equipment and materials required to complete the work as specified.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C117-13, Standard Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C117-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregate.
 - .4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .5 ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .6 ASTM D1883, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soil.
 - .7 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.

1.3 REFERENCES .2 (Cont'd)
(Cont'd) .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.4 DELIVERY, STORAGE AND HANDLING .1 Deliver and stockpile aggregates in accordance with Section 31 05 17 - Aggregate Materials. Stockpile minimum 50% of total aggregate required prior to beginning operation.

.2 Divert unused granular material from landfill to local facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS .1 Type 1 Granular Base: Material to the following requirements:
.1 Granulations to be within following limits when tested to ASTM C136-84a and ASTM C117-87. The gradings shall not show marked fluctuations from opposite extremes of the limiting sizes, and giving a smooth curve without sharp breaks when plotted on a semi-log grading chart to ASTM.

<u>ASTM Sieve Designation</u>	<u>% Passing</u>
19.0 mm	100
12.5 mm	70-100
9.5 mm	-
4.75 mm	40-70
2.00 mm	23-50
0.425 mm	7-25
0.180 mm	-
0.075 mm	3-8

.2 Type 2 Granular Sub-Base Material to the following requirements:
.1 Gradation to be within following limits when tested to ASTM C136-82 and ASTM C117-80. The gradings shall not show marked fluctuations from opposite extremes of the limiting sizes, having a smooth curve without sharp breaks when plotted on a semi-log grading chart to ASTM E11-87.

<u>ASTM Sieve Designation</u>	<u>% Passing</u>
50.8 mm	75-100
15.9 mm	45-80
4.76 mm	25-55
1.20 mm	12-35
0.300 mm	7-20
0.075 mm	3-6 (Pit Source) 3-8 (Rock Source)

- 2.1 MATERIALS (Cont'd)
- .2 (Cont'd)
- .2 Other properties as follows:
- .1 Liquid Limit ASTM D423-66 (1972) Maximum 25.
 - .2 Plasticity Index ASTM D424-59 (1971) Maximum 0.
 - .3 Los Angeles Abrasion ASTM C131-81 Maximum % Loss by Weight: 35.
 - .4 Crushed fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm sieve.
 - .5 CBR: AASHTO T180-74 Method D.
- .3 Other properties as follows:
- .1 Liquid Limit: to ASTM D4318 (1972) maximum 25.
 - .2 Plasticity Index: to ASTM D4318-59 (1971) maximum 0.
 - .3 Los Angeles Abrasion: to ASTM C131-06. Maximum % loss by weight: 35.
 - .4 Crushed Fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm sieve.
 - .5 CBR:AASHTO T 193-10 (2010) Min 100 when compacted to 100% of AASHTO T 180-10 Method D.

PART 3 - EXECUTION

- 3.1 SEQUENCE OF OPERATIONS
- .1 Place granular base after common backfill is inspected and approved by Departmental Representative.
- .2 Placing
- .1 Construct granular base to depth and grade in areas indicated.
 - .2 Ensure no frozen material is placed.
 - .3 Place material only on clean unfrozen surface, free from snow and ice.
 - .4 Place material to full width in uniform layers not exceeding 150mm compacted thickness. Department Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
 - .5 Shape to smooth contour and compact to specified density before succeeding layer is placed.
 - .6 Remove and replace that portion of layer in which material becomes segregated during spreading.

3.1 SEQUENCE OF
OPERATIONS
(Cont'd)

- .3 Compaction Equipment
 - .1 Compaction equipment to be capable of obtaining required material densities.
- .4 Compacting
 - .1 Compact to density not less than 100% corrected maximum dry density ASTM D698.
 - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
 - .3 Apply water as necessary during compacting to obtain specified density.
 - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Department Representative.

3.2 SITE TOLERANCES

- .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.3 PROTECTION

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

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.2 REFERENCES

- .1 American Association of State Highway and Transportation Officials (AASHTO)
 - .1 AASHTO M180-12, Standard Specification for Corrugated Sheet Steel Beams for Highway Guardrails.
- .2 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A307-12, Standard Specification for Carbon Steel Bolts Studs and Threaded Rod, 60 000 PSI Tensile Strength.
- .3 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .4 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-O80 Series-08(R2012), Wood Preservation.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Inform Departmental Representative at least 4 weeks prior to beginning Work, of proposed sources of guide rail and components.

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.
 - .2 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
 - .3 Place materials defined as hazardous or toxic in designated containers.
-

1.4 WASTE
MANAGEMENT AND
DISPOSAL
(Cont'd)

- .4 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
- .5 Unused paint or coating material must be disposed of at an official hazardous material collections site as approved by Departmental Representative.
- .6 Fold up metal banding, flatten and place in designated area for recycling.
- .7 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in any other location where it will pose a health or environmental hazard.
- .8 Do not dispose of preservative treated wood through incineration.
- .9 Do not dispose of preservative treated wood with other materials destined for recycling or reuse.
- .10 Dispose of treated wood, end pieces, wood scraps and sawdust at a sanitary landfill.
- .11 Dispose of unused preservative material at an official hazardous material collections site. Do not dispose of unused preservative material into the sewer system, streams, lakes, on ground or in any other location where they will pose a health or environmental hazard.

1.5 MEASUREMENT FOR
PAYMENT

- .1 Guide Rail: Measure supply and erection of roadside steel W-beam guide rail including posts and necessary hardware in lin. meters of guide rail installed and measured from outer tips of steel W-beam guide rail. Include the cost of all plant, labour, equipment and materials required to complete work as specified on accompanying drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Steel W-beam guide rail as indicated and to following requirements:
 - .1 Steel rail and terminal sections: to AASHTO M180-78, class A Type 1 zinc coated.

2.1 MATERIALS

(Cont'd)

- .1 (Cont'd)
- .2 Bolts, nuts and washers: to ASTM A307, hot dip galvanized to ASTM A123/A123M (CSA G-164M).
- .2 Organic zinc-rich coating: to CAN/CGSB-1.181.
- .3 Sawn timber posts and offset blocks:
 - .1 Species: Hemlock or Douglas Fir.
 - .2 Type: pressure treated in accordance with CAN/CSA-O80 Series.
 - .3 Grade: No 1 Structural Grade.
 - .4 Dimensions: as indicated 200 mm x 200 mm x 2440 mm.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Set posts by instrument for alignment, and locations as indicated and as directed by Departmental Representative.
- .2 Excavate post holes to depths as indicated and to diameter of 360 mm plus or minus 20 mm. Compact bottom to provide firm foundation. Set post plumb and square in hole.
- .3 Backfill around posts using excavated material and compact in uniform layers not exceeding 150 mm compacted thickness.
- .4 Cut off tops of posts as indicated, with tops parallel to grade of concrete apron edge.
- .5 Worker protection: workers must wear gloves respirators dust masks long sleeved clothing eye protection protective clothing when handling, drilling, sawing, cutting or sanding preservative treated wood and applying preservative materials.
- .6 Construct anchorages to details as indicated. Place and compact backfill for anchors as directed by Departmental Representative.
- .7 Erect steel W-beam components to details as indicated. Lap joints in direction of traffic. Tighten nuts to 100 N.m torque. Maximum protrusion of bolt 12 mm beyond nut.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C117-13, Standard Test Method for Material Finer than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 SUBMITTALS

- .1 Submit to Departmental Representative for approval, 4 weeks before blasting, details of proposed blasting operations showing types and quantities of explosives, loading charges and patterns, type of blasting caps, blasting techniques, blast protection measures, time of blasting and other pertinent details. Submit subsequent changes to Departmental Representative before proceeding.
- .2 Samples
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Inform Departmental Representative of proposed source of materials and provide access for sampling at least 2 weeks prior to commencing Work.
 - .3 Submit samples representative of quarry, minimum 2 weeks prior to beginning Work.
 - .4 Ship samples prepaid to Departmental Representative for approval.
- .3 Submit for approval of review by Departmental Representative proposed method of handling armour stone. Submission to cover phases of handling, from removal from form to final position.

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.
- .2 Collect and separate for disposal paper, plastic, polystyrene, and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .3 Divert unused geotextiles from landfill to plastic recycling facility as approved by Departmental Representative.
- .4 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
- .5 Divert unused concrete materials from landfill to local quarry facility as approved by Departmental Representative.
- .6 Fold up metal banding, flatten and place in designated area for recycling.

1.5 INTERFERENCE TO
NAVIGATION

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

1.6 REGULATORY
REQUIREMENTS

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

1.7 MEASUREMENT FOR
PAYMENT

- .1 Armour Stone (3.0 - 5.0 tonne): measured in cubic metres (m³) of material and supplied and placed in this work within the limits specified on drawings.
- .2 There will be no payment made for any material or stone placed beyond limits indicated on the drawings. The final contract grade must be within 200 mm of the specific elevation. Quantities will be based on a as-built survey. Any material placed outside the lines and grades as shown on the drawings will not be measured.
- .3 There will be no additional payment for delays resulting from fishing operations.
- .4 There will be no additional payment for downtime.
- .5 Mobilization/demobilization of equipment to be lump sum will not be measured for payment included in the above pay items.
- .6 Construction and maintenance of haul roads will not be measured for payment.

PART 2 - PRODUCTS

2.1 ROCK MATERIAL

- .1 Hard, angular rock free from cracks, seams and other defects which may impair durability.
- .2 Relative density, 2.65 minimum.
- .3 Absorption, 1.5 to 2.0% maximum as determined by ASTM C127 test procedure.
- .4 Durability, less than 35% abrasion Wear, ASTM C535 test procedure.
- .5 Sulphate Soundness Determination maximum 12% by ASTM C88.

2.2 ARMOUR STONE

- .1 Hard, dense with relative density (formally specific gravity) not less than 2.65, durable quarry stone, free from seams, cracks or other structural defects, to meet following size distribution for use intended.
- .2 Material for armour stone to be blasted rock or field stone.

- 2.2 ARMOUR STONE
(Cont'd)
- .3 Stone sizes to be in the range of 3 to 5 tonnes, in categories specified, well graded within each category.
 - .4 Greatest dimension of each stone not to exceed two (2) times least dimension.
 - .5 Supply rock spalls to fill open joints.

PART 3 - EXECUTION

- 3.1 GENERAL
- .1 Contractors will not be permitted to work the existing wharf deck. No equipment allowed on or operate from the structure.

- 3.2 PREPARATION
- .1 Haul roads: construct and maintain haul roads.

- 3.3 PLACING
- .1 Place armour stone to lines, grades and dimensions indicated on the drawings. Contractor should realize the distance required to place the armour stone out into the water, supply necessary equipment to complete as shown on drawings.
 - .2 Dumping of armour stone will not be permitted. Each stone will be lifted and individually placed.
 - .3 Side slopes to be 1.5 horizontal to 1.0 vertical unless otherwise indicated on the drawings.
 - .4 Place armour stone to a total layer thickness as indicated on the drawings.
 - .5 Choose stones and place them in such a way that the whole structure will be bonded and consolidated to as great an extent as nature or rock will allow. Rocks should vary in size so they don't grade lines as indicated on the drawings.
 - .6 Do not transport different categories of material in the same truckload. If rocks of markedly different sizes are present in the same load, Departmental Representative reserves the right to have each rock measured separately and sorted prior to installing in structure.

3.3 PLACING
(Cont'd)

- .7 Contractor to provide cross sections to the Departmental Representative at 10 metre stations to show that lines and grades have been achieved as shown on the drawings. Measurement for payment for this work will be included in the cost of the supply and installing the above item.

3.4 ROCK MATERIAL
WASHED OUT OF WORK

- .1 Should during the progress of the Work, any rock material be washed out of the Work, or through neglect or carelessness of the Contractor or their employees or from any other cause, be dumped into the water near the Work or anywhere within the harbour or channel so as to interfere in the opinion of the Departmental Representative with actual depths of water and/or impede navigation, it will be removed by the Contractor when ordered to do so by the Departmental Representative. Any material washed out of the Work or displaced beyond the contract limits will be replaced by the Contractor at no cost to Canada.

3.5 TOLERANCES

- .1 Note: These tolerances are not to be considered pay limits but are specified to ensure contractor keeps within acceptable lines and grades.
- .2 Completed component layers to be within the following tolerances of lines and grades as indicated:
- .1 Armour stone +/-300 mm.

**FISHERIES AND OCEANS
CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA) 2012
PROJECT EFFECTS DETERMINATION REPORT**

GENERAL INFORMATION

1. Project Title: Slipway Demolition & Reconstruction, River of Ponds, NL	
2 Proponent: Fisheries and Oceans Canada, Small Craft Harbours (DFO SCH)	
3. Other Contacts (Other Proponent, Consultant or Contractor): Public Works and Government Services Canada	4. Role: OGD Consultant
5. Source of Project Information: Paul Curran, Chief Engineer, DFO – Small Craft Harbours	
6. Project Review Start Date: September 7, 2018	
7. PATH No.: NA	8. PWGSC File No:
9. TC File No.: NPP #8200-02-1253 / TC NEATS: 48947	

BACKGROUND

10. Background about Proposed Development (including a description of the proposed development):

The scope of work includes the removal and replacement of the existing slipway and installation of a new concrete boat launch at the DFO-SCH facility in River of Ponds, NL (see appendix A).

PROJECT REVIEW

11. DFO's rationale for the project review:

Project is on federal land and:

- DFO is the proponent
- DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit
- DFO to provide financial assistance to another party to enable the project to proceed
- DFO to lease or sell federal land to enable the project to proceed
- Other

12. Fisheries Act Sections (if applicable):

n/a

<p>13. Other Authorities</p> <ul style="list-style-type: none">• Transport Canada – Navigation Protection Program (NPP) and Environmental Affairs and Aboriginal Consultation Unit	<p>14. Other Authorities rationale for involvement:</p> <ul style="list-style-type: none">• <i>Navigation Protection Act</i>
<p>15. Other Jurisdiction:</p> <ul style="list-style-type: none">• Department of Municipal Affairs and Environment, Pollution Prevention Division (NLDMAE PP)	

<p>16. Other Expert Departments Providing Advice:</p> <ul style="list-style-type: none"> • N/A 	<p>17. Areas of Interest of Expert Departments:</p> <ul style="list-style-type: none"> • N/A
<p>18. Other Contacts and Responses: n/a</p>	
<p>19. Scope of Project (details of the project subject to review):</p> <p><u>Project Description</u></p> <p>The proposed project involves removing dilapidated sections of an existing slipway and the installation of a new slipway, complete with rock filled timber cribs, concrete levelling pad, dowelled bars, reinforced concrete deck topping and timber beam runners. The slipway component is approximately 50 m wide by 31 m long. The new footprint will follow the same alignment as the existing. Treated timber will have to be disposed of in an approved landfill.</p> <p>The majority of the rehabilitation work will take place outside of the water, however, for removal and replacement of the concrete toe it is likely that an excavator will work from the shoreline to manipulate existing cobble and boulder to accommodate the new concrete slabs.</p> <p>A new concrete boat launch way will be installed east of the existing slipway. The boat launch is approximately 5 m wide by 41 m long. Existing material will be excavated from the shoreline in order to place the new boat launch way. Construction debris will be disposed of appropriately as per regulatory approvals. All rock crib ballast material will be obtained from a local licensed quarry and trucked to the site.</p> <p>Refer to the site plans in Appendix B.</p> <p><u>Operation/Maintenance</u></p> <p>The Environmental Management System with an integrated Environmental Management Plan for the Harbour Authority of River of Ponds will cover operational aspects of environmental management at the harbour (fuelling, waste disposal, activities on the property and water). As such, environmental effects resulting from the SCH operations are not considered further in this project effects determination.</p> <p><u>Decommissioning</u></p> <p>This facility is not presently planned to be decommissioned. At the time of decommissioning, Small Craft Harbours will develop a site-specific re-use or reclamation plan that is appropriate for the applicable environmental legislation and Fisheries and Oceans Canada policies.</p> <p><u>Scheduling</u></p> <p>Commencement of this project is subject to DFO SCH operational priorities and funding, as well as regulatory approval, but will likely proceed during the 2018-2019 fiscal year.</p>	
<p>20. Location of Project:</p> <p>River of Ponds is a community located off Route 430, 40 km northeast of Daniels Harbour, NL at coordinates 50° 31' 18" N, 57° 23' 28" W.</p>	

21. Environment Description:

The proposed project site is located in River of Ponds, NL. River of Ponds is located in the Northern Peninsula Forest Ecoregion. This ecoregion differs from most other forested parts of the island by the shortness of the vegetation season, 110-150 days compared to 145-170 days for other areas. The frost-free period is comparable to most other areas and somewhat better than in Central Newfoundland. Precipitation is lower, however, because of low summer temperatures and shorter vegetation season, soil moisture supply is probably adequate at most times.

The soils are comparable to those of Western Newfoundland. Limestone underlies most of the region, with acidic rocks more common on the eastern side of the peninsula.

Balsam Fir is the dominant forest cover except at high elevations (300-400m) on the eastern side of the peninsula where Black Spruce appears to be a natural component of the stands. There is very little fire history in this ecoregion. White Pine, Red Maple, Yellow Birch and Trembling Aspen are conspicuous by their absence. There are approximately 100 species of plants that are excluded from this ecoregion presumably because of the difference of climate (Damman 1965, 1976, and 1983). One of the most conspicuous changes is the replacement of *Alnus rugosa* by *Alnus crispa*, *Salix pellita* and *Salix planifolia* in swamps. Tall shrubs such as *Nemopanthus mucronata*, *Viburnum cassinoides* and *Rhododendron canadense* are sparse or lacking in the scrub bog-border forests. Silviculturally, they are similar to Western Newfoundland with hardwoods rather than ericaceous shrubs being the most common brush problem on understocked cutovers. *Ribes glandulosum*, *Ribes triste* and *Cornus stolonifera* appear to be a much more conspicuous component of seral vegetation on cutovers. Raspberry is also very abundant in the early years of succession.

Water depth at the proposed project site ranges between 0.9 – 2.0 metres.

Species at Risk (Aquatic and Terrestrial)

A search of the Atlantic Canada Conservation Data Centre (ACCDC) database was conducted. The ACCDC provided a list of rare/unique species (i.e. plants and animals) within a 5 km buffer zone (standard ACCDC procedure) of the site. All species were cross-referenced with Schedule 1 of the Species at Risk Act (SARA) listed as extirpated, endangered, threatened, or special concern. No species were identified within this buffer.

22. Scope of Effects Considered (sections 5(1) and 5(2)):

Table 1: Potential Project / Environment Interactions Matrix

Project Phase / Physical Work/Activity	As per Section 5(1)			Section 5(1c) Aboriginal Interest				Section 5(2)			Due Diligence			
	Fish (Fisheries Act)	Aquatic Species (SARA)	Birds (MBCA)	Health and Socio economic	Physical and cultural heritage	Land use	*HAPA Significance	Health and Socio economic	Physical and cultural heritage	*HAPA Significance	Water (ground, surface, drainage, etc)	Terrestrial / Aquatic Species	Soil/Marine Sediments	Air Quality
Construction/Installation														
Slipway Demolition/Reconstruction	P	P	-	-	-	-	-	-	-	-	P	-	-	P
Boat Launch Installation	P	P	-	-	-	-	-	-	-	-	P	-	-	P
Operation / Maintenance	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decommissioning / Abandonment	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*structure, site or thing that is of historical, archaeological, paleontological or architectural significance.
 Legend: P = Potential Effect of Project on Environment; '-' = No Interaction

23. Environmental Effects of Project:

In the table above, potential environmental effects were identified. Scoped project activities such as dredging, disposal, wharf construction and infilling have the potential to effect the environment. Each of the potential effects are addressed here:

Fish / Fish Habitat

- Sedimentation and/or increased turbidity as a result of construction activities may negatively impact fish and quality of potential fish habitat.
- Potential fish habitat within the project footprint will be eliminated during construction activities.
- Accidental discharge of heavy machinery fuel/fluids will negatively impact fish and potential fish habitat.

Effects for Aquatic Species

- Sedimentation and/or increased turbidity as a result of placement of slipway/boat launch materials may negatively impact aquatic species near project site.
- Accidental discharge of heavy machinery fuel/fluids may negatively impact aquatic species near project site.

Water

- Sedimentation and/or increased turbidity as a result of construction activities may decrease marine water quality at immediate project site.
- Accidental discharge of heavy machinery fuel/fluids will result in a decrease of marine water quality.

Air Quality / Noise

- Some minor disruptions and annoyance to facility users and residents who live in close proximity to the project site can be anticipated from project activities and the use of heavy equipment.

Navigation

- Potential for direct effects to navigation.

24. Mitigation Measures for Project (including Habitat Compensation):

Minimize duration of in water work.

Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.

Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation. Plan activities near water such that materials such as paint, primers, blasting abrasives, rush solvents, degreasers, grout, or other chemicals do not enter the watercourse.

Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.

Remove all construction materials from site upon project completion and dispose of at appropriately approved facilities.

Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.

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 the waterbody.

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.

Several environmental approvals / permits have been obtained on behalf of SCH. These include:

1. Pollution Prevention Division provided approval to dispose of creosote treated timber material to an approved landfill.
1. Transport Canada may provide approval under the Navigation Protection Act (NPA).

These approvals are attached in Appendix C and all conditions/mitigation measures must be reviewed and implemented by the contractor. Results of the timber analysis is available in Appendix D.

The project is covered under NL DMAE Terms & Conditions, and the conditions associated with Transport Canada's, Navigation Protection Act authorization. Fisheries and Oceans Canada, Fisheries Protection Program determined that the project would likely not result in Serious Harm to fish or fish habitat and prescribed several mitigation measures to help mitigate potential environmental impacts (Included above).

The proponent should ensure that copies of all regulatory approvals are available on-site during project activities.

Workers in contact with hazardous materials (e.g. wastes) must be provided with and use appropriate personal protective equipment;

Proper safety procedures must be followed during the duration of the project as per applicable municipal, provincial, and federal regulations;

Employees will be trained in health and safety protocols (e.g. safe work practices, emergency response).

Environmental effects of the project on navigation are taken into consideration as part of the Project Effects Determination (PED) only when the effects are indirect, i.e. resulting from a change in the environment affecting navigation. Direct effects on navigation are not considered in the PED, but any measures necessary to mitigate direct effects will be included as terms and conditions associated with the work approved or permitted pursuant to the Navigation Protection Act.

25. Significance of Adverse Environmental Effects of project:

Significant adverse environmental effects are unlikely, taking into account mitigation measures.

26, Other Considerations (Public Consultation, Aboriginal Consultation, Follow-up)

Public Consultation

The proposed project will provide more adequate and secure access for vessels utilizing this facility. No negative public concern was received as a result of this project. SCH consulted the local harbor users and Harbour Authority on all aspects of the project to ensure all requirements at the site were considered during design.

Aboriginal Consultation

Aboriginal fishers are not known to utilize the River of Ponds SCH facility, nor are there any known aboriginal groups in the surrounding area. As such, aboriginal consultation was not deemed necessary as part of this determination.

Government Consultation

Federal and provincial authorities likely to have an interest in the project were consulted by Public Works & Government Services Canada, Environmental Services, during the course of this assessment. A project description was distributed to the following authorities:

- Transport Canada – Navigation Protection Program and Environmental Affairs and Aboriginal Consultation Unit
- NL Department of Municipal Affairs and Environment Pollution Prevention Division

Accuracy and Compliance Monitoring

A follow-up program (as defined in S. 2(1) and as applicable to non-designated projects on federal lands) is a program for determining the effectiveness of any mitigation measures. Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented. The proponent must provide site access to Responsible Authority officials and/or its agents upon request.

27. Other Monitoring and Compliance Requirements (e.g. *Fisheries Act* or *Species at Risk Act* requirements)

n/a

CONCLUSION

28. Conclusion on Significance of Adverse Environmental Effects:

The Federal Authorities have evaluated the project in accordance with Section 67 of *Canadian Environmental Assessment Act (CEAA), 2012*. On the basis of this evaluation, the departments have determined that the project is not likely to cause significant adverse environmental effects with mitigation and therefore can proceed as outlined.

29. Prepared by: Natasha Warren 30. Date: November 13, 2018

31. Name: Natasha Warren

32. Title: Environmental Specialist, PWGSC-ES

DECISION

33. Decision Taken

- DFO may exercise its power, duty or function, i.e. may issue the authorization - where the project is not likely to cause significant adverse environmental effects. Confirm below the specific power, duty or function that may be exercised.
- DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit
 - DFO to proceed with project (as proponent)
 - DFO to provide financial assistance for project to proceed
 - DFO to provide federal land for project to proceed
- DFO has decided not to exercise its power, duty or function because the project is likely to cause significant adverse environmental effects.
- DFO to ask the Governor in Council to determine if the significant adverse environmental effects are justified in the circumstances




34. Approved by: Paul Curran 35. Date: Dec 18/18

36. Name: Paul Curran

37. Title: Regional Engineer, DFO-SCH, NL

38. References: n/a

39. TRANSPORT CANADA RECOMMENDATION

Project Title:	DFO-SCH River of Ponds, NL - Slipway Demolition and Reconstruction	
TC File No.:	48947	
NPP File No.:	NPP #8200-02-1253	
Environmental Review Decision:	Taking into account the implementation of any mitigation measures that Transport Canada considers appropriate, the project is not likely to cause significant adverse environmental effects and, as such, Transport Canada may exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part.	
Prepared by:	Melissa Ginn Environmental Officer Environmental Affairs and Aboriginal Consultation Unit	
Signature:		Date: Dec. 19, 2018
Mailing Address:	10 Barter's Hill, St. John's, NL	
Tel:	709-772-3088 / 709-351-3200	
Fax:	709-772-3072	
Email:	melissa.ginn@tc.gc.ca	
Recommended by:	J. Jason Flanagan Senior Environmental Assessment Officer Environmental Affairs and Aboriginal Consultation Unit	
Signature:		Date: December 19, 2018
Approved by:	Kevin LeBlanc Regional Manager Environmental Affairs and Aboriginal Consultation Unit	
Signature:		Date: December 20, 2019

Appendix A FIGURES

- Topo Map
- Aerial Photographs

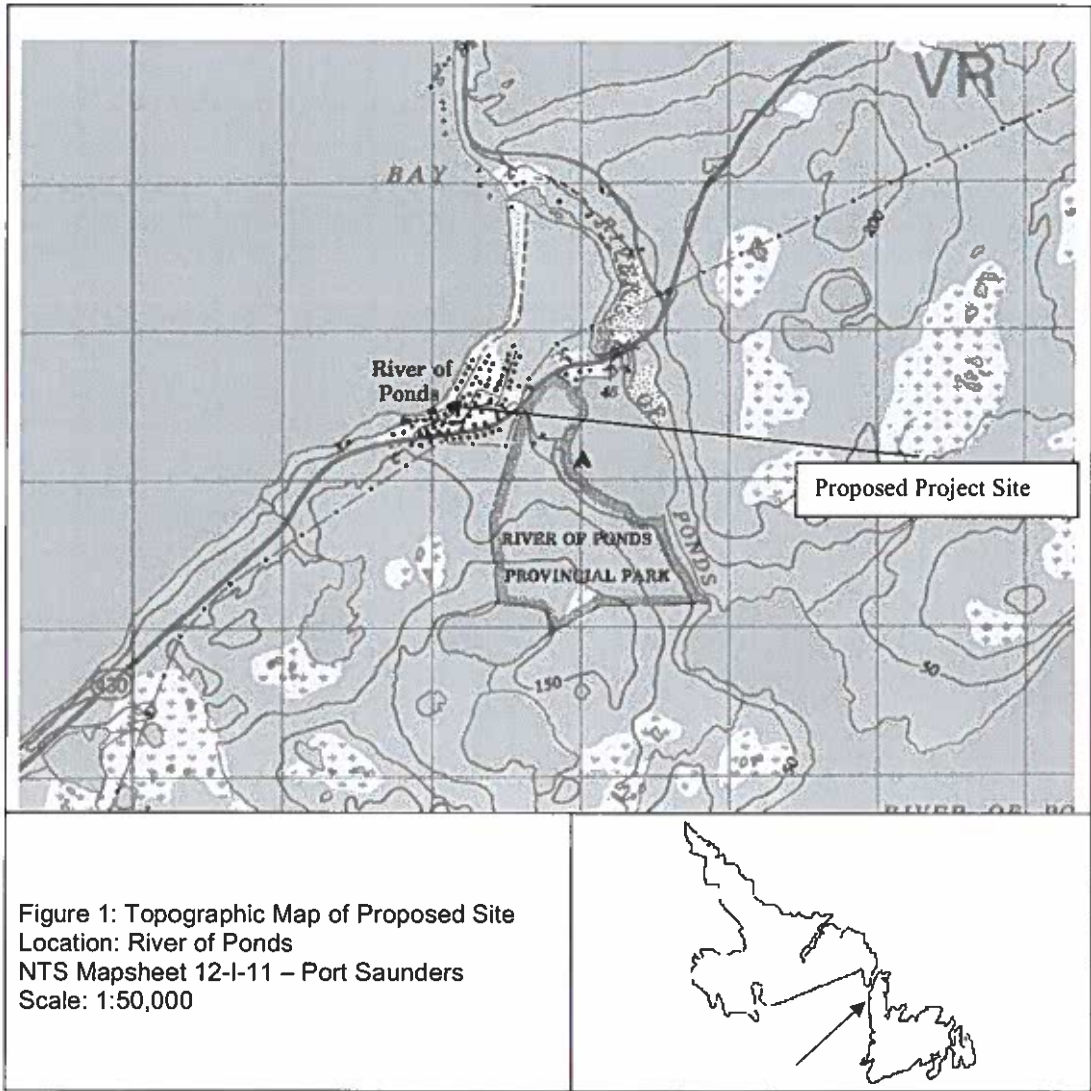


Figure 1: Topographic Map indicating project site.

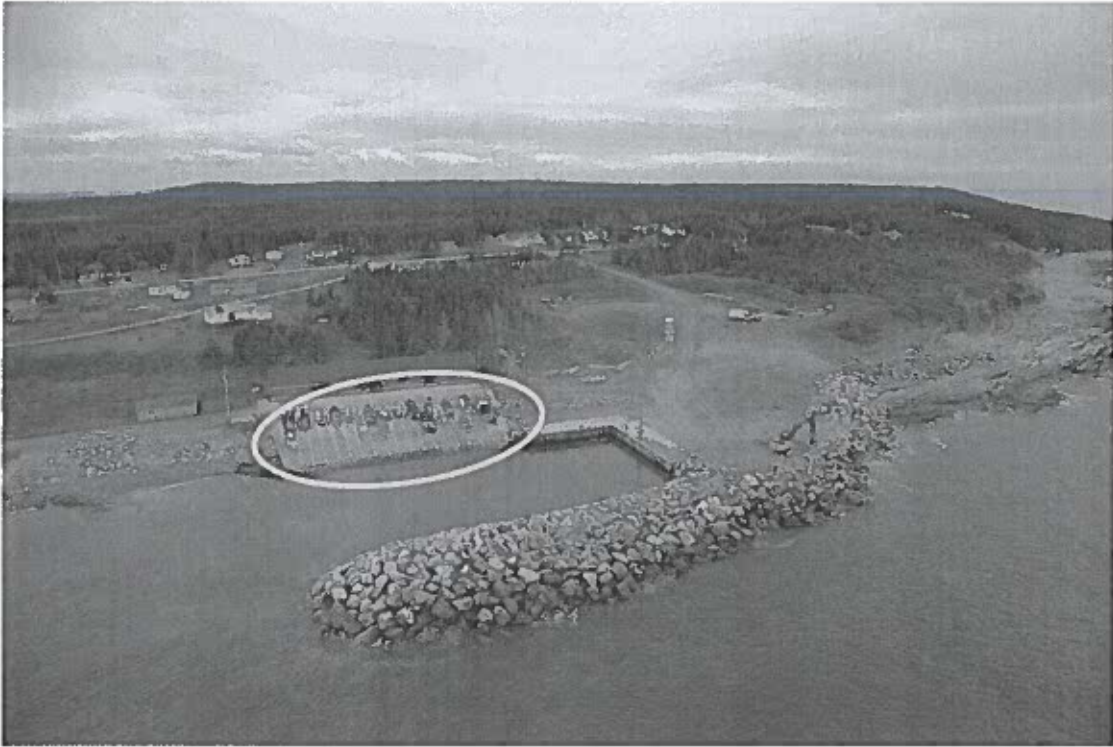


Figure 2: Location of proposed project (DFO Aerial Photograph 2015).

Appendix B SITE PLANS

Appendix C REGULATORY APPROVALS



Wed 07/11/2018 2:49 PM

Hann, Joan <joanhann@gov.nl.ca>

FW: Service NL Referral for Treated Timber Disposal - DFO SCH Western Area - River of Ponds, NL

To: [Natalie H. Warren](#)

cc: [Goosey, Debbie](#); [Mark McNeil](#)

Message

Hann Timber disposal to River of Ponds.pdf

Hello Natasha

Based upon the results above the TWW can be disposal of at an approved WDS. Please ensure all disposal documents are forwarded to the department. Debbie (EPO with SNL) can provide the location of WDS. Thanks

Joan Hann
Environmental Scientist
Pollution Prevention Division
Department of Municipal Affairs and Environment
4th Floor, Confederation Building, West Block
P.O. Box 8700
St. John's, NL, Canada A1B 4J6
Email: joanhann@gov.nl.ca
Phone: 709-729-1771

Appendix D TIMBER RESULTS



Your P.O. #: 700419969
Site Location: River of Ponds, NL
Your C.O.C. #: n/a

Attention: Mark McNeil
Public Works & Government Services Canada
PO Box 4600
10 Barter's Hill
St. John's, NL
CANADA A1C 5T2

Report Date: 2018/11/01
Report #: R546713B
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B856477
Received: 2018/10/29, 09:12

Sample Matrix: Solid
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Semivolatile Organic Compounds (TCLP) (1)	3	2018/10/31	2018/11/01	CAM SOP-00301	EPA 8270D m
TCLP - % Solids (1)	3	2018/10/31	2018/11/01	CAM SOP-00401	EPA 1311 Update f m
TCLP - Extraction Fluid (1)	3	N/A	2018/11/01	CAM SOP-00401	EPA 1311 Update f m
TCLP - Initial and final pH (1)	3	N/A	2018/11/01	CAM SOP-00401	EPA 1311 Update f m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga



Your P.O. #: 700419969
Site Location: River of Ponds, NL
Your C.O.C. #: n/a

Attention: Mark McNeil
Public Works & Government Services Canada
PO Box 4600
10 Barter's Hill
St. John's, NL
CANADA A1C 5T2

Report Date: 2018/11/01
Report #: R5467138
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B856477
Received: 2018/10/29, 09:12

Encryption Key



Maxxam
01 Nov 2018 19:00:16

Please direct all questions regarding this Certificate of Analysis to your Project Manager,
Maryann Comeau, Project Manager
Email: MComeau@maxxam.ca
Phone# (902) 420-0203

This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B856477
 Report Date: 2018/11/01

Public Works & Government Services Canada
 Site Location: River of Ponds, NL
 Your P.O. #: 700419969
 Sampler Initials: SSC

RESULTS OF ANALYSES OF SOLID

Maxxam ID		IDL530	IDL531	IDL532		
Sampling Date		2018/10/22 14:00	2018/10/22 14:00	2018/10/22 14:00		
COC Number		n/a	n/a	n/a		
	UNITS	RIVER OF PONDS #1	RIVER OF PONDS #2	RIVER OF PONDS #3	RDL	QC Batch
Inorganics						
Final pH	pH	4.95	5.01	5.05		5810877
Initial pH	pH	8.33	8.07	7.89		5810877
TCCLP - % Solids	%	100	100	100	0.2	5810875
TCCLP Extraction Fluid	N/A	FLUID 1	FLUID 1	FLUID 1		5810876
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						

SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		IDL530	IDL531	IDL532		
Sampling Date		2018/10/22 14:00	2018/10/22 14:00	2018/10/22 14:00		
COC Number		n/a	n/a	n/a		
	UNITS	RIVER OF PONDS #1	RIVER OF PONDS #2	RIVER OF PONDS #3	RDL	QC Batch
Semivolatile Organics						
Leachable Benzo(a)pyrene	ug/L	ND	ND	ND	0.80	5813867
Leachable m/p-Cresol	ug/L	ND	ND	ND	20	5813867
Leachable o-Cresol	ug/L	ND	ND	ND	20	5813867
Leachable Cresol Total	ug/L	ND	ND	ND	20	5813867
Leachable Pentachlorophenol	ug/L	ND	ND	ND	20	5813867
Surrogate Recovery (%)						
Leachable 2,4,6-Tribromophenol	%	83	85	79		5813867
Leachable 2-Fluorobiphenyl	%	72	62	55		5813867
Leachable 2-Fluorophenol	%	49	28	28		5813867
Leachable D14-Terphenyl (FS)	%	98	101	93		5813867
Leachable D5-Nitrobenzene	%	82	51	46		5813867
Leachable D5-Phenol	%	23	16	15		5813867
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not detected						



Maxxam Job #: B8S6477
Report Date: 2018/11/01

Public Works & Government Services Canada
Site Location: River of Ponds, NL
Your P.O. #: 700419969
Sampler Initials: SSC

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.6°C
-----------	-------

Sample IDL530 (RIVER OF PONDS #1) : ABN Leachate ANALYSIS: Due to the nature of the sample, a smaller amount was used for the analysis. Detection limits were adjusted accordingly.

Sample IDL531 (RIVER OF PONDS #2) : ABN Leachate ANALYSIS: Due to the nature of the sample, a smaller amount was used for the analysis. Detection limits were adjusted accordingly.

Sample IDL532 (RIVER OF PONDS #3) : ABN Leachate ANALYSIS: Due to the nature of the sample, a smaller amount was used for the analysis. Detection limits were adjusted accordingly.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits			
5813867	WZ	Matrix Spike	Leachable 2,4,6-Tribromophenol	2018/11/01		85	%	10 - 130			
			Leachable 2-Fluorobiphenyl	2018/11/01		70	%	30 - 130			
			Leachable 2-Fluorophenol	2018/11/01		53	%	10 - 130			
			Leachable D14-Terphenyl (FS)	2018/11/01		100	%	30 - 130			
			Leachable D5-Nitrobenzene	2018/11/01		91	%	30 - 130			
			Leachable D5-Phenol	2018/11/01		30	%	10 - 130			
			Leachable Benzo(a)pyrene	2018/11/01		97	%	30 - 130			
			Leachable m/p-Cresol	2018/11/01		64	%	10 - 130			
			Leachable o-Cresol	2018/11/01		80	%	10 - 130			
			Leachable Cresol Total	2018/11/01		72	%	10 - 130			
			Leachable Pentachlorophenol	2018/11/01		84	%	30 - 130			
			5813867	WZ	Spiked Blank	Leachable 2,4,6-Tribromophenol	2018/11/01		81	%	10 - 130
						Leachable 2-Fluorobiphenyl	2018/11/01		65	%	30 - 130
Leachable 2-Fluorophenol	2018/11/01					50	%	10 - 130			
Leachable D14-Terphenyl (FS)	2018/11/01					96	%	30 - 130			
Leachable D5-Nitrobenzene	2018/11/01					83	%	30 - 130			
Leachable D5-Phenol	2018/11/01					29	%	10 - 130			
Leachable Benzo(a)pyrene	2018/11/01					93	%	30 - 130			
Leachable m/p-Cresol	2018/11/01					61	%	10 - 130			
Leachable o-Cresol	2018/11/01					76	%	10 - 130			
Leachable Cresol Total	2018/11/01					68	%	10 - 130			
Leachable Pentachlorophenol	2018/11/01					79	%	30 - 130			
5813867	WZ	Method Blank				Leachable 2,4,6-Tribromophenol	2018/11/01		77	%	10 - 130
						Leachable 2-Fluorobiphenyl	2018/11/01		69	%	30 - 130
			Leachable 2-Fluorophenol	2018/11/01		44	%	10 - 130			
			Leachable D14-Terphenyl (FS)	2018/11/01		96	%	30 - 130			
			Leachable D5-Nitrobenzene	2018/11/01		82	%	30 - 130			
			Leachable D5-Phenol	2018/11/01		27	%	10 - 130			
			Leachable Benzo(a)pyrene	2018/11/01		ND, RDL=0.10		ug/L			
			Leachable m/p-Cresol	2018/11/01		ND, RDL=2.5		ug/L			
			Leachable o-Cresol	2018/11/01		ND, RDL=2.5		ug/L			
			Leachable Cresol Total	2018/11/01		ND, RDL=2.5		ug/L			
			Leachable Pentachlorophenol	2018/11/01		ND, RDL=2.5		ug/L			
			5813867	WZ	RPD	Leachable Benzo(a)pyrene	2018/11/01		NC	%	40
						Leachable m/p-Cresol	2018/11/01		NC	%	40
Leachable o-Cresol	2018/11/01					NC	%	40			
Leachable Cresol Total	2018/11/01					NC	%	40			
Leachable Pentachlorophenol	2018/11/01					NC	%	40			

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Navigation Protection Program
95 Foundry Street, 6th Floor
Moncton N.B. E1C 8K6

Your file

Our file
8200-02-1253

December 21, 2018

Fisheries and Oceans Canada - SCH
10 Barter's Hill
P.O. Box 5667
St. John's, NL A1C 5X1

Attention: Mr. Paul Curran

RE: Notice to the Minister under the *Navigation Protection Act* for review existing slipway removal and re-construction at River of Ponds in the Province of Newfoundland and Labrador

Our assessment of your work has determined that it is not likely to substantially interfere with navigation.

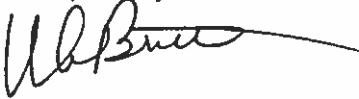
Therefore your work is permitted under section 9(1) of the *Navigation Protection Act* (NPA) and you may proceed per the attached plan(s) in accordance with the following terms and conditions:

1. Construction material and debris are not allowed to become waterborne.
2. A notice to shipping is to be issued prior to commencement and upon completion of work. To issue a notice to shipping the proponent is to contact Canadian Coast Guard Traffic Services at 709 695 2168 or via email at: notshippax@df-mpo.gc.ca.
3. The project is to be constructed in accordance with the approved plans.
4. 0.4 meter yellow cautionary floats are to be placed and maintained to mark the outer seaward leading limits of the work during slipway removal and re-construction. When construction is completed these are to be removed.
5. During construction and slipway removal any floating debris must be contained in the immediate area and removed from the water in a timely manner.
6. If a containment device is placed in the water it must be marked at 15-meter intervals by 0.4 meter yellow cautionary floats
7. All cables, equipment or temporary hazards resulting from the construction activities are to be clearly marked so they are visible to vessels operating in the area.
8. Barges and equipment used in the construction must be visible at all times and be marked in accordance with the Collision Regulations of the Canada Shipping Act.

Please note that permission relates only to the effect of your work on navigation under the NPA. It is the owner's responsibility to comply with any other applicable laws and regulations.

Should you have any questions, please do not hesitate to contact our office in Moncton by phone at (506) 851-3113, by fax at (506) 851-7542 or by e-mail at NPPATL-PPNATL@tc.gc.ca.

Respectfully,

A handwritten signature in black ink, appearing to read 'William Bennett', with a long horizontal flourish extending to the right.

William Bennett
Officer
Navigation Protection Program
Programs Group
Transport Canada
Atlantic Region

CC: Natasha Warren PWGSC
DFO- CHS