SPECIFICATION

SMALL CRAFT HARBOURS
PROJECT No. C2-00475
LUSHES BIGHT MARGINAL WHARF RECONSTRUCTION
LUSHES BIGHT, NL

Issued for tender

OWNER/AGENT:

Small Craft Harbours
Fisheries and Oceans Canada
Northwest Atlantic Fisheries Centre ST. JOHN'S, NL

DATE:

May 05, 2022

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1.1 SCOPE OF WORK

.1 The Work under this Contract consists of the supply of all labour, materials, and equipment required to demolish a portion of the existing native timber crib marginal wharf structure at Lushes Bight, NL and replace it with a new timber crib marginal wharf as described in the Contract Drawings and in this Specification.

.2 Note that the Contractor must incorporate COVID-19 standardized protocols in their site specific Health and Safety Plan. The protocols are to include:

.1 Prevention (signage, practices to reduce risk of transmission, encouragement of social distancing, use of PPE, use of individual modes of transportation, monitoring status of workers, construction jobsite and trailer cleaning protocols,etc.).
.2 Detection (screening at entry of construction site, unauthorized entry points, etc.).
.3 Response measures (shut down procedures, individual case handling, etc.)

1.2 DESCRIPTION

.1 In general, the Work under this contract consists of, but will not necessarily be limited to, the following:

.1 Site Work including mobilization, demobilization, excavation, demolition, hauling, and disposal offsite and onsite.
.2 Any required survey to set location of new Work as indicated on the drawings.
.3 Removal, storage and reinstatement of a portion of

the existing gravel parking area.

.4 Construction of timber cribwork with associated rock ballast, fendering, wheelguard and blocking, Type "B1" mooring cleats and blocks, and ladders.

.5 Supply and placement of new quarried rock fill and Class "A" granular material.

.6 Construction of reinforced concrete wharf deck.

1.3 SITE OF WORK

.1 Work will be carried out at Lushes Bight, Newfoundland and Labrador in the location indicated on the accompanying drawings.

1.4 DATUM

.1 The datum used for this project is Lowest Normal Tides (L.N.T.) which is assumed to be 2.55m below control point PWC 3-2001, a bolt set in the deck of the existing wharf.

.2 Bidders are advised to consult the Tide Tables issued by the Department of Fisheries and Oceans in order to make sure of the tidal conditions affecting Work.

1.5 FAMILIARIZATION WITH SITE

.1 Before submitting a bid, it is recommended that bidders visit the site and its surroundings to review and verify the form, nature, and extent of the Work, materials needed for completion of the Work, and the means of access to the site. The bidders shall also review and verify the 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 in this regard on account of error or negligence in properly determining the conditions that will apply.

.2 Contractors, bidders, or those they invite to site are to review Section 01 35 28 – Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid.

1.6 CODES AND STANDARDS

.1 Perform Work in accordance with the latest edition of the National Building Code of Canada, FC Standard 373 – Standard for Piers and Wharves, and any other codes of provincial or local application, including all amendments up to bid closing date, provided that in any case of conflict or discrepancy, the more stringent requirement shall apply.

.2 Materials and workmanship must meet or exceed requirements of specified standards, codes, and referenced documents.

1.7 TERM ENGINEER

.1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative as defined in the General Conditions of the Contract.

1.8 SETTING OUT WORK

.1 Set grades and layout Work in detail from control points and grades

established by Departmental Representative.

.2 Assume full responsibility for and execute complete layout of Work to locations, lines, and elevations indicated.

.3 Provide devices needed to lay out 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 MEASUREMENT FOR PAYMENT

.1 Notify Departmental Representative sufficiently in advance of operations to permit required measurements for payment.

.2 Regarding items included under "Measurement for Payment" throughout Specifications: all lump sum and all unit price items shall include all materials, labour, equipment, and all other items necessary to complete the Work.

.3 All other information regarding measurement for payment for the various portions of the required Work are found in the relevant Sections of the Specifications.

1.10 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 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 and costs 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.

1.11 WORK SCHEDULE

.1 Submit within seven (7) working 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 completion of each crib, if applicable). Break down the wharf into elements to indicate target dates for completion of each element. Generally, bar charts derived from commercially available computerized project management systems 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 the 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.

1.12 ABBREVIATIONS

.1 The following abbreviations of standard specifications have been used in this Specification and on the Contract Drawings:

CGSB - Canadian Government Specifications Board
CSA - Canadian Standards Association
NLGA - National Lumber Grades Authority
ASTM - American Society for Testing and Materials

.2 Where these abbreviations and standards are used in this project, latest edition in effect on date of bid call will be considered applicable.

1.13 QUARRY AND EXPLOSIVES

.1 Make own arrangements with Provincial Authorities and Owners of 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.

1.14 SITE OPERATIONS

.1 Arrange for sufficient space adjacent to project site to conduct operations, storage of materials, etc. 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.

1.15 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 otherwise directed by Departmental Representative.

.3 Departmental Representative will assume responsibility for recording minutes of meetings and forwarding copies to all parties present at meetings.

.4 Have a responsible member of firm present at all Project Meetings.

1.16 PROTECTION

.1 Store all materials and equipment to be incorporated into Work to prevent damage by any means.

.2 Repair and replace all materials or equipment damaged in transit or storage to the satisfaction of the Departmental Representative and at no cost to Canada.

1.17 EXISTING SERVICES

.1 Where Work involves breaking into or connecting to existing services, carry out Work at times directed by governing authorities, with minimum of disturbance to site operations.

.2 Before commencing Work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

.3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection

of electrical power and communication services to tenant's operational areas. Adhere to approved schedule and provide notice to affected parties.

.4 Provide temporary services, when directed by Departmental Representative, to maintain critical facility systems.

.5 Provide adequate bridging over trenches which cross walkways or roads to permit normal traffic.

.6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.7 Protect, relocate, or maintain existing active services as required. When inactive services are encountered, cap off in a manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed, and abandoned service lines.

1.18 REQUIRED DOCUMENTS

.1 Maintain at job site, one (1) copy each of the following:
- .1 Contract drawings;
- .2 Specifications;
- .3 Addenda;
- .4 Reviewed shop drawings;
- .5 List of outstanding shop drawings;
- .6 Change Orders;
- .7 Other modifications to contract;
- .8 Field test reports;
- .9 Copy of approved Work schedule;
- .10 Site specific Health and Safety Plan and other safety related documents;

.11 Permits and Regulatory Approvals and Requirements;
.12 Other documents as stipulated elsewhere in the Contract Documents.

1.19 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.

.7 See Appendix "A" for Regulatory Approvals and Responses already

obtained by Canada for this project.

1.20 CUTTING, FITTING AND PATCHING

.1 Execute cutting, including excavation, fitting, and patching required to make Work fit properly.

.2 Where new Work connects with existing and where existing Work is altered, cut, patch, and make good to match existing Work.

.3 Do not cut, bore, or sleeve load-bearing members.

.4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

1.21 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.

.2 Contact the Department of Fisheries and Oceans (DFO) (Fisheries Protection Program) detachment at St. John’s, NL at least 48 hours in advance of starting any Work on site.

.3 Maintain on site a copy of DFO’s Letter of Advice regarding this project, and abide by all stipulations, unless otherwise agreed in writing by Departmental Representative.

1.22 NOTICE TO SHIPPING/MARINERS

.1 Notify the Marine Communications and Traffic 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 issuances of Notice 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 WORK COORDINATION

.1 Contractor is responsible for coordinating the Work of the various trades where the Work of such trades interfaces with each other.

.2 Convene meetings between trades whose Work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required. Provide each trade with the plans and specifications of the interfacing trade, as required, to assist them in planning and carrying out their respective Work.

.3 Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination of Work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface Work shall be the sole responsibility of the Contractor and

shall be resolved at no extra cost to Canada.

1.25 CONTRACTOR'S USE OF SITE

.1 The Contractor shall be responsible for arranging the storage of materials on or off site, and any materials stored at the site which interfere with any of the day to day activities at or near the site will be moved promptly at the Contractor's expense, upon request by the Departmental Representative.

.2 Contractor will take adequate precautions to protect existing concrete and asphalt when operating tracked equipment.

.3 Contractor shall exercise care so as not to obstruct or damage public or private property in the area.

.4 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 materials, 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 Health and Safety Plan, unless otherwise agreed by Departmental Representative.

.2 Project Work on site is to commence as soon as possible with a continuous reasonable workforce 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 workforce to complete the project within the specified completion time.

.4 Make every effort to ensure that sufficient material and equipment is delivered to site at the earliest possible date after acceptance of bid and replenished as required.

1.27 FACILITY SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

1.28 INTERPRETATION OF DOCUMENTS

.1 Supplementary to the General Conditions, the Division 01 Sections of the Specifications take precedence over technical specification in other divisions of the specifications.

1.29 ASBESTOS DISCOVERY

.1 Demolition of spray or trowel-applied asbestos can be hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of Work, stop Work and notify Departmental Representative immediately. Do not proceed with relevant Work until written instructions have been received from Departmental Representative.

END OF SECTION

1.1 SECTION INCLUDES

.1 Inspecting and testing by inspecting firms or testing laboratories designated by Departmental Representatives.

1.2 RELATED REQUIREMENTS

.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 as follows:

.1 Inspection and testing required by 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 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 as 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 for inspection and testing;
- .2 Facilitate inspections and tests;
- .3 Make good Work disturbed by inspection and testing;
- .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 tests.

.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.

END OF SECTION

1.1 SECTION INCLUDES

.1 Shop drawings and product data.

.2 Samples.

.3 Certificates.

1.2 RELATED SECTIONS

.1 Section 01 78 00 - Closeout Submittals.

1.3 SUBMITTAL GENERAL REQUIREMENTS

.1 Submit to Departmental Representative for review requested submittals specified in various sections of the Specifications including shop drawings, samples, permits, compliance certificates, test reports, Work management plans, and other data required as part of the Work.

.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 have been reviewed.

.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 coordinated 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 Verify field measurements and affected adjacent Work are coordinated.

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

.9 Contractor's responsibility for errors, omissions, or deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.

.10 Submittal format: paper originals, or alternatively clear and fully legible photocopies of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental Representative. Poorly printed non-legible photocopies or facsimiles will not be accepted and will be returned for resubmission.

.11 Make changes or revisions to

submissions which Departmental Representative may require, consistent with Contract Documents, and resubmit as directed by Departmental Representative. When resubmitting, identify in writing of any revisions other than those requested.

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

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means fabrication drawings, erection drawings, diagrams, illustrations, schedules, performance charts, technical product data, brochures, Specifications, test reports, installation instructions, and other data which are to be provided by Contractor to illustrate compliance with specified materials and details of a portion of Work.

.2 Number of Shop Drawings: Submit sufficient copies required by the General Contractor and sub-contractors plus one (1) copy which will be retained by Departmental Representative. Additionally, ensure that a complete set is provided in digital file format.

.3 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 will be returned not reviewed.

.4 Shop drawings can be submitted in digital form.

.4 Shop Drawings Content:

.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 has been coordinated, regardless of section or trade from which the adjacent Work is being supplied and installed.

.2 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.

.3 Delete information not applicable to project on all submittals.

.5 Allow fourteen (14) calendar days for Departmental Representative's review of each submission.

.6 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to

change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.

.7 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of Work until resubmission and review of corrected shop drawings has been completed, through same submission procedures indicated above.

.8 Be advised that costs and expenses incurred by Departmental Representative to conduct more than one review of incorrectly prepared shop drawing submittal for a particular material, equipment, or component of Work may be assessed against the Contractor in the form of a financial holdback to the Contract.

.9 Accompany each submission with transmittal letter, in duplicate, containing:
.1 Date;
.2 Project title and project number;
.3 Contractor's name and address;
.4 Identification and quantity of each shop drawing, product data, and sample;
.5 Other pertinent data.

.10 Submissions shall include:
.1 Date and revision dates;

.2 Project title and project number;
.3 Name and address of:
  .1 Subcontractor;
  .2 Supplier;
  .3 Manufacturer;
.4 Contractor's stamp, signed by Contractor's authorized Representative certifying approval of submissions, verification of field measurements, and compliance with Contract Documents;
.5 Cross references to particular details of Contract Drawings and Specifications section number for which shop drawing submission addresses;
.6 Details of appropriate portions of Work as applicable:
  .1 Fabrication;
  .2 Layout, showing dimensions, including identified field dimensions, and clearances;
  .3 Setting or erection details;
  .4 Capacities;
  .5 Performance characteristics;
  .6 Standards;
  .7 Operating weight;
  .8 Wiring diagrams;
  .9 Single line and schematic diagrams;
  .10 Relationship to adjacent Work.

.11 After Departmental Representative's review, distribute copies.

.12 The review of shop drawings by the Departmental Representative or by an authorized Consultant or designate

is for sole purpose of ascertaining conformance with general concept. This review shall not mean that Department of Fisheries and Oceans approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for co-ordination of Work of all sub-trades.

1.5 SAMPLES

.1 Submit for review samples as specified in respective Specification Sections. Label samples with origin and intended use.

.2 Deliver samples to Departmental Representative's office or to other address as directed. Do not drop off samples at construction site except for pre-approved circumstances previously approved by Departmental Representative.

.3 Notify Departmental Representative in writing, at time of submission, of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern, or texture is

criterion, submit full range of samples.

.5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments will result in a cost increase to the Contract notify Departmental Representative in writing prior to proceeding with Work.

.6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 SCHEDULES, PERMITS AND CERTIFICATES

.1 Upon acceptance of bid, submit to Departmental Representative copy of Work Schedule and various other schedules, permits, certification documents, and project management plans as specified in other sections of the Specifications.

.2 Submit copy of permits, notices, and compliance Certificates received from Regulatory Agencies having jurisdiction and as applicable to the Work.

.3 Submission of above documents to be in accordance with "01 33 00 1.3 – Submittal General Requirements" procedures specified in this section.

END OF SECTION

1.1 SECTION INCLUDES

.1 Fire Safety Requirements.

.2 Hot Work Permit.

.3 Existing Fire Protection and Alarm Systems.

1.2 RELATED WORK

.1 Section 01 35 25 – Special Procedures on Lockout Requirements.

.2 Section 01 35 28 - Health and Safety Requirements.

1.3 REFERENCES

.1 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
  .1 FCC No. 301-June 1982 Standard for Construction Operations;
  .2 FCC No. 302-June 1982 Standard for Welding and Cutting.

.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 fourteen (14)

calendar days of acceptance of bid.

.2 Submit in accordance with the Submittal General Requirements specified in Section 01 33 00.

1.6 FIRE SAFETY REQUIREMENTS

.1 Implement and follow fire safety measures during Work. Comply with following:
.1 National Fire Code 2015;
.2 National Building Code 2015;
.3 Federal and Provincial Occupational Health and Safety Acts and Regulations.

.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 and followed during

performance of Hot Work, Departmental Representative will give authorization to proceed as follows:

.1 Issue one written "Authorization to Proceed" covering the entire project for duration of Work or;

.2 Subdivide the Work into pre-determined, individual activities, each activity requiring a separately written authorization to proceed.

.4 Requirement for individual authorization will be based on:

.1 Nature or phasing of Work;

.2 Risk to Facility operations;

.3 Quantity of various trades needing to perform Hot Work on project or;

.4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.

.5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of Work.

.6 In tenant occupied Facility, coordinate performance of Hot Work with Facility Manager through the Departmental Representative. When directed, perform Hot Work only during non-operative hours of the Facility. Follow Departmental Representative's directives in this regard.

1.8 HOT WORK PROCEDURES

.1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.

.2 Hot Work Procedures to include:

.1 Requirement to perform hazard assessment of site and immediate Work area beforehand for each Hot Work event in accordance with Health and Safety Plan specified in section 01 35 28.

.2 Use of a Hot Work Permit system for each Hot Work event.

.3 The step-by-step process of how to prepare and issue a Hot Work permit.

.4 Permit shall be issued by Contractor’s site Superintendent, or other authorized person designated by Contractor, granting permission to Hot Work or for subcontractor to proceed with Hot Work.

.5 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 60 minutes immediately following the completion of the Hot Work.

.6 Compliance with fire safety codes, standards, and occupational health and safety regulations specified in Section 01 35 28.

.7 Site specific rules and procedures in force at the site as provided by the Facility Manager.

.3 Generic procedures, if used, must be

edited and supplemented with pertinent information tailored to reflect specific project conditions. Label document as being the Hot Work Procedures for this contract.

.4 Procedures shall clearly establish worker instructions and allocate responsibilities of:
.1 Worker performing Hot Work;
.2 Authorized person issuing the Hot Work Permit;
.3 Fire Safety Watcher;
.4 Subcontractor(s) and Contractor.

.5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.

.6 Failure to comply with fire safety procedures may result in the issuance of a Non-Compliance notification at Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 28.

1.9 HOT WORK PERMIT

.1 Hot Work Permit to include, at a minimum, the following:
.1 Project name and project number;
.2 Site name, address, and specific room or area where Hot Work will be performed;
.3 Date of issue;
.4 Description of Hot Work type needed;
.5 Special precautions to be followed, 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 issued;
.8 Permit validity period not to exceed eight (8) hours. Indicate start time/date and termination time/date;
.9 Worker's signature with time/date of Hot Work completion;
.10 Stipulated time period of 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

.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/or hose systems for purposes other than firefighting.

.3 Costs incurred from the fire department, Facility owner, and/or 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.

END OF SECTION

1.1 SECTION INCLUDES

.1 Procedures to isolate and lockout electrical facility and other equipment from energy sources.

1.2 RELATED WORK

.1 Section 01 35 24 – Special Procedures on Fire Safety Requirements.

.2 Section 01 35 28 – Health and Safety.

1.3 REFERENCES

.1 CSA C22.1-06 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.

.2 CAN/CSA C22.3 No.1-06 - Overhead Systems.

.3 CSA C22.3 No.7-06 - Underground Systems.

.4 COSH: 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 has

been 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.

.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 Comply with the following in regards to isolation and lockout of electrical facilities and equipment:
.1 Canadian Electrical Code;
.2 Federal and Provincial Occupational Health and Safety Acts and Regulations;

.3 Regulations and codes 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 of lockout permit or lockout tags to Departmental Representative for review within seven (7) calendar days of acceptance of bid. Do not proceed with Work until submittal has been reviewed by Departmental Representative.

.2 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.3 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 working on existing live or active electrical facilities and equipment and before proceeding with isolation of such item.

.2 To obtain authorization, submit to Departmental Representative the

following documentation:
.1 Written request to isolate the particular 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, as follows:
.1 Fill-out standard form in current use at the Facility as provided by Departmental Representative or;
.2 Where no form exists, make written request indicating:
.1 The equipment, system, or service to be isolated and its location;
.2 Duration of isolation period (i.e.: start time & date and completion time & date);
.3 Voltage of service feed to system or equipment being isolated;
.4 Name of person making the request.

.4 Do not proceed with isolation until receipt of written notification from Departmental Representative granting the Isolation Request and authorization to proceed with the Work.
.1 Note that Departmental Representative may designate another person at the Facility being authorized to grant the Isolation Request.

.5 Conduct safe, orderly shut down of equipment or facility. De-energize,

isolate, and lockout power and other sources of energy feeding the equipment or facility.

.6 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require isolation of existing services.

.7 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. Follow Departmental Representative's directives in this regard.

.8 Conduct hazard assessment as part of the process in accordance with health and safety requirements specified in Section 01 35 28.

1.8 LOCKOUTS

.1 De-energize, isolate, and lockout electrical facility, mechanical equipment, and machinery from all potential sources of energy prior to working on such items.

.2 Develop and implement clear and specific Lockout Procedures to be followed as part of the Work.

.3 Prepare typewritten Lockout Procedures describing safe work practices, procedures, worker responsibilities, and sequence of activities to be followed on site by workforce to safely isolate an active piece of equipment or electrical facility and effectively

lockout and tagout its sources of energy.

.4 Include as part of the Lockout Procedures a system of lockout permits managed by Contractor's Superintendent or other qualified person designated by him/her as being "in-charge" at the site.

.1 A lockout permit shall be issued to a specific worker providing a Guarantee of Isolation before each event when Work must be performed on a live equipment or electrical facility.

.2 Duties of person managing the permit system to include:

.1 Issuance of permits and lockout tags to workers;

.2 Determining permit duration;

.3 Maintaining record of permits and tags issued;

.4 Making a Request for Isolation to Departmental Representative when required as specified above;

.5 Designating a Safety Watcher, when one is required based on type of Work;

.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.

.5 Clearly establish, describe, and allocate, within procedures, responsibilities of:
.1 Workers;
.2 Person managing the lockout permit system;
.3 Safety Watcher;
.4 Subcontractor(s) and General Contractor.

.6 Generic procedures, if used, must be edited and supplemented with pertinent information to reflect specific project requirements.
.1 Incorporate site-specific rules and procedures in force at site as provided by Facility Manager through the Departmental Representative.
.2 Clearly label the document as being the Lockout Procedures applicable to Work of this contract.

.7 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.

.8 Use industry standard lockout tags.

.9 Provide appropriate safety grounding and guards as required.

.10 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 Brief all workers and subcontractors on requirements of this section. Stringently enforce use and

compliance.

.2 Ensure that Lockout Procedures, as established for project on site, are stringently followed. Enforce use and compliance by all workers.

.3 Failure to follow Lockout Procedures specified herein or according to regulatory authority may result in the issuance of a Non-Compliance notification at the Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 28.

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 forms and lockout permits and tags issued to workers on site for full duration of Work.

.3 Upon request, make such data available to Departmental Representative or to authorized safety Representative for inspection.

END OF SECTION

1.1 RELATED SECTIONS

.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 COSH: 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 Knowledgeable 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 or 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 – Submittal Procedures.

.2 Submit site-specific Health and Safety Plan prior to commencement of Work.

.1 Submit within seven (7) work days of notification of Bid Acceptance. Allow for seven to ten (7 to 10) days for Department review and recommendations prior to the commencement of Work.

.2 Departmental Representative will review Health and Safety Plan and provide comments.

.3 Revise the Plan as appropriate and resubmit within five (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.

.5 Submit revisions and updates made to the Plan during the course of Work.

.3 Submit name of designated Health and Safety Site Representative and support documentation specified in the Safety Plan.

.4 Submit building permit, compliance certificates, and other permits

obtained.

.5 Upon request by Departmental Representative, submit reports and other documentation as stipulated to be produced and maintained by Federal and Provincial Occupational Health and Safety regulations and as specified herein.

.6 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.

.7 Submit copies of reports or directions issued by Federal, Provincial, and Territorial Inspectors and other Authorities having jurisdiction.

.8 Submit copies of incident reports.

.9 Submit WHMIS MSDS - Material Safety Data Sheets.

1.4 COMPLIANCE REQUIREMENTS

.1 Comply with Occupational Health and Safety Act for Province of Newfoundland and Labrador, and 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 Health and Safety Regulations 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/acts/L-2/index.html.
.2 Canadian Occupational Health and Safety Regulations can be viewed at: http://laws.justice.gc.ca/eng/regulations/SOR-86-304/index.html.
.3 A copy may be obtained at: Canadian Government Publishing Public Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: 819-956-4800 or 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&section=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 NBC 2010, Division B, Part 8.
.2 Municipal by-laws and ordinances.
.3 Provincial Worker’s Compensation Board

.6 In case of conflict or discrepancy between above specified requirements, the more stringent shall apply. Should a dispute arise in determining the most stringent

requirements, Departmental Representative will advise on the course of action to be followed.

.7 Maintain Workers Compensation Coverage in good standing for duration of Contract. Submit Letter of Good Standing to Departmental Representative at time of submitting the Project Health and Safety Plan and with each Request for Progress Payment.

.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 on site, and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of 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. Immediately stop and remove non-authorized persons.

.1 Departmental Representative will provide names of those

persons authorized by Departmental Representative to enter Work Site and will ensure that such authorized persons 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. See Section 01 50 00 – Temporary Facilities for minimum acceptable requirements.

.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 known 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 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.

.6 Contractor's designated representative is responsible to coordinate all matters pertaining to Health and Safety whether the parties that enter the site are visitors or under contract with the Contractor.

1.7 PROTECTION

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

.2 Erect safety barricades, lights and signage on site to effectively delineate Work areas, protect pedestrian and vehicular traffic around and adjacent to Work, and to create a safe working environment. See Section 01 56 00 for minimum acceptable barricades.

.3 Should unforeseen or peculiar safety related hazard or condition become evident during performance of Work, immediately take measures to rectify 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 certificates, specified in Section 01 10 10 – General Instructions, at Work Site.

.2 Where a particular permit or compliance certificate cannot be obtained at the required stage of Work, notify Departmental Representative in writing and obtain Departmental Representative's approval to proceed prior to carrying out that portion of Work.

1.10 HAZARD ASSESSMENTS

.1 Conduct site-specific health and safety hazard assessment before commencing project and during the course of Work identifying risks and hazards resulting from site conditions, weather conditions, and Work operations.
  .1 Perform on-going assessments addressing new risks and hazards as Work progresses, including when new subtrade or sub-contractors arrive on site.
  .2 Conduct assessment when the scope of Work has been changed by Change Order and when potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety representative.

.2 Record results and address in Health and Safety Plan.

.3 Keep documentation on site for entire duration of the Work.

.4 A list of known or potential project related hazards are provided in Subsection 1.11 below.

1.11 PROJECT/SITE CONDITIONS

.1 The following are potential health, environmental, and safety hazards at the site which may be encountered during the Work:
- .1 Working in close proximity of water;
- .2 Use of water crafts and floating platforms;
- .3 Wet and slippery conditions;
- .4 Inclement Weather;
- .5 Potential structural weakness of existing structure;
- .6 Heavy equipment activity in the area;
- .7 Heavy lifting;
- .8 Working at heights;
- .9 Cutting tools and other construction power tools;
- .10 Overhead power/utility lines;
- .11 Risk of electric shock;
- .12 Vehicular and pedestrian traffic;
- .13 Confined space.

.2 The above items shall not be construed as being complete and inclusive of potential health and safety hazards encountered as a result of Contractor’s operations during the course of Work.

.3 Include above items in the hazard assessment of the Work.

.4 Obtain from Departmental Representative a copy of MSDS data sheets for existing hazardous products stored on site or used by Facility personnel.

1.12 HEALTH AND SAFETY 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 & Safety Site Representative.
.3 Subcontractors.

.2 Conduct regularly scheduled tool box and safety meetings during the Work in conformance with Occupational Health and Safety regulations.
.1 Keep workers informed of potential hazards and provide safe work practices and procedures to be followed
.2 Take written minutes and post on site

.3 Keep documents on site.

1.13 HEALTH AND SAFETY PLAN

.1 Develop written site-specific Project Health and Safety Plan, based on hazard assessments, prior to commencement of Work.
.1 Submit copy to Departmental Representative within seven (7) calendar days of acceptance of bid.
.2 Submit updates as Work progresses.

.2 Health and Safety Plan shall contain three (3) parts with following information:

.1 Part 1 - Hazards:
List of individual health risks and safety hazards identified by hazard assessment process.

.2 Part 2 - Safety Measures:
Engineering controls, personal protective equipment, and safe work practices used to mitigate hazards and risks listed in Part 1 of Plan.

.3 Part 3a - Emergency Response:
Standard operating procedures, evacuation measures, and emergency response in the occurrence of an accident, incident, or emergency.

.1 Include response to all hazards listed in Part 1 of Plan.

.2 Evacuation measures to complement the Facility's existing Emergency Response and Evacuation Plan. Obtain pertinent information from Departmental Representative.

.3 List names and telephone numbers of officials to contact including:

.1 General Contractor and all subcontractors.

.2 Federal and Provincial Departments as stipulated by laws and regulations of authorities having jurisdiction and local emergency resource

organizations, as needed based on nature of emergency.

.3 Officials from DFO and site Facility Management. Departmental Representative will provide list.

.4 Part 3b - Site Communications:

.1 Procedures used on site to share work-related safety issues between workers, subcontractors, and General Contractor.

.2 List of critical tasks and Work activities, to be communicated with the Facility Manager, which has risk of affecting tenant operations, or endangering health and safety of Facility personnel and the general public. Develop list in consultation with the Departmental Representative.

.3 Prepare Health and Safety Plan in a three-column format, addressing the three parts specified above, as follows:

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

.4 Develop Plan in collaboration with subcontractors. Address Work activities of all trades. Revise and

update Plan as subcontractors arrive on site.

.5 Implement and enforce compliance with requirements of Plan for full duration of Work to final completion and demobilization from site.

.6 As Work progresses, review and update Plan. Address additional health risks and safety hazards identified by on-going hazard assessments.

.7 Post copy of Plan and updates, on site.

.8 Submission of the Health and Safety Plan and updates, to the Departmental Representative, is for review and information purposes only. Departmental Representative's receipt, review, and any comments made of the Plan shall not be construed to imply approval in part, or in hold, of such Plan by Departmental Representative, and shall not be interpreted as a warranty of being complete and accurate, or as a confirmation that all health and safety requirements of the Work have been addressed, and that it is legislative compliant. Furthermore, Departmental Representative's review of the Plan shall not relieve the Contractor of any of his legal obligations for Occupational Health and Safety provisions specified as part of the Work and those required by provincial legislation or those which would otherwise be applicable to the site of the Work.

1.14 SAFETY SUPERVISIONS

.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:

.1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action 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 hazards or conditions occur during performance of 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.

.4 Ensure that all workers and other persons granted access to site are competently trained and knowledgeable on:

.1 Safe use of tools and equipment.

.2 How to wear and use personal protective equipment (PPE).
.3 Safe work practices and procedures to be followed in carrying out Work.
.4 Site conditions and minimum safety rules to be observed on site, as given at site orientation.

1.16 MINIMUM SITE SAFETY RULES

.1 Notwithstanding 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 PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, and safety glasses.
.2 Immediately report unsafe condition at site, near-miss accidents, 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.

.2 Brief persons of disciplinary protocols to be taken for violation or noncompliance of site safety rules. Post rules on site.

.3 The following actions or conduct by Contractor, workers, and sub-contractors will be considered as nonconformance with the health and safety requirements of the contract for which a non-compliance notification will be issued to the General Contractor by the Departmental Representative:
.1 Failure to follow the minimum

site safety rules specified above;

.2 Negligence resulting in serious injury or major property damage;

.3 Deliberate non-compliance with Federal and Provincial Acts and Regulations;

.4 Falsification of information in Workers Compensation Reports, safety reports, and other health and safety related documents submitted to Departmental Representative or to Authority having jurisdiction;

.5 Possession of firearms on site;

.6 Possession of non-prescriptive illegal drugs or alcohol;

.7 Action, or lack thereof, resulting in the issuance of Warnings, Fines, or Stop Work Orders from a Provincial Authority having jurisdiction;

.8 Violation of other specified health and safety rules and requirements as determined by the Departmental Representative.

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

1.17 NON-COMPLIANCE AND DISCIPLINARY MEASURES

.1 Immediately address and correct health and safety violations and non-compliance issues.

.2 Negligence or failure to follow occupational health and safety provisions specified in the Contract Documents and of those of applicable laws and regulations could result in

disciplinary measures taken by the Departmental Representative against the General Contractor.

.3 DFO uses a system of Non-Compliance Notifications and Disciplinary Measures on projects as follows:

.1 A non-compliance notification is issued to the General Contractor, by the Departmental Representative, whenever there is a violation or non-compliance of the project's health and safety requirements and of those of Provincial and Federal regulations by any worker, subcontractor, or other person to whom the Contractor has granted access to the Work site.

.2 Non-compliance notifications are progressive in nature resulting in disciplinary measures imposed depending on the frequency, nature, and severity of the infraction.

.3 Disciplinary measures could include:

.1 Removal of the offending person or party from site;

.2 Financial penalties in the form of progress payment reduction or holdback assessments made against the Contract and;

.3 Taking the Work Out of Contractor's Hands in accordance with the General Conditions.

.4 Departmental Representative will make final decision as to what constitutes a violation and when to issue a Non-compliance Notification.

.5 Non-compliance Notifications issued by Departmental Representative shall not be construed as to overrule or disregard warnings, orders, and fines levied against Contractor by a regulatory agency having jurisdiction.

.6 Each non-compliance notification issued is given a numerical rating based on a three-level numbering system. Each level is progressive in nature to reflect:
- .1 The seriousness of the infraction as viewed by the Departmental Representative.
- .2 The degree of disciplinary action which will be taken by the Departmental Representative.

.7 Numerical ratings are as follows:
- .1 Non-compliance Notification – Level No.1 Rating:
  - .1 Situation: occurrence of a first-time infraction by a person or party on site.
  - .2 Action: verbal warning to General Contractor, documented in Departmental files and copy sent to the General Contractor.
- .2 Non-compliance Notification – Level No.2 Rating:
  - .1 Situation:
    - .1 The second occurrence of a previous infraction by the same person or party on site or;
    - .2 Accumulation of several Level No.1 notifications for different infractions

by the same person or party on site or;

.3 Non-action on the part of the Contractor or subcontractor to rectify non-compliance infractions previously identified in one or several Level No.1 notifications or;

.4 Violation or non-observance of a Federal or Provincial safety Law or Regulation by subcontractor or Contractor or;

.5 Negligence by a person or party resulting in injury or major property damage.

.2 Action: written notice to General Contractor complete with an order for immediate remedial action to be taken. Depending on the severity of the offense, the order may include request for the immediate removal of the offending person or party from site.

.3 Non-compliance Notification – Level No.3 Rating:

.1 Situation:

.1 Continued and repeated non-compliance with health and safety requirements by the General Contractor or

by subcontractor(s) or;

.2 The occurrence of a serious accident on site resulting in serious bodily injury or death.

.2 Action:

.1 Formal letter issued to General Contractor with an order to "Immediately Stop Work" until so notified to proceed.

.2 Review of all noncompliance and/or accident occurrences in the project with possible investigation by DFO.

.3 Based on outcome of the review/investigation, Work could be suspended or Taken Out of the Contractor's Hands in accordance with the General Conditions.

.3 The term "serious accident" used herein shall have the same meaning as defined in the Canadian Dictionary of Safety Terms - 1987 issue from the Canadian Society of Safety Engineers (C.S.S.E).

.8 Decision on which rating level to be placed on any given Non-Compliance Notification will be determined solely by Departmental Representative.

.9 Further details on the disciplinary system will be provided at the preconstruction Health and Safety meeting after Contract award.

.10 Be responsible to fully brief workers and subcontractors on the operation and importance of this system.

1.18 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 another regulatory Agency.

.2 Injury requiring medical aid as defined in the Canadian Dictionary of Safety Terms-1987, published by the Canadian Society of Safety Engineers (C.S.S.E) as follows: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.

.3 Property damage in excess of $5,000.00.

.4 Interruptions to Facility operations resulting in an operational loss to a Federal department in excess of $5,000.00.

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

1.19 TOOLS AND EQUIPMENT SAFETY

.1 Routinely check and maintain tools, equipment, and machinery for safe operation.

.2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.

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

1.20 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.

1.21 BLASTING

.1 Blasting or other use of explosives is not permitted without prior written instructions from Departmental Representative.

.2 Do blasting operations in accordance with local and provincial codes.

1.22 POWDER-ACTUATED DEVICES

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

1.23 CONFINED SPACES

.1 Carry out Work in confined spaces in compliance with:
.1 Provincial Occupational Safety and Health Regulations
.2 Canada Occupation Safety and

Health Regulations (COSH) made under the Canada Labour Code – Part II

.2 Conduct hazard assessment and address in Safety Plan before entering confined space.

.3 Provide and maintain equipment and PPE as required for the safety and emergency evacuation of persons entering confined space.

.4 Provide training to persons who will be entering a confined space and to those persons who will be assisting in the confined space entry process. Training to be specialized instructions beyond basic confined space entry information as required to suit type and conditions of confined space.

.5 Safety for Inspections:
.1 Upon request, provide PPE and training to Departmental Representative and to other authorized persons, for the purpose of entering confined space to conduct inspections.
.2 Be responsible for the efficacy of the equipment and safety of such persons during their entry and occupancy in the confined space.

1.24 POSTING OF DOCUMENTS

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

1.25 SITE RECORDS

.1 Maintain on Work Site copy of safety related 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. Provide copy when directed by Departmental Representative.

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, Hyperbaric Chamber, and Remotely Operated Vehicle Operations" and CSA Z180.1-13, "Compressed Breathing Air and Systems."

.2 Diver 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 a 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.

END OF SECTION

1.1 RELATED REQUIREMENTS

.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 is not permitted.

1.4 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS

.1 Do not bury rubbish and waste materials on site. Dispose at approved landfill sites as specified in Section 01 74 21.

.2 Do not dispose of hazardous waste, volatile materials (such as mineral spirits, paints, thinners etc...) and petroleum products into waterways, storm or sanitary sewers, or in waste landfill sites. Ensure pumped water into waterways, sewers, or drainage systems is free of suspended materials.

.3 Store, handle, and dispose of hazardous materials and hazardous waste in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.4 Dispose of construction waste materials and demolition debris, resulting from Work, at approved landfill sites only. Carry out such

disposal in strict accordance with provincial and municipal rules and regulations. Separate out and prevent improper disposal of items banned from landfills.

.5 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 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.

.6 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 exceedances 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 lands. Maintain such devices in good order for duration of Work.

1.6 PERMITS

.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 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not blast within 100 m of spawning beds.

.8 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 in accordance with 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.

.6 Have emergency spill response equipment and rapid clean-up kit, appropriate to Work, at site and

located adjacent to Work and where hazardous materials are stored. Provide personal protective equipment as required for clean-up.

.7 Report, to Federal and Provincial environmental departments, spills of petroleum and other hazardous materials as well as accidents having the potential of polluting the environment. Also notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of said occurrence.

.8 Provide a floating debris containment boom whenever any of the methods of Work allow for the potential of floating debris.

1.9 WILDLIFE PROTECTION

.1 Should nests of migratory birds in wetlands be encountered during Work, immediately notify Departmental Representative for directives to be followed.

.1 Do not disturb nest site or neighboring vegetation until nesting is completed.

.2 Minimize Work immediately adjacent to such areas until nesting is completed.

.3 Protect these areas by following recommendations of Canadian Wildlife Service.

1.10 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial, or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental

Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.1 Take action only after receipt of written approval by Departmental Representative.

.3 Departmental Representative will issue stop order of Work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

END OF SECTION

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 in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by Departmental Representative or by inspection authorities having appropriate jurisdiction.

.3 If Contractor covers or permits to be covered Work designated for special tests, inspections, or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to

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

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

1.4 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or 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 the following paragraph.

.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 facilities to provide access to Work being inspected and/or tested.

.2 Co-operate to facilitate such inspections and/or tests.

.3 Make good Work disturbed by such inspections and/or tests.

1.6 PROCEDURES

.1 Notify Departmental Representative sufficiently in advance of requirement for tests in order for Department Representative to make attendance arrangements with Testing Agency. When directed by Departmental Representative, notify such Agency directly.

.2 Submit representative samples of materials specified to be tested. Deliver in required quantities to Testing Agency. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples on site. Provide sufficient space on site for Testing Agency’s exclusive use to store equipment and cure test samples.

1.7 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products, or damage and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute Work in accordance with Contract Documents.

.2 Make good damages to existing or new Work, including Work of other Contracts, resulting from removal or replacement of defective Work.

1.8 TESTING BY CONTRACTOR

.1 Provide all necessary instruments, equipment, and qualified personnel to perform tests designated as Contractor's responsibilities herein or elsewhere in the Contract Documents.

.2 At completion of tests, turn over two (2) copies of fully documented test reports to Departmental Representative. Additionally, obtain other copies in sufficient quantities to enable one (1) complete set of test reports to be provided to Departmental Representative.

.3 Submit mill test certificates and other certificates as specified in various sections.

.4 Furnish test results and mix designs as specified in various sections.

1.9 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in various

trade sections. Include in each mock-up all related Work components representative of final assembly.

.2 Construct in locations acceptable to Departmental Representative.

.3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.

.6 Remove mock-up at conclusion of Work or when directed by Departmental Representative unless approval is given to remain as part of Work.

END OF SECTION

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 Contractor's 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 degrees Celsius inside temperature at -20 degrees Celsius 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 m^2 of glass and arranged to provide at least 0.5 m^2 of screened opening. The door will be fitted with a lockset and two (2) keys.

.4 The office will be equipped with a drafting chair and a 900 mm by 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.

.7 Arrange and pay for telephone, facsimile machine and internet installation (if available) in Departmental Representative's office for the site representative's exclusive use. Long distance calls or faxes placed on this phone by the Departmental Representative or site inspector 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, Contractor will be responsible for all service, air time, 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 SCAFFOLDINGS

.1 Design, construct, and maintain scaffolding in rigid, secure, and safe manner in accordance with CAN/CSA-S269.2-M87 (R2003).

.2 Erect scaffolding independent of walls. Remove when no longer required.

1.8 CONSTRUCTION SIGNS AND NOTICES

.1 Contractor or sub-contractor 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: Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321-96 (R2001).

.4 Maintenance and Disposal of Site Signs: Maintain approved signs and notices in good condition for duration of project and dispose of said signs and/or notices off-site

upon 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.

END OF SECTION

1.1 SECTION INCLUDES

.1 Barriers.

.2 Traffic Controls.

1.2 RELATED SECTIONS

.1 Section 01 35 28 – Health and Safety Requirements.

.2 Section 01 50 00 - Temporary Facilities.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such Work after use.

1.4 HOARDING

.1 Erect temporary site enclosure using new 1.2 m high snow fence wired to rolled steel "T" bar fence posts spaced at 2.4 m on centre. Provide one lockable truck gate. Maintain fence in good repair.

1.5 GUARD RAILS AND BARRICADES

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

.2 Provide barricades along wharf structure when wheel guard is removed.

.3 Provide as required by governing authorities.

1.6 ACCESS TO SITE

.1 Provide and maintain access to adjacent harbour facilities.

1.7 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.

1.8 FIRE ROUTES

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

1.9 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.

END OF SECTION

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 on site 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 Departmental Representative.

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, internet service (if available), linens and bedding, etc., and any reasonable service as directed by the Departmental Representative.

.2 Board and lodgings must be approved by the Departmental Representative 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' regulations of the Province of Newfoundland and Labrador relating to the setup, servicing, and maintenance of accommodations for the Inspector.

.2 Obtain and pay for any permits which may be required and comply to regulations of same.

END OF SECTION

1.1 GENERAL

.1 Use new material and equipment unless otherwise specified.

.2 Within seven (7) days of written request by Departmental Representative, submit the following information for any materials and products proposed for supply:
- .1 Name and address of manufacturer;
- .2 Trade name, model, and catalogue number;
- .3 Performance, descriptive, and test data;
- .4 Manufacturer's installation or application instructions;
- .5 Evidence of arrangements to procure;
- .6 Evidence of manufacturer delivery problems or unforeseen delays.

.3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.

.4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

.5 Permanent labels, trademarks, and nameplates on products are not acceptable in prominent locations, except where required for operating instructions or when located in mechanical or electrical rooms.

1.2 PRODUCT QUALITY

.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 rests solely with the Departmental Representative in accordance with the General Conditions of the Contract.

1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES

.1 Acceptable Materials: When materials specified include trade names or trademarks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.

.2 Alternative Materials: Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.

.3 Substitutions: After contract award, 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 MANUFACTURER'S 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 the Departmental

Representative in writing of any conflict between these specifications and manufacturer's 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 subsection 1.1.2 above.

1.6 QUALITY OF WORK

.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 the General Conditions of the Contract.

.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 are not acceptable.

.3 Minimize exposed fastenings and keep said fastenings evenly spaced and neatly laid out.

.4 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

.5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See Section 01 35 28 in this regard.

1.8 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur, and use resilient washers with stainless steel.

1.9 STORAGE, HANDLING AND PROTECTION

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

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

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

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

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

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

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

.8 Immediately remove damaged or rejected materials from site.

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

1.10 CONSTRUCTION EQUIPMENT AND PLANT

.1 On request, prove to the satisfaction of Departmental Representative that the construction equipment and plant are adequate to manufacture, transport, place, and finish Work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.

.2 Maintain construction equipment and plant in good operating order. Prevent oil and other contaminant leaks. Should any contaminant leak onto ground or into the water, take immediate and appropriate measures to contain, clean-up, and dispose in an environmentally responsible manner.

END OF SECTION

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.

END OF SECTION

1.1 RELATED SECTIONS

.1 Section 01 35 43 – Environmental Procedures.

.2 Section 02 41 16 – Sitework, Demolition, and Removal.

.3 Section 03 30 00 – Cast-in-Place Concrete.

.4 Section 06 05 73 – Wood Treatment.

.5 Section 31 53 13 – Timber Cribwork.

.6 Section 31 53 16 – Structural Timber.

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 sub-contractors to ensure

all waste management issues and opportunities are addressed.

.5 Submit copy of Workplan to Departmental Representative for review and approval.
.1 Make revisions to Workplan as directed by Departmental Representative.

.6 Implement and manage all aspects of Waste Management Workplan for duration of Work.

.7 Revise Workplan as Work progresses, addressing new opportunities for diversion of waste from landfill.

1.3 WASTE AUDIT

.1 At beginning of project, 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 left over after installation Work.

.2 Develop written list. Record type, composition, and quantity of various salvageable items and waste anticipated, reasons for waste generation, and operational factors which contribute to waste.

1.4 WASTE REDUCTION

.1 Based on waste audit, develop waste reduction program.

.2 Structure program to prioritize actions with waste reduction as first priority, followed by salvage

and recycling effort, then disposal as solid waste.

.3 Identify materials and equipment to be:
- .1 Protected and turned over to Departmental Representative when indicated;
- .2 Salvaged for resale by Contractor;
- .3 Sent to recycling facility;
- .4 Sent to waste processing/landfill site for their recycling effort; or
- .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; and
- .3 Use of effective and strategically placed facilities on site for storage and staging of left-over or partially cut materials (such as gypsum board, plywood, ceiling tiles, insulation, etc.) to allow for easy incorporation into Work whenever possible thus avoiding unnecessary waste.

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

1.5 MATERIAL SOURCE SEPARATION PROCESS

.1 Develop and implement material source separation process at commencement of Work as part of mobilization and waste management at site.

.2 Provide on-site facilities to collect, handle, and store anticipated quantities of reusable, salvageable, and recyclable materials.
- .1 Use suitable containers for individual collection of items based on intent.
- .2 Locate to facilitate deposit but without hindering daily operations of existing building tenants.
- .3 Clearly mark containers and stockpiles as to purpose and use.

.3 Perform demolition and removal of existing structure components and equipment following a systematic deconstruction process. Separate materials and equipment at source, carefully dismantling, labelling, and stockpiling alike items for the following purposes:
- .1 Reinstallation into the Work where indicated.
- .2 Salvaging reusable items not needed in project which Contractor may sell to other parties. Sale of such items not permitted on site.
- .3 Sending as many items as possible to locally available recycling facility.
- .4 Segregating remaining waste and debris into various individual waste categories for disposal

in a "non-mixed state" as recommended by waste processing/landfill sites.

.4 Isolate product packaging and delivery containers from general waste stream; send to recycling facility or return to supplier/manufacturer.

.5 Send leftover material resulting from installation Work to recycling facility whenever possible.

.6 Establish methods whereby hazardous and toxic waste materials and their containers, encountered or used in the course of Work, are properly isolated, stored on site, and disposed of in accordance with applicable laws and regulations from authorities having appropriate jurisdiction.

.7 Isolate and store existing materials and equipment identified for re-incorporation into the Work and protect said materials and/or equipment against damage.

1.6 WORKER TRAINING AND SUPERVISION

.1 Provide adequate training to workforce, through meetings and demonstrations, to emphasize purpose and worker responsibilities in carrying out the Waste Management Plan.

.2 Waste Management Coordinator: designate full-time person on site, experienced in waste management and having knowledge of the purpose and content of the Waste Management Plan, to:

.1 Oversee and supervise waste management during Work; and

.2 Provide instructions and directions to all workers and sub-contractors on waste reduction, source separation, and disposal practices.

.3 Post a copy of the Waste Management Plan in a prominent location on site for review by workers.

1.7 CERTIFICATE OF MATERIAL DIVERSION

.1 Submit to Departmental Representative copies of certified weigh bills from authorized waste processing sites and sale receipts from recycling/reuse facilities confirming receipt of building materials and quantity of waste diverted from landfill.

.2 Submit data at pre-determined project milestones as determined by Departmental Representative.

.3 Compare actual quantities diverted from landfill with projections made during waste audit.

1.8 DISPOSAL REQUIREMENTS

.1 Burying or burning of rubbish and waste materials is prohibited.

.2 Disposal of waste, volatile materials, mineral spirits, oil, paint, paint thinner, or unused preservative material into waterways or storm or sanitary sewers is prohibited.

.3 Do not dispose of preservative-treated wood through incineration.

.4 Do not dispose of preservative-treated wood with other materials destined for recycling or reuse.

.5 All treated wood is to be disposed of at the one of the Provincial Regional lined waste disposal sites at either Robin Hood Bay, St. John's, NL or Norris Arm, NL.

.6 Dispose of waste only at provincially approved landfill sites.

.7 Contact the authority having jurisdiction prior to commencement of Work to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of Work and dispose of in strict accordance with provincial and municipal regulations.

.8 Transport waste intended for landfill in separated condition, following rules and recommendations of Landfill Operator in support of their effort to divert, recycle, and reduce amount of solid waste placed in landfill.

.9 Collect, bundle, and transport salvaged materials to be recycled in separated categories and condition as directed by recycling facility. Ship materials only to recycling facilities approved by Departmental Representative.

.10 Sale of salvaged items by Contractor

to other parties not permitted on site.

END OF SECTION

1.1 SECTION INCLUDES

.1 Administrative procedures preceding inspection and acceptance of Work by Departmental Representative.

1.2 RELATED SECTIONS

.1 Section 01 78 00 – Closeout Submittals.

1.3 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Coordinate and perform, in concert with subcontractors, an inspection and check of all Work. Identify and correct deficiencies, defects, and repairs and perform outstanding items as required to complete Work in conformance with Contract Documents.

.1 Notify Departmental Representative in writing when deficiencies from Contractor's inspection have been rectified and that Work is deemed to be complete and ready for Departmental Representative's inspection.

.2 Departmental Representative's Inspection: Accompany Departmental Representative during all substantial and final inspections of the Work.

.1 Address defects, faults, and outstanding items of Work identified by such inspections.

.2 Advise Departmental Representative when all deficiencies identified have been rectified.

.3 Note that Departmental Representative will not issue a Certificate of Substantial Performance of the Work until such time that Contractor performs

following Work and turns over the specified documents:

.1 Project record as-built documents;

.2 Reports resulting from designated tests;

.3 Data generated cross-sections.

.4 Correct all discrepancies before Departmental Representative will issue the Certificate of Completion.

END OF SECTION

1.1 SECTION INCLUDES

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

.2 Reviewed shop drawings.

1.2 PROJECT RECORD DOCUMENTS

.1 Departmental Representative will provide two (2) white print sets of contract drawings and two (2) copies of Specifications Manual specifically for "as-built" purposes.

.2 Maintain at site one (1) set of the contract drawings and specifications to record actual as-built site conditions.

.3 Maintain up-to-date as-built drawings and specifications in good condition and make such drawings available for inspection by the Departmental Representative at any time during construction.

.4 As-Built Drawing Requirements:
- .1 Record changes in red ink on prints. Mark only on one (1) 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 the specifications.
- .3 Record following information:

.1 Horizontal and vertical location of various elements in relation to Geodetic 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 change existing design drawings must also be marked up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document.
.5 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.

.5 As-built Specification Requirements: 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; and
.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 Section 1.2.4 above.

.6 Ensure as-built documents are kept current and complete as Work progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis, with frequency of reviews being the subject of the Departmental Representative's discretion. Failure to maintain current and complete as-builts to satisfaction of the Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.

1.3 REVIEWED SHOP DRAWINGS

.1 Compile two (2) full sets of all reviewed shop drawings.

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION

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

.2 Demolition and removal will consist of, but not necessarily be limited to, the following:

- .1 Demolition, removal, and disposal of existing native timber crib wharf.
- .2 Removal and disposal of material dredged to install cribs to an approved site.
- .3 Removal and storage of gravel parking area for re-use to allow for wharf reconstruction.

1.2 GENERAL REQUIREMENTS

.1 A Notice to Shipping is to be issued prior to commencement and upon completion of Work.

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

.3 Upon completion of the project, a written Notice to Mariners must be issued.

1.3 PROTECTION

.1 Protect existing objects designated to remain. In event of damage, immediately replace or make repairs to approval of and at no additional cost to Canada.

.2 Place a floating boom around entire demolition site to prevent loss of any materials.

.3 Remove all floating debris from water on a routine and timely basis.

1.4 MEASUREMENT FOR PAYMENT

.1 Demolition and Removal: to be included in a lump sum amount and includes the cost of all plant, labour, and materials required to complete the Work as specified and indicated on the drawings.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 – EXECUTION

3.1 EXECUTION

.1 Inspect site and verify with Departmental Representative objects designated for removal.

.2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.

3.2 REMOVAL

.1 Remove in their entirety all materials and objects specified for removal.

.2 Do not disturb adjacent Work designated to remain in place.

3.3 DISPOSAL OF MATERIAL

.1 All demolished materials, except materials designated to be reused, will become property of contractor and will be removed from site and disposed of to the satisfaction of the Departmental Representative and in accordance with environmental guidelines. It is the sole responsibility of the Contractor to dispose of all demolished materials at provincially approved landfill sites. Ensure that disposal site is willing to accommodate any materials disposed of from Work site.

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

.3 All treated wood is to be disposed of at the one of the Provincial Regional lined waste disposal sites at either Robin Hood Bay, St. John's, NL or Norris Arm, NL.

3.4 RESTORATION

.1 Upon completion of Work, remove debris, trim surfaces, and leave Work site in clean condition.

.2 Upon completion of the work the contractor will be responsible for restoring the existing gravel parking area to its existing state. If additional materials should be required, they shall be supplied and installed by the contractor as required.

.3 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of Work.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 03 20 00 – Concrete Reinforcing.

.2 Section 03 30 00 – Cast-in-Place Concrete.

1.2 REFERENCES

.1 Canadian Standards Association (CSA)
- .1 CAN/CSA-A23.1-04, Concrete Materials and Methods of Concrete Construction.
- .2 CAN/CSA-086-01 (R2006), Engineering Design in Wood (Limit States Design).
- .3 CSA 0121-M1978 (R2003), Douglas Fir Plywood.
- .4 CSA 0151-04, Canadian Softwood Plywood.
- .5 CSA 0153-M1980 (R2003), Poplar Plywood.
- .6 CAN3-0188.0-M78, Standard Test Methods for Mat-Formed Wood Particleboards and Waferboard.
- .7 CSA 0437 Series-93 (R2001), Standards for OSB and Waferboard.
- .8 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.
- .9 CAN/CSA-S269.3-M92 (R2003), Concrete Formwork.

1.3 SHOP DRAWINGS

.1 Submit shop drawings for formwork and falsework in accordance with Section 01 33 00 – Submittal Procedures.

.2 Indicate method and schedule of construction, shoring, stripping, and re-shoring procedures, materials, arrangement of joints, special architectural exposed

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

.3 Indicate formwork design data, such as permissible rate of concrete placement and temperature of concrete, in forms.

.4 Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.

.5 Each shop drawing submission shall bear stamp and signature of qualified Professional Engineer licensed to practice in the 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 volatile organic compound (VOC) content.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Formwork materials:
- .1 Formwork materials to CAN/CSA-A23.1.

.2 Form ties:
- .1 Removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm in diameter in concrete surface.

.3 Form release agent:
- .1 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:
- .1 Falsework materials to CSA-S269.1.
- .2 Materials required to bear grade marks, or be accompanied with certificates, test reports, or other proof of conformity.

.5 Pre-moulded joint fillers:
- .1 Bituminous-impregnated fibreboard to ASTM D1751.

.6 Bond Breaker:
- .1 Impermeable tube formed of polyvinylchloride, rubber, or similar material meeting approval of Departmental Representative. Internal diameter equal to dowels.

.7 Sealant:
.1 Sealant to Section 07 92 00 – Joint Sealants.

PART 3 – EXECUTION

3.1 FABRICATION AND ERECTION

.1 Verify lines, levels, and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

.4 Fabricate and erect falsework in accordance with CSA S269.1.

.5 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations, and levels indicated within tolerances required by CAN/CSA-A23.1.

.6 Align form joints and make watertight. Keep form joints to minimum.

.7 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners and joints unless specified otherwise.

.8 Form chases, slots, openings, drips, recesses, and expansion and control joints as indicated.

.9 Build in anchors, sleeves, and other

inserts required to accommodate Work specified in other sections. Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.10 Clean formwork in accordance with CAN/CSA-A23.1 before placing concrete.

3.2 REMOVAL AND RESHORING

.1 Leave formwork in place for following minimum periods of time after placing concrete:
- .1 Seven (7) days for walls and sides of beams;
- .2 Seven (7) days for columns;
- .3 Five (5) days for beam soffits, slabs, decks, and other structural members, or three (3) days when replaced immediately with adequate shoring to standard specified for falsework;
- .4 Five (5) days for footings and abutments.

.2 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

.3 Provide 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 CSA-A23.1/A23.2.

3.3 JOINT FILLERS .1 Locate and form expansion joints as indicated. Install joint filler in all joints.

3.4 JOINT SEALANT .1 Fill expansion and control joints with sealer as per the details of drawings and manufacturer's instructions.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 03 10 00 – Concrete Forming and Accessories.

.2 Section 03 30 00 – Cast-in-Place Concrete.

1.2 REFERENCES

.1 American Concrete Institute (ACI).
- .1 ACI 315R-80, Manual of Engineering and Placing Drawings for Reinforced Concrete.

.2 American National Standards Institute/American Concrete Institute (ANSI/ACI).
- .1 ANSI/ACI 315-80, Details and Detailing of Concrete Reinforcement.

.3 American Society for Testing & Materials (ASTM).
- .1 ASTM A143/A143M-07, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
- .2 ASTM-A123/A123M-09, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

.4 Canadian Standards Association (CSA)
- .1 CSA-A23.1-14, Concrete Materials and Methods of Concrete Construction.
- .2 CSA A23.3-14, Design of Concrete Structures.
- .3 CSA G30.3-M1983 (R1998), Cold Drawn Steel Wire for Concrete Reinforcement.
- .4 CSA G30.5-M1983 (R1998), Welded

Steel Wire Fabric for Concrete Reinforcement.

.5 CSA G30.14-M1983 (R1998), Deformed Steel Wire for Concrete Reinforcement.

.6 CSA G30.15-M1983 (R1991), Welded Deformed Steel Wire Fabric for Concrete Reinforcement.

.7 CSA G30.18-M92 (R2007), Billet-Steel Bars for Concrete Reinforcement.

.8 CSA G40.21-04, Structural Quality Steels.

.9 CSA W186-M1990 (R2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.3 SHOP DRAWINGS

.1 Submit shop drawings including placing of reinforcement in accordance with Section 01 33 00 - Submittal Procedures.

.2 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 licensed to practice 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.

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 Plan.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Substitute different size bars only if permitted in writing by Departmental Representative.

.2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.

.3 Reinforcing steel: weldable low alloy steel deformed bars to CAN/CSA-30.18.

.4 Cold-drawn annealed steel wire ties: to CSA G30.3.

.5 Welded steel wire fabric: to CSA G30.5.

.1 Provide in flat sheets only.

.6 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.

.7 Mechanical splices: subject to

approval of Departmental Representative.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada. ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures unless indicated otherwise.

.2 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on placing drawings.

.3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

.4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

.1 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, a minimum of two (2) weeks prior to beginning reinforcing Work.

.2 Upon request, inform Departmental Representative of proposed source of material to be supplied.

PART 3 – EXECUTION

3.1 FIELD BENDING

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

Representative.

.2 When field bending is authorized, bend without heat, applying a slow and steady pressure.

.3 Replace bars which develop cracks or splits.

3.2 PLACING REINFORCING

.1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CSA-A23.1/A23.2.

.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 placement.

3.3 CLEANING

.1 Clean reinforcing before placing in concrete to CSA-A23.1/A23.2.

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION

.1 This section specifies requirements for supply, placing, finishing, protecting, and curing cast-in-place reinforced concrete for mooring cleat pedestals and reinforced concrete wharf deck.

1.2 RELATED SECTIONS

.1 Section 03 10 00 - Concrete Forming and Accessories.

.2 Section 03 20 00 - Concrete Reinforcing.

.3 Section 31 53 13 – Timber Cribwork.

.4 Section 35 59 29 - Mooring Devices.

1.3 REFERENCE STANDARDS

.1 ASTM International
- .1 ASTM C109/Cl09M-08, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens).
- .2 ASTM C260/C260M-10a, Standard Specification for Air-Entraining Admixtures for Concrete.
- .3 ASTM C494/C494M-10a, Standard Specification for Chemical Admixtures for Concrete.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.3 Canadian Standards Association (CSA International)
- .1 CAN/CSA-A23.1-09, Concrete Materials and Methods of Concrete Construction.
- .2 CAN/CSA-A23.2-09, Methods of Test for Concrete.
- .3 CAN/CSA-A3000-031(R2006).

1.4 CERTIFICATES

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

.2 Minimum two (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 CSA-A23.1/A23.2.

.4 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1/A23.2.

1.5 STORAGE OF MATERIALS

.1 Store all materials to prevent contamination or deterioration, whether at the plant or at the job site.

.2 Provide adequate storage facilities for materials to ensure a continuous supply of these materials during batching operations.

.3 Store cement in weathertight facility.

1.6 QUALITY ASSURANCE

.1 Minimum two (2) weeks prior to starting concrete Work, provide proposed quality control procedures for review by Departmental Representative on following items:
.1 Cold weather concrete;
.2 Curing;
.3 Finishes;
.4 Formwork removal;
.5 Joints.

1.7 READY-MIX CONCRETE SUPPLY

.1 Provide, with each load of concrete delivered to site, duplicate delivery slips containing following:
.1 Name of ready-mix batch plant;
.2 Serial number of ticket;
.3 Date and truck number;
.4 Project identification;
.5 Class of concrete or mix;
.6 Amount of concrete in cubic meters;
.7 Time and loading or first mixing of aggregate, cement, and water;
.8 Time of discharge of concrete;
.9 Admixtures added to plant;
.10 Amount of water added to plant.

1.8 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.

1.9 MEASUREMENT OF PAYMENT

.1 Cast-in-Place Reinforced Concrete Deck: Supply and installation of cast-in-place reinforced concrete deck to be measured in square metres (m^2) calculated from actual field measurements, excluding area occupied by mooring cleat pedestals and coping. Contractor to provide all plant, equipment, material, and labour including concrete, reinforcing steel, and construction and control joints. No separate payment will be made for any other ingredient or feature of concrete Work, and all factors, including cold weather placement, reinforcing steel, anchor bolts, joint filler for joints, cement, plant, and labour will be considered as being included in the unit price for Cast-in-Place Reinforced Concrete Deck.

.2 Mooring Cleat Pedestals: No measurement for payment to be made under this section. Include such costs incidental to unit price for Type "B1" mooring cleats (see Section 35 59 29 – Mooring Devices).

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Cement to CAN/CSA-A3001, Type GUbF/SF.

.2 Supplementary cementing materials: to

CAN/CSA-A3001.

.3 Fly ash to be Type F to CAN/CSA-A3001.

.4 Water: to CAN/CSA-A23.1/A23.2.

.5 Aggregates: to CAN/CSA-A23.1/A23.2. Coarse aggregates to be normal density.

.6 Air entraining admixture: to ASTM C260.

.7 Chemical admixtures: to ASTM C494/C494M. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.

.8 Concrete retarders: to ASTM C494/C494M. Do not allow moisture of any kind to come in contact with the retarder film.

.9 Curing compound: curing compounds are not to be used.

.10 Pre-moulded joint fillers:
.1 Sponge rubber: to ASTM D1752, Type I, flexible grade.

2.2 CONCRETE MIXES

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

.2 Proportion concrete to comply with Alternate 1, Table 2 in CSA-A23.1 and following requirements:
.1 Cement: Cement shall be a blended Portland, fly ash, silica fume cement, Type GUbF/SF. Contractors are advised that the minimum proportion by mass of the total cementing materials for silica fume shall be 6% and a maximum of 8%. Contractors are advised that the maximum proportion by mass of the total cementing materials for fly ash is 25%.

.2 Minimum compressive strength: 35 MPa at 28 days.
.3 Class of exposure: C1.
.4 Minimum cement content: 385 kg/m^3 of concrete.
.5 20 mm nominal size coarse aggregate.
.6 Air content: 5% to 8%.
.7 Density of air-dry concrete in range of 2240 kg/m^3 to 2400 kg/m^3.
.8 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 CSA-A23.1.
.2 That the mix proportions selected will produce concrete of the specified quality and yield. Indicate mix proportions and sources of all materials.
.3 That the strengths will comply with the strengths specified herein.

.4 When the Contractor wishes to mix concrete on site, identify the source of aggregates and submit samples of fine and coarse aggregates to a testing laboratory for testing and trial mixes in order to determine a suitable mix design. The testing laboratory, at Contractor's cost, will test the trial mix for slump, air content, density, and strength. The results of these tests will be submitted to the Departmental Representative to be reviewed for compliance with the specification. This review must be completed before permission to place concrete is given.
.1 The sand, gravel, water, and air

entraining agent should be mixed prior to the addition of cement and water reducer.

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

.6 Do not use calcium chloride or compounds containing calcium chloride.

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.

.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 placed concrete items to indicate date, location of placement, quality, air temperature, and test samples taken.

.6 Do not place load(s) upon new concrete until authorized by Departmental Representative.

3.2 CONSTRUCTION

.1 Comply with additional requirements of CSA-A23.1/A23.2, 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 CSA-A23.1/A23.2.

.4 Place concrete in cold weather to CSA-A23.1/A23.2.

.5 Keep concrete surfaces moist continually during protection stage.

.6 Place, consolidate, finish, cure, and protect concrete to CSA-A23.1/A23.2.

.7 Do not commence placing concrete until Departmental Representative has inspected and approved forms, foundations, reinforcing steel, joints, conveying, spreading, consolidation and finishing equipment, and curing and protective methods.

3.3 FORMWORK

.1 Install and strip formwork to CSA-A23.1/A23.2 and Section 03 10 00.

3.4 INSERTS

.1 Position and secure anchor bolts in formwork to maintain line and grades.

3.5 CONTROL JOINTS

.1 Construct control joints in locations shown on drawings or as directed by Departmental Representative.

.2 All joints will be centred over a support. Joints will be made in a perfectly straight line.

.3 Cut control joint when concrete has hardened.

.4 Fill saw cut with joint sealer as

specified.

3.6 PLACING CONCRETE

.1 Place and consolidate concrete to CSA-A23.1/A23.2.

.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.

3.7 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 Strike off 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.

3.8 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 CSA-A23.1/A23.2, 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 three-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.

.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 person 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-troweling.

.13 After slight interval necessary for concrete to further harden, repeat the troweling 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 parallel across paving.

.15 The surface shall be true and accurate to a maximum tolerance of 1 mm in 500 mm.

3.9 PROTECTION AND CURING

.1 Cure to CSA-A23.1/A23.2.

.2 Cure concrete by protecting it against loss of moisture, rapid temperature change, and mechanical injury for at least seven (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 as well as 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 three (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 four (4) days following the initial three (3) days.

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

3.10 TESTING

.1 Departmental Representative will appoint a concrete testing company to test all Work under this section of the specification as per CSA A23.1/A23.

.2 Cost of compressive strength tests shall be paid for by the Departmental Representative.

.3 Testing company shall issue reports to Departmental Representative on quality of test cylinders.

.4 Notify Departmental Representative at least seven (7) days prior to start of placing concrete. Provide for testing purposes an adequate quantity of approved test cylinders.

.5 At least one (1) set of three (3) cylinders each shall be taken from 25 m^3 or fraction thereof of each day's pour, whichever is less. One (1) cylinder shall be tested at seven (7) days and the other two (2) tested at twenty-eight (28) days.

.6 Crate cylinders and deliver to the testing laboratory within forty-eight (48) hours after casting in accordance with CSA-A23.l/A23.2. 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 twenty-eight (28) days, the Departmental Representative reserves the right to determine the acceptability of the concrete by performing additional field testing as outlined in CSA-A23.1/A23.2.

.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.

END OF SECTION

PART 1 – GENERAL

1.1 REFERENCES

.1 American Wood-Preservers' Association (AWPA).
- .1 AWPA M2-01, Standard for Inspection of Treated Wood Products.
- .2 AWPA M4-06, Standard for the Care of Preservative-Treated Wood Products.

.2 Canadian Standards Association (CSA).
- .1 CSA O80 Series-97 (R2007) 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 a stand-alone specification.
- .3 CSA O322-02, 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 the following information certified by an authorized signing officer of the 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 retention 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 re-use.

.3 Dispose of preservative-treated wood, including 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, 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-O80 Series.

.2 Solvent: to CSA-O80.201.

2.2 PRESERVATIVE TREATMENTS

.1 Treat to CSA O80, commodity standard O80.18, Table 1 and its referenced standards, with the following minimum assay retentions:

Species	**CCA (kg/m^3)**	**ACA (kg/m^3)**
Douglas Fir	24	24
Western/Eastern Hemlock	24	24
Hemlock, Douglas Fir (wheelguards and wheelguard blocking, crib timbers)	10	10
Birch, Maple	Treat to Refusal	Treat to Refusal

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

2.3 ORDERING TREATED TIMBER

.1 Ordering of material is to follow requirements of Contract Documentation such that field cutting of treated material is essentially avoided and is used as a last resort and only if authorized by the Departmental Representative.

PART 3 – EXECUTION

3.1 FIELD TREATMENT

.1 Handle preservative-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 preservative-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 Timbers 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 preservative-treated timber for penetration and retention of preservative. Timber not meeting the requirements of the specification may be rejected for use under the contract.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 45 00 – Testing and 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.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature, and data sheets for joint sealant and include product characteristics, performance

criteria, physical size, finish, and limitations.

.2 Manufacturer's product to describe:
- .1 Caulking compound;
- .2 Primers;
- .2 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit two (2) copies of WHMIS MSDS in accordance with Section 01 35 28 – Health and Safety Requirements and Section 01 35 43 – Environmental Procedures.

.3 Manufacturer's Instructions:
- .1 Submit instructions to include installation instructions for each product used.

1.4 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.

1.5 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, and packaging material in appropriate on-site containers 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, 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.

.9 Fold up and flatten metal banding and place in designated area for recycling.

1.6 PROJECT CONDITIONS

.1 Ambient Conditions:
.1 Proceed with installation of joint sealants only when:
.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees Celsius.
.2 Joint substrates are dry.
.3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Joint Width Conditions:
.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint Substrate Conditions:
.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous

materials and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

PART 2 – PRODUCTS

2.1 SEALANT MATERIALS

.1 Where sealants are qualified with primers use only those primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Polysulfide two part:
- .1 Self-levelling to CAN/CGSB-19.24, Type 1, Class B, colour to match concrete.

.2 Polysulfide two part:
- .1 Non-sag to CAN/CGSB-19.24, Type 2, Class B, colour to match concrete.

.3 Preformed compressible and non-compressible back-up materials:
- .1 Polyethylene, urethane, neoprene, or vinyl foam:
  - .1 Extruded closed cell foam backer rod.
  - .2 Size: oversize 30 to 50 %.

2.3 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 sealant

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, and embedded impurities.
- .7 Tool expose 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 Cleaning:

.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.

.4 Protection:

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealant installation.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 – Environmental Procedures.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- .2 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .3 ASTM D422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils.
- .4 ASTM D698-07, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbs/ft^3) (600kN-m/m^3).
- .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.

.3 Canadian Standards Association (CSA).
- .1 CAN/CSA-A23.1/A23.2-04,

Concrete Materials and Methods of Concrete Construction.

1.3 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
  .1 Rock: any solid material in excess of 0.25 m^3 and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m^3 bucket. Frozen material not classified as rock.
  .2 Common excavation: excavation of material of whatever nature, which are not included under definitions of rock excavation.

.2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.3 Borrow material: material obtained from locations outside area to be graded and required for construction of fill areas or for other portions of Work.

.4 Unsuitable materials:
  .1 Weak and compressible materials under excavated areas.
  .2 Frost-susceptible materials under excavated areas.
  .3 Frost susceptible materials:
    .1 Fine grained soils with plasticity index

less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136, Sieve sizes to CAN/CGSB-8.1:

Sieve Designation	**% Passing**
2.00 mm	100
0.10 mm	45 – 100
0.02 mm	10 – 80
0.005 mm	0 – 45

.2 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.

1.4 MEASUREMENT FOR PAYMENT

.1 Excavating, Trenching and Backfilling: No measurement for payment is intended for excavation, trenching and backfilling relating to the scope of work for this project. This is inclusive of excavation required to complete construction of timber cribwork, reinforced concrete slab on grade, installation of scour protection, installation of electrical shed, conduit, etc.

PART 2 – PRODUCTS NOT APPLICABLE

PART 3 – EXECUTION

3.1 SITE PREPARATION

.1 Remove obstructions, ice, and snow from surfaces to be excavated within limits indicated.

.2 Install temporary measures such as shoring or temporary retaining structures so as to ensure the integrity of existing structures which might be impacted by excavation.

3.2 EXCAVATION

.1 Excavate to lines, grades, elevations, and dimensions as indicated.

.2 Remove all obstructions encountered during excavation in accordance with Section 02 41 16 – Sitework, Demolition, and Removal.

.3 Excavation must not interfere with bearing capacity of adjacent foundations.

.4 Dispose of surplus and unsuitable excavated material in approved location off site.

.5 Do not obstruct flow of surface drainage.

.6 Earth bottoms of excavations to be undisturbed soil, level, and free from loose, soft, or organic matter.

.7 Notify Departmental Representative when bottom of excavation is reached.

.8 Obtain Departmental Representative's approval of completed excavation.

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 the compacted thicknesses indicated in Section 31 23 26 - Rock Fill and Class "A", up to grades indicated. Compact each layer before placing succeeding layer.

.5 Backfilling around installations:

.1 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.

.2 Place bedding and surrounding material as specified elsewhere.

.3 Place layers simultaneously

on both sides of installed Work to equalize loading. Difference not to exceed 1.0m.

3.5 RESTORATION

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

.2 Clean and reinstate areas affected by Work as directed by Departmental Representative.

.3 Restore site to its normal state prior to excavation

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION

.1 This section specifies the supply, placement, and compaction of rock fill and Class "A" in areas identified on the drawings, as required or as directed by the Departmental Representative.

1.2 MEASUREMENT FOR PAYMENT

.1 Rock Fill: The supply, placement, and compaction of rock fill as specified will be measured by the cubic meter (m^3). The volume of material will be determined in place from measurements taken prior to and at completion of the Work. Only new quarried rock fill material brought to site will be measured for payment. Fill or ballast materials salvaged from existing construction at the site will not be measured for payment. Include the cost of all plant, labour, equipment, and materials required to complete the Work as specified.

.2 Class "A": Supply, placement, and compaction of Class "A" as specified will be measured by the cubic meter (m^3). 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 will be of hard, durable, evenly-graded blasted stone having a maximum diameter of 300 mm in major portion of fill and a maximum diameter of 150 mm in upper 600 mm of rock fill. Fill material will contain no more than 6 percent by weight passing the 25.4 mm sieve. Rock fill to be evenly graded within the limits specified.

.2 Use of shale rock or slate will not be permitted.

2.2 CLASS "A"

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

ASTM Sieve Designation	**% Passing**
	Class "A"
50.8 mm	-
25.4 mm	-
19.0 mm	100
9.51 mm	50-80
4.76 mm	35-60
1.20 mm	15-35
300 µm	5-20
75 µm	2-6 (Pit Source) 2-8 (Rock Source)

.2 Physical Requirements for Class "A":
- .1 Los Angeles Abrasion (Loss % Maximum) ASTM C131-89 35, C535-89: 35
- .2 Percent Crushed (% Minimum): 50
- .3 Plasticity Index, ASTM D4318-84: 0
- .4 Petrographic Number (max), ASTM CSA 23.2-M90: 150

PART 3 – EXECUTION

3.1 PLACING ROCK FILL

.1 Only rock fill material approved by Departmental Representative will be placed. Material will be placed uniformly across full cross-section in layers not exceeding 500 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 500 mm lift.

3.2 PLACING CLASS "A"

.1 Place in 100mm lift and compact to 98 percent standard modified proctor density.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation of polymeric geotextiles used in timber cribbing, purpose of which is to:
  .1 Separate and prevent mixing of granular materials of different grading.
  .2 Act as hydraulic filters permitting passage of water while retaining soil strength of granular structure.

1.2 RELATED WORK

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 31 23 26 - Rock Fill and Class "A".

.4 Section 31 53 13 - Timber Cribwork.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM):
  .1 ASTM D4491-99a(2004)e1, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  .2 ASTM D4595-05, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
  .3 ASTM D4716-04, 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 D4751-04, 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.

.4 No.6.1-93, Bursting Strength of Geotextiles Under No Compressive Load.

.3 Canadian Standards Association (CSA):

.1 CAN/CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel.

.2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.4 SAMPLES

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

.2 Submit to Departmental Representative the following samples at least two (2) weeks prior to commencing Work.

.1 Minimum length of 1m of roll width of geotextile.

1.5 MILL CERTIFICATES

.1 Submit to Departmental Representative a copy of mill test data and certificate at least two (2) weeks prior to start of Work.

1.6 DELIVERY AND STORAGE

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

1.7 WASTE MANAGEMENT AND DISPOSAL

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

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

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and packaging material, in appropriate on-site bins, for recycling in accordance with Waste Management Plan.

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

1.8 MEASUREMENT FOR PAYMENT

.1 No measurement for payment is intended for the supply and installation of geotextiles as

indicated on the project drawings.

PART 2 – PRODUCTS

2.1 MATERIAL

.1 Geotextile: woven or non-woven synthetic fibre fabric, supplied in rolls.
- .1 Width: 3.5m minimum.
- .2 Length: 50m minimum.
- .3 Composed of: minimum 85% by mass of polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.

.2 Physical properties:
- .1 Thickness: to CAN/CGSB-148.1, No.3, minimum 2.5mm.
- .2 Mass per unit area: to CAN/CGSB-148.1, No. 2, minimum 400g/m².
- .3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
  - .1 Tensile strength: minimum 1200 N, wet condition.
  - .2 Elongation at break: 50 to 100 percent.
  - .3 Seam strength: equal to or greater than tensile strength of fabric.
- .4 Mullen burst strength: to CAN/CGSB-4.2, method 11.1, minimum 3100 kPa.

.3 Hydraulic properties:
- .1 Apparent opening size (AOS): to ASTM D4751, 50 to 150 micrometres.
- .2 Permittivity: to ASTM D4491, 0.25 cm per second.

.4 Securing pins and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m² to CAN/CSA G164.

PART 3 – EXECUTION

3.1 INSTALLATION

.1 Place geotextile material from base elevation of crib to top of crib and retain in position with securing pins and washers.

.2 Place geotextile material by unrolling onto graded surface in orientation, manner, and locations indicated and retain in position with securing pins and washers.

.3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.

.4 Place geotextile material smooth and free of tension stress, folds, wrinkles, and creases.

.5 Overlap each successive strip of geotextile 600 mm over previously laid strip.

.6 Protect installed geotextile material from displacement, damage, or deterioration before, during, and after placement of material layers.

.7 After installation, cover with overlying layer within four (4) hours of placement.

.8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.

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.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED WORK

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

.2 Section 31 53 13 – Timber Cribwork.

1.2 MEASUREMENT FOR PAYMENT

.1 Scour Protection: The supply and placement of stone for scour protection, including the cost of all plant, labour, equipment, and materials required to complete the Work, will be measured in cubic metres (m^3) of material placed within the limits indicated on the drawings. The volume of material will be determined in place from measurements taken prior to and at completion of the Work.

.2 Provide a sounding survey to DFO/SCH following the placement of new cribwork and again after the installation of scour protection. No separate payment will be made for the sounding surveys. All excavation required to complete the installation of the scour protection will be considered incidental to the unit price. The minimum draft provide after placement of the scour protection will be 1.2m from L.N.T.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM).

.1 ASTM C88-05, Standard Test Method for Soundness of

Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.

.2 ASTM C127-07, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.

.3 ASTM C535-03e1, Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

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 Divert leftover aggregate material from landfill to a local facility as approved by Departmental Representative.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Scour protection material to meet following requirements:

.1 Hard, dense with relative density (formally specifically 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 Scour protection to be well graded with maximum size not exceeding 300mm on any side and minimum

size of not less than 200 mm on any side.

PART 3 – EXECUTION

3.1 PLACEMENT

.1 Ensure that no frozen material is placed as part of Work.

.2 Prevent segregation of material sizes during placement. Do not drop material through water.

.3 Do not place material during weather judged to be unsuitable by Departmental Representative.

.4 Place scour protection to thickness and details as indicated on drawings after placement of timber cribs.

.5 Place scour protection to details as indicated on the drawings as soon as practical after placement of timber cribs.

3.2 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 workers or from any other cause, be dumped into the water near the Work or anywhere within the harbour, 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.

3.3 TESTING

.1 Submit rock material samples for testing to testing laboratory approved by Departmental Representative prior to commencement of quarry production. Allow sufficient lead time to perform and report results of tests before start of material production.

.2 Contractor will be responsible for procurement of samples for testing and arrange and pay for shipment of samples to testing laboratory.

.3 Departmental Representative will pay for costs associated with laboratory testing. The cost of retesting due to samples failing to meet the requirements of the contract will be the responsibility of the Contractor.

.4 Only materials satisfactorily tested and approved by the Departmental Representative will be quarried and placed in the Work.

END OF SECTION

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 REFERENCES

.1 American Society for Testing and Materials (ASTM International).
- .1 ASTM A307-07b, 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-09, Zinc (Hot Dip Galvanized) coatings on Iron and Steel Products.

.2 American Wood-Preserver's Association (AWPA).
- .1 AWPA M4-06, 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-97 (R2007), Wood Preservation.

.4 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.4 Canadian Wood Council.

.1 Wood Design Manual.

.5 National Lumber Grades Authority (NLGA).

.1 Standard Grading Rules for Canadian Lumber 2000 edition.

1.4 MEASUREMENT FOR PAYMENT

.1 Treated Timber Cribwork: to be measured in cubic metres (m^3) of completed Work, including all ballast stone, gravel, treated timber, geotextiles, fastenings, and all plant, labour, materials, and equipment required to perform the Work. All excavation required to complete the installation of the cribwork will be considered incidental to the unit price.

.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 Measurements of the heights, 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.

1.5 SAFETY REQUIREMENTS

.1 Worker protection:

.1 Workers must wear gloves, respirators, dust masks, long sleeved clothing, eye protection, and 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.

1.6 SUBMITTALS

.1 Ballast: Submit proposed placing method to Departmental Representative for approval

prior to placing of ballast.

1.7 WASTE MANAGEMENT AND DISPOSAL

.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 re-use.

.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. 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 CSA-G164. Minimum weight of zinc coating as stated in Table 1 of this Standard. Fabricator to adhere to recommendations in Appendix A and B of Standard.

.2 Wire nails, spikes, staples: to CSA-B111.

.3 Bolts, nuts, washers: to

ASTM A 307.

.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, use 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 meter.

.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.

.8 Gravel: Evenly graded pit run or crushed stone, maximum size of 50 mm, with not more than 8% passing the 0.075 mm sieve.

PART 3 – EXECUTION

3.1 PREPARATION

.1 Excavate/prepare area of crib base to elevation indicated on drawings.

.2 Contractor to confirm with Departmental Representative that crib seat elevation is adequate for cribwork placement. Ensure full support is provided under the timbers.

.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 soundings and probings, 1500 mm centre to centre or less, precisely located by template, to confirm a flat bottom is established over the new crib area. In areas where crib base is stepped, construct crib to suit the configuration and take sounding to confirm proper preparation of bottom to match. Scribe cribwork to bedrock where required to approval of the Departmental Representative.

.5 Cribs out of alignment or not correctly located to be refloated and replaced in correct position.

3.2 CRIB CONSTRUCTION

.1 Construct timber cribwork to 400 mm above L.N.T. prior to sinking in final position in Work.

.2 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.

.3 Bottom timbers:

.1 Place bottom timbers lengthwise and crosswise to form bottom three (3) courses of cribs.

.2 Crosswise bottom timbers to be of one piece.

.3 Lengthwise bottom timbers to be of one piece.

.4 Secure three (3) courses of bottom timbers together with machine bolts at every intersection with each other and with vertical posts.

.4 Ballast floor:

.1 Place ballast floor in pockets on bottom or middle course of bottom timbers.

.2 Secure each ballast floor timber to bottom timbers with drift bolts securing adjacent ballast floor timbers to same bottom timber.

.5 Longitudinals:

.1 Longitudinals one length for individual cribs below L.N.T.

.2 Longitudinals minimum 6100 mm long above L.N.T.

.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 center of a 1200 mm long joiner block.

.5 Secure block to lower timber with drift bolt at center and secure longitudinals and splice at ends of 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 above L.N.T.

.6 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.

.2 One row of crossties and verticals may be eliminated from one crib where cribs marry together above +400 mm L.N.T.

.3 Place 19.0mm diameter by

250 mm long lag screws at 500 mm c/c across top crosstie to provide a connection into concrete as indicated.

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

.8 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 600mm 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 two (2) drift bolts into timber immediately below it.

.9 Levelling: treated timber required for levelling of cribwork after ballasting, must be full width continuous over entire length to be levelled.

.10 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 mm. 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-O80. 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 metre.

.3 Pockets of cribs ballasted within 100 mm of top of crib timbers.

3.5 GRAVEL

.1 Install a 100 mm layer of gravel over the top of ballast to form a base for the reinforced concrete deck.

.2 Hand place final items of ballast stone to fill voids and depressions to hold gravel in place.

.3 Install gravel to grade required and compact in preparation for concrete deck Work.

.4 Clean any loose gravel off timber surface prior to placement of deck.

3.6 TOLERANCES

.1 1 in 300 in overall dimensions.

.2 Locate cribs within 100 mm of locations 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 above or below L.N.T.

3.7 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.

END OF SECTION

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 coping, and associated painting.
- .2 Supply and installation of untreated dimension hardwood timber fenders.
- .3 Supply and installation of untreated timber hardwood ladders, ladder handgrips, and associated hardware and painting.

1.2 RELATED SECTIONS

.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 A307-07b, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
- .2 ASTM A123/A123M-09, Zinc (Hot-Dip Galvanized) coatings on Iron and Steel Products.

.2 American Wood-Preserver's Association (AWPA).
.1 AWPA M4-06, 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-97 (R2007), Wood Preservation.
.4 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles

.4 Canadian Wood Council.
.1 Wood Design Manual.

.5 National Lumber Grades Authority (NLGA).
.1 Standard Grading Rules for Canadian Lumber 2000 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 three (3) brush coats of preservative to CSA O80.

.5 Treat bolt holes, cutoffs, and field cuts in accordance with CSA O80.

1.6 DELIVERY AND STORAGE

.1 Store timber horizontally, evenly supported, and open piled to permit air 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:

.1 Treated Dimension Timber: The supply and installation of treated dimension timber for coping, wheelguard and wheelguard blocking will be measured by the cubic metre (m^3) 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 Timber: The supply and installation of untreated dimension timber for fendering and ladders will be measured by the cubic meter (m^3). Contractor will provide all timber, fastenings, plant, material, equipment, and labour, including ladder rungs, ladder handgrips, and painting of all sides of ladder uprights.

.2 Payment for all dimension timber will be made on volume calculated from nominal sizes as indicated on drawing and specified, e.g. 200 mm x 200 mm.

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 blocking, coping: Hemlock or Douglas Fir (CCA or ACA Treated).

.2 Hardwood fenders and ladder uprights: Birch or Maple

(Untreated).

.3 Grade: No. 1 Structural Grade.

.4 Grading Authority: NLGA.

.5 Preservative Treatment: Treat to CSA O80 and Section 06 05 73. Timbers will be treated in the lengths required. Unnecessary field cutting will not be permitted.

.6 Primer: Alkyd undercoat, exterior primer/sealer, similar to Pittsburgh 17-941 NFC.

.7 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "Safety Yellow" Product ID 7-808C. 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 300W, galvanized.

.2 Nails and Spikes: to CSA B111.

.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:

.1 For 16 mm machine bolts: 76 mm diameter by 6.4 mm thick with 18 mm diameter hole.

.2 For 19 mm machine bolts: 79 mm diameter by 7.9 mm thick, with 21 mm diameter hole.
.3 Washers to conform to G40.21. All washers to be galvanized.

.2 Plain Washers: to CSA B19.1, Class 2. All washers to be galvanized.
.3 Square washers are not permitted.

.6 Galvanizing: will conform to CSA G164 “Hot Dip Galvanizing of Irregularly Shaped Articles” Unless otherwise specified, minimum weight of zinc coating will be as stated in Table 1 of this Standard. Fabricator is to adhere to recommendations of Appendix A and Appendix B of this Standard.

.7 Ladder Rungs and Hand Grips: to CSA G40.21, galvanized.

.8 Lag Screws: to CSA B34 and be galvanized. Lag screw washers will conform to CSA B19.1.

.9 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 coping and/or wheelguard to existing concrete deck will be 19 mm diameter resin cartridge anchors.

.2 Submit shop drawings and manufacturer's specification for anchor bolts for approval.

.3 Anchor bolts to be installed with strict adherence to manufacturer's 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 200 mm by 200 mm and will be in minimum lengths of 6100 mm or as specially required with butt joints made over wheelguard blocking sized as shown on the drawings. Wheelguard timbers to be chamfered on top, 25 mm on each horizontal and vertical surface, as detailed on drawings.

.2 Wheelguard blocks will be installed at 1500 mm on centre as support for wheelguard.

.3 Wheelguard will be secured through wheelguard blocking as shown on detail drawings.

.4 Wheelguard and wheelguard blocking will be installed as indicated on detail drawings.

3.4 COPING

.1 Coping timbers to be 200 mm by 250 mm and will be in minimum lengths of 6100 mm or as specially required.

.2 Coping will be secured to the concrete deck as shown on detail drawings with 19 mm diameter galvanized machine bolts at a maximum spacing of 1500 mm.

.3 Coping will be secured to the crib timbers as shown on detail drawings with 19 mm diameter galvanized drift bolts at a maximum spacing of 1500 mm.

.4 Coping will be installed as indicated on detail drawings.

3.5 LADDERS

.1 Install ladders on face of wharf in locations shown on drawings or as designated by Departmental Representative.

3.6 PAINTING

.1 Paint wheelguard, wheelguard blocking, and complete ladder uprights as directed by the Departmental Representative.

.2 Use one (1) coat of exterior primer/sealer 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 Drift Bolts: Drift bolts used in the Work will have a length equal to thickness of timbers being fastened less 50 mm unless otherwise specified. Holes for drift 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 Lag Screws: Lag screws used in Work will have a length equal to thickness of timbers being fastened less 50 mm and the depth of countersinking. Holes for lag screws to be drilled same diameter as shank for shank portion of screw and to inside thread diameter for threaded portion of screw and for full length. All lag screws will be countersunk, screwed, not driven in place, and will have one (1) standard washer under the head.

.4 Countersink drift bolts and/or lag screws in hardwood fenders and ladders 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.

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION

.1 This section specifies the requirements for supply and installation of mooring devices as follows:
  .1 Supply and installation of Type "B1" mooring cleats.

1.2 RELATED SECTIONS

.1 Section 02 41 16 - Sitework, Demolition, and Removal.

.2 Section 03 10 00 - Concrete Forming and Accessories.

.3 Section 03 20 00 - Concrete Reinforcing.

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

1.3 MEASUREMENT FOR PAYMENT

.1 Mooring Cleats - Type "B1": The supply and installation of Type "B1" mooring cleats, including reinforced concrete pedestal, will be measured by the unit secured in place. Contractor to provide all concrete, reinforcing steel, anchor bolts, nuts, washers, grout, fastenings, paint, plant, equipment, and labour.

PART 2 – PRODUCTS

2.1 MOORING DEVICES

.1 Mooring Devices:
  .1 Mooring Cleats Type "B1": galvanized cast iron, 36.2kg weight as dimensioned on the attached drawing.
  .2 Anchor Bolts and Nuts: to ASTM A307, galvanized.

.3 Non-Shrink Grout: pre-mixed compound of non-metallic aggregate and plasticizing agents, capable of developing minimum compressive strength of 50 MPa at 28 days.
.4 Galvanizing: to CSA G164 minimum zinc coating 610 g/m^2.
.5 Welding: to CSA W59.
.6 Concrete: to Section 03 30 00.
.7 Concrete Reinforcement: to CSA G30.12M, Grade 400.
.8 Primer: Alkyd undercoat, exterior oil ferrous metal primer, similar to Pittsburgh 6-208.
.9 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "Brilliant Red (Safety Red)" Product ID 7-801. Paint to conform to CAN/CGSB-1.61-2004.

2.2 SHOP DRAWINGS

.1 Submit fabricator's shop drawings for cleats in accordance with Section 01 33 00 – Submittal Procedures.

PART 3 – EXECUTION

3.1 INSTALLATION

.1 Mooring Cleats – Type "B1":
.1 Install concrete cleat block for Type "B1" cleats as per attached drawings.
.2 Install concrete cleat blocks monolithically with deck.
.3 Secure cleats with 25 mm diameter anchor bolts of lengths required complete

with associated nuts and washers.

.4 After cleat installation is complete, bolt holes in cleats to be filled with approved waterproofing compound.

3.2 PAINTING

.1 Paint ferrous metal portions of mooring cleats.

.2 Use one (1) coat of exterior oil ferrous metal 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.

END OF SECTION