SPECIFICATION
HARBOUR DEVELOPMENT
LODGE BAY, NL

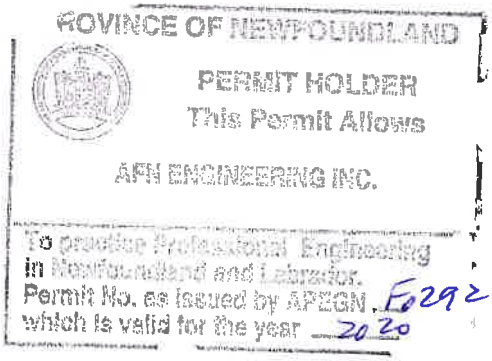
Project Number: 722353

PREPARED FOR

Fisheries and Oceans Canada

DATE

January 1, 2020



LIST OF DRAWINGS

Harbour Development
Lodge Bay, NL
722353

2020-01-01

DRAWING NO	TITLE
C1 of 10	Sounding and Topographic Survey
C2 of 10	Demolition and Dredging Plan
C3 of 10	New Site Plan
C4 of 10	Floating Dock Support Crib
C5 of 10	Anchors for Floating Docks
C6 of 10	Floating Docks Plans, Elevations and Details
C7 of 10	Floating Docks Plans, Elevations and Details
C8 of 10	Gangway Details
C9 of 10	Floating Dock Details
C10 of 10	Sections - Gravel Launch and Uplands

1.1 SCOPE

.1 The work consists of the furnishing of all plant, labour, equipment and material for harbour development at Lodge Bay, Labrador, in strict accordance with specifications and accompanying drawings and subject to all terms and conditions of the Contract.

2. Due to the proximity of the work to the Mouth of the St. Charles River, in-water works is only permitted between October 1, 2020 to March 31, 2021.

.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 OF WORK

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

.1 Demolition of the existing infrastructure (old wooden cribbing, decking, etc.), as noted on the drawings.
.2 Construction of one (1) new treated timber crib, to the dimensions as indicated on the drawings.

.3 Supply and installation of a new wooden gangway, as shown on the drawings.
.4 Supply and installation of floating docks as noted on the drawings, including anchor chains and concrete mooring blocks.
.5 Construction of a gravel launch and uplands development including granulars, geotextile/filter stone/armour stone on side slopes, as indicated on the drawings.

1.3 SITE OF WORK

.1 Work will be carried out at Lodge Bay, Labrador, in the location as shown on the accompanying drawings.

1.4 DATUM

.1 Datum used for this project is shown on the drawings. Confirm with Departmental Representative prior to construction that the benchmarks are accurate. If required, Contractor is to establish a new benchmark to the approval of the Departmental Representative.

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

1.5 FAMILIARIZATION WITH SITE

.1 Before submitting a bid, it is recommended that bidders visit the site and its surroundings at their own schedule and cost, to review and verify the form, nature and extent of the work, materials needed for the completion of the work, the means of access to the site, severity, exposure and uncertainty of weather, soil conditions, any accommodations they may require, and in general shall obtain all necessary information as to risks, contingencies and other circumstances

which may influence or affect their bid or costs to do the work. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.

.2 Contractors, bidders or those they invite to site are to review specification Section 01 35 29 - Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid.

1.6 CODES AND STANDARDS

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

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

1.7 TERM ENGINEER

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

1.8 SETTING OUT WORK

.1 Set grades and layout work in detail from control points and grades established by Departmental Representative.

.2 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated or as directed by Departmental Representative.

.3 Provide devices needed to layout and construct work.

.4 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.

.5 Supply stakes and other survey markers required for laying out work.

1.9 COST BREAKDOWN

.1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price.

.2 Provide cost breakdown in same format as the numerical and subject title system used in this specification project manual and thereafter sub-divided into major work components as directed by Departmental Representative.

.3 Upon approval by Departmental Representative, cost breakdown will be used as basis for progress payment.

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

1.10 WORK SCHEDULE

.1 Submit within 7 work days of notification of acceptance of bid, a construction schedule showing commencement and completion of all work within the time

stated on the Bid and Acceptance Form and the date stated in the bid acceptance letter.

.2 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.

.3 As a minimum, work schedule to be prepared and submitted in the form of Bar (GANTT) Charts, indicating work activities, tasks and other project elements, their anticipated durations and planned dates for achieving key activities and major project milestones provided in sufficient details and supported by narratives to demonstrate a reasonable plan for completion of project within designated time. Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.

.4 Submit schedule updates on a minimum monthly basis and more often, when requested by Departmental Representative, due to frequent changing project conditions. Provide a narrative explanation of necessary changes and schedule revisions at each update.

.5 The schedule, including all updates, shall be to Departmental Representative's approval. Take necessary measures to complete work within approved time. Do not change schedule without Departmental Representative's approval.

.6 All work on the project will be completed

within the time indicated on the Bid and Acceptance Form.

1.11 ABBREVIATIONS

.1 Following abbreviations of standard specifications have been used in this specification and on the drawings:

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

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

1.12 QUARRY AND EXPLOSIVES

.1 Make own arrangements with Provincial authorities and owners of private properties, for the quarrying and transportation of rock and all materials and machinery necessary for work over their property, roads or streets as case may be.

1.13 SITE OPERATIONS

.1 Arrange for sufficient space adjacent to project site for conduct of operations, storage of materials and so on. Exercise care so as not to obstruct or damage public or private property in area. Do not interfere with normal day-to-day operations in progress at site. All arrangements for space and access will be made by Contractor.

.2 Remove snow and ice as required to maintain safe access in a manner that does not damage existing structures or interfere with the operations of others.

1.14 PROJECT MEETINGS

.1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.

.2 Project meetings will take place on site of work unless so directed by the Departmental Representative.

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

.4 Have a responsible member of firm present at all project meetings.

1.15 PROTECTION

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

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

1.16 EXISTING SERVICES

.1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to site operations, pedestrian, vehicular traffic and tenant operations.

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

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

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

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

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

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

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

1.17 DOCUMENTS REQUIRED

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

1.18 PERMITS

.1 Obtain and pay for all permits,

certificates and licenses as required by Municipal, Provincial, Federal and other Authorities.

.2 Provide appropriate notifications of project to municipal and provincial inspection authorities.

.3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.

.4 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.

.5 Submit to Departmental Representative, copy of quarry permit, if applicable, prior to start of quarry operations.

.6 Comply with all requirements, recommendations and advice by all regulatory authorities unless otherwise agreed in writing by Departmental Representative. Make requests for such deviations to these requirements sufficiently in advance of related work.

1.19 CUTTING, FITTING AND PATCHING

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

.2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work. This includes patching of openings in existing work resulting from removal of existing services.

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

members.

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

1.20 EXISTING SUB-SURFACE CONDITIONS

.1 Information pertaining to the existing sub-surface conditions may be available by contacting the Departmental Representative.

.2 Contractors are cautioned that any previous investigations that may be available for review, were intended to provide general site information only. Any interpolation and/or assumptions made relative to any previous investigations is the Contractor's responsibility.

1.21 LOCATION OF EQUIPMENT

.1 Location of work shown or specified shall be considered as approximate. Actual location shall be as required to suit conditions at time of installation and as is reasonable. Obtain approval of Departmental Representative.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Departmental Representative when impending installation conflicts with other new or existing components. Follow directives for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.22 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 local Department of Fisheries and Oceans detachment at least 48 hours in advance of starting any work on site. Submit confirmation to the Departmental Representative that DFO have been contacted. Allow for the supply, installation and maintenance of a silt curtain during any near shore excavation activities as well as during wharf removal activities, to meet Fisheries Habitat’s mitigation measures to protect fish.

1.23 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 issuance of Notices to Shipping/Mariners.

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

1.24 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.

1.25 WORKS COORDINATION

.1 Responsible for coordinating the work of the various trades, where the work of such trades interfaces with each other.

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

.3 Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor and shall be resolved at no extra cost to Canada.

1.26 CONTRACTOR'S USE OF SITE

.1 Construction operations, including storage of materials for this contract, not to interfere with the fishing activity and/or operations at this harbour facility.

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

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

.4 Exercise care so as not to obstruct or damage public or private property in the area.

.5 At completion of work, restore area to its original condition. Damage to ground and property will be repaired by Contractor. Remove all construction materials, residue, excess, etc., and leave site in a condition acceptable to Departmental Representative.

1.27 WORK COMMENCEMENT

.1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan and insurance documentation, unless otherwise agreed by Departmental Representative.

.2 Project work on site is to commence as soon as possible, with a continuous reasonable work force, unless otherwise agreed by Departmental Representative.

.3 Weather conditions, short construction season, delivery challenges and the location of the work site may require the use of longer working days and additional work force to complete the project within the specified completion time.

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

1.28 FACILITY SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

1.29 WORKING ADJACENT TO COMMUNITY ROADS

1. The Contractor will be responsible to restore any damage to existing roadways.

PART 1 - GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

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

1.3 APPOINTMENT AND PAYMENT

.1 Departmental Representative will appoint and pay for services of testing laboratory except for the following:
.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
.2 Inspection and testing performed exclusively for Contractor's convenience.
.3 Mill tests and certificates of compliance.
.4 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
.5 Tests requested by Departmental Representative to confirm material specifications when the applicable manufacturer's documentation or test results are unavailable.
.6 Additional tests specified in the following paragraph.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.4 CONTRACTOR'S RESPONSIBILITIES

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

.2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Shop drawings and product data.

.2 Samples.

.3 Certificates.

1.2 SUBMITTAL GENERAL REQUIREMENTS

.1 Submit to Departmental Representative for review submittals listed, including shop drawings, samples, certificates and other data, as specified in other sections of the Specifications.

.2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.

.3 Do not proceed with work until relevant submissions are reviewed by Departmental Representative.

.4 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.5 Where items or information is not produced in SI Metric units, provide soft converted values.

.6 Review submittals prior to submission to Departmental Representative. Ensure during review that necessary requirements have been determined and verified, required field measurements or data have been taken, and that each submittal has been checked and co-ordinated with requirements of Work and

Contract Documents.

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

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

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

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

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

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

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

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

1.3 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Number of Shop Drawings: submit sufficient copies of shop drawings which are required by the General Contractor and sub-contractors plus 2 copies which will be retained by Departmental Representative. Ensure sufficient numbers are submitted to enable one complete set to be included in each of the maintenance manuals specified, if applicable.

.3 Shop Drawings Content and Format:

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

.2 Shop Drawings Format:

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

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

.3 Non or poorly legible drawings,

photocopies or facsimiles will not be accepted and returned not reviewed.

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

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

.4 Allow 10 calendar days for Departmental Representative's review of each submission.

.5 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.

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

.7 Accompany each submission with transmittal letter, containing:

.1 Date.

.2 Project title and project number.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing, product data and sample.

.5 Other pertinent data.

.8 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.

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

.10 The review of shop drawings by the Departmental Representative or their delegated representative is for sole purpose of ascertaining conformance with general concept. This review shall not mean that the Departmental Representative approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in

shop drawings or of responsibility for meeting all requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 SCHEDULES, PERMITS AND CERTIFICATES

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

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

.3 Submission of above documents to be in accordance with Submittal General Requirements procedures specified in this section.

1.1 SECTION INCLUDES

.1 Fire Safety Requirements.

.2 Hot Work Permit.

1.2 RELATED WORK

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

.2 Section 01 35 29 - Health and Safety Requirements.

1.3 REFERENCES

.1 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
.1 FCC No. 301-June 1982 Standard for Construction Operations (http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/301/page00.shtml).
.2 FCC No. 302-June 1982 Standard for Welding and Cutting (http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/302/page00.shtml).
.3 FCC standards, may also be viewed at the Regional Fire Protection Services' office (previously known as the Fire Commissioner of Canada) located at 99 Wyse Road, 8th Floor, Dartmouth, NS, Tel: (902) 426-6053.

1.4 DEFINITIONS

.1 Hot Work defined as:
.1 Welding work.
.2 Cutting of materials by use of torch or other open flame devices.
.3 Grinding with equipment which produces sparks.

1.5 SUBMITTALS

.1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days after notification of acceptance of bid.

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

1.6 FIRE SAFETY REQUIREMENTS

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

.2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.7 HOT WORK AUTHORIZATION

.1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot work on site.

.2 To obtain authorization submit to Departmental Representative:
.1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
.2 Description of the type and frequency of Hot Work required.
.3 Sample Hot Work Permit to be used.

.3 Upon review and confirmation that effective fire safety measures will be implemented during performance of hot work, Departmental Representative will provide authorization to proceed as follows:
.1 Issue one written "Authorization to Proceed" covering the entire project for

duration of work or;
.2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Departmental Representative. Follow Departmental Representative's directives in this regard.

.4 Requirement for individual authorization based on:
.1 Nature or phasing of work;
.2 Risk to Facility operations;
.3 Quantity of various trades needing to perform hot work on project or;
.4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.

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

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

1.8 HOT WORK PROCEDURES

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

.2 Procedures to include:
.1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of Section 01 35 29.
.2 Use of a Hot Work Permit system for each

hot work event.
.3 The step by step process of how to prepare and issue permit.
.4 Permit shall be issued by Contractor's site Superintendent, or other authorized person designated by Contractor, granting permission to worker or subcontractor to proceed with hot work.
.5 Provision of a designated person to carryout a Fire Safety Watch for a minimum of 60 minutes immediately upon completion of the hot work.
.6 Compliance with fire safety codes and standards specified herein and occupational health and safety regulations specified in Section 01 35 29.

.3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.

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

.5 Brief all workers and subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.
.1 Failure to comply with the established procedures may result in the issuance of a Non-Compliance Notification at Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 29.

1.9 HOT WORK PERMIT

.1 Hot Work Permit to include, as a minimum, the following data:

.1 Project name and project number.

.2 Building name, address and specific room or area where hot work will be performed.

.3 Date when permit issued.

.4 Description of hot work type to be performed.

.5 Special precautions required, including type of fire extinguisher needed.

.6 Name and signature of person authorized to issue the permit.

.7 Name of worker (clearly printed) to which the permit is being issued.

.8 Time Duration that permit is valid (not to exceed 8 hours). Indicate start time and date, and completion time and date.

.9 Worker signature with date and time upon hot work termination.

.10 Specified time period requiring safety watch.

.11 Name and signature of designated Fire Safety Watcher, complete with time and date when safety watch terminated, certifying that surrounding area was under continual surveillance and inspection during the full watch time period specified in Permit and commenced immediately upon completion of Hot Work.

.2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.

.3 Each Hot Work Permit to be completed in full and signed as follows:

.1 Authorized person issuing Permit before hot work commences.

.2 Worker upon completion of Hot Work.

.3 Fire Safety Watcher upon termination of safety watch.

.4 Returned to Contractor's Site Superintendent for safe keeping.

1.10 DOCUMENTS ON SITE

.1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.

.2 Upon request, make available to Departmental Representative or to authorized safety representative for inspection.

1.1 SECTION INCLUDES

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

1.2 RELATED WORK

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

.2 Section 01 35 29 - Health and Safety Requirements.

1.3 REFERENCES

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

.2 CAN/CSA C22.3 No. 1-10 - Overhead Systems.

.3 CAN/CSA C22.3 No. 7-10 - 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 is isolated.

.3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).

.4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.

.5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.

.6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

1.5 COMPLIANCE REQUIREMENTS

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

.2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.6 SUBMITTALS

.1 Submit copy of proposed Lockout Procedures and sample form of lockout permit or lockout tags for review.

.2 Submit documentation within 7 calendar days of acceptance of bid. Do not proceed with work until submittal has been reviewed by Departmental Representative.

.3 Submit above documents in accordance with the submittal requirements specified in Section 01 33 00.

.4 Resubmit Lockout Procedures with noted revisions as may result from Departmental Representative's review.

1.7 ISOLATION OF EXISTING SERVICES

.1 Obtain Departmental Representative's written authorization prior to conducting work on an existing active, energized service or facility required as part of the work and before proceeding with lockout of such services or facility.

.2 To obtain authorization, submit to Departmental Representative the following documentation:
.1 Written Request for Isolation of the service or facility and;
.2 Copy of Contractor's Lockout Procedures.

.3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, and as follows:
.1 Fill-out standard forms in current use at the Facility when so directed by Departmental Representative or;
.2 Where no form exist at Facility, make request in writing identifying:
.1 Identification of system or equipment to be isolated, including it's

location;
.2 Time duration, indicating Start time and date, and Completion time and date when isolation will be in effect;
.3 Voltage of service feed to system or equipment being isolated;
.4 Name of person making the request.

.3 Document to be in typewritten format.

.4 Do not proceed until receipt of written notification from Departmental Representative granting the Isolation Request and authorization to proceed with the isolation of designated equipment or facility. Departmental Representative may designate other individual at the Facility as the person authorized to grant the Isolation Request.

.5 Conduct safe, orderly shut down of equipment or facilities, de-energize and isolate power and other sources of energy and lockout items in accordance with requirement of clause 1.8 below.

.6 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of facility operations.

.7 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require a Request for Isolation. Follow Departmental Representative's directives in this regard.

.8 Conduct hazard assessment as part of the planning process of isolating existing equipment and facilities. Hazard Assessments to conform with requirements of Health and Safety Section 01 35 29.

1.8 LOCKOUTS

.1 Isolate and lockout electrical facilities, mechanical equipment and machinery from all potential energy sources prior to starting work on such items.

.2 Develop and implement lockout procedures to be followed on site as an integral part of the Work.

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

.4 Use industry standard lockout tags.

.5 Provide appropriate safety grounding and guards as required.

.6 Prepare Lockout Procedures in writing. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tagout facilities and equipment.

.7 Include within procedures a system of worker request and issuance of individual lockout permit by a person, employed by Contractor, designated to be "in-charge" and being responsible for:

.1 Controlling issuance of permits or tags to workers.

.2 Determining permit duration.

.3 Maintaining record of permits and tags issued.

.4 Submitting a Request for Isolation to Departmental Representative when required in accordance with Clause 1.7 above.

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

.6 Ensuring equipment or facility has been properly isolated, providing a Guarantee of

Isolation to worker(s) prior to proceeding with work.

.7 Collecting and safekeeping lockout tags, returned by workers, as a record of the event.

.8 Clearly establish, describe and allocate, within procedures, the responsibilities of:

.1 Workers.

.2 Designated person controlling issuance of lockout tags/permits.

.3 Safety Watcher.

.4 Subcontractors and General Contractor.

.9 Procedures shall meet the requirements of Codes and Regulations specified in clause 1.5 above.

.10 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the procedures applicable to this contract.

.1 Incorporate site specific rules and procedures established by Facility Manager and in force at site. Obtain such procedures through Departmental Representative.

.11 Procedures to be in typewritten format.

.12 Submit copy of Lockout Procedures to Departmental Representative, in accordance with submittal requirements of clause 1.6 herein, prior to commencement of work.

1.9 CONFORMANCE

.1 Ensure that lockout procedures, as established for project on site, are stringently followed. Enforce use and compliance by all workers.

.2 Brief all persons working on electrical facilities, mechanical and other equipment

fed by an energy source on requirements of this section.

.3 Failure to perform lockouts in accordance with regulatory requirements or follow procedures specified herein may result in the issuance of a Non-Compliance Notification at Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 29.

1.10 DOCUMENTS ON SITE

.1 Post Lockout Procedures on site in common location for viewing by workers.

.2 Keep copies of Request for Isolation submitted to Departmental Representative and lockout permits or tags issued to workers during the course of work for full project duration.

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

1.1 RELATED WORK

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

.2 Section 01 35 25 - Special Procedures on Lockout Requirements.

1.2 DEFINITIONS

.1 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.

.2 Submit site-specific Health and Safety

Plan prior to commencement of Work.
.1 Submit within 10 work days of notification of Bid Acceptance. Provide 3 copies.
.2 Departmental Representative will review Health and Safety Plan and provide comments.
.3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
.4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
.5 Submit revisions and updates made to the Plan during the course of Work.

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

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

.5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
.1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.

.6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.7 Submit copies of incident reports.

.8 Submit WHMIS MSDS - Material Safety Data

Sheets.

1.4 COMPLIANCE REQUIREMENTS

.1 Comply with the Occupational Health and Safety Act for the Province of Newfoundland and Labrador, and the Occupational Health and Safety Regulations made pursuant to the Act.

.2 Comply with Canada Labour Code Part II, (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations (COSH) as well as any other regulations made pursuant to the Act.

.1 The Canada Labour Code can be viewed at: www.http://laws.justice.gc.ca/en/L-2/

.2 COSH can be viewed at: www.http://laws.justice.gc.ca/eng/SOR-86-304/ne.html.

.3 A copy may be obtained at: Canadian Government Publishing Public Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: (819) 956-4800 (1-800-635-7943) Publication No. L31-85/2000 E or F).

.3 Observe construction safety measures of:

.1 Part 8 of National Building Code.

.2 Municipal by-laws and ordinances.

.4 In case of conflict or discrepancy between any specified requirements, the more stringent shall apply.

.5 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter of Good Standing.

.6 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.

1.5 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of 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 onto 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.

.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.

1.7 PROTECTION

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

.2 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, at Work Site.

.2 Where a particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed before carrying out applicable portion of work.

1.10 HAZARD ASSESSMENTS

.1 Perform site specific health and safety hazard assessment of the Work and its site.

.2 Carryout initial assessment prior to commencement of Work with further assessments as needed during progress of work, including when new trades and subcontractors arrive on site.

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

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

1.11 PROJECT/SITE CONDITIONS

.1 The following are known or potential project related safety hazards at site:

.1 Working in close proximity of water.
.2 Use of water crafts and floating platforms.
.3 Wet and slippery conditions.
.4 Inclement weather.
.5 Potential structural weakness of existing structures.
.6 Heavy equipment activity in the area.
.7 Heavy lifting.
.8 Working at heights.
.9 Cutting tools and other construction power tools.
.10 Overhead power/utility lines.
.11 Risk of electric shock.
.12 Vehicular and pedestrian traffic.
.13 Confined spaces.

.2 Above items shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work.

.3 Include above items into hazard assessment process.

.4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.

1.12 MEETINGS

.1 Attend pre-construction health and safety meeting, convened and chaired by Departmental Representative, prior to commencement of Work, at time, date and location determined by Departmental Representative. Ensure attendance of:
.1 Superintendent of Work.
.2 Designated Health & 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.

.3 Keep documents on site.

1.13 HEALTH AND SAFETY PLAN

.1 Prior to commencement of Work, develop written Health and Safety Plan specific to the work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.

.2 Health and Safety Plan shall include the following components:
.1 List of health risks and safety hazards identified by hazard assessment.
.2 Control measures used to mitigate risks

and hazards identified.

.3 On-site Contingency and Emergency Response Plan as specified below.

.4 On-site Communication Plan as specified below.

.5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.

.6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.

.3 On-site Contingency and Emergency Response Plan shall include:

.1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency.

.2 Evacuation Plan: site and floor plan layouts showing escape routes, marshaling areas. Details on alarm notification methods, fire drills, location of fire fighting equipment and other related data.

.3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.

.4 Emergency Contacts: name and telephone number of officials from:

.1 General Contractor and subcontractors.

.2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.

.3 Local emergency resource organizations.

.5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will

provide pertinent data including name of Facility Management contacts.

.4 On-site Communication Plan:
- .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
- .2 List of critical work activities to be communicated with Facility Manager which have a risk of endangering health and safety of Facility users.

.5 Address all activities of the Work including those of subcontractors.

.6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor arrive at Work Site.

.7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.

.8 Post copy of the Plan, and updates, prominently on Work Site.

1.14 SAFETY SUPERVISION

.1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.

.2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
- .1 Implement, monitor and enforce daily compliance with health and safety

requirements of the Work
.2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
.3 Conduct site safety orientation session to persons granted access to Work Site.
.4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
.5 Stop the Work as deemed necessary for reasons of health and safety.

.3 Health & Safety Site Representative must:
.1 Be qualified and competent person in occupational health and safety.
.2 Have site-related working experience specific to activities of the Work.
.3 Be on Work Site at all times during execution of the Work.
.4 All supervisory personnel assigned to the Work shall also be competent persons.
.5 Inspections:
.1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
.2 Conduct Formal Inspections on a minimum monthly basis. Use standardized safety inspection forms. Distribute to subcontractors.
.3 Follow-up and ensure corrective measures are taken.
.6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
.7 Keep inspection reports and supervision related documentation on

site.

1.15 TRAINING

.1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.

.2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.

.3 When unforeseen or peculiar safety-related hazard, or condition occur during performance 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.

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, safety glasses and hearing protection.
.2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
.3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
.4 Obey warning signs and safety tags.

.2 Brief persons of disciplinary protocols to be taken for non compliance. Post rules on site.

1.17 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Departmental Representative will stop Work if non-compliance of health and safety regulations is not corrected in a timely manner.

1.18 INCIDENT REPORTING

.1 Investigate and report the following incidents to Departmental Representative:
- .1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
- .2 Medical aid injuries.
- .3 Property damage in excess of $10,000.00.
- .4 Interruptions to Facility operations resulting in an operational lost to a Federal department in excess of $5000.00.

.2 Submit report in writing.

1.19 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System WHMIS).

.2 Keep MSDS data sheets for all products delivered to site.
- .1 Post on site.

1.20 BLASTING

.1 Blasting or other use of explosives is not permitted on site without prior receipt of written permission and instructions from Departmental Representative.

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

1.21 POWDER ACTUATED DEVICES

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

1.22 CONFINED SPACES

.1 Abide by occupational health and safety regulations regarding work in confined spaces.

.2 Obtain an Entry Permit in accordance with Part XI of the Canada Occupational Health and Safety Regulations for entry into an existing identified confined space located at the Facility or premises of Work.

.1 Obtain permit from Facility Manager

.2 Keep copy of permit issued.

.3 Safety for Inspectors:

.1 Provide PPE and training to Departmental Representative and other persons who require entry into confined space to perform inspections.

.2 Be responsible for efficacy of equipment and safety of persons during their entry and occupancy in the confined space.

1.23 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.

1.24 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous

location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.

.2 Post other documents as specified herein, including:
.1 Site specific Health and Safety Plan.
.2 WHMIS data sheets.

1.25 DIVING OPERATIONS

.1 All diving work to comply fully with the requirements of CSA Z275.2-04, "Occupational Safety Code for Diving Operations", CSA Z275.4-02, "Competency Standards for Diving Operations "and CSA Z180.1-00,"Compressed Breathing Air and Systems."

.2 Dive personnel must meet the minimum competency requirements of the CSA Z275.4-02 (R2008) and all divers must possess a valid Category 1 Diving Certificate or an Unrestricted Surface-supplied Certificate.

.3 Diving in free-swim mode is not permitted at the work site.

.4 Divers must have a current(less than one year) validated medical examination certificate(s) from a licensed Diving Physician in Newfoundland and Labrador who is knowledgeable and competent in diving and hyperbaric medicine, for all dives.

1.1 RELATED WORK

.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 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 or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.

.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. Carryout 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 waste categories in order to maximize recycling abilities of various materials and avoid disposal of debris at landfill site(s) in a "mixed state". Where recycling firms, specializing in recycling of specific materials exist, transport such materials to the recycling facility and avoid disposal at landfill sites.

.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 exceedences are noted, the Departmental Representative has the right to issue stop pumping instructions to the Contractor. Contractor will not be compensated for any delays associated with retrofitting equipment to meet guidelines.

.5 Provide control devices such as filter fabrics, sediment traps and settling ponds

to control drainage and prevent erosion of adjacent lands. Maintain 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 to local authorities emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and around entire construction site.

.5 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.

.6 Have emergency spill response equipment and rapid clean-up kit, appropriate to work, at site. Locate adjacent to work and where hazardous materials are stored. Provide personal protective equipment as required for clean-up.

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

.8 Provide a floating debris containment boom whenever any of the Contractors methods of work allow for the potential of floating debris. Provide and maintain a silt curtain to meet DFO Habitat regulations when work activities elevate turbidity levels.

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 and neighbouring vegetation until nesting is completed.
.2 Minimize work immediately adjacent to such areas until nesting is completed.
.3 Protect these areas by following recommendations of Canadian Wildlife Service.

1.1 SECTION INCLUDES

.1 Inspection and testing, administrative and enforcement requirements.

.2 Tests and mix designs.

.3 Mill tests.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 78 00 - Closeout Submittals.

1.3 INSPECTION

.1 Facilitate Departmental Representative's access to Work. If part of Work is being fabricated at locations other than construction site, make preparations to allow access to such Work whenever it is in progress.

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

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

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

1.4 INDEPENDENT INSPECTION AGENCIES

.1 Departmental Representative may engage and pay for service of Independent Inspection and Testing Agencies for purpose of inspecting

and testing portions of Work except for the following which remain part of Contractor's responsibilities:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing performed exclusively for Contractor's convenience.

.3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.

.4 Mill tests and certificates of compliance.

.5 Tests as specified within various sections designated to be carried out by Contractor under the supervision of Departmental Representative.

.6 Additional tests specified in Clause 1.4.2.

.2 Where tests or inspections by designated Testing Agency reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of corrected work.

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

1.5 ACCESS TO WORK

.1 Furnish labour and facility to provide access to the work being inspected and tested.

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

.3 Make good work disturbed by inspections and tests.

1.6 PROCEDURES

.1 Notify Departmental Representative sufficiently in advance of when work is ready

for tests, in order for Departmental Representative to make attendance arrangements with Testing Agency. When directed by Departmental Representative, notify such Agency directly.

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

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

1.7 REJECTED WORK

.1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.

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

1.8 TESTING BY CONTRACTOR

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

.2 At completion of tests, turn over 2 copies of fully documented test reports to Departmental Representative.

.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.

1.1 ACCESS

.1 Provide and maintain adequate access to project site.

.2 Maintain access roads for duration of contract and make good damage resulting from Contractors' use of roads.

1.2 CONTRACTOR'S SITE OFFICE

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

1.3 DEPARTMENTAL REPRESENTATIVE'S SITE OFFICE

.1 Provide or construct a separate site office for the use of the Departmental Representative and the Site Representative. The building must be in place prior to commencement of work.

.2 Provide heating system to maintain 22°C inside temperature at -20°C outside temperature.

.3 The building will be approximately 2400 mm x 3600 mm. It will have a suitable frame covered with a weatherproof siding and lined with plywood or other approved material. The floor will be of 19 mm thick material. It will be provided with suitable window with at least 1 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 2 keys.

.4 The office will be equipped with a drafting chair and a 900 mm x 1500 mm table having a hinged, smooth wooden top suitable for drafting.

.5 Install electrical lighting system to provide minimum 750 lux using surface mounted, shielded commercial fixtures with 10% upward

light component.

.6 Maintain office in clean condition.

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

.8 Contractor may, on approval of Departmental Representative, provide cellular or mobile phone. If approval to use cellular or mobile phone is granted, be responsible for all services, airtime, license and network access fees, and all other fees or charges required to utilize the phone as intended by the manufacturer.

1.4 SANITARY FACILITIES

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

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

1.5 POWER

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

.2 Supply and install all temporary facilities for power such as pole lines and underground cables to approval of local power supply authority.

1.6 WATER SUPPLY

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

1.7 SCAFFOLDING

.1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CSA797-09.

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

1.8 CONSTRUCTION SIGN AND NOTICES

.1 Contractor or subcontractor advertisement signboards are not permitted on site.

.2 Only notices of safety or instructions are permitted on site.

.3 Safety and Instruction Signs and Notices:
.1 Signs and notices for safety and instruction shall be in both official languages.

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

1.9 REMOVAL OF TEMPORARY FACILITIES

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

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Barriers.

.2 Traffic Controls.

1.2 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.3 HOARDING

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

1.4 GUARD RAILS AND BARRICADES

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

.2 Provide barricades along wharf structure when wheelguard is removed.

.3 Provide as required by governing authorities.

1.5 ACCESS TO SITE

.1 Provide and maintain access to adjacent harbour facilities.

1.6 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect the public.

1.7 FIRE ROUTES

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

response vehicles.

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

.2 Be responsible for damage incurred.

1.1 DESCRIPTION

.1 This section specifies requirements for board, lodgings and related services to be provided by the Contractor for the Site Inspector.

.2 It is a requirement of this contract that the Contractor provide and pay for all board and lodgings for the Site Inspector's sole use for the duration of the project. Provide for and maintain acceptable living accommodations on site for the Site Inspector's sole use. The minimum requirement would be a hotel in close vicinity to the project site, or other arrangement approved by the Departmental Representative. The minimum daily allowance for the site Inspector's meals (to be paid for by the contractor), is in accordance with the latest published Treasury Board guidelines for breakfast/lunch/dinner allowances (these can be found on-line at http://www.njc-cnm.gc.ca/directive/travel-voyage/s-td-dv-a3-eng.php).

1.2 BOARD AND LODGINGS

.1 For the purpose of this contract board and lodgings shall include but not necessarily be limited to: sleeping accommodation, meals and dining facilities, washroom facilities, laundry facilities, electrical and heating service, linens and bedding, etc. and any reasonable service as directed by the 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. Also include any anticipated downtimes, times when the Contractor is off site for convenience, etc., in the cost, as the site Inspector's camp and board will be due for each calendar day from the date of mobilization to the date of final completion.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

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

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

1.1 GENERAL

.1 Use new material and equipment unless otherwise specified.

.2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
.1 name and address of manufacturer;
.2 trade name, model and catalogue number;
.3 performance, descriptive and test data;
.4 manufacturer's installation or application instructions;
.5 evidence of arrangements to procure.
.6 evidence of manufacturer delivery problems or unforseen delays.

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

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

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

1.2 PRODUCT QUALITY AND REFERENCED STANDARDS

.1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.

.2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions.

1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES

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

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

.3 Substitutions: After acceptance of bid, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.4 MANUFACTURERS INSTRUCTIONS

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.

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

1.5 AVAILABILITY

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

1.6 WORKMANSHIP

.1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are

employed.

.2 Remove unsuitable or incompetent workers from site as stipulated in General Conditions.

.3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.

.4 Coordinate work between trades and subcontractors.

.5 Coordinate placement of openings, sleeves and accessories.

1.7 FASTENINGS - GENERAL

.1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.

.2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.

.3 Keep exposed fastenings to minimum, space evenly and lay out neatly.

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

.5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See Section 01 35 29 on Health and Safety in this regard.

1.8 FASTENINGS - EQUIPMENT

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

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

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

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

1.9 STORAGE, HANDLING AND PROTECTION

.1 Deliver, handle and store materials in manner to prevent deterioration and soiling and in accordance with manufacturer's instructions when applicable.

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

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

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

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

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

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

.8 Immediately remove damaged or rejected materials from site.

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

1.10 CONSTRUCTION EQUIPMENT AND PLANT

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

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

PART 1 - GENERAL

1.1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

.2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.3 Prevent accumulation of wastes which create hazardous conditions.

.4 Provide adequate ventilation during use of volatile or noxious substances.

1.2 MATERIALS

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

1.3 CLEANING DURING CONSTRUCTION

.1 Maintain project grounds and public properties in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.

.2 Provide on-site garbage containers for collection of waste materials and debris.

.3 Remove waste materials and debris from site on a daily basis.

1.4 FINAL CLEANING

.1 In preparation for acceptance of the Work perform final cleaning.

.2 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.

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

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Environment Procedures.

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

.3 Section 06 05 73 - Wood Treatment.

.4 Section 31 53 13 - Timber Cribwork.

.5 Section 31 53 16 - Structural Timber.

Note: Any reference in this section to recycling, re-use, etc., does not apply to creosote timber. Creosote timber is to be disposed of at one of the Provincially approved regional lined landfill sites (Norris Arm or Robin Hood Bay).

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 waste to approved waste processing facility or landfill site.
.6 Training and supervising workforce on waste management at site.

.3 Workplan to incorporate waste management requirements specified herein and in other sections of the Specifications.

.4 Develop Workplan in collaboration with all subcontractors to ensure all waste management issues and opportunities are addressed.

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

Departmental Representative.

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

.7 Revise Plan as work progresses addressing new opportunities for diversion of waste from landfill.

1.3 WASTE AUDIT

.1 At project start-up, conduct waste audit of:
.1 Site conditions identifying items and waste resulting from demolition and removal work.
.2 Projected waste resulting from product packaging and from material leftover after installation work.

.2 Develop written list. Record type, composition and quantity of various 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 Identify materials and equipment to be:
.1 Protected and turned over to Departmental Representative when indicated.
.2 Sent to recycling facility.
.3 Sent to waste processing/landfill site for their recycling effort.
.4 Disposed of in approved landfill site.

.3 Reduce construction waste during installation work. Undertake practices which will minimize waste and optimize full use of new materials on site, such as:
.1 Use of a central cutting area to allow for easy access to off-cuts;
.2 Use of off-cuts for blocking and bridging elsewhere.

.3 Use of effective and strategically placed facilities on site for storage and staging of left-over or partially cut materials to allow for easy incorporation into work whenever possible avoiding unnecessary waste.

.4 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 temporarily store anticipated quantities of waste materials.

.1 Use suitable containers for individual collection of items based on intended purpose.

.2 Locate to facilitate deposit but without hindering daily operations of existing building tenants.

.3 Clearly mark containers and stockpiles as to purpose and use.

.3 Perform demolition and removal of existing structure components and equipment following a systematic deconstruction process.

.1 Separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:

.1 Reinstallation into the work where indicated.

.2 Salvaging reusable items not needed in project which Contractor may sell to other parties. Sale of such items not permitted on site.

.3 Sending as many items as possible

to locally available recycling facility.
.4 Segregating remaining waste and debris into various individual waste categories for disposal in a "non-mixed state" as recommended by waste processing/landfill sites.

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

.5 Send leftover material resulting from installation work for recycling whenever possible.

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

.7 Isolate and store existing materials and equipment identified for re-incorporation into the Work. Protect against damage.

1.6 WORKER TRAINING AND SUPERVISION

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

.2 Waste Management Coordinator: designate full-time person on site, experienced in waste management and having knowledge of the purpose and content of Waste Management Plan to:
.1 Oversee and supervise waste management during work.
.2 Provide instructions and directions to

all workers and subcontractors on waste reduction, source separation and disposal practices.

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

1.7 CERTIFICATION OF MATERIAL DIVERSION

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

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

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

1.8 DISPOSAL REQUIREMENTS

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

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

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

.4 Dispose of treated wood, end pieces, wood scraps and sawdust at an approved waste disposal site.

.5 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.

.6 Contact the authority having jurisdiction

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

.7 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.

1.1 SECTION INCLUDES

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

1.2 PROJECT RECORD DOCUMENTS

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

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

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

.4 As-Built Drawings:
.1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set (also by use of red ink). Submit both sets to Departmental Representative. All drawings of both sets shall be stamped "As-Built Drawings" and be signed and dated by Contractor.
.2 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
.3 Record following information:
.1 Horizontal and vertical location of various elements in relation to 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 to change existing design drawings must also be marked-up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document.

.5 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.

.5 As-built Specifications: legibly mark in red each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.

.2 Changes made by Addenda and Change Orders.

.3 Mark up both copies of specifications; stamp "as-built", sign and date similarly to drawings as per above clause.

.6 Maintain As-built documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis. Frequency of reviews will be subject to Departmental Representative's discretion. Failure to maintain as-builts current and complete to satisfaction of the Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.

1.3 REVIEWED SHOP DRAWINGS

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

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 of the existing infrastructure (old cribbing, decking, etc.), as noted on the drawings. It will be Contractor's responsibility to ensure all timber and demolition debris is disposed of at a Provincially approved waste site (this includes any creosote timber encountered). An underwater diving video is to be prepared by the Contractor confirming all demolition debris has been removed from the site.

.2 Any miscellaneous works required at the new site to accommodate the work, which may include relocation/extension of an existing culvert (visit site to determine all requirements).

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.

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 satisfaction of Departmental Representative and in accordance with environmental guidelines. It is the sole responsibility of the contractor to dispose of all demolished materials at an

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

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

3.4 RESTORATION

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

.2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 03 20 00 - Concrete Reinforcing.

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

1.2 REFERENCES

.1 Canadian Standards Association (CSA)
.1 CAN/CSA-A23.1-09, Concrete Materials and Methods of Concrete Construction.
.2 CAN/CSA-O86-09, Engineering Design in Wood.
.3 CSA O121-08, Douglas Fir Plywood.
.4 CSA O151-09, Canadian Softwood Plywood.
.5 CSA O153-M1980 (R2008), Poplar Plywood.
.6 CAN3-O188.0-M78, Standard Test Methods for Mat-Formed Wood Particleboards and Waferboard.
.7 CSA O437 Series-93 (R2006), Standards for OSB and Waferboard.
.8 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.
.9 CAN/CSA-S269.3-M92 (R2008), 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.

PART 2 - PRODUCTS

2.1 MATERIALS

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

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

.3 Form release agent: non-toxic, chemically active release agents containing compounds that react with free lime present in concrete to provide water insoluble soaps, preventing set of film of concrete in contact with form.

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

.5 Premoulded joint fillers:
.1 Bituminous impregnated fibreboard to ASTM D1751.

PART 3 - EXECUTION

3.1 FABRICATION AND ERECTION

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

.2 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.

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

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

3.2 REMOVAL AND RESHORING

.1 Leave formwork in place for 5 days after placing concrete.

.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 Re-use formwork and falsework subject to requirements of CAN/CSA-A23.1.

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-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.

.2 American National Standards Institute/American Concrete Institute (ANSI/ACI)
.1 ANSI/ACI 315-99, Details and Detailing of Concrete Reinforcement.

.3 American Society for Testing and Materials International (ASTM)
.1 ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
.2 ASTM A497/A497M-07, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
.3 ASTM-A123/A123M-09, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

.4 Canadian Standards Association (CSA)
.1 CAN/CSA-A23.1-09, Concrete Materials and Methods of Concrete Construction.
.2 CSA-A23.3-04(R2010), Design of Concrete Structures.
.3 CAN/CSA-G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
.4 CSA-G40.20-04/G40.21-04(R2009), General Requirements for Rolled or Welded

Structural Quality Steel/Structural Quality Steel.

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

1.4 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

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

indicated otherwise.

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

.4 Cold-drawn annealed steel wire ties: to ASTM A-82/A-82M.

.5 Welded steel wire fabric: to CSA G30.5. Provide in flat sheets only.

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

.7 Mechanical splices: subject to approval of Departmental Representative.

2.2 FABRICATION

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

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

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

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

2.3 SOURCE QUALITY CONTROL

.1 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 2 weeks prior to commencing reinforcing work.

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

PART 3 - EXECUTION

3.1 FIELD BENDING

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

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

.3 Replace bars which develop cracks or splits.

3.2 PLACING REINFORCEMENT

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

.2 Use approved type chairs to locate the reinforcing steel at the proper grade.

.3 Tie reinforcement where spacing in each direction is:
.1 Less than 300 mm: tie at alternate intersections.
.2 300 mm or more: tie at each intersection.

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

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

3.3 CLEANING

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

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies requirements for supply, placing, finishing, protecting and curing cast-in-place concrete for anchor blocks. Note that the anchor blocks may be cast on site and allowed to cure before placing on location, or alternatively shipped to the site as pre-cast units.

1.2 RELATED SECTIONS

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

.2 Section 03 20 00 - Concrete Reinforcing.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C109/C109M-08, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens).

.2 ASTM C260/260M-10a, Standard Specification for Air-Entraining Admixtures for Concrete.

.3 ASTM C494/C494M-10a, Standard Specification for Chemical Admixtures for Concrete.

.2 Canadian Standards Association (CSA)

.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 CSA-A283-06, Qualification Code for Concrete Testing Laboratories.

.4 CAN/CSA-A3000-08, Cementitious Materials Compendium (consists of A3001, A3002, A3003, A3004 and A3005).

.1 CSA-A3001-08, Cementitious Materials for Use in Concrete.

1.4 CERTIFICATES

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

.2 Minimum 2 weeks prior to starting concrete work submit to Departmental Representative manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:
- .1 Portland cement.
- .2 Blended hydraulic cement.
- .3 Supplementary cementing materials.
- .4 Grout.
- .5 Admixtures.
- .6 Aggregates.
- .7 Water.

.3 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA-A23.1.

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

1.5 STORAGE OF MATERIALS

.1 Store materials to prevent contamination or deterioration.

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

.3 Store cement in weathertight facility.

1.6 QUALITY ASSURANCE

.1 Minimum 2 weeks prior to starting concrete work, submit proposed quality control procedures to Departmental Representative

for the following items:
.1 Cold weather concrete.
.2 Curing.
.3 Finishes.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Use trigger operated spray nozzles for water hoses.

.2 Designate a cleaning area for tools to limit water use and runoff.

.3 Carefully coordinate the specified concrete work with weather conditions.

.4 Ensure emptied containers are sealed and stored safely for disposal away from children.

.5 Prevent plasticizers, water-reducing agents and air-entraining agents from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with an inert, noncombustible material and remove for disposal. Dispose of all waste in accordance with applicable local, provincial and national regulations.

.6 Choose least harmful, appropriate cleaning method which will perform adequately.

1.8 MEASUREMENT FOR PAYMENT

.1 Concrete Anchor Blocks: Supply and installation of reinforced concrete anchor blocks to be measured by the unit. Contractor to provide all plant, equipment, material, and labour including concrete, reinforcing steel, steel lifting bars, shackles, chains (including connections to floating docks).

.2 No separate payment will be made for any other ingredient or feature of concrete work, and all factors, including cold weather placement, reinforcing steel, lifting bars, divers for install, cement, plant and labour will be considered as being included in the unit price for item.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Cement to CAN/CSA-A3001, Type GU.

.2 Supplementary cementing materials: to CAN/CSA-A3001.

.3 Cementitious hydraulic slag: to CAN/CSA-A3001.

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

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

.6 Air entraining admixture: to ASTM C260.

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

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

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

2.2 MIXES

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

.2 Proportion concrete to comply with

Alternate 1, Table 2 in CAN/CSA-A23.1 and following requirements:

.1 Cement:

.1 Type GU Portland Cement.

.2 Minimum compressive strength: 35 MPa at 28 days.

.3 Class of exposure: C1 (chloride ion penetrability test requirement of <1,500 coulombs within 56 days does not have to be met for this mix design).

.4 Minimum cement content: 385 kg/m³ 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/m³ to 2400 kg/m³.

.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 CAN/CSA-A23.1.

.2 That the mix proportions selected will produce concrete of the specified quality and yield. Indicate mix proportions and sources of all materials.

.3 That the strengths will comply with the strengths specified herein.

.4 When the Contractor wishes to mix concrete on site, identify the source of aggregates and submit samples of fine and coarse aggregates to a testing laboratory for testing and trial mixes in order to determine a suitable mix design. The testing laboratory, at Contractor's cost, will test the trial mix for slump, air content, density and strength. The results

of these tests will be submitted to the Departmental Representative to be reviewed for compliance with the specification. This review must be completed before permission to place concrete is given.

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

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

.6 Do not use calcium chloride.

PART 3 - EXECUTION

3.1 PREPARATION

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

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

.3 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.4 Do not place anchor blocks on location until authorized by Departmental Representative.

3.2 CONSTRUCTION

.1 Comply with additional requirements of CAN/CSA-A23.1, Clause 4.1.1.5, for concrete exposed to seawater environments.

.2 Minimum concrete cover over reinforcing steel bars to be 75 mm.

.3 Place concrete in hot weather to CAN/CSA-A23.1.

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

.5 Keep concrete surfaces moist continually during protection stage.

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

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

3.3 FORMWORK

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

3.4 INSERTS

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

3.5 PLACING CONCRETE

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

3.6 FINISHING

.1 All work is to be finished to CAN/CSA-A23.1.

3.7 PROTECTION AND CURING

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

3.10 TESTING

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

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

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

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

.5 Crate cylinders and deliver to the testing laboratory within 48 hours after casting in accordance with CAN/CSA-A23.1. Contractor will pay for crating and delivery of cylinders to the laboratory.

.6 If strength tests of test cylinder for any portion of the work falls below the specified compressive strength at 28 days, the Departmental Representative reserves the right to determine the acceptability of the concrete by performing additional field testing as outlined in CAN/CSA-A23.1. If concrete does not conform to drawings or specifications, take measures as directed to correct the deficiency. All costs of correctional measures will be at the expense of the Contractor.

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For finishes, coatings, primers and paints.

.2 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. This includes stamped fabrication drawing of the gangway itself.

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.3 QUALITY ASSURANCE

.1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 To CAN/CSA-S157-05/S157.1-05 (R2015) - Strength Design in Aluminum.

.2 Welding materials: to CSA W59.

.3 Welding electrodes: to CSA W48 Series.

.4 Bolts and anchor bolts: to ASTM A 307.

2.2 FABRICATION

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

.2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

PART 3 - EXECUTION

3.1 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Make field connections with bolts to CAN/CSA-S16.1, or weld.

.6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

3.2 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

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

PART 1 - GENERAL

1.1 REFERENCES

.1 American Wood-Preservers' Association (AWPA)
.1 AWPA M2-01, Standard 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 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 following information certified by authorized signing officer of treatment plant:
.1 Information listed in AWPA M2 and

revisions specified in CSA O80 Series, Supplementary Requirement to AWPA M2 applicable to specified treatment.
.2 Moisture content after drying following treatment with water-borne preservative.
.3 Assay retentions results representing each treated batch of supplied timber.
.4 Acceptable types of paint, stain, and clear finishes that may be used over treated materials to be finished after treatment.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Do not dispose of preservative treated wood through incineration.

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

.3 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Departmental Representative.

.4 Dispose of unused wood preservative material at official hazardous material collections site approved by Departmental Representative.

.5 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in other location where they will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Preservative: to CSA-O80 Series.

.2 Solvent: to CSA-O80.201.

2.2 PRESERVATIVE TREATMENTS

.1 Treat to CSA 080, commodity standard 080.18, Table 1 and its referenced standards, with

the following minimum assay retentions:

Species	CCA kg/m3	ACA kg/m3
Dimension Timber		
-Coast Douglas Fir	24	24
-Western/Eastern Hemlock	24	24
-Hemlock, Douglas Fir (Wheelguard, Wheelguard Blocking)	10	10
-Birch or Maple	Treat to Refusal	

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

PART 3 - EXECUTION

3.1 FIELD TREATMENT

.1 Handle pressure treated material in a manner that will avoid damage which may expose untreated material. Rejection of any damaged material may result and replacement will be at the Contractor's expense.

.2 Fill all bored bolt holes with preservative immediately after boring. Use a pressurized container with hose to apply preservative, or some alternate method acceptable to the Departmental Representative.

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

3.2 CUTTING

.1 Field cuts, if authorized, are to receive three (3) liberal coats of the applicable

preservative applied to dry wood on each application.

3.3 FIELD QUALITY

.1 Timber which contain rot, splits exposing untreated wood, excessive wane, or timbers which cannot be fastened in the work so as to be structurally sound are unacceptable.

.2 The Departmental Representative reserves the right to carry out field testing of treated timber for penetration and retention of preservative. Timber not meeting the requirements of the specification may be rejected for use under the contract.

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies supply, placement and compaction of rock and gravel fill. The areas requiring rock/gravel fill are shown on the drawings, and the Contractor will make his own assessment of the quantities required to meet the lines and grades shown on the drawings. Rock/gravel fill will not be measured separately for payment, as these costs are to be included in the lump sum arrangement.

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 not more than 6 percent by weight passing the 25 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 GRAVEL FILL

.1 Gravel fill will consist of hard, durable, particles of stone mixed with suitable binding material. It shall be free from flat, elongated particles and shall be well graded. When tested by means of laboratory sieves it shall fulfill requirements as follows:

Sieve Size	% by Weight Passing
56 mm	100
16 mm	45-80
4.75 mm	25-55
1.25 mm	10-35

0.300 mm	5-15
0.075 mm	3-8

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 300 mm loose depth.

.2 Use suitable earth moving and surface grading equipment to place and spread rock fill in continuous and uniform horizontal layers.

.3 Compact rock fill after each 300 mm lift.

.4 Place rock fill to 350 mm below bottom of finished grade.

3.2 PLACING GRAVEL FILL

.1 Top 300 mm of fill will consist of gravel fill as specified in Clause 2.2.1 of this section.

.2 Place gravel fill in two (2) equal lifts to minimum 95% standard proctor density.

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation of polymeric geotextiles on the back of the floating dock support crib and on uplands side slopes, 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 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 2 weeks prior to commencing work.
.1 Minimum length of 1 m of roll width of geotextile.

1.5 MILL CERTIFICATES

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

1.6 DELIVERY AND STORAGE

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

1.7 WASTE MANAGEMENT AND DISPOSAL

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

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

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

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

PART 2 - PRODUCTS

2.1 MATERIAL

.1 Geotextile: woven or non-woven synthetic fibre fabric, supplied in rolls.
.1 Width: 3.5 m minimum.
.2 Length: 50 m 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 2.5 mm.
.2 Mass per unit area: to CAN/CGSB-148.1, No. 2, minimum 400 g/m².
.3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
.1 Tensile strength: minimum 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 in area noted on drawings. Secure to satisfaction of Departmental Representative.

.2 Place geotextile 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 Pin successive strips of geotextile with securing pins at mid point of lap to satisfaction of Departmental Representative.

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

.8 After installation, cover with overlying layer within 4 hours of placement.

.9 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.

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies requirements for supply and installation of treated timber and necessary fastenings for fabrication, placing, and ballasting of timber cribwork.

1.2 RELATED SECTIONS

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

.2 Section 06 05 73 - Wood Treatment.

1.3 MEASUREMENT FOR PAYMENT

.1 Treated Timber Cribwork: for the floating dock support crib to be measured in cubic metres (m^3) of completed work which include ballast stone, teflon panels, treated timber, fastenings, and all plant, labour, materials and equipment to perform work.

.2 Measure timber cribwork in cubic metres determined by product. Use following dimensions measured in place:
.1 Height: average of measurements taken at each vertical from bottom of lowest timber to top side of uppermost course of timber.
.2 Width: average of measurements between outside faces of exterior longitudinal timbers, each width measured on top ties of each row of cross ties.
.3 Length: measured horizontally along centre-line of crib between outside faces of exterior cross ties.

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

this regard, as there will be no overpayment for cribwork not actually installed in the work.

1.4 SAFETY REQUIREMENTS

.1 Worker protection:

.1 Workers must wear gloves, respirators, dust masks, long sleeved clothing, eye protection, protective clothing when handling, drilling, sawing, cutting or sanding preservative treated wood and applying preservative materials.

.2 Workers must not eat, drink or smoke while applying preservative material.

.3 Clean up spills of preservative materials immediately with absorbent material. Safely discard of absorbent material to sanitary landfill.

1.5 REFERENCES

.1 American Society for Testing and Materials (ASTM International)
.1 ASTM A307-07b, 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.

.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 G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
.4 CAN/CSA-O80 Series-97 (R2007), Wood Preservation.

.4 Canadian Wood Council
.1 Wood Design Manual.

.5 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian Lumber 2000 edition.

1.6 SUBMITTALS

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

1.7 WASTE MANAGEMENT

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

.2 Dispose of all corrugated cardboard and polystyrene plastic packaging material in appropriate on-site bin for recycling.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Ensure emptied containers are sealed and stored safely.

.5 Do not dispose of preservative treated wood through incineration.

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

.7 Dispose of treated wood, end pieces, wood scraps and sawdust at a sanitary landfill.

.8 Dispose of unused preservative material at an official hazardous material collections site. Do not dispose of unused preservative material into sewer system, streams, lakes, on ground or in any other location where they will pose a health or environmental hazard.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Timber: Use timber graded and stamped in accordance with applicable grading rules and standards of associations or agencies approved to grade lumber by Canadian Lumber Standards Accreditation Board of CSA.

.2 Species: Douglas Fir, Pacific Coast Hemlock and Eastern Hemlock.

.3 Grade: No. 1 Structural.

.4 Grading authority: NLGA.

.5 Preservative treatment: To CSA O80 for coastal waters and Section 06 05 73. 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 leveling 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 CAN/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 A307.
.4 Drift Bolts: to G40.21 from round stock, button head and diamond or wedge point.
.5 Washers:
.1 Round Plate Washers: for 19 mm diameter machine bolts, 79 mm diameter by 7.9 mm thick, with hole diameter of 21 mm. Washers to G40.21.
.2 Square washers not permitted to be used.
.6 All hardware galvanized.

.7 Ballast for filling cribs to following requirements:
.1 Stone, consisting of hard durable particles free from clay lumps, organic material and other deleterious materials.
.2 Dry density in place: minimum 2600 kg per cubic metre.
.3 Ballast stone to be well graded with maximum sizes not exceeding 400 mm on any side and minimum size of not less than 250 mm on any side.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Place cribwork after rock mattress has been approved by Departmental Representative.

.2 Contractor to confirm with Departmental Representative that rock mattress bearing layer is adequate for cribwork placement.

.3 Before construction, stockpile sufficient ballast to completely fill cribs. Provide suitable plant and equipment to keep crib in proper position and alignment during sinking operations.

.4 Take closely spaced accurate soundings and probings, 1500 mm centre to centre or less, precisely located by template, to determine actual base area of crib.

.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 LNT 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 courses of cribs.

.2 Crosswise bottom timbers to be of one piece.

.3 Lengthwise bottom timbers to be of one piece.

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

.4 Ballast floor:

.1 Place ballast floor on 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 crib.
.2 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.
.3 Countersink machine bolts on exterior face above LNT.

.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.

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

.8 Blocking: install treated timber filler blocking as indicated on drawings.
.1 Cut blocking exact length to completely fill spaces.
.2 If cribwork ends on a longitudinal one additional tier of blocking is required.
.3 Blocking of same size and material as crossties or longitudinals and fastened with 2 drift bolts into timber immediately below it.

.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 m. Where bolts are countersunk, the length, as noted above, less depth of countersink. Thread machine bolts for 64 mm. Bore holes for machine bolts to same diameter as bolts.

3.3 HANDLING TREATED TIMBER

.1 Handle treated material without damaging original treatment.

.1 Replace treated timber with major damage to original treatment, as instructed by Departmental Representative.

.2 Field treatment: to CAN/CSA-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 m.

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

3.5 TOLERANCES

.1 1 in 300 in overall dimensions.

.2 Locate crib within 100 mm of location as indicated.

3.6 PROTECTION

.1 Protect work from damage resulting from work on other sections and from damage resulting from environmental conditions.

.2 Repair or replace portion or entire crib at no additional cost if damaged by work.

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, beams, and associated painting.
.2 Supply and installation of treated timber decking.
.3 Supply and installation of the floating docks and gangway.

1.2 RELATED WORK

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

.2 Section 06 05 73 - Wood Treatment.

.3 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 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 G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
.4 CAN/CSA-O80 Series-97 (R2007), Wood Preservation.

.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 3 brush coats of preservative to CSA 080.

.5 Treat bolt holes, cutoffs and field cuts in accordance with CSA 080.

1.6 DELIVERY AND STORAGE

.1 Store timber horizontally, evenly supported and open piled permit circulation when stored for prolonged period.

.2 When handling long timber, provide support at sufficient number of points, properly located to prevent damage due to excessive bending.

.3 Handle treated timber with hemp, manila or sisal rope slings or other approved means of support that will not damage surface.

.4 Do not use sharp pointed tools to handle

treated timber. Any timber so handled will be rejected and be replaced at Contractor's expense.

1.7 MEASUREMENT FOR PAYMENT

.1 Structural Timber:

.1 Treated Dimension Timber - floating dock support crib: The supply and installation of treated dimension timber for wheelguard, wheelguard blocking and beams 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. All timber associated with the floating docks (including framing, wheelguard and decking), to be considered incidental to the unit cost for "floating dock".

.2 Treated Timber Decking - floating dock support crib: The supply and installation of treated timber decking on the floating dock support crib will be measured by the cubic metre (m^3)of timber secured in place. Contractor will provide all timber, fastenings, plant, material, equipment, and labour, including all spacers and blocking where required. Decking on the floating dock is to be included incidental to the unit price for "floating dock".

.2 Floating Docks: The supply and installation of the floating docks will be measured by the unit (one unit being a complete assembled +/- 16.5m long dock). Include all equipment, material and labour, including all timber, stringers, wheelguard on docks, lifting hooks, Type B1 cleats, skids, buoyancy compartments, chocks, ladders, decking on docks, splice blocks, hardware, etc.

.3 Gangway: The supply and installation of the wooden gangay will be measured by the unit. Include all equipment, material and labour, including all timber, hardware, connection flip plate, mounting eye, pintle hook, polyethylene strips, traction strips, railing, etc.

PART 2 - PRODUCTS

2.1 TIMBER MATERIALS

.1 Timber: Use timber graded and stamped in accordance with applicable grading rules and standards of associations or agencies approved to grade lumber by Canadian Lumber Standards Administration Board of CSA.

.2 Species

.1 Wheelguard, wheelguard blocks, coping, beams, gangway timbers and floating dock timber: Hemlock or Douglas Fir (CCA or ACA treated).

.2 Decking: Hemlock (CCA or ACA treated).

.3 Grade: No. 1 Structural Grade

.4 Grading Authority: NLGA

.5 Preservative Treatment: Treat to CSA 080, for coastal waters and Section 06 05 73. Timbers will be treated in the lengths required. Unnecessary field cutting will not be permitted.

.6 Primer: Alkyd undercoat, exterior oil wood primer.

.7 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "safety orange for wheelguard, wheelguard blocking and ladders". Paint to conform to CAN/CGSB-1.61-2004.

2.2 MISCELLANEOUS STEEL AND FASTENINGS

.1 Miscellaneous Steel: All steel and fastenings to be CSA G40.21, Grade 300 W, galvanized.

.2 Nails and Spikes: to CSA B111.

.3 Machine Bolts and Nuts: to ASTM A307. All machine bolts and nuts to be galvanized.

.4 Drift Bolts: to G40.21 from round stock button head and diamond or wedge point. All drift bolts to be galvanized.

.5 Washers:

.1 Round Plate Washers: for 16 mm machine bolts will be 76 mm diameter by 6.4 mm thick, for 19 mm machine bolts will be 79 mm diameter by 7.9 mm thick and have a hole diameter of 18 mm and 21 mm diameter respectively. Washers to conform to G40.21. All washers to be galvanized.

.2 Plain Washers: to CSA B19.1, Class 2. All washers to be galvanized.

.3 Square washers are not permitted.

.6 Galvanizing: will conform to 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 standard.

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

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 chamfered on top, 25 mm on each horizontal and vertical surface.

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

.3 Wheelguard will be secured with drift bolts as shown on detail drawings. Bolts to be countersunk and filled with leveling sealant following installation.

3.3 BEAMS

.1 Install beams as shown on the drawings.

3.4 PAINTING

.1 Paint complete ladder uprights and four (4) sides and exposed ends of wheelguard and exposed sides of wheelguard blocking as directed by the Departmental Representative.

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

3.5 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: All lag screws used in the work will have a length equal to thickness of timbers being fastened less 50 mm and depth of countersinking. Holes for lag screws to be drilled same diameter as shank portion of screw and to inside thread diameter for threaded portion of screw and for full length. All lag screws will be countersunk, screwed, not driven in place, and will have one (1) standard washer under the head.

.4 Bolting of timbers without properly drilled bolt holes will not be accepted.

3.6 DECKING

.1 Install timber deck plank having a uniform thickness of 75 mm to detail shown or specified.

.2 Deck planks to be laid at right angles to deck beams.

.3 Deck planks to be in width specified and will cross structure in one length.

3.7 FLOATING DOCKS

.1 Install floating docks as shown on the drawings. Note that the Type B1 cleats on each dock will not be measured separately for payment and are incidental to the unit cost for "floating docks". Type B1 cleats to be galvanized cast iron cleats, 36.2kg weight.

3.8 WOODEN GANGWAY

.1 Install gangway as shown on the drawings.

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies the requirements for the supplying, producing and placing crushed gravel for quarried stone as a granular base course to lines, grades and typical cross sections indicated, or as directed by Departmental Representative.

1.2 REFERENCES

.1 ASTM C 117-04, Test method for material finer than 0.075 mm sieve in mineral aggregates by washing.

.2 ASTM C 131-06. Test method for resistance to degradation of small size coarse aggregate by abrasion and impact in the Los Angeles machine.

.3 ASTM C 136-6, Method for sieve analysis of fine and coarse aggregates, CAN/CGSB-8.2-M88, Sieves testing, woven wire, metric..

1.3 DELIVERY, STORAGE AND HANDLING

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

1.4 MEASUREMENT FOR PAYMENT

.1 Class "A" Granular Base: The supply and installation of Class "A" granular base will be measured in cubic metres of materials supplied and installed in the work. Include all costs in the unit price including plant, material and labour.

.2 Class "B" Granular Sub-Base: The supply and installation of Class "B" granular sub-base will be measured in cubic metres of materials supplied and installed in the work. Include all costs in the unit price including plant, material and labour.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular base fill (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 and ASTM C117 and giving a smooth curve without sharp breaks when plotted on a semi-chart.

ASTM Sieve Designation	% Passing
19.0 mm	100
9.51 mm	50-80
4.76 mm	35-60
1.20 mm	15-35
300 um	7-20
75 um	3-6 (Pit Source)
	3-8 (Rock Source)

.2 Physical Requirements for Class "A":

.1 Liquid Limit ASTM D4318: Maximum 25

.2 Plasticity Index ASTM D4318: Maximum 0

.3 Los Angeles Abrasion ASTM C131-81 Maximum % loss by weight: 35

.4 Crushed Fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76mm sieve and dividing the weight of

the crushed particles by the total weight retained on the 4.76 mm sieve.

.5 CBR: ASSHTO T193-72 Min 100 when compacted to 100% of AASHTO T180-74 Method D.

.3 Granular base fill (Class "B") 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 and ASTM C117 and giving a smooth curve without sharp breaks when plotted on a semi-chart.

ASTM Sieve Designation	% Passing
50.8 mm	100
25.4 mm	50 - 100
4.76 mm	20 - 55
1.20 mm	10 - 35
300 um	5 - 20
75 um	2 - 6 (Pit Source)
	2 - 8 (Rock Source)

.4 Physical Requirements for Class "B":

.1 Liquid Limit ASTM D4318: Maximum 25

.2 Plasticity Index ASTM D4318: Maximum 0

.3 Los Angeles Abrasion ASTM C131-81 Maximum % loss by weight: 35

.4 Crushed Fragments: 50%.

The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm

sieve.

.5 CBR: ASSHTO T193-72 Min 100 when compacted to 100% of AASHTO T180-74 Method D.

.5 Materials from deposits acceptable as to the quality of the particles, but deficient in sizes to provide the required gradation, may be accepted if the contractor furnishes and satisfactorily incorporates into the product supplementary sizes from other sources to produce the required grading. If the deficiencies occur in Class "A" or Class "B" materials, corrections may be attempted by crushing to a smaller maximum particle size. In that event, the Departmental Representative will furnish special grading limits on the actual maximum particle size.

.6 Material shall be considered unsuitable even though particle sizes are within the specified gradation limits if particle shape or any other characteristic precludes satisfactory compaction or fails to provide a roadway suitable for traffic. If, in the opinion of the Departmental Representative, an improved particle shape can be achieved by using a different crushing unit for that proposed by the contractor, then the Contractor shall supply and use a crushing unit of the type directed by the Departmental Representative.

.7 Class "A" and Class "B" shall be processed by crushing and, when necessary, to eliminate surplus fines passing the 4.76 mm sieve, shall be screened and washed.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Place granular base after sub-base surface is inspected and approved by Departmental Representative.

.2 Placing:

.1 Construct granular base to depth and grade in area indicated.

.2 Ensure no frozen material is placed.

.3 Place material only on clean unfrozen surface, free from snow and ice.

.4 The contractor shall place all granular bases in such a manner as to prevent contamination by other materials and to prevent segregation. If, in the opinion of the Departmental Representative, the methods and techniques used by the Contractor cannot overcome contamination or segregation, then the Departmental Representative may direct a modification in these methods which may require the use of an approved spreader box or other acceptable device.

.5 All granular bases shall be placed in uniform layers such that the thickness of the compacted layer does not exceed 50 mm.

.6 Prior to closing down operations for each working day, all granular materials shall be bladed and compacted to the specified density.

.7 The materials shall be sprayed with water when and as directed by the Departmental Representative,

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

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

.4 Compaction Equipment:

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

.5 Compacting:

.1 All Class "A" and Class "B" materials shall be compacted to not less than 100% of the maximum Standard Proctor Dry Density ASTM D698-07e1 Method D.

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

.3 Each layer of material shall be graded and compacted as specified before the next layer is placed.

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

3.2 INSTALLATION

.1 Testing of materials and compaction will be carried out by testing laboratory designated by the Departmental Representative.

.2 Contractor will pay costs for inspection and testing.

.3 Sieve Analysis: proposed granular material will be tested to confirm suitability for intended use and conformity with specifications.

.4 Frequency of Tests: to be determined by the Departmental Representative.

3.3 TOLERANCES

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

3.4 PROTECTION

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

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This specification section includes the requirements for dredging, and disposal of dredged materials.

.2 That under this contract, DFO will only accept sounding depths done by PSPC (on behalf of DFO) survey crew for final verification of the required grade depth. Any sounding depths shallower than 0.1m of the required grade depth will have to be re-dredged by the Contractor until the proper depth is achieved.

.3 For this contract, all dredged material will consist of class A material, Class B material, varying sizes of boulders and debris as outlined in the definitions, and will not be measured separately.

1.2 INSPECTION OF SITE

.1 Contractor to visit site of work and become thoroughly familiar with extent and nature of work and conditions affecting work before bidding. Contractor is to note that this location is very remote, exposed ice, wind and sea swells and dredging operations will be limited due to weather conditions.

1.3 DEFINITIONS

.1 Dredging: excavating, transporting and disposing of underwater materials.

.2 Class A material: solid rock requiring drilling and blasting to loosen, and boulders or rock fragments of individual volumes 6 m^3 or more.

.3 Class B material: loose or shale rock, silt, sand, quick sand, mud, shingle, gravel, clay, sand, gumbo, large boulders, hardpan and debris of individual volumes less than 6 m^3.

.4 Obstructions: material other than Class A,

having individual volumes of 6 m³ or more.

.5 CMPM: cubic metres place measurement.

.6 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.

.7 Estimated quantity:
.1 Volume of material calculated to be above grade and within specified limits shown on the drawings.

.8 Chart Datum: permanently established plane from which soundings or tide heights are referenced, usually Lowest Normal Tide (LNT).

.9 Lowest Normal Tide (LNT): plane so low that tide will seldom fall below it.

.10 Cleared Area: area of dredging accepted as achieving the required grade and verified by a PWGSC survey.

1.4 REGULATORY REQUIREMENTS

.1 There are strict environmental procedures that must be followed during the Work.

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

1.5 SCHEDULING

.1 Submit to Departmental Representative, within 2 weeks after acceptance of bid, schedule of work including time periods during which each operation involved in Work will be undertaken. At time of submission of schedule, meet with Departmental Representative to review schedule.

.2 Adhere to schedule and take immediate action to correct any slippage by effectively altering operations or mobilizing other

equipment. Notify Departmental Representative of corrective action to be taken.

1.6 LOCATION

.1 Work comprises dredging of areas as indicated on the drawing. Contractor to become familiar with the distance to the dredging limits, and plan his dredging methodology accordingly. All measures required to achieve the dredge depths and limits shown on the drawing are the responsibility of the Contractor.

1.7 INTERFERENCE TO NAVIGATION

.1 Be familiar with vessel movements and fishery activities in area affected by dredging operations. Plan and execute Work in manner that will not interfere with fishing operations, marine operations and construction activities at wharf site.

.2 Departmental Representative will not be responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in harbour or due to other Contractor's operations.

.3 Keep the Marine Communications and Traffic Services' Centre, Fisheries and Oceans Canada, informed of dredging operations in order that necessary Notices to Mariners will be issued.

1.8 DATUM, WATER GAUGES AND TARGETS

.1 Elevations used in this specification and contract drawings are in metres referred to Canadian Hydrographic Services Survey datum.

.2 Areas to be dredged are to be referenced to vertical bench marks for each location of dredging as indicated.

1.9 FLOATING PLANT

.1 Dredges or other floating plants to be employed on this Work, to be of Canadian registry, make or manufacture, or, must

receive certificate of qualification from Industry Canada, Aerospace, Defence and Marine Branch and this certificate to accompany bid submission.

1.10 SITE INFORMATION

.1 Results of most recent soundings and uplands elevations are included on the drawings. This data will be used for all calculations for quantity purposes. If the contractor wishes to perform own survey, a written notice must be submitted to the Departmental Representative (at least 7 days notice) so PWGSC can verify the sounding survey before the commencement of any work.

.2 Take necessary steps to become fully familiar with potential inclement weather and sea conditions in this area.

1.11 SURVEY REQUIREMENTS

.1 Provide, at own expense, survey vessel, equipment and crew to set up and maintain control for location of dredge limits and to sound areas immediately after dredging to verify that grade depth has been attained. Areas are to be sounded to provide sounding printout display of at least 2 x 2 m UTM grid to approval of Departmental Representative.

1.12 SURVEYS AND ACCEPTANCE OF WORK

.1 No area will be dredged prior to Departmental Representative and Contractor's mutual acceptance of the existing sounding and topographical survey data included on the drawings.

.2 A survey will be undertaken by Departmental Representative upon completion of dredging. Survey will confirm if dredging is completed as specified and whether area can be considered cleared area. Survey will be by electronic sweep equipment. Survey plan at 1:250 plotting least of minimum depths

obtained in this survey will identify areas requiring reworking to obtain following elevations using least of minimum mode.

.3 Contractor to re-dredge as necessary to remove all material within dredge limits that is found to be above grade and any others areas where sounding depths differ from pre-dredged survey. These areas that infills during dredging operations will be deem to have been caused by the contractor's methodology and must be removed and will not be measured.

.4 One additional survey will be undertaken at Departmental Representative's cost, for those areas not meeting acceptance criteria for dredging. All additional surveys required to clear areas will be undertaken by the Departmental Representative at Contractor's cost.

.5 All sounding depths obtained by Departmental Representative must be within +/- 0.1m of the specific grade depth before the area will be considered completed.

1.13 MEASUREMENT FOR PAYMENT

.1 Dredging: Dredging will be measured in cubic metres, determined from existing seabed elevation established from the current sounding survey down to grade depth elevation within pay limits shown on drawings. Note that under this contract DFO will only accept the soundings done by the PSPC survey crew to +/- 0.1m of the required grade (and these will be the pay limits). Quantities will be determined by a sounding survey performed by the PSPC Survey Crew after dredging survey is completed by using electronic sounding and DPGS positioning equipment. The Departmental Representative will verify that the Contractor has performed dredging to the specified grade depth. No payment will be made

for over-dredging. PWGSC will conduct an interim and final survey. The Contractor will formally request at least seven (7) days in advance that the final after-dredging survey be performed upon completion of dredging. The survey will be dependent on the weather. If the survey and inspection shows that all material has not been removed, the Contractor is to re-dredge to obtain grade depth. The Contractor will perform a sounding survey, using a method approved by the Departmental Representative to verify that the specified dredge depth has been obtained. The Departmental Representative will then perform a third survey for final verification of dredge depth. This third sounding survey and any subsequent surveys will be at the cost of the Contractor.

.2 Contractor will dispose of all dredge material off-site to an approved waste site.

.3 No separate payment will be made for Contractor's survey vessel, equipment and crew or diving services.

.4 There will be no additional payment for delays and/or downtime for vessel traffic, fishery operations, marine operations, during periods when no dredging is permitted. Contractor should contact the Harbour Authority to determine schedules of operations.

.5 There will be no additional payment for downtime and for delays caused by vessel traffic or other activities associated with the site operations.

.6 Removal of infilling material that occurs inside or outside the dredged area identified during the dredging operations will be considered the contractors responsibility to

be removed to the grade depth or to the original bottom. This will not be measured for payment.

.7 No separate payment will be made for sweeping.

.8 PSPC will only pay tender quantities within +/- 0.1m of the required grade depth. Any additional cost for over dredging material, and disposal of that material will be the responsibility of the contractor and will not be measured.

.9 Dredged material will consist of class A material, Class B material, varying sizes of boulders and debris as outlined in the definitions. They will not be measured separately but included in the unit price of dredging.

PART 2 - PRODUCTS

2.1 DREDGING EQUIPMENT

.1 Contractor to determine required equipment necessary to dredge material specified.

PART 3 - EXECUTION

3.1 GENERAL

.1 Mark floating equipment with lights in accordance with the provisions of the Canada Shipping Act Collision Regulations and Notices to Mariners.

.2 Place and maintain buoys, markers and lights required to define work.

.3 Lay out Work from control points and baselines established by Departmental Representative. Be responsible for accuracy of Work relative to established bench marks and baseline. Provide and maintain electronic position

fixing and distance measuring equipment, laser transits and such other equipment as normally required for accurate dredging control.

.4 Establish and maintain water level gauges or tide boards in order that proper depth of dredging can be determined. Locate gauges and tide boards so as to be clearly visible.

.5 Establish and maintain on-land targets for location and definition of designated dredge area limits. Targets to be suitable for control of dredging operations and locating soundings. Remove targets on completion of Work.

.6 Dredge area to grade depths indicated on the drawing.

.7 Dredge side slopes are shown on the drawings.

.8 Remove materials above specified grade depths within limits indicated. Material removed from below grade depth or outside specified area is not part of Work.

.9 Remove shoaling which occurs as a result of Work at no expense to Canada.

.10 Remove material cast-over in surrounding area and dispose of it as dredged material. Do not cast-over material unless authorized by Departmental Representative.

.11 Remove infilling in dredge areas which occurs prior to acceptance by Departmental Representative.

.12 Immediately notify Departmental Representative upon encountering object which might be classified as obstruction. By-pass object after clearly marking its

location and continue Work.

.13 Dredging or equipment will not be permitted on the existing wharf infrastructure.

.14 Dispose of all dredged material as noted on the drawings.

.15 All trucks used in the transportation of dredged material to have tail gates with seals in good working order so as to prevent leakage of material or water from the truck. Truck boxes must be covered prior to leaving the site. Any trucks failing to meet these requirements will be rejected.

.16 Dredged material that is saturated with water must be drain back into the dredged area prior then leaving site for disposal at an approved waste site. Contractor to take appropriate actions to ensure any excess water or saturated material in dump truck boxes is contained.

.17 If required by the Regulatory agencies, the Contractor to install containment/silt boom around area dredging or the entire site as he completes the dredging.

.18 Sweep dredged areas on completion of dredging to confirm that grade depth has been achieved.

.19 Sweeping equipment may consist of heavy steel beam suspended from scow or any necessary equipment to sweep at required grade depth of other approved method. Beam to be capable of adjustment and calibration and approved by Departmental Representative.

.20 If, as result of incomplete Work, additional verification of depths by sounding or sweeping becomes necessary, additional costs involved shall be paid by Contractor.

.21 Re-dredge unsatisfactory Work and verify depths with additional sounding or sweeping to approval of Departmental Representative.

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

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal 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 Sieve in Mineral Aggregates by Washing.

.2 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire.

.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 SUBMITTALS

.1 Submit to Departmental Representative for approval, 4 weeks before blasting, details of proposed blasting operations showing types and quantities of explosives, loading charges and patterns, type of blasting caps, blasting techniques, blast protection measures, time of blasting and other pertinent details. Submit subsequent changes to Departmental Representative before proceeding.

.2 Submit to Departmental Representative complete photographic and descriptive record of buildings, roads and structures in general area of Project Work, before blasting is started. Describe buildings both inside and out. Record existing cracks in walls or structural components.

.3 Samples

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

.2 Inform Departmental Representative of

proposed source of materials and provide access for sampling at least 2 weeks prior to commencing Work.

.3 Submit 20 to 70 kg samples representative of quarry, minimum 2 weeks prior to beginning Work.

.4 Ship samples prepaid to Departmental Representative for approval.

1.4 INTERFERENCE TO NAVIGATION

.1 Be familiar with vessel movements and fishery activities in area affected by construction operations.

.2 Plan and execute work, in a manner that will not impede navigation, including movement of vessels at the facility.

.3 Plan and execute work, in a manner that will not interfere with fishing operations or access to marine structures by land or water.

.4 Departmental Representative will not be responsible for loss of time, equipment, material or any other charges related to interference with moored vessels in the harbour or other Contractor's operations.

.5 Keep the Marine Communications and Traffic Services' Centre, Fisheries and Oceans Canada, informed of construction operations, in order that necessary Notices to Mariners may be issued.

1.5 REGULATORY REQUIREMENTS

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

.2 Mark floating equipment with sound and light signals in accordance with Collision Regulations made pursuant to the Canada Shipping Act and Notice to Mariners.

1.6 MEASUREMENT FOR PAYMENT

.1 Filter stone and armour stone to protect the side slopes on the uplands development will not be measured separately for payment. Include all costs in the lump sum.

PART 2 - PRODUCTS

2.1 ROCK MATERIAL

.1 Hard, angular rock free from cracks, seams and other defects which may impair durability.

.2 Relative density, 2.65 minimum.

.3 Absorption, 1.5 to 2.0% maximum as determined by ASTM C127 test procedure.

.4 Durability, less than 35% abrasion Wear, ASTM C535 test procedure.

.5 Sulphate Soundness Determination maximum 12% by ASTM C88.

2.2 FILTER STONE

.1 Material for filter stone to be blasted rock or field stones.

.2 Stone size to be well graded, size as indicated on the drawings.

.3 Greatest dimension of each stone not to exceed two (2) times the least dimension.

2.3 ARMOUR STONE

.1 Material for armour stone to be blasted rock or field stones.

.2 Stone sizes to be in the range indicated, well graded within each category.

.3 Greatest dimension of each stone not to exceed two (2) times least dimension.

PART 3 - EXECUTION

3.1 GENERAL

.1 Take precautions not to damage existing properties during hauling of rock materials. Damage to existing roads or other private or public properties will be repaired at the Contractor's expense.

3.2 PREPARATION

.1 Haul roads: construct and maintain haul roads.

3.3 FILTER STONE

.1 Place filter stone layers to grades, dimensions, profiles and cross sectional elements indicated on the drawings.

.2 Place filter stone in layers as indicated on the drawings.

.3 Side slopes to be as shown on the drawings.

.4 Do not transport different categories of material in the same truckload. If rocks of markedly different sizes are present in the same load, Departmental Representative reserves the right to have each rock measured separately and sorted prior to installing in structure.

3.4 ARMOUR STONE

.1 Place armour stone to lines, grades and dimensions indicated on the drawings.

.2 Dumping of armour stone will not be permitted. Each stone will be lifted and individually placed.

.3 Side slopes to be as shown on the drawings.

.4 Choose stones and place them in such a way that the whole structure will be bonded and consolidated to as great an extent as nature or rock will allow. Rocks should vary in size so they don't create steep slopes when placing

to the grade lines as indicated on the drawings.

.5 Do not transport different categories of material in the same truckload. If rocks of markedly different sizes are present in the same load, Departmental Representative reserves the right to have each rock measured separately and sorted prior to installing in structure.

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

3.6 TOLERANCES

.1 Note: These tolerances are not to be considered pay limits but are specified to ensure contractor keeps within acceptable lines and grades.

.2 Completed component layers to be within the following tolerances of lines and grades indicated:

.1 Filter stone +/-100 mm.

.2 Armour stone +/-200 mm.

Appendix A:

Regulatory Approvals

FISHERIES AND OCEANS
IMPACT ASSESSMENT ACT 2019

PROJECT EFFECTS DETERMINATION REPORT

GENERAL INFORMATION

1. Project Title: Harbour Development, Lodge Bay, Labrador	
2 Proponent: Fisheries and Oceans Canada, Small Craft Harbours (DFO SCH)	
3. Other Contacts (Other Proponent, Consultant or Contractor): Public Works and Government Services Canada	**4. Role:** OGD Consultant
5. Source of Project Information: Paul Curran, Regional Engineer, DFO Small Craft Harbours	
6. Project Review Start Date: November 1, 2019	
7. PATH No.: 19-HNFL-00869	**8. PWGSC File No:** R.104660.010
9. TC File No.: CNWA #2019-201419 / TC NEATS: 52173	

BACKGROUND

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

DFO-SCH acquired the Lodge Bay property with the intention of establishing a new SCH facility at the location. The proposed project will see the demolition of four wooden decks and dredging to accommodate a new gravel launchway, upland area and floating dock with associated gangway and support crib (see Appendix A).

PROJECT REVIEW

11. DFO's rationale for the project review:

Project is on federal land ☒ and;

☒ DFO is the proponent

☐ DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit

☐ DFO to provide financial assistance to another party to enable the project to proceed

☐ DFO to lease or sell federal land to enable the project to proceed

☐ Other

12. Fisheries Act Sections (if applicable):

n/a

13. Other Authorities • Transport Canada – Navigation Protection Program (NPP) and Environmental Programs and Indigenous Relations	**14. Other Authorities rationale for involvement:** • *Canadian Navigable Waters Act*

15. Other Jurisdiction:

- NLMAE Department of Pollution Prevention
- Department of Municipal Affairs and Environment – Water Resources Management Division
- Service NL

16. Other Expert Departments Providing Advice:	17. Areas of Interest of Expert Departments:
• Fisheries and Oceans Canada, Fisheries Protection Program (DFO-FPP)	• *Fisheries Act*

18. Other Contacts and Responses: n/a

19. Scope of Project (details of the project subject to review):

Project Description

DFO-SCH acquired the Lodge Bay property with the intention of establishing a new SCH facility at the location. DFO SCH is proposing to demolish four wooden decks and dredge a 14.800m by 30.459m area to -1.5m L.N.T. to accommodate an upland area, gravel launchway and floating dock with associated gangway and support crib at its site in Lodge Bay, Labrador.

The proposed upland area will measure 23.17m by 38.10m with armourstone on the east perimeter. The gravel launchway will be situated at the south border of the proposed upland area. The launchway will be made up of 150mm Class 'A' on top of 200mm Class 'B' and be 3.05m wide. The proposed floating dock will be situated south east of the new upland area, east of the gravel launchway on top of the proposed dredge area, and be anchored via six 1.53m by 1.53m concrete anchor blocks.

Standard floating dock and launchway construction methods and equipment will likely be utilized. Stone required for the project will be obtained from an approved quarry in an upland location and trucked to the site. Heavy equipment consisting primarily of excavators and dump trucks working from the existing paved access to place the stone in location.

The culvert running beneath the entryway to the developed upland area is to be protected and replaced if necessary to support construction equipment loads.

Operation/Maintenance

The Environmental Management System with an integrated Environmental Management Plan for the Harbour Authority of Lodge Bay will cover operational aspects of environmental management at the harbour (fuelling, waste disposal, activities on the property and water). As such, environmental effects resulting from the SCH operations are not considered further in this project effects determination.

Decommissioning

This facility is not presently planned to be decommissioned. At the time of decommissioning, Small Craft Harbours will develop a site-specific re-use or reclamation plan that is appropriate for the applicable environmental legislation and Fisheries and Oceans Canada policies.

Scheduling

The proposed project is scheduled to commence during the 2020-2021 fiscal year. Project commencement is subject to DFO SCH operational priorities and funding.

20. Location of Project:

Lodge Bay is located approximately 80 km northeast of Red Bay off route 510 on the southeast coast of Labrador at coordinates 52o 13' 58" N, 55o 50' 42" W. The site is located adjacent to an unnamed road in the community of Lodge Bay.

21. Environment Description:

Physical Environment

Lodge Bay is located approximately 80 km northeast of Red Bay off route 510 on the southeast coast of Labrador. The site is located adjacent to an unnamed road in the community of Lodge Bay. The harbor is slightly developed consisting of four wooden docks, gravel ramps and a wooden slipway. The upland property consists of a mixture of sand and gravel with silt and cobbles in the approach/parking area, gravel material along the approaches to the private wharf, and a vegetative cover to the east and west of the site access road. The harbour bottom of the waterlot property consists of natural silty sand with organics.

Lodge Bay sits within the coast barrens ecoregion of Labrador. This ecoregion extends from Napaktok Bay south to the Strait of Belle Isle. Much of the coast is characterized by long, sheltered inlets. The summers are cool to warm and the growing season is 100 to 120 days. The winters are cold.

Water depth at the proposed project site is approximately 6.3 metres.

Biological Environment

Within the coast barrens ecoregion of Labrador, Empetrum barren is the dominate vegetation type, with forest occurring in sheltered valleys. Most mid and lower slopes support a continuous spruce for est with a moss understory. Repeated fires have changed many forested areas to dwarf shrub barrens. Plateau bogs with frozen peat (palsas) and salt marshes on marine terraces are characteristic of the valleys in this ecoregion. Fauna within the project area is limited to nearshore fish species such as cunner, tomcod, sculpin, and winter flounder.

Species at Risk (Aquatic and Terrestrial)

A search of the Atlantic Canada Conservation Data Centre (ACCDC) database was conducted that produced a list of rare / unique species (i.e., plants and animals) within a 5 km buffer zone (standard ACCDC procedure) of the site of the proposed work. All species were cross-referenced with Schedule 1 of the Species at Risk Act (SARA); no species were reported within this buffer.

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

Table 1: Potential Project / Environment Interactions Matrix

	As per Section 5(1)			*Section 5(1c)* *Aboriginal Interest*				*Section 5(2)*			*Due Diligence*			
Project Phase / Physical Work/Activity	*Fish (Fisheries Act)*	*Aquatic Species (SARA)*	*Birds (MBCA)*	*Health and Socio economic*	*Physical and cultural heritage*	*Land use*	**HAPA Significance*	*Health and Socio economic*	*Physical and cultural heritage*	**HAPA Significance*	*Water (ground, surface, drainage, etc)*	*Terrestrial / Aquatic Species*	*Soil/Marine sediments*	*Air Quality*
Harbour Development														
Wooden Deck Demolition	P	-	P	-	-	-	-	P	-	-	P	P	P	P
Dredging	P	-	P	-	-	-	-	P	-	-	P	P	P	P
Gravel Launchway Construction	P	-	P	-	-	-	-	P	-	-	P	P	P	P
Upland Area Development	P	-	P	-	-	-	-	P	-	-	P	P	P	P
Floating Dock Construction/Construction of Crib Block	P	-	P	-	-	-	-	P	-	-	P	P	P	P
Operation / Maintenance	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decommissioning / Abandonment	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

23. Environmental Effects of Project:

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

Fish / Fish Habitat

- Sedimentation and/or increased turbidity as a result of dredging, demolition or placement of construction materials may negatively impact fish and quality of potential fish habitat.
- Accidental discharge of heavy machinery fuel/fluids will negatively impact fish and potential fish habitat.

Bird/Bird Habitat

- Any type of hydrocarbon spill could result in bird or bird habitat loss.
- Noise / fumes may result in birds avoiding the site and surrounding area.

Health and Socio economic

- Potential for safety hazards to workers during demolition activities.

Water

- Sedimentation and/or increased turbidity as a result of dredging, demolition or placement of construction materials may decrease marine water quality at immediate project site.
- Demolition and construction activities taking place near the shoreline may result in run off / erosion.
- Accidental discharge of heavy machinery fuel/fluids will result in a decrease of marine water quality.

Aquatic species

- Sedimentation and/or increased turbidity as a result of removal of the existing wharf may negatively impact aquatic species near project site.
- Accidental discharge of heavy machinery fuel/fluids may negatively impact aquatic species near project site.

Soil (Surface and Subsurface)/Marine Sediments

- Demolition and construction activities at site or natural events (e.g. rainfalls) could result in erosion, sedimentation and/or increased turbidity.
- Improper disposal of waste material could result in contamination of soil.

Air Quality / Noise

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

Navigation

- Potential for direct effects to navigation.

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

Minimize duration of in water work.

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

Work should be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile filter fabric) are to be used, as appropriate, to prevent erosion and release of sediment and/or sediment laden water during the demolition phase.

The in-water use of heavy equipment is not permitted. The operation of such equipment should be from dry / stable shoreline areas.

Work should be properly timed to avoid potential interference with commercial and/or recreational fisheries.

Appropriate sedimentation and/or increased turbidity control measures (e.g. silt curtains, booms, etc.), should be deployed where required.

All wastes should be recycled where possible or otherwise disposed of appropriately.

Remove all construction materials from site upon completion.

There should be no sedimentation and/or increased turbidity events as a result of proposed activities. If required, mitigation measures must be implemented such as installation of a turbidity barrier, construction of sediment ponds, etc.

Machinery should be well muffled and local municipality construction by-laws must be adhered to.

Machinery must be checked for leakage of lubricants or fuel and must be in good working order. Refueling must be done at least 100 m from any water body. Basic petroleum spill clean-up equipment should be on-site. All spills or leaks should be promptly contained, cleaned up and reported to the 24-hour environmental emergencies report system (1-800-563-9089). The proponent should consider developing a contingency plan specific to the proposed undertaking to enable a quick and effective response to a spill event.

As part of this project's pre-planning process, marine sediment samples were collected from the proposed dredge areas and submitted for chemical analysis. The sediment materials will be disposed of at an approved waste disposal site with the owner's approval. If there are fly/odor issues, it should be covered with hydrated lime and a layer of clean, non-dredged material. Results from the sediment sample analysis are attached in appendix D.

Weather conditions should be assessed on a daily basis to determine the potential risk on project activities.

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

1. Transport Canada may provide approval under the Canadian Navigable Waters Act.
2. Fisheries and Oceans provided a letter of advice for the project outlining mitigation measures for the protection of fish and fish habitat.
3. NLDMAE provided Water Resources Permit to Alter a Water Body Minor Dredging Permit.
4. Service NL issues authorization to dispose of dredge material.

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

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

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

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

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

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

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

25. Significance of Adverse Environmental Effects of project:

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

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

Public Consultation

No negative public concern is expected as a result of this project. Public consultation was not deemed necessary as part of this determination. However, the project was posted on the Impact Assessment Act (IAA) registry for public comment.

Aboriginal Consultation

PSPC, on behalf of DFO-SCH, carried out an Indigenous Assessment at Lodge Bay, Labrador. The Supreme Court of Canada has held that the Crown has a duty to consult and, where appropriate, accommodate when the Crown contemplates conduct that might adversely impact potential or established Indigenous or treaty rights. While there may be other reasons to undertake consultations (e.g., good governance, policy-based, etc.), three elements are required for a legal duty to consult to arise:

1. There is contemplated or proposed Crown conduct.
2. The Crown has knowledge of potential or established Indigenous or treaty rights.
3. The potential or established Indigenous or treaty rights may be adversely impacted by the Crown.

On September 5th, 2019, NunatuKavut (NCC) signed a Memorandum of Understanding (MOU) with Canada, which outlines the general principles of discussion and sets the stage for the next steps in the recognition of Indigenous Rights and Self-Determination. As such, the NCC were consulted on the Lodge Bay harbour development project. Consultation activities were as follows:

- Initial consultation letter sent to NCC on February 5, 2020
- Follow up consultation letter sent to NCC on April 22, 2020
- Teleconference scheduled for May 13, 2020 including NCC, PSPC, DFO and TC.
    - As requested by the NCC, additional information including DFO-FPP letter of advice, site photos, and site plans provided to NCC on May 13, 2020.
- Follow up email sent to NCC on June 8, 2020 to confirm that the group has no additional questions or concerns regarding the project.
    -NCC expressed their appreciation of PSPC's engagement on the project. No further issues or concerns were addressed.

Government Consultation

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

- Fisheries and Oceans Canada – Fisheries Protection Program
- Transport Canada – Navigation Protection Program and Environmental Programs and Indigenous Relations.

- Service NL provided approval for dredge material disposal.

Accuracy and Compliance Monitoring

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

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

n/a

CONCLUSION

28. Conclusion on Significance of Adverse Environmental Effects:

The Federal Authority has evaluated the project in accordance with 82 of the Impact Assessment Act. On the basis of this evaluation, the department has determined that the project is not likely to cause significant adverse environmental effects with mitigation and therefore can proceed using mitigative measures as outlined.

29. Prepared by: Natasha Warren **30. Date:** July 27, 2020

31. Name: Natasha Warren

32. Title: Environmental Specialist, PWGSC-ES

DECISION

33. Decision Taken

☒ DFO may exercise its power, duty or function, i.e. may issue the authorization - where the project is not likely to cause significant adverse environmental effects. Confirm below the specific power, duty or function that may be exercised.

- ☐ DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit
- ☒ DFO to proceed with project (as proponent)
- ☐ DFO to provide financial assistance for project to proceed
- ☐ DFO to provide federal land for project to proceed

☐ DFO has decided not to exercise its power, duty or function because the project is likely to cause significant adverse environmental effects.

☐ DFO to ask the Governor in Council to determine if the significant adverse environmental effects are justified in the circumstances

34. Approved by: Paul Curran **35. Date:** July 27, 2020

36. Name: Paul Curran

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

38. References: n/a

TRANSPORT CANADA DECISION

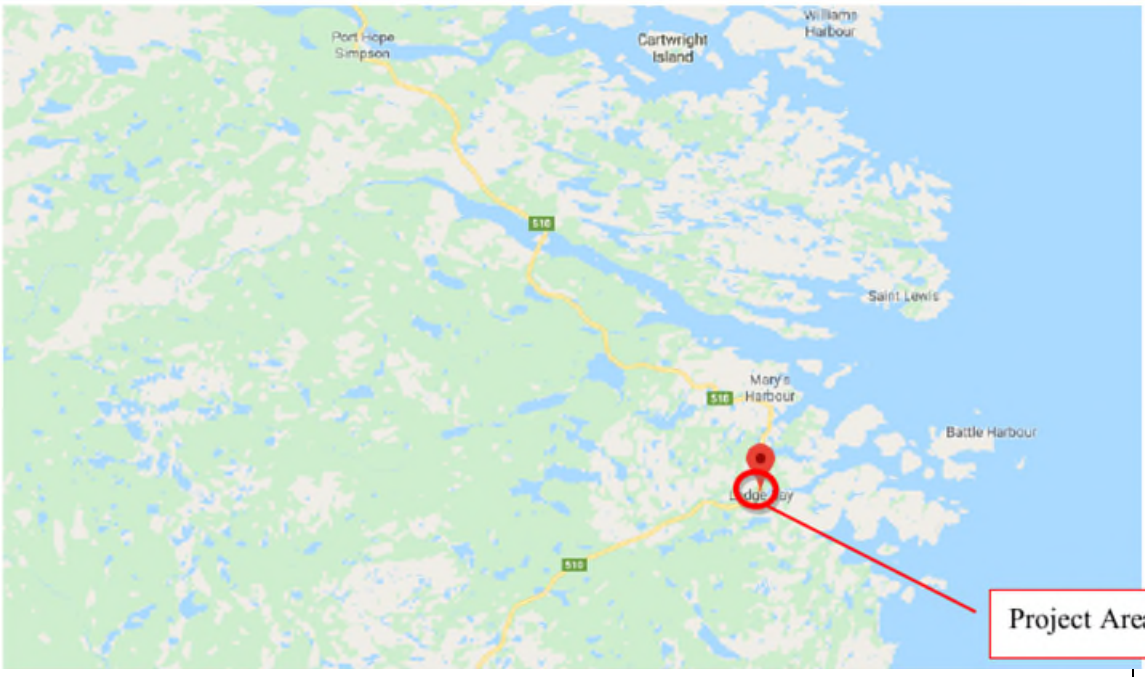
Project Title:	DFO-SCH Lodge Bay, NL – Harbour Development
TC File No.:	NEATS: 52173
CNWA File No.:	2019-201419
Environmental Review Decision:	Taking into account the implementation of any mitigation measures that Transport Canada considers appropriate, the project **is not likely** to cause significant adverse environmental effects and, as such, Transport Canada may exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part.

Prepared by:	**Melissa Ginn** Environmental Officer Environmental Programs and Indigenous Relations	
Signature:		**Date:**
Mailing Address:	10 Barter's Hill, St. John's, NL	
Tel:	709-772-3088	
Fax:	709-772-3072	
Email:	melissa.ginn@tc.gc.ca	
Approved by:	**Kevin LeBlanc** Regional Manager Environmental Programs and Indigenous Relations	
Signature:		**Date:**

APPENDICES

-Appendix A: Topographic Map and Aerial Photograph
-Appendix B: Site Plan
-Appendix C: Regulatory Responses/Approvals
-Appendix D: Sediment Sample Analysis

Appendix A
Topographic Map and Aerial Photograph



Description

Topographic map of Lodge Bay showing the proposed project site.

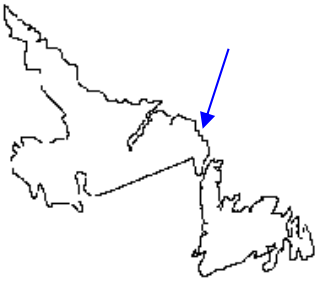


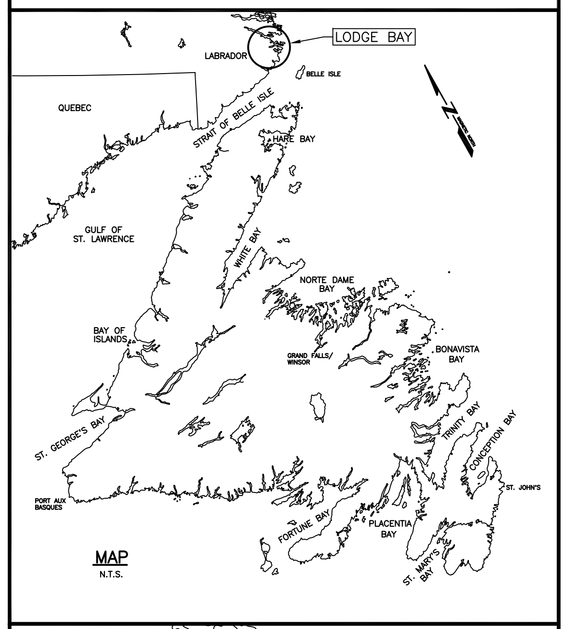
Figure 1: Topographic Map indicating project site.

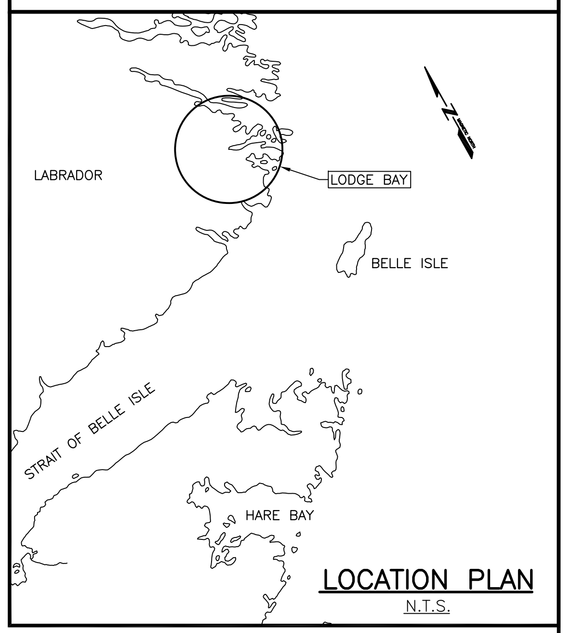
Figure 2: Area to be developed.

Appendix B
Site plan

FISHERIES AND OCEANS
CANADA

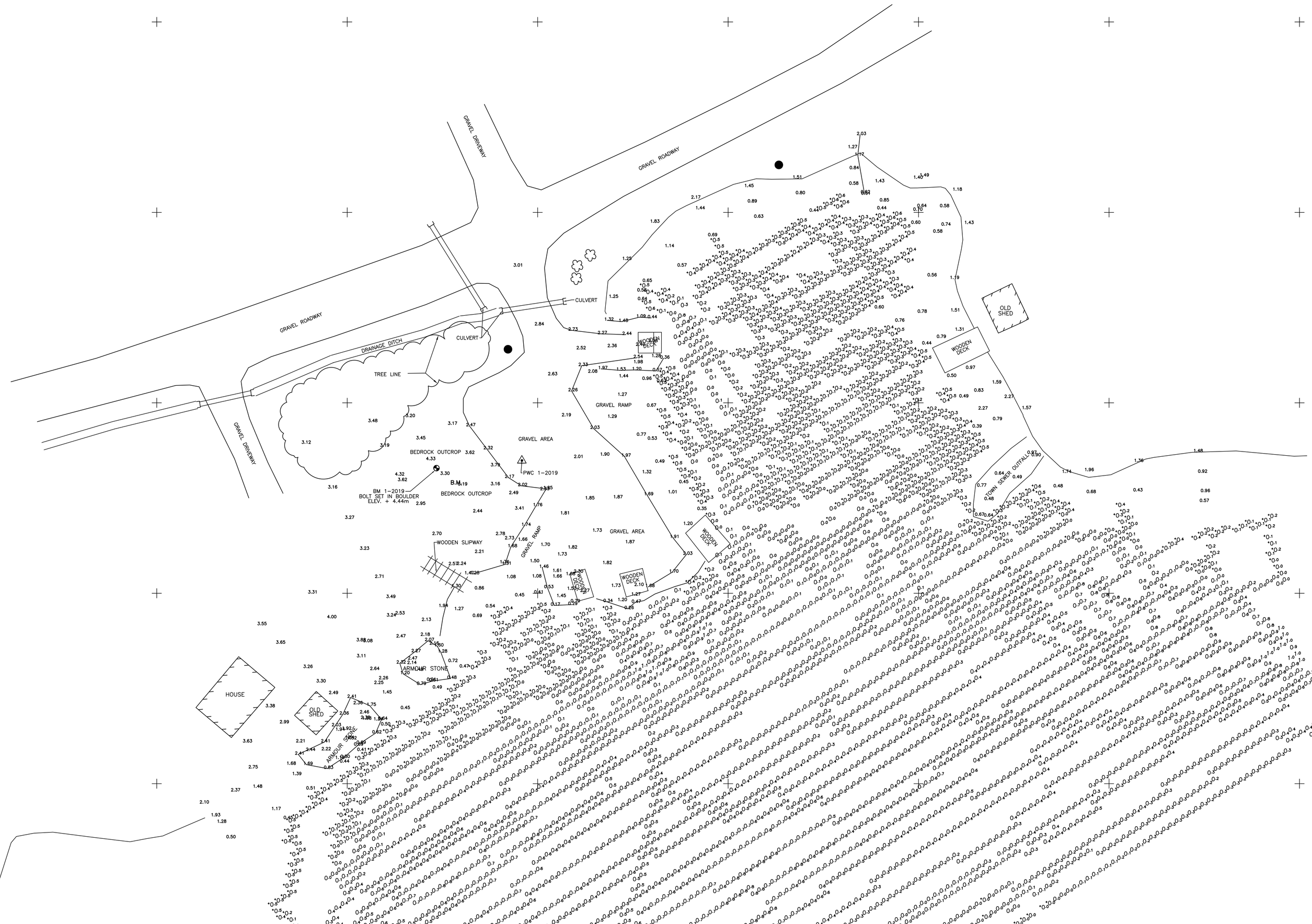
SMALL CRAFT HARBOURS





HARBOUR DEVELOPMENT
LODGE BAY
NEWFOUNDLAND AND LABRADOR

PROJECT No. XXXXXX



LEGEND

SYMBOLS

- AQUACULTURE
- ANCHOR BLOCK
- BOLLARD
- BOREHOLE
- BOUNDARY MARKER
- CARD POSITION BUOY
- CATCH BASIN
- CLEAT
- CULVERT
- DERRICK
- DISPOSAL
- DREDGE CONTROL
- ELECTRICAL OUTLET
- FIRE HYDRANT
- FIRST AID
- FISH HANDLING EQUIP.
- FOG HORN
- FUEL PUMP
- H PILE
- HORIZONTAL CONTROL
- ICE PLANT
- INVERT PIPE
- JIB CRANE
- FLAG POLE
- LADDER
- LIFE RING
- LIGHT STANDARD
- MANHOLE
- MAST/TOWER
- NAVIGATION LIGHT
- OBSERVED BUOY
- OBSERVED SPAR BUOY
- PIPE PILE
- RANGE LIGHT
- SAFETY POST
- SEWER OUTFLOW PIPE
- SIGN
- TELEPHONE
- TELEPHONE POLE
- TIDE GUAGE/STAFF
- TREE
- UTILITY POLE
- VERTICAL CONTROL
- WATER TAP/OUTLET
- WATER VALVE
- WATER WELL
- WOOD PILE

LINETYPE

- ARMOUR STONE
- CL RAILROAD
- DRAIN PIPE
- EDGE ROAD / SHOULDER
- FENCE LINE
- FLOATING WAVEBREAK
- GUARD RAIL
- HIGH WATER MARK
- LOW WATER MARK
- MARSH OUTLINE
- PROPERTY BOUNDARY
- RANGE LIGHT EXTENSION
- RETAINING WALL
- RIPRAP
- TOE OF BANK
- TREE LINE
- UNDERGROUND CABLE

SCALE: 1:250

0m 5m 10m 15m 20m 25m

SURVEY NOTES

SURVEY PARTY CHIEF RICHARD HEALEY
SURVEY VESSEL ALUMINUM BOAT
SURVEY DATE(S) JULY 24,2019

SOUNDER TYPE: SINGLE TRANSDUCER
SOUNDER SETTING MIN/INST **VEL. OF SOUND** 1465 m/s
DEPTH GATE USED N/A **FRE. OF TRANS.** 210 kHz

POSITIONING SYSTEM USED TRIMBLE R7 GNSS DGPS (WITH OTF)
LAND SURVEY POSITION BY TRIMBLE R7 GNSS DGPS (WITH OTF)

DATA TAPE/DISC(S) USED
CAD DRAWING FILE(S):
TIDAL REDUCTION SCHEME

OFFICE PROCESSOR EDDIE BEARNS
DATE OF PROCESSING JULY 2019

MODE OF PLOTTING LEAST OF MINIMUM DEPTHS
MATRIX CELL WIDTH X LENGTH
REDUCTION OF MATRIX CELLS

CONTROL POINTS:

Pt. NAME	EASTING	NORTHING	CD ELEV	DESCRIPTION
2003G18	578550.818	5787451.668	11.65 m	PROVINCIAL BRASS PLAQUE SET IN BEDROCK
PWC 1-2019	578811.716	5787566.428	2.23 m	PUNCH HOLE IN BEDROCK OUTCROP
BM 1-2019	578822.931	5787567.422	4.44 m	NAIL SET IN BEDROCK OUTCROP

ALL SOUNDINGS & ELEVATIONS IN METRES.

ALL SOUNDINGS & ELEVATIONS REFERRED TO CHS BM 95F9336 ELEV. +6.298m (BRASS PLAQUE SET IN BEDROCK).

SOUNDINGS TAKEN USING NAVISOUND 210 ECHO SOUNDER AND POSITIONED BY TRIMBLE R7 GNSS DIFFERENTIAL GPS POSITIONING SYSTEM ON JULY 24,2019 BY PWSSC SURVEY CREW.

COORDINATES FOR HORIZONTAL CONTROL ARE GIVEN ON THE U.T.M. MAPPING PLANE, ZONE 21, USING THE NORTH AMERICAN DATUM OF 1983(NAD83).

SOUNDINGS WERE REDUCED BY DIGITRACE & RE-CHECKED FROM SOUNDING CHARTS BEFORE BEING CORRECTED FOR TIDE & BAR CHECK CORRECTION.

SOUNDINGS WERE REDUCED USING HYPACK MAX VER. 2013"A".

SPEED OF SOUND WAS OBTAINED USIND A DIGIBAR-PRO VELOCIMETER.

ALL FIELD NOTES ARE IN LODGE BAY BOOK #999.

Fisheries and Oceans Canada / Pecheset Oceans Canada

SMALL CRAFT HARBOURS

NOTES:

1. ALL ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
This Permit Allows
AFN ENGINEERING INC.
To practice Professional Engineering in Newfoundland and Labrador.
Permit No. as issued by APEGNL P0292
which is valid for the year 2019

STAMP
REGISTERED PROFESSIONAL ENGINEER
NEIL C. HUNT
SIGNATURE
DATE
NEWFOUNDLAND & LABRADOR

A	ISSUED FOR REVIEW	10/15/19
revisions		date

project / projet

HARBOUR DEVELOPMENT

LODGE BAY, NL

drawing / dessin

SOUNDING AND TOPOGRAPHIC SURVEY

designed N.H. / concu
date OCTOBER 15, 2019
drawn P.H. / dessine
date OCTOBER 15, 2019
approved / approuve

Tender / Soumission
DFO Project Manager
project number / no. du projet
XXXX
drawing no. / no. du dessin
C1

Plot Scale PLOT_SCALE

EDRM Document No. XXXX

GPS COORDINATES:

DREDGE LIMTS:

POINTS	EASTING	NORTHING
1	578849.9301	5787563.7366
2	578878.8742	5787554.2496
3	578874.2646	5787540.1858
4	578845.3205	5787549.6727

LEGEND:

EXISTING INFRASTRUCTURE TO BE DEMOLISHED AND REMOVED

AREA TO BE DREDGED TO −1.5m L.N.T.

NAD 1983 CSRS MTM ZONE 21 (NAD83)

GRAVEL DRIVEWAY

GRAVEL ROADWAY

PROTECT CULVERT (REPLACE IF NECESSARY TO SUPPORT CONSTRUCTION EQUIPMENT LOADS

CULVERT

GRAVEL ROADWAY

DRAINAGE DITCH

CULVERT

TREE LINE

GRAVEL DRIVEWAY

GRAVEL RAMP

NEW UPLANDS AREA

GRAVEL AREA

BEDROCK OUTCROP

BM 1−2019
BOLT SET IN BOULDER
ELEV. = 4.44m

B.M.

PWC 1−2019

BEDROCK OUTCROP

WOODEN SLIPWAY

GRAVEL RAMP

GRAVEL AREA

WOODEN DECK

WOODEN DECK

WOODEN DECK

OLD SHED

WOODEN DECK

TOWN SEWER OUTFALL

J0459

DREDGE TO −1.5m L.N.T.

PERIMETER SHOWN IS TOE OF DREDGE SLOPE

1:2

ARMOUR STONE

HOUSE

OLD SHED

WOODEN DECK

LEGEND

SYMBOLS

- ACQUACULTURE
- ANCHOR BLOCK
- BOLLARD
- BOREHOLE
- BOUNDARY MARKER
- CARD POSITION BUOY
- CATCH BASIN
- CLEAT
- CULVERT
- DERRICK
- DISPOSAL
- DREDGE CONTROL
- ELECTRICAL OUTLET
- FIRE HYDRANT
- FIRST AID
- FISH HANDLING EQUIP.
- FOG HORN
- FUEL PUMP
- H PILE
- HORIZONTAL CONTROL
- ICE PLANT
- INVERT PIPE
- JIB CRANE
- FLAG POLE
- LADDER
- LIFE RING
- LIGHT STANDARD
- MANHOLE
- MARSH
- MAST/TOWER
- NAVIGATION LIGHT
- OBSERVED BUOY
- OBSERVED SPAR BUOY
- PIPE PILE
- RANGE LIGHT
- SAFETY POST
- SEWER OUTFLOW PIPE
- SIGN
- TELEPHONE
- TELEPHONE POLE
- TIDE GUAGE/STAFF
- TREE
- UTILITY POLE
- VERTICAL CONTROL
- WATER TAP/OUTLET
- WATER VALVE
- WATER WELL
- WOOD PILE

LINETYPE

- ARMOUR STONE
- CL RAILROAD
- DRAIN PIPE
- EDGE ROAD / SHOULDER
- FENCE LINE
- FLOATING WAVEBREAK
- GUARD RAIL
- HIGH WATER MARK
- LOW WATER MARK
- MARSH OUTLINE
- PROPERTY BOUNDARY
- RANGE LIGHT EXTENSION
- RETAINING WALL
- RIPRAP
- TOE OF BANK
- TREE LINE
- UNDERGROUND CABLE

SURVEY NOTES

SURVEY PARTY CHIEF RICHARD HEALEY
SURVEY VESSEL ALUMINUM BOAT
SURVEY DATE(S) JULY 24,2019

SOUNDER TYPE: SINGLE TRANSDUCER
SOUNDER SETTING MIN/INST VEL. OF SOUND 1465 m/s
DEPTH GATE USED N/A FRE. OF TRANS. 210 kHz

POSITIONING SYSTEM USED TRIMBLE R7 GNSS DGPS (WITH OTF)
LAND SURVEY POSITION BY TRIMBLE R7 GNSS DGPS (WITH OTF)

DATA TAPE/DISC(S) USED
CAD DRAWING FILE(S):
TIDAL REDUCTION SCHEME

OFFICE PROCESSOR EDDIE BEARNS
DATE OF PROCESSING JULY 2019

MODE OF PLOTTING LEAST OF MINIMUM DEPTHS
MATRIX CELL WIDTH X LENGTH
REDUCTION OF MATRIX CELLS

CONTROL POINTS:

Pt. NAME	EASTING	NORTHING	CD ELEV	DESCRIPTION
2003018	578550.818	5787451.668	11.65 m	PROVINCAL BRASS PLAQUE SET IN BEDROCK
PWC 1−2019	578811.716	5787566.428	2.23 m	PUNCH HOLE IN BEDROCK OUTCROP
BM 1−2019	578822.931	5787567.422	4.44 m	NAIL SET IN BEDROCK OUTCROP

ALL SOUNDINGS & ELEVATIONS IN METRES.

ALL SOUNDINGS & ELEVATIONS REFERRED TO CHS BM 95F9336 ELEV. +6.298m (BRASS PLAQUE SET IN BEDROCK).

SOUNDINGS TAKEN USING NAVISOUND 210 ECHO SOUNDER AND POSITIONED BY TRIMBLE R7 GNSS DIFFERENTIAL GPS POSITIONING SYSTEM ON JULY 24,2019 BY PWGSC SURVEY CREW.

COORDINATES FOR HORIZONTAL CONTROL ARE GIVEN ON THE U.T.M. MAPPING PLANE, ZONE 21, USING THE NORTH AMERICAN DATUM OF 1983(NAD83).

SOUNDINGS WERE REDUCED BY DIGITRACE & RE−CHECKED FROM SOUNDING CHARTS BEFORE BEING CORRECTED FOR TIDE & BAR CHECK CORRECTION.

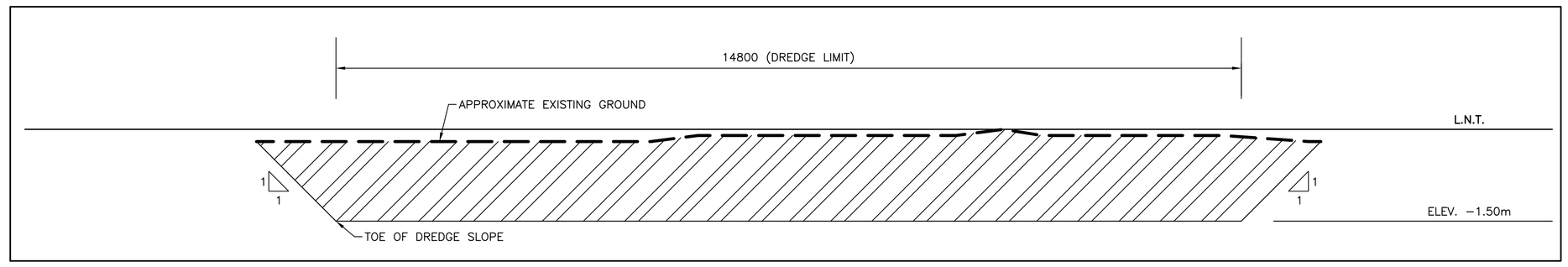
SOUNDINGS WERE REDUCED USING HYPACK MAX VER. 2013"A".

SPEED OF SOUND WAS OBTAINED USIND A DIGIBAR−PRO VELOCIMETER.

ALL FIELD NOTES ARE IN LODGE BAY BOOK #999.

SCALE: 1:250

0m 5m 10m 15m 20m 25m



SECTION − DREDGE AREA

SCALE : 1:75

0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

1 / 2 2

Fisheries and Oceans Canada / Pecches et Oceans Canada

SMALL CRAFT HARBOURS

NOTES:

1. ALL ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
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STAMP
REGISTERED PROFESSIONAL ENGINEER
NEIL C. HUNT
SIGNATURE
DATE
NEWFOUNDLAND & LABRADOR

A	ISSUED FOR REVIEW	10/15/19
revisions		date

project / projet

HARBOUR DEVELOPMENT

LODGE BAY, NL

drawing / dessin

DEMOLITION AND DREDGING PLAN

designed N.H. / concu
date OCTOBER 15, 2019
drawn P.H. / dessine
date OCTOBER 15, 2019
approved / approuve
Tender / Soumission
DFO Project Manager
project number / no. du projet
XXXX
drawing no. / no. du dessin
C2

EDRM Document No. XXXX

Plot Scale PLOT_SCALE

GPS COORDINATES:

UPLANDS:

POINTS	EASTING	NORTHING
A	578819.8464	5787586.0921
B	578842.9819	5787587.2569
C	578844.8975	5787549.2050
D	578821.7620	5787548.0403

LEGEND

SYMBOLS

- AQUACULTURE
- ANCHOR BLOCK
- BOLLARD
- BOREHOLE
- BOUNDARY MARKER
- CARD POSITION BUOY
- CATCH BASIN
- CLEAT
- CULVERT
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- TREE
- UTILITY POLE
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- WATER VALVE
- WATER WELL
- WOOD PILE

LINETYPE

- ARMOUR STONE
- CL RAILROAD
- DRAIN PIPE
- EDGE ROAD / SHOULDER
- FENCE LINE
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- GUARD RAIL
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- RIPRAP
- TOE OF BANK
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SURVEY VESSEL ALUMINUM BOAT
SURVEY DATE(S) JULY 24,2019

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DEPTH GATE USED N/A **FRE. OF TRANS.** 210 kHz

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LAND SURVEY POSITION BY TRIMBLE R7 GNSS DGPS (WITH OTF)

DATA TAPE/DISC(S) USED
CAD DRAWING FILE(S):
TIDAL REDUCTION SCHEME

OFFICE PROCESSOR EDDIE BEARNS
DATE OF PROCESSING JULY 2019

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ALL FIELD NOTES ARE IN LODGE BAY BOOK #999.

LEGEND:

- SUPPORT CRIB
- GANGWAY
- FLOATING DOCK
- GRAVEL LAUNCHWAY
- AREA OF WORK DREDGED TO -1.50m L.N.T.

Plot Scale PLOT_SCALE

Fisheries and Oceans Canada / Pêches et Océans Canada

SMALL CRAFT HARBOURS

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NEIL C. HUNT
SIGNATURE
DATE
NEWFOUNDLAND & LABRADOR

A	ISSUED FOR REVIEW	10/15/19
revisions		date

project / projet

HARBOUR DEVELOPMENT

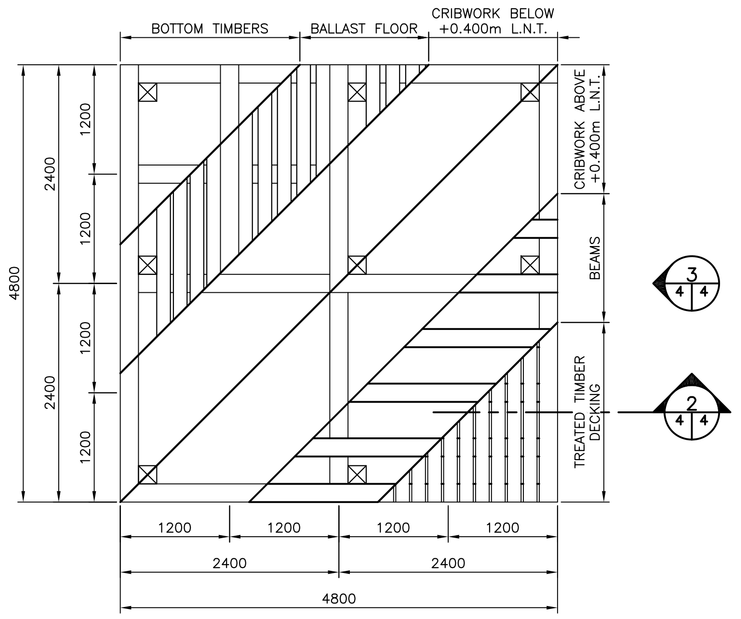
LODGE BAY, NL

drawing / dessin

NEW SITE PLAN

designed N.H. / concu
date OCTOBER 15, 2019
drawn P.H. / dessine
date OCTOBER 15, 2019
approved / approuve
Tender / Soumission
DFO Project Manager
project number / no. du projet XXXX
drawing no. / no. du dessin C3

EDRM Document No. XXXX



PLAN – TYP.

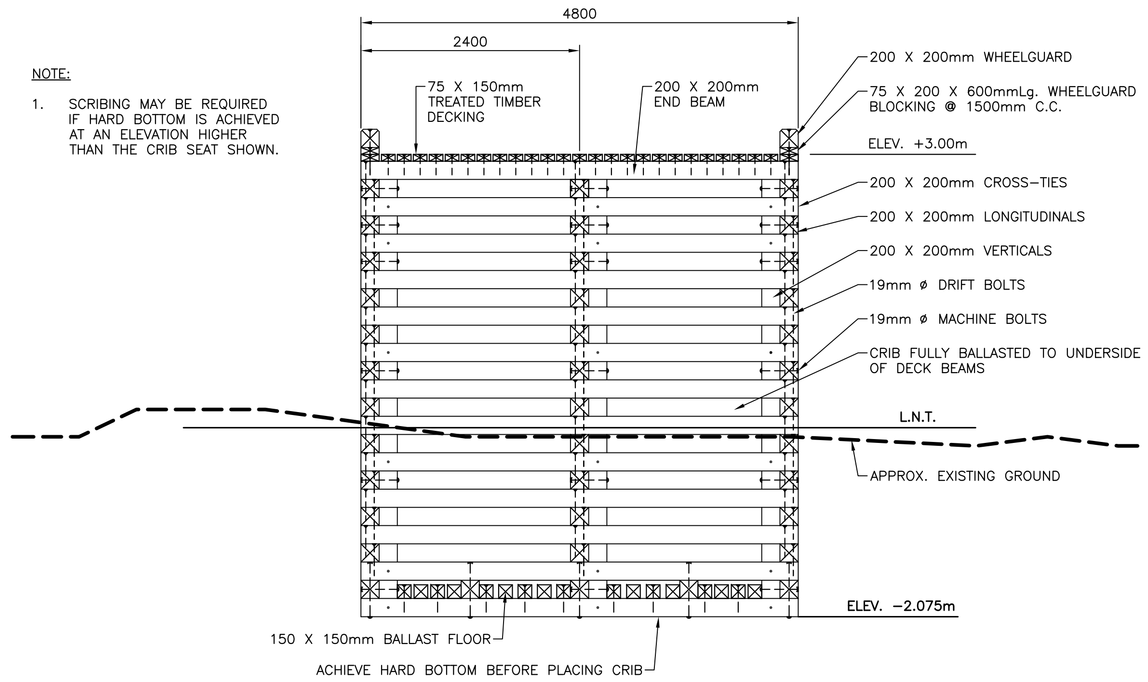
SCALE: 1:40

1
4 4

0mm 1mm 2mm 3mm 4mm 5mm

NOTE:

1. SCRIBING MAY BE REQUIRED IF HARD BOTTOM IS ACHIEVED AT AN ELEVATION HIGHER THAN THE CRIB SEAT SHOWN.

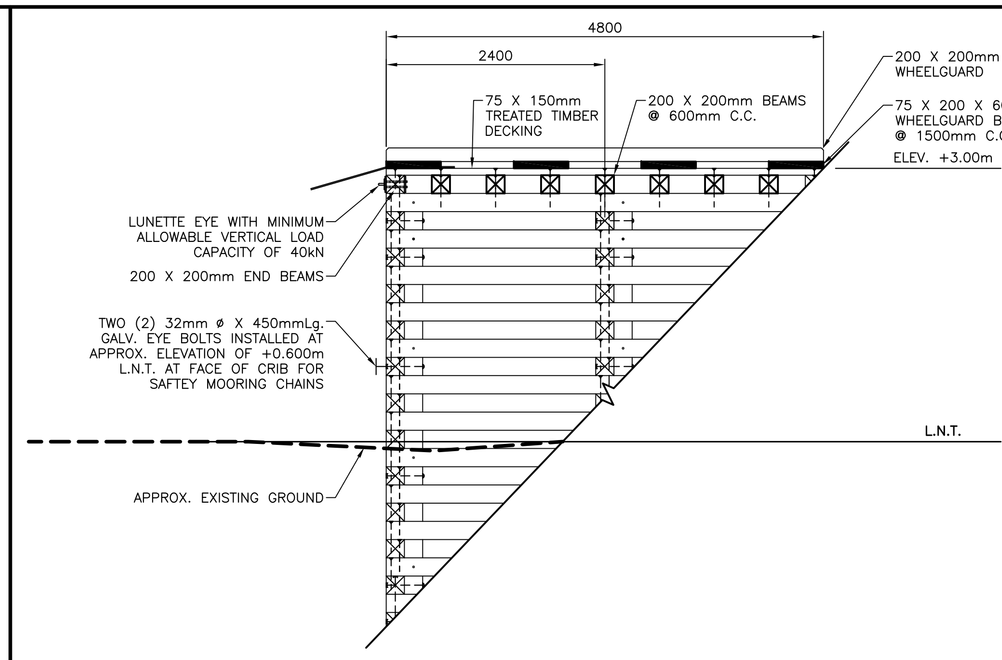


SECTION – TYP.

SCALE: 1:40

2
4 4

0mm 1mm 2mm 3mm 4mm 5mm

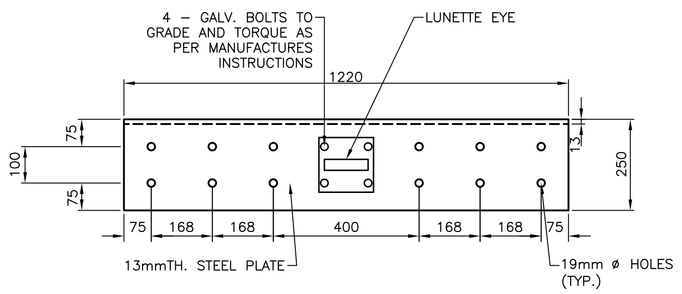


ELEVATION – TYP.

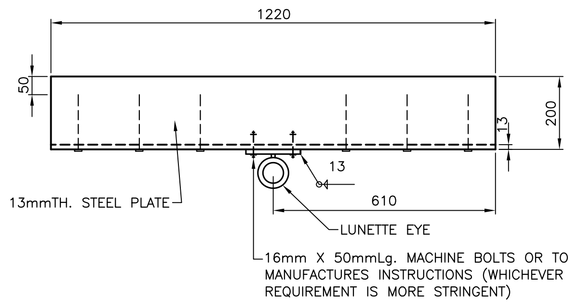
SCALE: 1:40

3
4 4

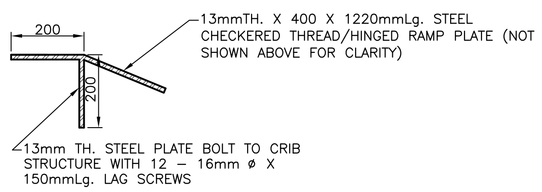
0mm 1mm 2mm 3mm 4mm 5mm



ELEVATION



TOP VIEW



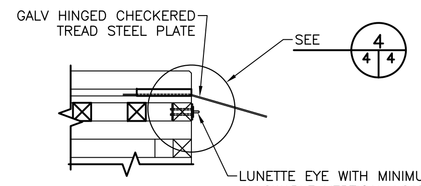
SECTION

CONNECTION PLATE – OUTSIDE FACE OF CRIB

SCALE : 1:10

4
4 4

0mm 100 200 300 400 500 600 700 800 900 1000mm

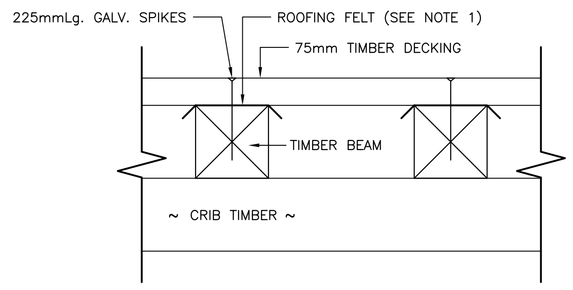


GANGWAY CONNECTION DETAIL

SCALE: 1:40

6
4 4

0mm 1mm 2mm 3mm 4mm 5mm



NOTE:

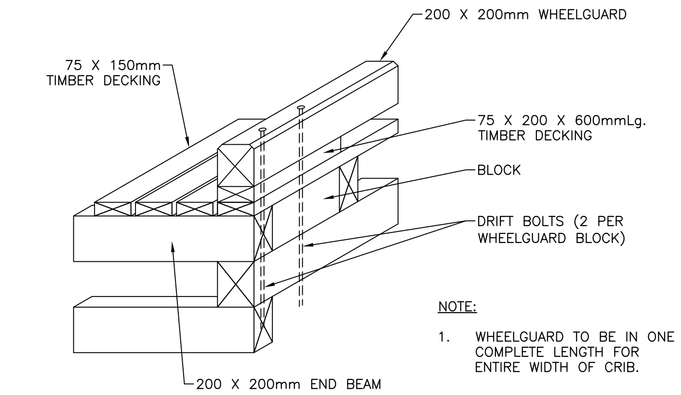
1. ROOFING FELT TO BE PLACED ALONG TOP OF ALL BEAMS, FULL LENGTH, FOR WIDTH OF BEAMS AND EXTENDING MIN. 50mm OUT OVER EACH EDGE. FELT TO BE SECURED TO THE TOP OF TIMBER WITH ROOFING CEMENT FOR FULL LENGTH.

DECK DETAIL

SCALE : 1:10

7
4 4

0mm 100 200 300 400 500 600 700 800 900 1000mm



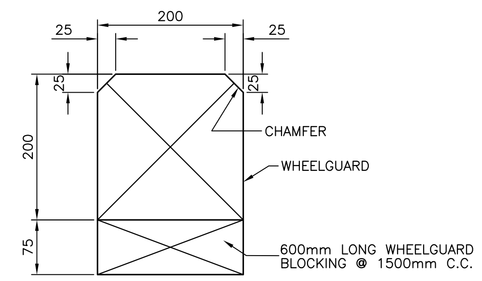
NOTE:

1. WHEELGUARD TO BE IN ONE COMPLETE LENGTH FOR ENTIRE WIDTH OF CRIB.

WHEELGUARD ON TIMBER DECK

SCALE : N.T.S.

8
4 4

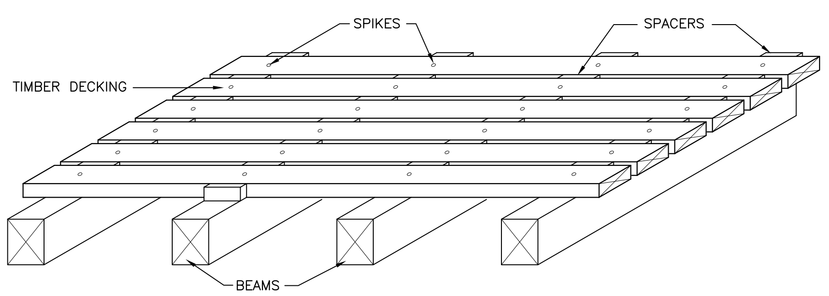


WHEELGUARD DETAIL

SCALE: 1:5

9
4 4

0mm 100mm 200mm 300mm 400mm 500mm



TIMBER DECK NAILING DETAIL

SCALE : N.T.S.

5
4 4

NOTE:

1. DECKING TO BE IN ONE COMPLETE LENGTH FOR ENTIRE WIDTH OF CRIB. ONE (1) SINGLE NAIL IN CENTER BEAMS, TWO (2) DOUBLE NAILS AT EXTERIOR BEAMS.

Plot Scale: PLOT_SCALE

Fisheries and Oceans Canada / Pêches et Océans Canada

SMALL CRAFT HARBOURS

NOTES:

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revisions		date
A	ISSUED FOR REVIEW	10/15/19

project / projet

HARBOUR DEVELOPMENT

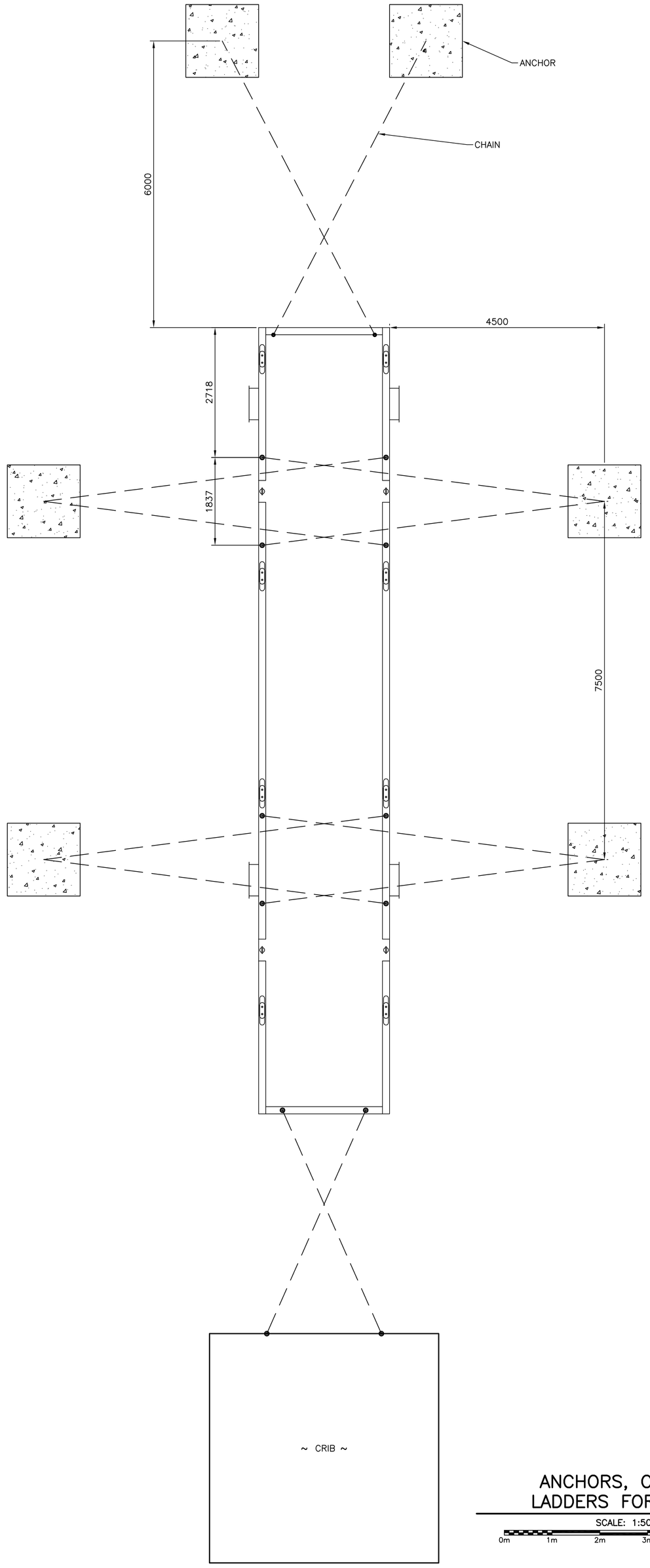
LODGE BAY, NL

drawing / dessin

FLOATING DOCK SUPPORT CRIB

designed N.H. / concu
date OCTOBER 15, 2019
drawn P.H. / dessine
date OCTOBER 15, 2019
approved / approuve
Tender / Soumission
DFO Project Manager
project number / no. du projet
XXXX
drawing no. / no. du dessin
C4

EDRM Document No. XXXX

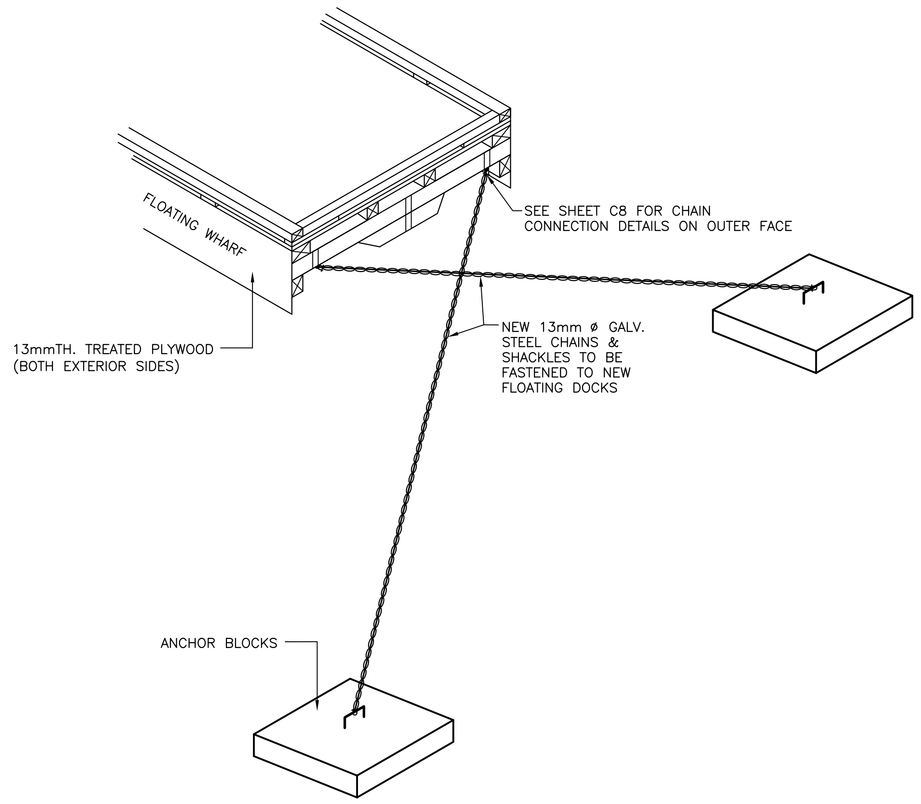


ANCHORS, CLEATS, LADDERS FOR DOCK

SCALE: 1:50

0m 1m 2m 3m 4m 5m

1 / 5 5

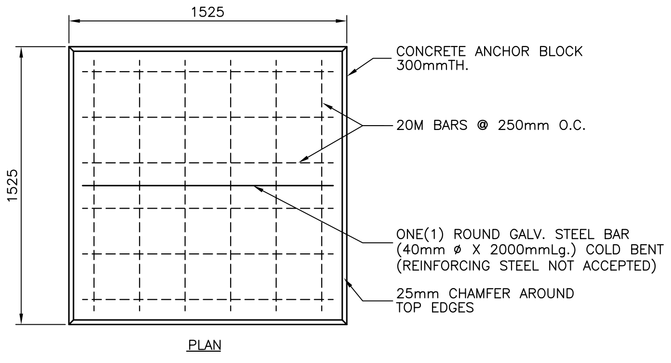


ANCHOR BLOCK FASTENING DETAIL

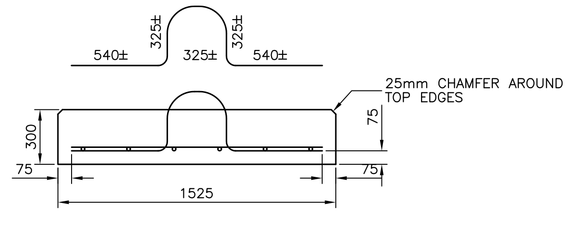
SCALE: 1:50

0m 1m 2m 3m 4m 5m

2 / 5 5



PLAN



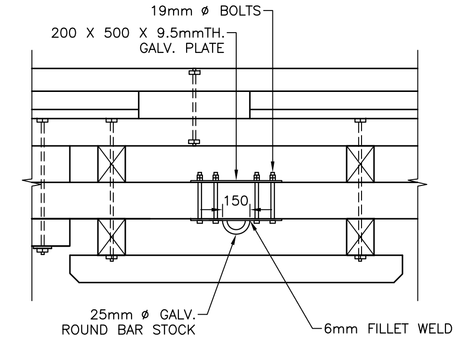
SECTION

CONCRETE ANCHOR BLOCK

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

3 / 5 5



CHAIN CONNECTION ON SIDES

SCALE : N.T.S.

4 / 5 5

Fisheries and Oceans Canada / Pêches et Océans Canada

SMALL CRAFT HARBOURS

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HARBOUR DEVELOPMENT

LODGE BAY, NL

drawing / dessin

ANCHORS FOR FLOATING DOCKS

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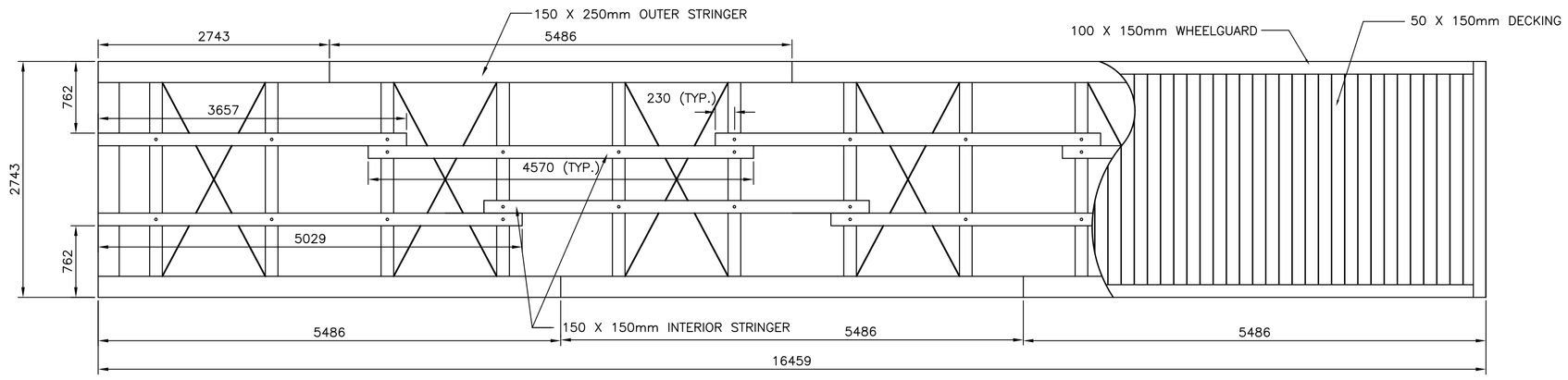
EDRM Document No. XXXX

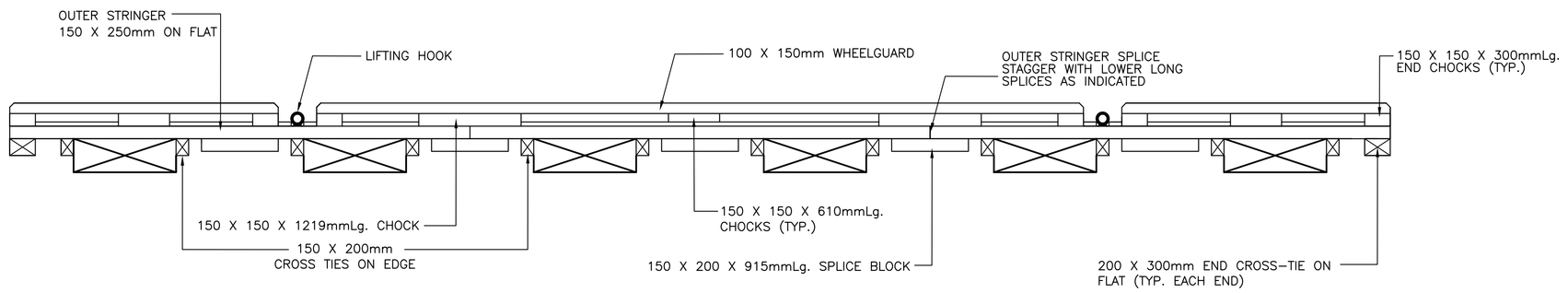
Plot Scale: PLOT_SCALE



TOP TIER–PLAN VIEW — 1 — 6 6

SCALE: 1:40

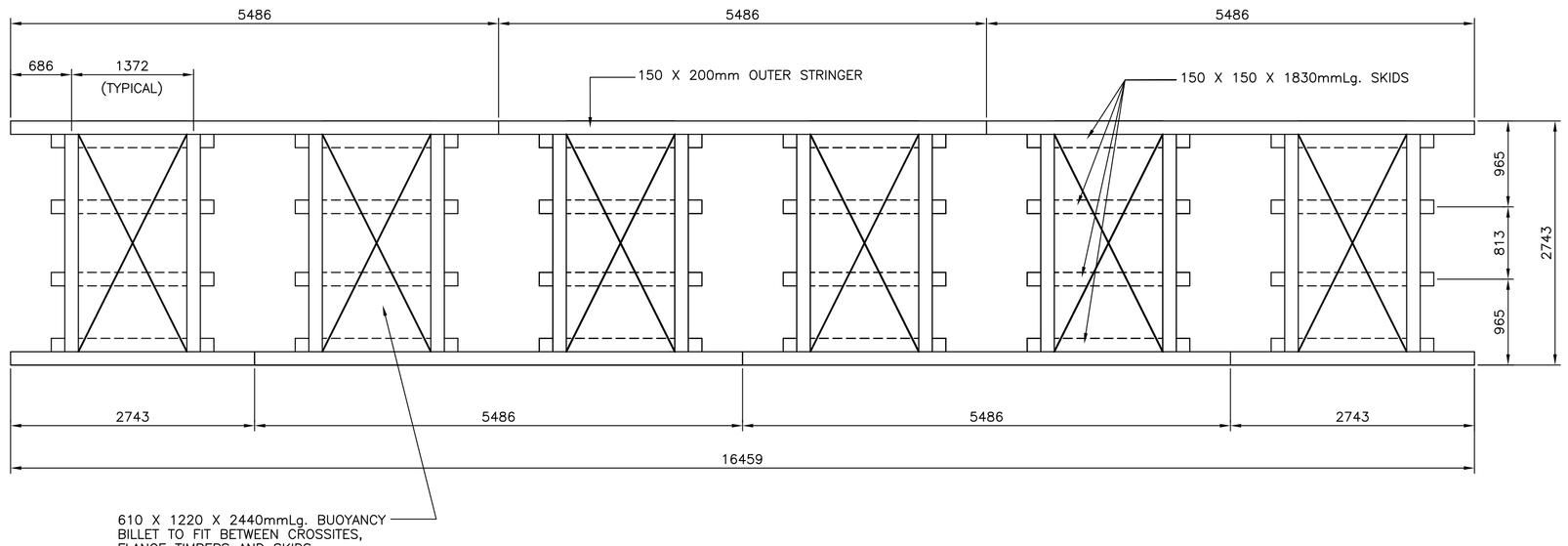
0mm 1mm 2mm 3mm 4mm 5mm



TOP TIER–SIDE VIEW — 2 — 6 6

SCALE: 1:40

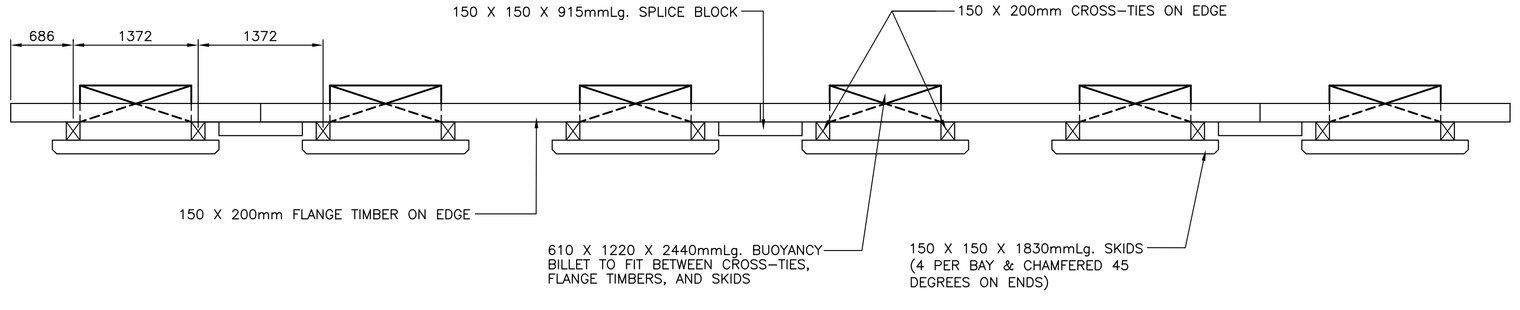
0mm 1mm 2mm 3mm 4mm 5mm



FIRST TIER–PLAN VIEW — 3 — 6 6

SCALE: 1:40

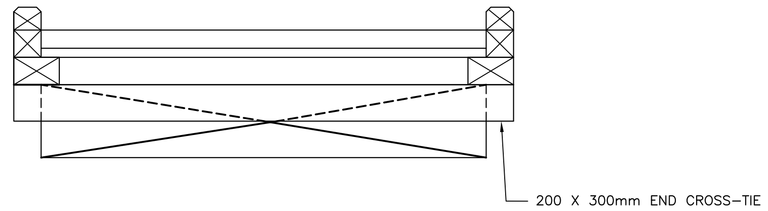
0mm 1mm 2mm 3mm 4mm 5mm



FIRST TIER–SIDE VIEW — 4 — 6 6

SCALE: 1:40

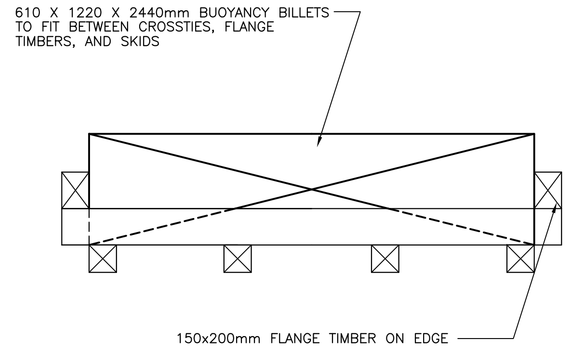
0mm 1mm 2mm 3mm 4mm 5mm



END VIEW – TOP TIER — 5 — 6 6

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



END VIEW – FIRST TIER — 6 — 6 6

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

GENERAL NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL MACHINE BOLTS 16mm ø.
3. ALL DRIFT BOLTS 16mm.
4. ALL BOLTS TO BE COUNTERSUNK.
5. ALL TIMBER TO BE TREATED.
6. ALL HARDWARE TO BE GALVANIZED.
7. CONNECTION PLATES TO BE INSTALLED ON EACH FLOATING DOCK.
8. MOORING PLATE TO BE INSTALLED ON EACH FLOATING DOCK AS REQUIRED AND DIRECTED BY THE DEPARTMENTAL REPRESENTATIVE.
9. CENTER MOORING PLATE TO BE INSTALLED AT OPPOSITE END OF FLOATING DOCK CONNECTION PLATE.
10. BUOYANCY BILLETS:
    610 X 1220 X 2440mm
    TYPE 2 EXPANDED POLYSTRENE
    C/W 90 MILS AG101 URETHANE
    WATERPROOFING.
11. PAINT WHEELGUARD AND W/G BLOCKING WITH ALKYD/OIL RESIN PAINT SIMILAR TO PITTSBURGH PAINTS "SAFETY ORANGE" PRODUCT ID 7–808. PAINT TO CONFORM TO CAN/CGSB–1.61–2004.

Fisheries and Oceans Canada / Pêches et Océans Canada

SMALL CRAFT HARBOURS

NOTES:

1. ALL ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
This Permit Allows
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To practice Professional Engineering in Newfoundland and Labrador.
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which is valid for the year 2019

STAMP
REGISTERED PROFESSIONAL ENGINEER
NEIL C. HUNT
SIGNATURE
DATE
NEWFOUNDLAND & LABRADOR

A	ISSUED FOR REVIEW	10/15/19
revisions		date

project / projet

HARBOUR DEVELOPMENT

LODGE BAY, NL

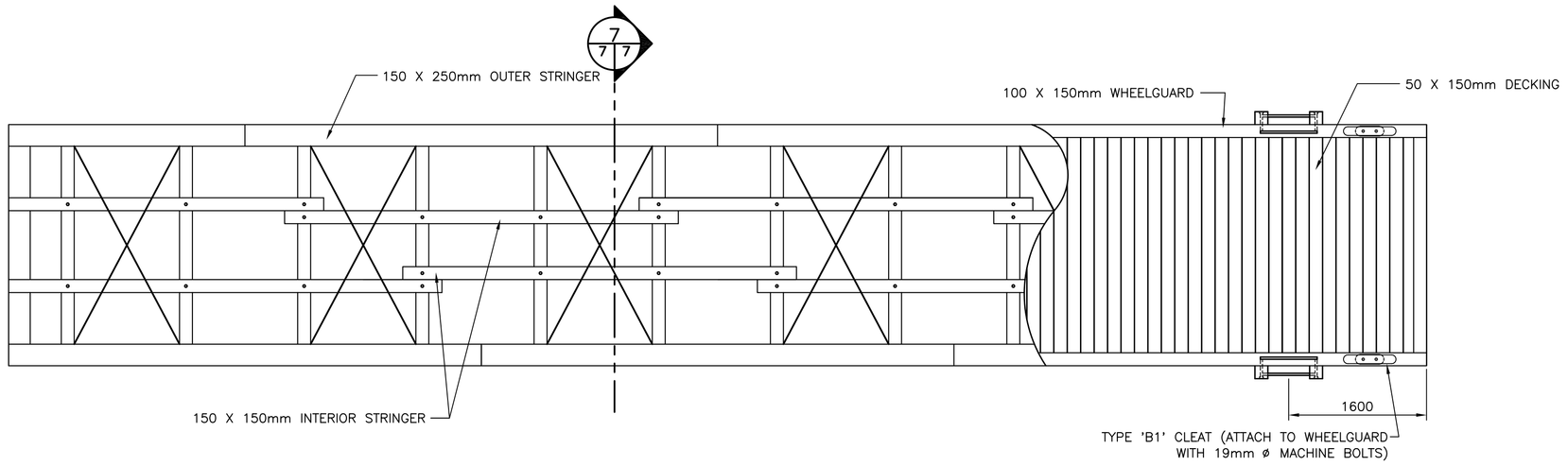
drawing / dessin

FLOATING DOCKS
PLANS, ELEVATIONS
AND DETAILS

designed N.H. / concu
date OCTOBER 15, 2019
drawn P.H. / dessine
date OCTOBER 15, 2019
approved / approuve
Tender / Soumission
DFO Project Manager
project number / no. du projet
XXXX
drawing no. / no. du dessin
C6

EDRM Document No. XXXX

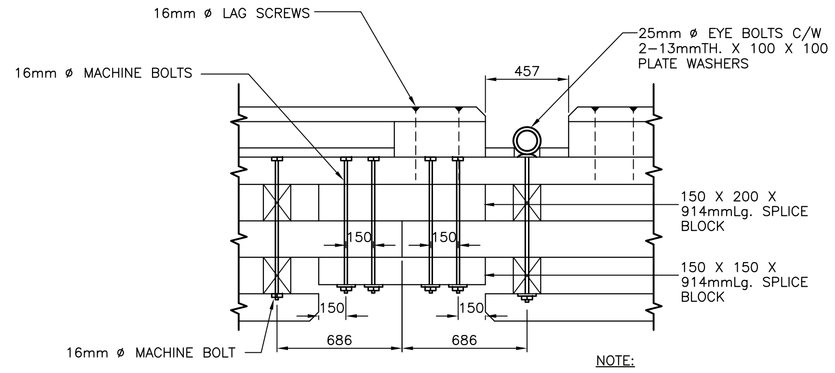
Plot Scale: PLOT SCALE



COMPLETE ASSEMBLY – PLAN VIEW — 1 | 7 7

SCALE: 1:40

0mm 1mm 2mm 3mm 4mm 5mm



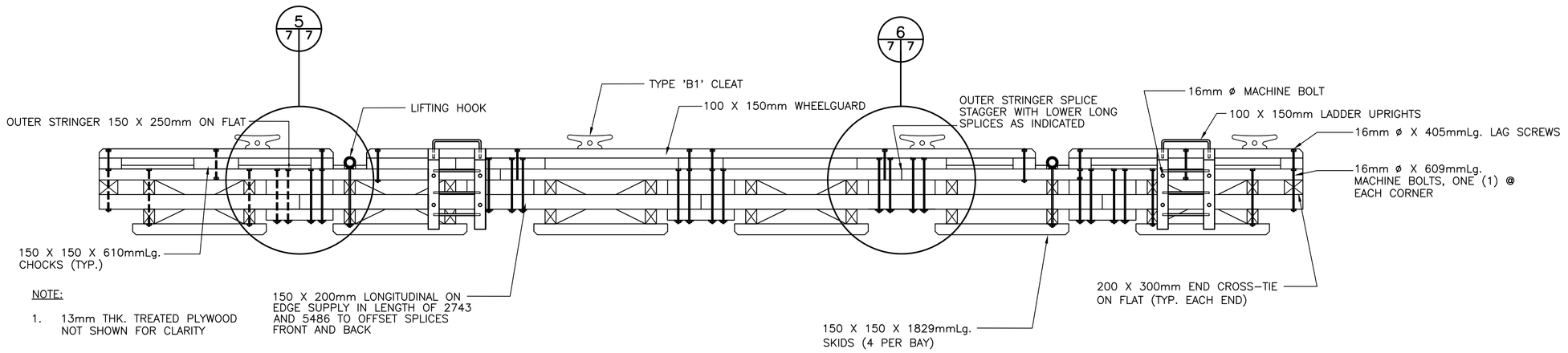
NOTE:

1. ALL EYE BOLTS SET FLUSH WITH DECK. FOUR (4) PER DOCK.

FLANGE SPLICE — 5 | 7 7

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



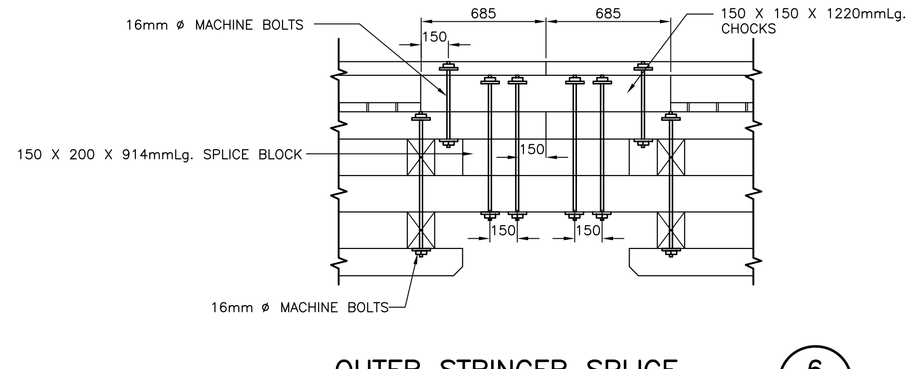
NOTE:

1. 13mm THK. TREATED PLYWOOD NOT SHOWN FOR CLARITY

COMPLETE ASSEMBLY – PLAN VIEW — 2 | 7 7

SCALE: 1:40

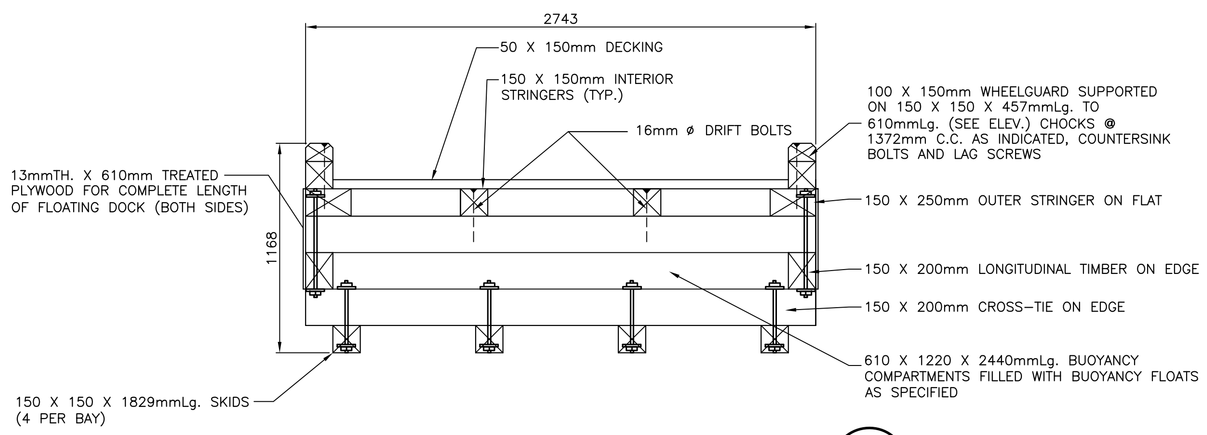
0mm 1mm 2mm 3mm 4mm 5mm



OUTER STRINGER SPLICE — 6 | 7 7

SCALE : 1:20

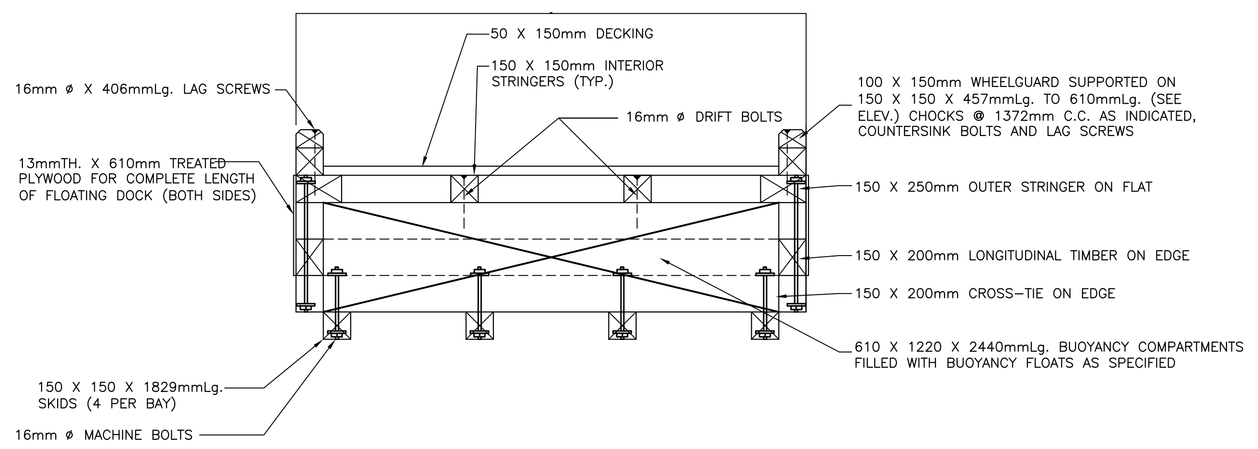
0mm 500mm 1000mm 1500mm 2000mm 2500mm



END VIEW — 3 | 7 7

SCALE : 1:20

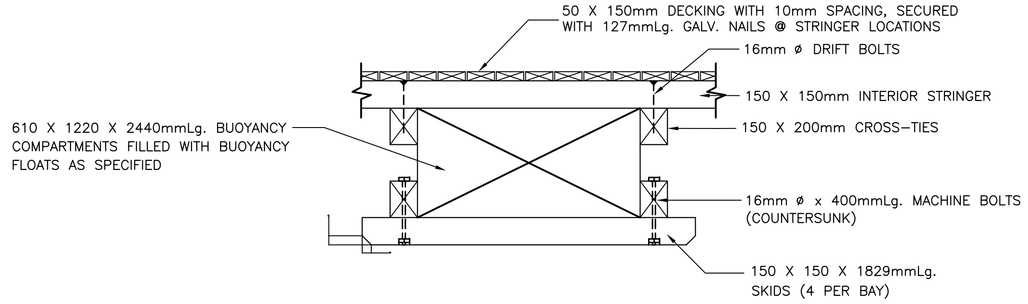
0mm 500mm 1000mm 1500mm 2000mm 2500mm



OUTER STRINGER SPLICE — 7 | 7 7

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm



BILLET PROTECTION SKIDS — 4 | 7 7

SCALE : 1:20

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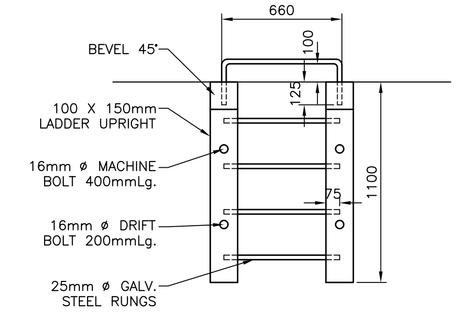

LADDER DETAIL — 8 | 7 7

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

Fisheries and Oceans Canada / Pecheset Oceans Canada

SMALL CRAFT HARBOURS

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revisions		date

project / projet

HARBOUR DEVELOPMENT

LODGE BAY, NL

drawing / dessin

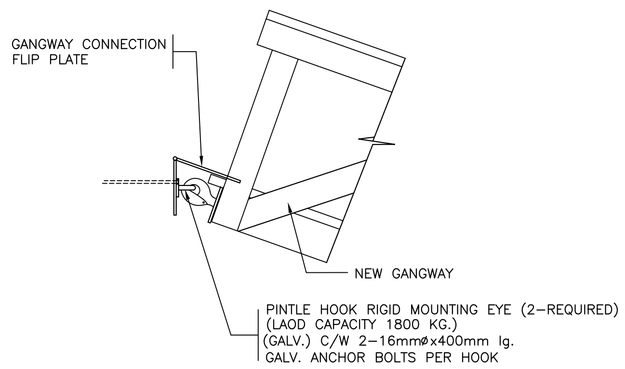
FLOATING DOCKS PLANS, ELEVATIONS AND DETAILS

designed N.H. / concu
date OCTOBER 15, 2019
drawn P.H. / dessine
date OCTOBER 15, 2019
approved / approuve

Tender / Soumission
DFO Project Manager
project number / no. du projet
XXXX
drawing no. / no. du dessin
C7

EDRM Document No. XXXX

Plot Scale: PLOT_SCALE



PINTLE MOUNTING HOOK DETAIL 1/9

SCALE : 1:20

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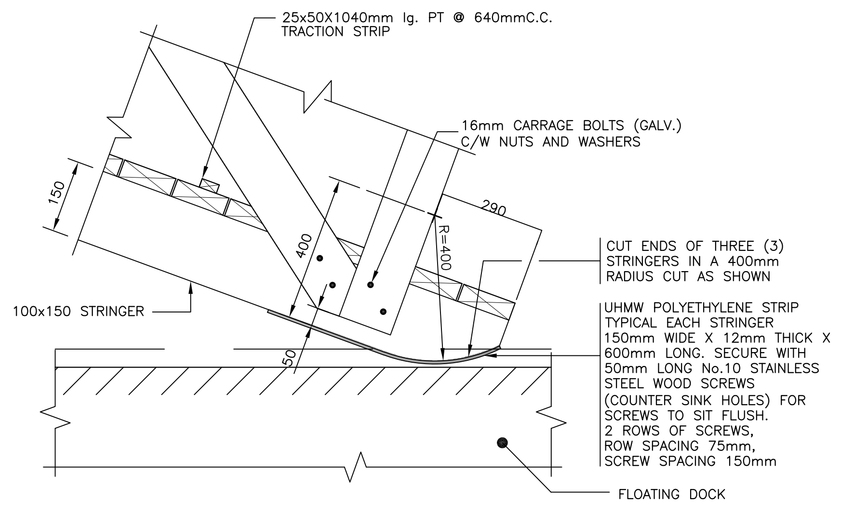
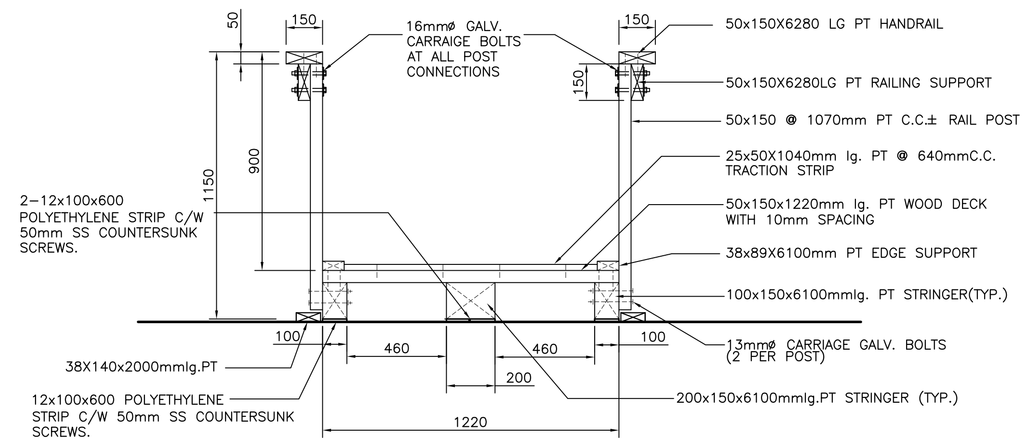


DETAIL – GANGWAY WHEEL 2/9

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm



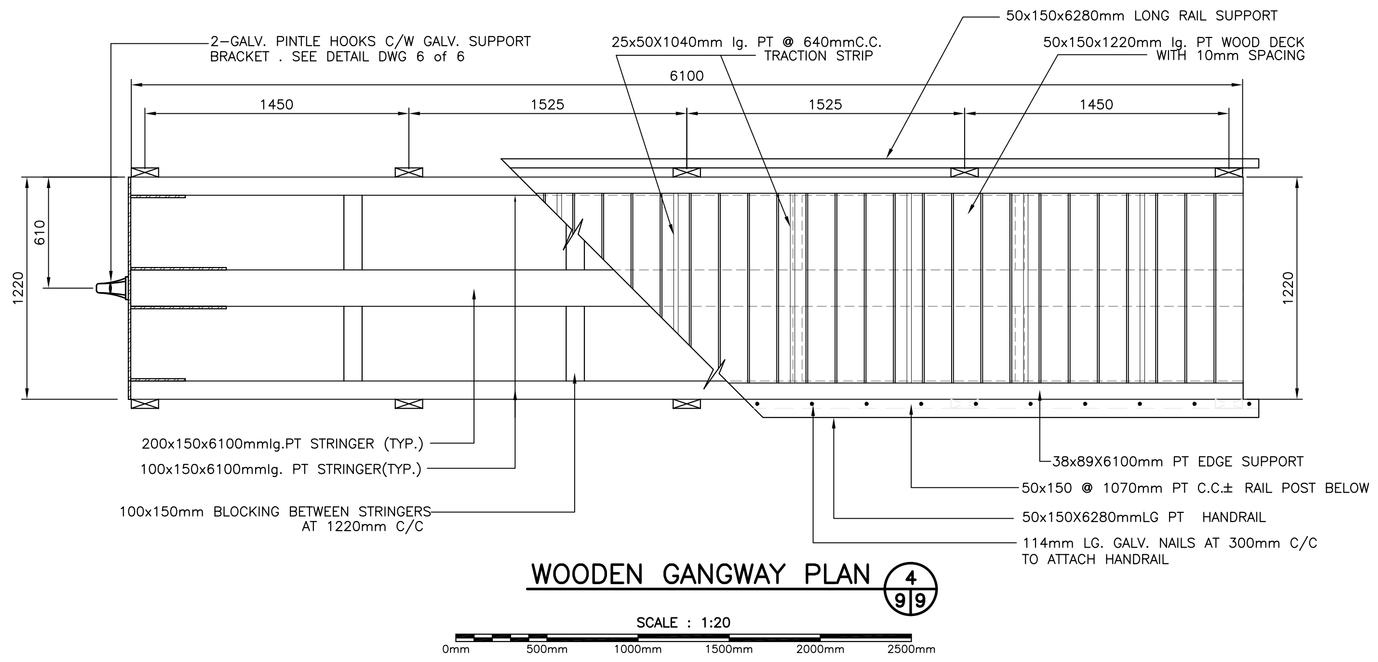
NOTE

GANGWAY CONSTRUCTED WITH 125mm GALVANIZED NAILS (UNLESS OTHERWISE NOTED) ALL TIMBER CCA TREATED.

SECTION THRU GANGWAY 3/9

SCALE: 1:15

0mm 500mm 1000mm 1500mm



WOODEN GANGWAY PLAN 4/9

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

Fisheries and Oceans Canada / Pecheset Oceans Canada

SMALL CRAFT HARBOURS

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project / projet

HARBOUR DEVELOPMENT

LODGE BAY, NL

drawing / dessin

GANGWAY DETAILS

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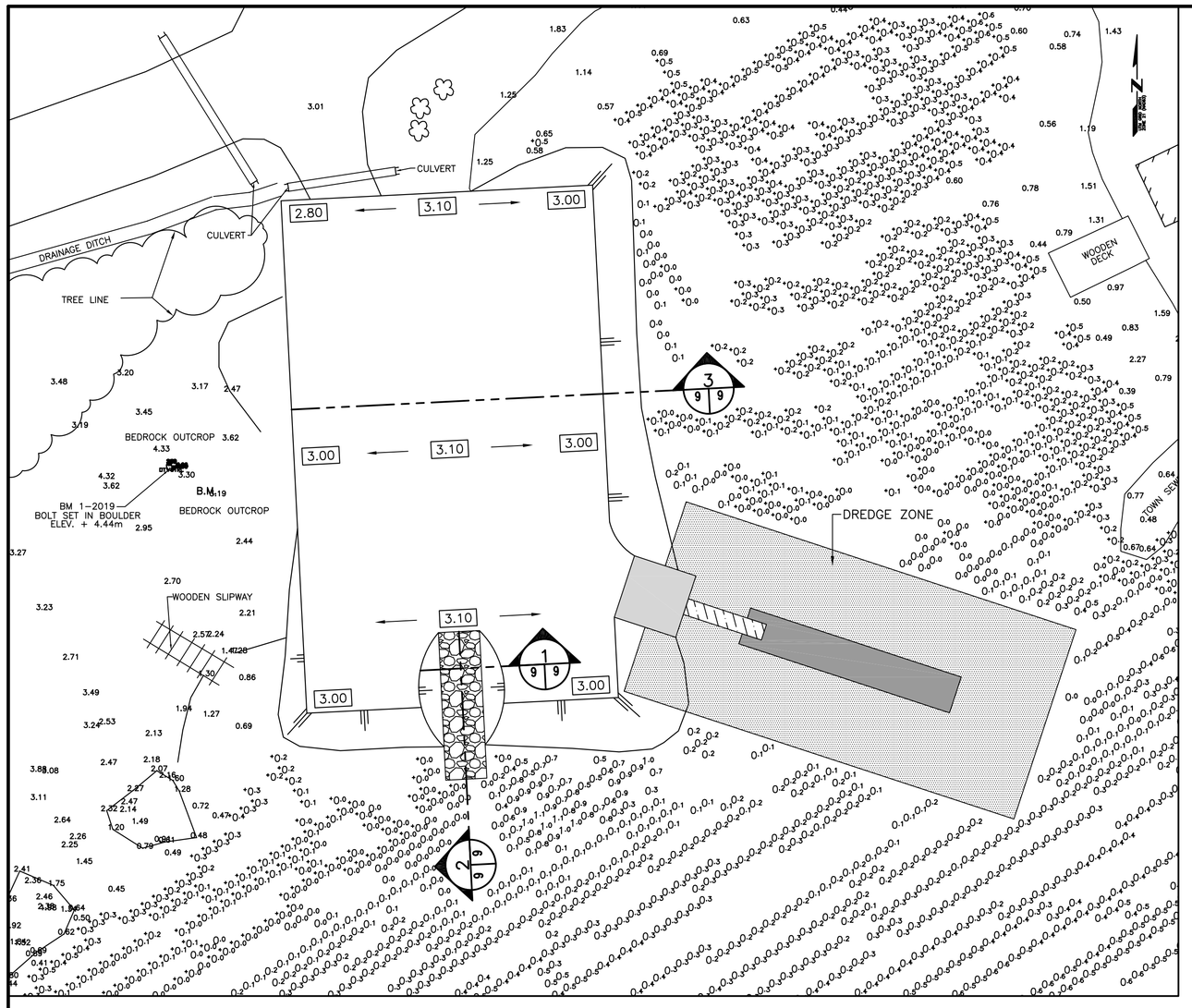
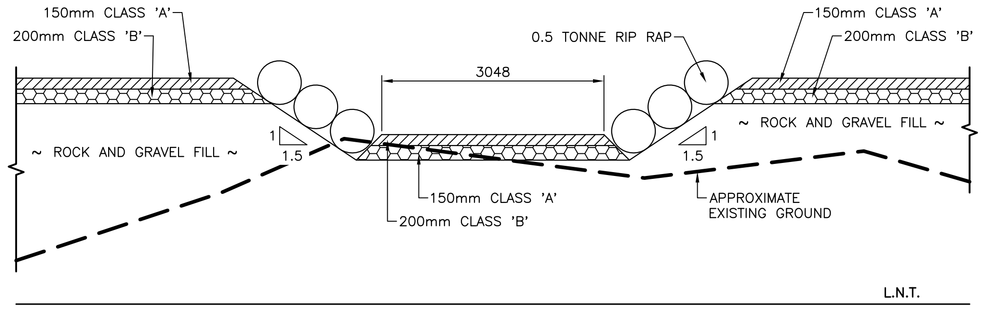
drawing no. / no. du dessin
C8

Plot Scale: PLOT_SCALE

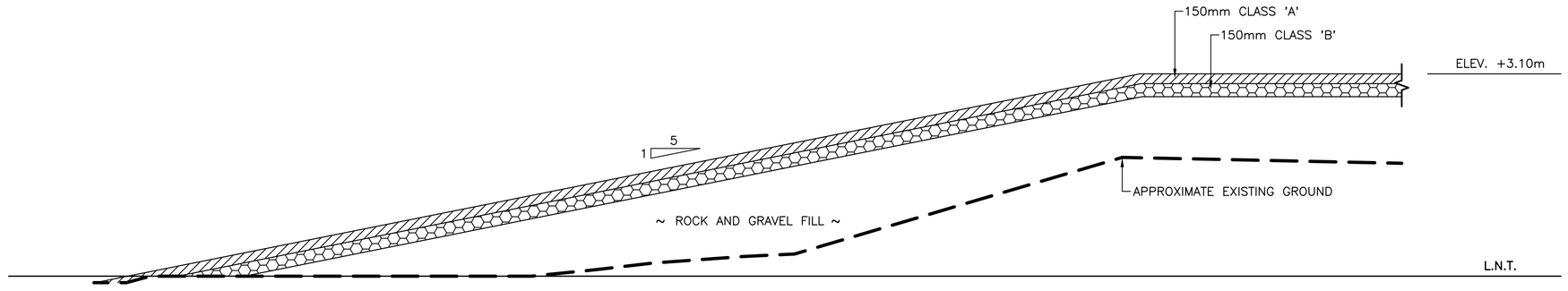
EDRM Document No. XXXX



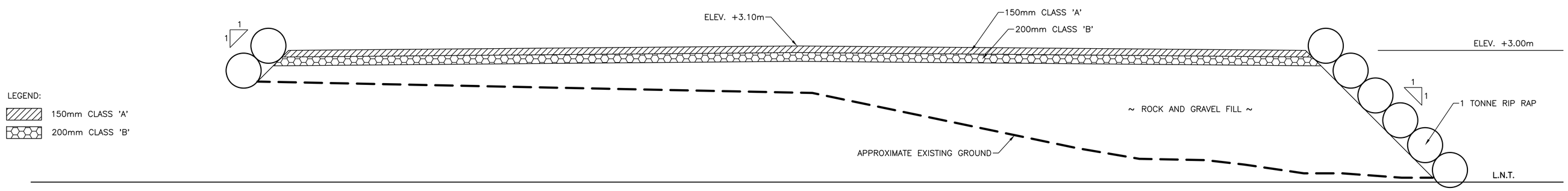
KEY PLAN FOR UPLANDS
SCALE: 1:250



SECTION – GRAVEL LAUNCH 1 9 9
SCALE : 1:50
0m 1m 2m 3m 4m 5m



SECTION – GRAVEL LAUNCH 2 9 9
SCALE : 1:50
0m 1m 2m 3m 4m 5m



SECTION – UPLANDS 3 9 9
SCALE : 1:50
0m 1m 2m 3m 4m 5m

Fisheries and Oceans Canada / Pêches et Océans Canada

SMALL CRAFT HARBOURS

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revisions		date

project / projet

HARBOUR DEVELOPMENT

LODGE BAY, NL

drawing / dessin

SECTIONS – GRAVEL LAUNCH AND UPLANDS

designed N.H. / concu
date OCTOBER 15, 2019
drawn P.H. / dessine
date OCTOBER 15, 2019
approved / approuve
Tender / Soumission
DFO Project Manager
project number / no. du projet
XXXX
drawing no. / no. du dessin
C9

EDRM Document No. XXXX

Plot Scale: PLOT_SCALE

Appendix C
Regulatory Responses/Approvals

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Municipal Affairs and Environment
Water Resources Management Division

PERMIT TO ALTER A BODY OF WATER

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 48

Date: **DECEMBER 21, 2018**

File No: **532-02**
Permit No: **ALT10060-2018**

Permit Holder: **Department of Fisheries and Oceans Canada**
Small Craft Harbours Branch
John Cabot Building, 10 Barters Hill
St. John's, NL, A1C 5X1

Attention: **Mr. Paul Curran**

Re: **Minor DFO Dredging, Infilling, and Works Projects**

Permission is hereby given for : **routine dredging or beach grading of 3500 cubic metres or less of primarily sand, gravel, cobble and boulder material in order to provide safe navigation at various Department of Fisheries and Oceans' Small Craft Harbours facilities around the Province of Newfoundland and Labrador as well as the infilling of 500 square metres or less of DFO SCH leased waterlot to construct new or increase existing service/laydown areas at existing DFO SCH facilities, with reference to the application dated November 20, 2018.**

- This Permit does not release the Permit Holder from the obligation to obtain appropriate approvals from other concerned municipal, provincial and federal agencies.
- The Permit Holder must obtain the approval of the Crown Lands Administration Division if the project is being carried out on Crown Land.
- This Permit is subject to the terms and conditions indicated in Appendices A and B (attached).
- It should be noted that prior to any significant changes in the design or installation of the proposed works, or in event of changes in ownership or management of the project, an amendment to this Permit must be obtained from the Department of Municipal Affairs and Environment under Section 49 of the *Water Resources Act*.

MINISTER

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

File No: **532-02**
Permit No: **ALT10060-2018**

APPENDIX A

Terms and Conditions for Permit

Dredging

1. Dredging activity must only be carried out during periods when wind, wave and tide conditions minimize the dispersion of silt and sediment from the work site.

2. The area to be dredged must be enclosed and isolated from the rest of the body of water through the use of a filter fabric curtain or similar method.

3. Dredged material must be disposed of in accordance with the regional Service NL Centre of the Department of Service NL. The Department of Service NL may require samples to be submitted for testing and analysis.

Infilling

4. The slopes along the perimeter of infilled areas must be no steeper than two horizontal to one vertical (2H:1V).

5. The constructed works must be inspected regularly so that action can be taken to undertake repairs as required.

6. Fill material must be obtained from an approved quarry site. It must not be taken from beaches or streams, and must not be dredged from a body of water.

7. The natural course of any stream must not be altered.

8. Infilling must not disrupt the established surface drainage pattern of the area.

9. Infilling must not cause increased water elevation upstream or increase flow velocity downstream of the site. Reduction of the natural cross sectional area of any watercourse is not permitted.

10. Before infilling, any vegetation and topsoil must be completely removed and under no circumstances shall it be used as fill material. Topsoil must be stored and reused in final landscaping of the infilled area.

11. The constructed works must comply with all other terms and conditions provided in the Crown Lands grant, lease, or license for occupancy.

12. Select heavy rocks must be placed along the toe of any infilling to provide slope stability and erosion protection.

13. A minimum 15 metre wide vegetated buffer zone must be maintained along the edge of the waterbody in order to provide bank stability and maintain local aesthetics.

Special Conditions

14. The Permit Holder must apply for and obtain a separate permit under the Water Resources Act, SNL 2002 cW-4.01, specifically Section 39 https://assembly.nl.ca/Legislation/sr/statutes/w04-01.htm for any minor dredging or associated works that may take place within any designated Protected Public Water Supply Area servicing any community as indicated in Water Resources Portal available at https://maps.gov.nl.ca/water/mapbrowser/Default.aspx.

15. The Permit Holder may be required to apply for and obtain a separate permit under the Water Resources Act, SNL 2002 cW-4.01, specifically Section 48 https://assembly.nl.ca/legislation/sr/statutes/w04-01.htm for any minor dredging or associated works that may take place within any designated flood risk area as indicated at https://www.mae.gov.nl.ca/waterres/flooding/frm.html.

16. Any alteration in or near a freshwater body (including wetlands) requires a separate permit under the Water Resources Act, SNL 2002 cW-4.01, specifically Section 48 https://assembly.nl.ca/legislation/sr/statutes/w04-01.htm. The Permit Holder must avoid work activities in wetlands wherever possible.

17. A water quality monitoring program is not required at this time. However, the Department reserves the right to require that the Permit Holder sample, analyze, and submit results of water quality tests, for the purpose of ensuring that the water quality

is maintained within acceptable guidelines. All analyses must be undertaken by a CALA accredited laboratory.

18. Suitable booms must be deployed around work sites to contain any floating debris that might otherwise be carried away. All booms must be properly maintained and remain in place until all work is completed.

19. Creosote treated wood must not be used in the construction of any structures in or within 15 metre of any body of water.

20. If a minor dredging or associated work carried out under this Permit does prohibit, restrict or impede public access along the shoreline reservation then the Permit Holder shall restore the shoreline reservation to the satisfaction of the Minister within sixty (60) days of a written notice.

21. For each minor dredging or associated work carried out under this Permit, the Permit Holder must notify this Department via email to waterinvestigations@gov.nl.ca or facsimile at (709)729-0320 in accordance with a reporting protocol as deemed necessary and appropriate in the opinion of the Minister. Also, each minor dredging or associated work carried out under this Permit shall be subject to the payment of applicable fee by the Permit Holder as stated in the application fee schedules approved by the Minister.

22. The acknowledgment of the receipt of this Permit by the Permit Holder constitutes the acceptance of this Permit and its terms and conditions and requirements stated in Appendices A, B and C.

23. At the end of each year, the permit holder submits a report of all the work done under this permit along with the applicable fees incurred during the period.

General Alterations

24. Any work that must be performed below the high water mark must be carried out during a period of low water levels.

25. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.

26. Water pumped from excavations or work areas, or any runoff or effluent directed out of work sites, must have silt and turbidity removed by settling ponds, filtration, or other suitable treatment before discharging to a body of water. Effluent discharged into receiving waters must comply with the *Environmental Control Water and Sewage Regulations, 2003.*

27. All operations must be carried out in a manner that prevents damage to land, vegetation, and watercourses, and which prevents pollution of bodies of water.

28. The use of heavy equipment in streams or bodies of water is not permitted. The operation of heavy equipment must be confined to dry stable areas.

29. All vehicles and equipment must be clean and in good repair, free of mud and oil, or other harmful substances that could impair water quality.

30. During the construction of concrete components, formwork must be properly constructed to prevent any fresh concrete from entering a body of water. Dumping of concrete or washing of tools and equipment in any body of water is prohibited.

31. Wood preservatives such as penta, CCA or other such chemicals must not be applied to timber near a body of water. All treated wood or timber must be thoroughly dry before being brought to any work site and installed.

32. Any areas adversely affected by this project must be restored to a state that resembles local natural conditions. Further remedial measures to mitigate environmental impacts on water resources can and will be specified, if considered necessary in the opinion of this Department.

33. The bed, banks and floodplains of watercourses, or other vulnerable areas affected by this project, must be adequately protected from erosion by seeding, sodding or placing of rip-rap.

34. All waste materials resulting from this project must be disposed of at a site approved by the Department of Service NL.

35. Periodic maintenance such as painting, resurfacing, clearing of debris, or minor repairs, must be carried out without causing any physical disruption of any watercourse. Care must be taken to prevent spillage of pollutants into the water.

36. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.

37. Sediment and erosion control measures must be installed before starting work. All control measures must be inspected regularly and any necessary repairs made if damage is discovered.

38. Fill material must be of good quality, free of fines or other substances including metals, organics, or chemicals that may be harmful to the receiving waters.

39. The attached Completion Report (Appendix C) for Permit No. 10060 must be completed and returned to this Department upon completion of the approved works. Pictures must be submitted along with the completion report, showing the project site prior to and after development.

40. This Permit is effective January 1, 2019 and shall expire on December 31, 2020 or earlier if modified, suspended or cancelled by the Minister. Also, this Permit may be renewed by the Minister for such renewal term as the Minister deems appropriate, on such terms and conditions as the Minister considers appropriate and in the public interest, provided the Permit Holder applies for the renewal at least ninety (90) days before the expiry of this Permit.

41. All work must be carried out within the Permit Holder's legal property boundaries.

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

File No: **532-02**
Permit No: **ALT10060-2018**

APPENDIX B

Special Terms and Conditions for Permit

---

1. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall keep all systems and works in good condition and repair and in accordance with all laws, by-laws, directions, rules and regulations of any governmental authority. The Permit Holder or its agent(s), subcontractor(s), or consultant(s) shall immediately notify the Minister if any problem arises which may threaten the structural stability of the systems and works, endanger public safety and/or the environment or adversely affect others and/or any body of water either in or outside the said Project areas. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall be responsible for all damages suffered by the Minister and Government resulting from any defect in the systems and works, operational deficiencies/inadequacies, or structural failure.

2. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall operate the said Project and its systems and works in a manner which does not cause any water related and/or environmental problems, including but not limited to problems of erosion, deposition, flooding, and deterioration of water quality and groundwater depletion, in or outside the said Project areas. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall be responsible for any and all damages associated with these problems caused as a result of changes, deficiencies, and inadequacies in the operational procedures by the Permit Holder or its agent(s), subcontractor(s), or consultant(s).

3. If the Permit Holder or its agent(s), subcontractor(s), or consultant(s) fails to perform, fulfil, or observe any of the terms and conditions, or provisions of this Permit, as determined by this Department, the Minister may, without notice, amend, modify, suspend or cancel this Permit in accordance with the *Water Resources Act.*.

4. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) indemnify and hold the Minister and Government harmless against any and all liabilities, losses, claims, demands, damages or expenses including legal expenses of any nature whatsoever whether arising in tort, contract, statute, trust or otherwise resulting directly or indirectly from granting this Permit, systems and works in or outside the said Project areas, or any act or omission of the Permit Holder or its agent(s), subcontractor (s), or consultant(s) in or outside the said Project areas, or arising out of a breach or non-performance of any of the terms and conditions, or provisions of this Permit by the Permit Holder or its agent(s), subcontractor(s), or consultant(s).

5. This Permit is subject to all provisions of the *Water Resources Act* and any regulations in effect either at the date of this Permit or hereafter made pursuant thereto or any other relevant legislation enacted by the Province of Newfoundland and Labrador in the future.

6. This Permit shall be construed and interpreted in accordance with the laws of the Province of Newfoundland and Labrador.

File No: **532-02**
Permit No: **ALT10060-2018**

cc: Amir Ali Khan, Ph.D., P.Eng.
Manager, Water Rights, Investigations and Modelling Section
Water Resources Management Division
Department of Municipal Affairs and Environment
P.O. Box 8700
4th Floor, West Block, Confederation Building
St. John's, NL A1B 4J6
akhan@gov.nl.ca

cc: File Copy for Binder

cc: Mr. Ken Russell (Labrador)
Manager of Operations, GSC - Happy Valley-Goose Bay, Service NL
Government Service Centre
2 Tenth Street, P.O. Box 3014, Stn. B
Happy Valley-Goose Bay, NL A0P 1E0
krussell@gov.nl.ca

cc: Mr. Rick Curran (Eastern)
Director of Regional Operations Avalon , Service NL
149 Smallwood Drive, MountPearl
PO Box 8700
St. John's NL A1B 4J6
rjcurran@gov.nl.ca

cc: Mr. Robert Locke
Manager of Operations and Environmental Protection, GSC - Mount Pearl, Service NL
P.O. Box 8700
St. John's, NL A1B 4J6
rlocke@gov.nl.ca

cc: Mr. Wayne Lynch (Central)
Regional Director (Central)
Service NL
P.O. Box 2222
Gander, NL A1V 2N9
waynelynch@gov.nl.ca

cc: Ms. Susan Hoddinott (Western/Labrador)
Regional Director
Service NL
PO Box 2006
Corner Brook NL A2H 6J8
SusanHoddinott@gov.nl.ca

cc: Marine Safety
Transport Canada, Atlantic Regional Headquarters
Airports, Harbours and Ports, and Environmental Services
95 Foundry St.
P.O. Box 42
Moncton, NB E1C 8K6
NPPATL-PPNATL@tc.gc.ca

cc: Mark McNeil
Public Works and Government Service Canada
Suite 204, 1 Regent Square
Corner Brook, NL A2H 7K6
mark.mcneil@pwgsc-tpsgc.gc.ca

cc: Mr. Shawn Kean
Environmental Services
Public Works & Government Services Canada

John Cabot Building, 10 Barter's Hill
P.O. Box 4600
St. John's, NL A1C 5T2
shawn.kean@pwgsc.gc.ca

Government of Newfoundland and Labrador
Department of Municipal Affairs and Environment
Water Resources Management Division

Appendix C - Completion Report

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 48

Date: **DECEMBER 21, 2018**

File No: **532-02**
Permit No: **ALT10060-2018**

Permit Holder: **Department of Fisheries and Oceans Canada**
Small Craft Harbours Branch
John Cabot Building, 10 Barters Hill
St. John's, NL, A1C 5X1

Attention: **Mr. Paul Curran**

Re: **Minor DFO Dredging, Infilling, and Works Projects**

Permission was given for : **routine dredging or beach grading of 3500 cubic metres or less of primarily sand, gravel, cobble and boulder material in order to provide safe navigation at various Department of Fisheries and Oceans' Small Craft Harbours facilities around the Province of Newfoundland and Labrador as well as the infilling of 500 square metres or less of DFO SCH leased waterlot to construct new or increase existing service/laydown areas at existing DFO SCH facilities, with reference to the application dated November 20, 2018.**

I (the Permit Holder named above or agent authorized to represent the Permit Holder) do hereby certify that the project described above was completed in accordance with the plans and specifications submitted to the Department of Municipal Affairs and Environment and that the work was carried out in strict compliance with the terms and conditions of the Permit issued for this project.

Date: _____ Signature: _____

This completion report must be completed and forwarded to the following address upon completion of the approved work.

Department of Municipal Affairs and Environment
Water Resources Management Division
PO Box 8700
St. John's NL A1B 4J6

Newfoundland Labrador

Government of Newfoundland and Labrador
Service NL

December 16, 2019

Natasha Warren
Public Works and Government Services Canada
P.O. Box 4600
10 Barter's Hill
St. John's, NL
A1C 5T2

Dear Ms. Warren:

Re: Harbour Development, Lodge Bay, NL

The Government Service Centre has reviewed your request of December 6, 2019 regarding the above mentioned project. Based on the results of chemical analyses provided, the Government Service Centre has no objections to the disposal of the dredged material at an approved waste disposal site with prior permission from the owner/operator.

If you have any questions, please do not hesitate to contact me at (709) 896-5473 or at the address below.

Sincerely,

Ken Russell
Environmental Protection Officer

Fisheries and Oceans Canada | Pêches et Océans Canada

P.O. Box 5667
St. John's NL A1C 5X1

Your file *Votre référence*

February 20, 2020

Our file *Notre référence*
19-HNFL-00971

Mr. Paul Curran
Fisheries and Oceans Canada
Small Craft Harbours
John Cabot Building, 10 Barters Hill
St. John's, NL A1C 5X1

Subject: Harbour Development Lodge Bay, Labrador. Minimal Dredging, Floating Dock Installation, Launchway Installation, Upland Enhancement.

Dear Mr. Curran:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received your proposal on October 24th, 2019. We understand that you propose to:

- Dredge to a depth of ~1.5m an area of ~450 m^2 adjacent to the community of Lodge Bay. Install a floating dock including 6 mooring blocks, shore based cribbing (dock approach/gangway), create a launchway, and improve the adjacent upland area (including armour stone)

Our review considered the following information:

- A submitted "Request for Review" application and associated documentation received by FFHPP personnel on November 27, 2019, and
- Email correspondence with proponent dated December (06, 20, 31) 2019 and January 07, 2020.

Your proposal has been reviewed to determine whether it is likely to result in:

- the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat which are prohibited under subsections 34.4(1) and 35(1) of the *Fisheries Act*;
- effects to listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*;
- the introduction of aquatic species into regions or bodies of water frequented by fish where they are not indigenous, which is prohibited under section 10 of the *Aquatic Invasive Species Regulations*.

Canada

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The aforementioned impacts are prohibited unless authorized under their respective legislation and regulations.

To avoid and mitigate the potential for prohibited effects to fish and fish habitat (as listed above), we recommend implementing the measures listed below:

- The proposed project should be carried out in such a manner that excessive sedimentation and erosion is prevented.
- Due to the proximity of the project site to the Mouth of the St. Charles River in-water works should be carried out during the periods of January 01, 2020 to April 30, 2020; or October 01, 2020 to March 31, 2021
- The in-water use of heavy equipment should be avoided. The operation of such equipment should be from dry, stable shore locations or where the excavator cannot reach the full extent of the trenching required, clean quarried rock will be placed mid trench to provide a stable elevated platform for the excavator to work from
- All vehicles and equipment must be clean and in good repair, free of mud, fuel, and oil, or other harmful substances that could impair water quality
- Develop and implement an erosion and sediment control plan to avoid the introduction of sediment into any waterbody during all phases of the work, undertaking or activity
    - Install effective erosion and sediment control measures prior to beginning work, undertaking or activity in order to stabilize all erodible and exposed areas
    - Regularly inspect and maintain the erosion and sediment control measures and structures during all phases of the project
    - Regularly monitor the watercourse for signs of sedimentation during all phases of the work, undertaking or activity and take corrective action
    - Keep the erosion and sediment control measures in place until all disturbed ground has been permanently stabilized
    - Remove all exposed non-biodegradable sediment control materials once site is stabilized
    - Use biodegradable erosion and sediment control materials whenever possible
    - Dispose of, and stabilize all excavated material above the High Water Mark or top of bank of any waterbodies and ensure sediment re-entry to the watercourse is prevented
    - Schedule work to avoid wet, windy and rainy periods (and heed weather advisories) that may result in high flow volumes and/ or increase erosion and sedimentation
- Limit impacts on riparian vegetation to those approved for the work, undertaking or activity
    - Limit access to banks or areas adjacent to waterbodies
    - Limit grubbing on watercourse banks to the area required for the footprint of works, undertaking or activity

.../3

  - Construct access points and approaches perpendicular to the watercourse or waterbody
- All equipment used in water should be cleaned, drained and dried on land before and after use for the purposes of preventing the introduction or spread of aquatic invasive/non-indigenous species.
- An environmental monitor / construction supervisor should be available and consulted during the construction period.

Provided that you incorporate these measures into your plans, the Program is of the view that your proposal will not require an authorization under the *Fisheries Act*, the *Aquatic Invasive Species Regulations* or the *Species at Risk Act*.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to remain in compliance with the *Fisheries Act*, avoid prohibited effects on listed aquatic species at risk, any part of their critical habitat or the residences of their individuals, and prevent the introduction of non-indigenous species.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to (http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html).

Please notify DFO Conservation and Protection at NLCP@dfo-mpo.gc.ca and the Triage Unit at FPP.XNFL@dfo-mpo.gc.ca at least 10 days before starting your project.

Please note a copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Roger Johnson at our St. John's office at (709) 772-3296, by fax at (709) 772-5562, or by email at roger.johnson@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Roger Johnson
Senior Biologist – Regulatory Review , FFHPP

Appendix D
Sediment Sample Analysis

Site Location: LODGER BAY
Your C.O.C. #: 6-109

Attention: Cathy Martin

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

Report Date: 2019/11/27
Report #: R5982220
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9W2570
Received: 2019/11/15, 10:23

Sample Matrix: Sediment
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Benzo(b/j)fluoranthene Sum (LL soil)	6	N/A	2019/11/27	N/A	Auto Calc.
Boron Solid MS - Hot Water Soluble	6	2019/11/22	2019/11/22	ATL SOP 00058	EPA 6020B R2 m
Hexavalent Chromium in Soil by IC (1, 3)	6	2019/11/22	2019/11/25	CAM SOP-00436	EPA 3060/7199 m
TEH in Soil (PIRI) (3)	6	2019/11/18	2019/11/18	ATL SOP 00111	Atl. RBCA v3.1 m
Metals Solids Acid Extr. ICPMS	6	2019/11/19	2019/11/20	ATL SOP 00058	EPA 6020B R2 m
Weak Acid Dissociable Cyanides (2)	6	2019/11/21	2019/11/22	STL SOP-00035	MA300-CN 1.2 R3 m
Total Cyanide (2)	6	2019/11/21	2019/11/25	STL SOP-00035	MA300-CN 1.2 R4 m
Water Content (Subcontracted) (2, 4)	6	N/A	2019/11/22	STL SOP-00021	MA.100-S.T. 1.1 R4 m
Moisture	6	N/A	2019/11/18	ATL SOP 00001	OMOE Handbook 1983 m
PAH in sediment by GC/MS (Low Level) (3)	6	2019/11/21	2019/11/26	ATL SOP 00102	EPA 8270E R6 m
Low Level PCB in Soil by GC-ECD	6	2019/11/21	2019/11/22	ATL SOP 00106	EPA 8082A m
PCB Aroclor sum (low level soil)	6	N/A	2019/11/22	N/A	Auto Calc.
VPH in Soil (PIRI) (5)	6	2019/11/15	2019/11/19	ATL SOP 00119	Atl. RBCA v3.1 m
ModTPH (T1) Calc. for Soil	6	N/A	2019/11/20	N/A	Atl. RBCA v3.1 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Site Location: LODGER BAY
Your C.O.C. #: 6-109

Attention: Cathy Martin

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

Report Date: 2019/11/27
Report #: R5982220
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9W2570
Received: 2019/11/15, 10:23

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

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

(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) This test was performed by Bedford To Montreal Offsite
(3) Soils are reported on a dry weight basis unless otherwise specified.
(4) Offsite analysis requires that subcontracted moisture be reported.
(5) Sample(s) were not field preserved for VPH when received at the laboratory. Analytical results for VPH parameters should be regarded as minimum values.

Encryption Key

AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas Laboratories
27 Nov 2019 14:05:02

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Maryann Comeau, Project Manager
Email: Maryann.COMEAU@bvlabs.com
Phone# (902)420-0203 Ext:298

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: B9W2570
Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

RESULTS OF ANALYSES OF SEDIMENT

BV Labs ID		LHX920	LHX921	LHX922	LHX923	LHX924	LHX925		
Sampling Date		2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11		
COC Number		6-109	6-109	6-109	6-109	6-109	6-109		
	UNITS	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	SAMPLE 6	RDL	QC Batch
Inorganics									
Moisture	%	42	41	26	32	37	45	1.0	6444954
Total Cyanide (CN)	mg/kg	ND	ND	ND	ND	ND	ND	0.50	6463252
WAD Cyanide (Free)	mg/kg	ND	ND	ND	ND	ND	ND	0.50	6463251
Physical Testing									
Moisture Subcontracted	%w/w	44	40	30	25	35	44	0.50	6463253

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9W2570
Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

ELEMENTS BY ICP/MS (SEDIMENT)

BV Labs ID		LHX920	LHX920	LHX921	LHX922	LHX923	LHX924	LHX925		
Sampling Date		2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11		
COC Number		6-109	6-109	6-109	6-109	6-109	6-109	6-109		
	UNITS	SAMPLE 1	SAMPLE 1 Lab-Dup	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	SAMPLE 6	RDL	QC Batch
Metals										
Soluble (Hot Water) Boron (B)	mg/kg	6.9	6.8	5.5	5.1	5.4	6.2	11	3.0	6457266

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: B9W2570
Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

BV Labs ID		LHX920	LHX921	LHX922	LHX923	LHX924	LHX925		
Sampling Date		2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11		
COC Number		6-109	6-109	6-109	6-109	6-109	6-109		
	UNITS	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	SAMPLE 6	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	ND	ND	ND	ND	ND	ND	0.2	6459160
Metals									
Acid Extractable Aluminum (Al)	mg/kg	4600	4800	4400	5300	4400	4300	10	6449816
Acid Extractable Antimony (Sb)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	6449816
Acid Extractable Arsenic (As)	mg/kg	4.1	3.7	3.9	5.2	3.6	4.6	2.0	6449816
Acid Extractable Barium (Ba)	mg/kg	22	23	26	25	23	20	5.0	6449816
Acid Extractable Beryllium (Be)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	6449816
Acid Extractable Bismuth (Bi)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	6449816
Acid Extractable Boron (B)	mg/kg	ND	ND	ND	ND	ND	ND	50	6449816
Acid Extractable Cadmium (Cd)	mg/kg	ND	ND	ND	ND	ND	ND	0.30	6449816
Acid Extractable Chromium (Cr)	mg/kg	6.3	6.3	16	7.3	5.7	6.1	2.0	6449816
Acid Extractable Cobalt (Co)	mg/kg	3.0	3.3	3.1	3.6	3.0	2.8	1.0	6449816
Acid Extractable Copper (Cu)	mg/kg	4.3	3.6	7.1	5.5	3.8	3.2	2.0	6449816
Acid Extractable Iron (Fe)	mg/kg	14000	15000	13000	16000	13000	16000	50	6449816
Acid Extractable Lead (Pb)	mg/kg	5.2	7.8	8.2	7.1	7.7	4.9	0.50	6449816
Acid Extractable Lithium (Li)	mg/kg	11	13	9.4	13	11	10	2.0	6449816
Acid Extractable Manganese (Mn)	mg/kg	160	180	160	180	160	150	2.0	6449816
Acid Extractable Mercury (Hg)	mg/kg	ND	ND	ND	ND	ND	ND	0.10	6449816
Acid Extractable Molybdenum (Mo)	mg/kg	ND	ND	ND	ND	ND	ND	2.0	6449816
Acid Extractable Nickel (Ni)	mg/kg	3.8	4.3	8.9	5.0	4.3	3.8	2.0	6449816
Acid Extractable Rubidium (Rb)	mg/kg	8.6	9.2	9.2	10	9.7	8.0	2.0	6449816
Acid Extractable Selenium (Se)	mg/kg	ND	ND	ND	ND	ND	ND	1.0	6449816
Acid Extractable Silver (Ag)	mg/kg	ND	ND	ND	ND	ND	ND	0.50	6449816
Acid Extractable Strontium (Sr)	mg/kg	20	19	19	21	17	23	5.0	6449816
Acid Extractable Thallium (Tl)	mg/kg	ND	ND	ND	ND	ND	ND	0.10	6449816
Acid Extractable Tin (Sn)	mg/kg	1.2	5.2	2.6	18	3.8	1.2	1.0	6449816
Acid Extractable Uranium (U)	mg/kg	1.5	1.7	1.3	1.9	1.7	1.4	0.10	6449816
Acid Extractable Vanadium (V)	mg/kg	24	24	21	28	22	26	2.0	6449816
Acid Extractable Zinc (Zn)	mg/kg	35	35	35	40	36	31	5.0	6449816

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

SEMI-VOLATILE ORGANICS BY GC-MS (SEDIMENT)

BV Labs ID		LHX920			LHX920			LHX921	LHX922		
Sampling Date		2019/11/11			2019/11/11			2019/11/11	2019/11/11		
COC Number		6-109			6-109			6-109	6-109		
	UNITS	SAMPLE 1	RDL	QC Batch	SAMPLE 1 Lab-Dup	RDL	QC Batch	SAMPLE 2	SAMPLE 3	RDL	QC Batch
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	ND	ND	0.0050	6455076
2-Methylnaphthalene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	ND	ND	0.0050	6455076
Acenaphthene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	ND	ND	0.0050	6455076
Acenaphthylene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	ND	ND	0.0050	6455076
Anthracene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	0.011	ND	0.0050	6455076
Benzo(a)anthracene	mg/kg	ND	0.0050	6455076	0.010	0.0050	6455076	0.036	0.012	0.0050	6455076
Benzo(a)pyrene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	0.039	0.0073	0.0050	6455076
Benzo(b)fluoranthene	mg/kg	ND	0.0050	6455076	0.0088	0.0050	6455076	0.035	0.0085	0.0050	6455076
Benzo(b/j)fluoranthene	mg/kg	ND	0.010	6445087				0.053	ND	0.010	6445087
Benzo(g,h,i)perylene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	0.029	ND	0.0050	6455076
Benzo(j)fluoranthene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	0.019	ND	0.0050	6455076
Benzo(k)fluoranthene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	0.019	ND	0.0050	6455076
Chrysene	mg/kg	ND	0.0050	6455076	0.011	0.0050	6455076	0.043	0.013	0.0050	6455076
Dibenzo(a,h)anthracene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	ND	ND	0.0050	6455076
Fluoranthene	mg/kg	ND	0.0050	6455076	0.039 (1)	0.0050	6455076	0.12	0.034	0.0050	6455076
Fluorene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	ND	ND	0.0050	6455076
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	0.023	ND	0.0050	6455076
Naphthalene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	ND	ND	0.0050	6455076
Perylene	mg/kg	ND	0.0050	6455076	ND	0.0050	6455076	0.019	0.013	0.0050	6455076
Phenanthrene	mg/kg	ND	0.0050	6455076	0.010	0.0050	6455076	0.10	0.014	0.0050	6455076
Pyrene	mg/kg	ND	0.0050	6455076	0.031 (1)	0.0050	6455076	0.091	0.024	0.0050	6455076
Surrogate Recovery (%)											
D10-Anthracene	%	91		6455076	85		6455076	75	81		6455076
D14-Terphenyl	%	83		6455076	85		6455076	79	80		6455076
D8-Acenaphthylene	%	89		6455076	90		6455076	93	90		6455076

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected
(1) Duplicate: results are outside acceptance limit. Sample was past recommended hold time for repeat analysis.

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BV Labs Job #: B9W2570
Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

SEMI-VOLATILE ORGANICS BY GC-MS (SEDIMENT)

BV Labs ID		LHX923	LHX924	LHX925		
Sampling Date		2019/11/11	2019/11/11	2019/11/11		
COC Number		6-109	6-109	6-109		
	UNITS	SAMPLE 4	SAMPLE 5	SAMPLE 6	RDL	QC Batch
Polyaromatic Hydrocarbons						
1-Methylnaphthalene	mg/kg	ND	ND	ND	0.0050	6455076
2-Methylnaphthalene	mg/kg	ND	ND	ND	0.0050	6455076
Acenaphthene	mg/kg	ND	ND	ND	0.0050	6455076
Acenaphthylene	mg/kg	ND	ND	ND	0.0050	6455076
Anthracene	mg/kg	ND	ND	ND	0.0050	6455076
Benzo(a)anthracene	mg/kg	ND	ND	ND	0.0050	6455076
Benzo(a)pyrene	mg/kg	ND	ND	ND	0.0050	6455076
Benzo(b)fluoranthene	mg/kg	ND	ND	ND	0.0050	6455076
Benzo(b/j)fluoranthene	mg/kg	ND	ND	ND	0.010	6445087
Benzo(g,h,i)perylene	mg/kg	ND	ND	ND	0.0050	6455076
Benzo(j)fluoranthene	mg/kg	ND	ND	ND	0.0050	6455076
Benzo(k)fluoranthene	mg/kg	ND	ND	ND	0.0050	6455076
Chrysene	mg/kg	ND	ND	ND	0.0050	6455076
Dibenzo(a,h)anthracene	mg/kg	ND	ND	ND	0.0050	6455076
Fluoranthene	mg/kg	ND	0.024	ND	0.0050	6455076
Fluorene	mg/kg	ND	ND	ND	0.0050	6455076
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	ND	0.0050	6455076
Naphthalene	mg/kg	ND	ND	ND	0.0050	6455076
Perylene	mg/kg	0.0092	0.012	ND	0.0050	6455076
Phenanthrene	mg/kg	ND	0.014	ND	0.0050	6455076
Pyrene	mg/kg	ND	0.018	ND	0.0050	6455076
Surrogate Recovery (%)						
D10-Anthracene	%	85	88	85		6455076
D14-Terphenyl	%	83	85	84		6455076
D8-Acenaphthylene	%	93	92	95		6455076

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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BV Labs Job #: B9W2570
Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

ATLANTIC RBCA HYDROCARBONS (SEDIMENT)

BV Labs ID		LHX920	LHX921	LHX922	LHX923	LHX924		
Sampling Date		2019/11/11	2019/11/11	2019/11/11	2019/11/11	2019/11/11		
COC Number		6-109	6-109	6-109	6-109	6-109		
	UNITS	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	RDL	QC Batch
Petroleum Hydrocarbons								
Benzene	mg/kg	ND	ND	ND	ND	ND	0.025	6449669
Toluene	mg/kg	ND	ND	ND	ND	ND	0.050	6449669
Ethylbenzene	mg/kg	ND	ND	ND	ND	ND	0.025	6449669
Total Xylenes	mg/kg	ND	ND	ND	ND	ND	0.050	6449669
C6 - C10 (less BTEX)	mg/kg	ND	ND	ND	ND	ND	2.5	6449669
>C10-C16 Hydrocarbons	mg/kg	ND	ND	ND	ND	ND	10	6447610
>C16-C21 Hydrocarbons	mg/kg	ND	19	ND	ND	ND	10	6447610
>C21-<C32 Hydrocarbons	mg/kg	56	64	35	59	47	15	6447610
Modified TPH (Tier1)	mg/kg	56	83	35	59	47	15	6444402
Reached Baseline at C32	mg/kg	Yes	Yes	Yes	No	Yes	N/A	6447610
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	COMMENT (2)	COMMENT (1)	COMMENT (1)	COMMENT (1)	N/A	6447610
Surrogate Recovery (%)								
Isobutylbenzene - Extractable	%	91	89	89	96	87		6447610
n-Dotriacontane - Extractable	%	101	99	100	114	99		6447610
Isobutylbenzene - Volatile	%	107	110	110	106	109		6449669

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
N/A = Not Applicable
(1) Unidentified compound(s) in lube oil range.
(2) Unidentified compound(s) in fuel / lube range.

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Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

ATLANTIC RBCA HYDROCARBONS (SEDIMENT)

BV Labs ID		LHX925		
Sampling Date		2019/11/11		
COC Number		6-109		
	UNITS	SAMPLE 6	RDL	QC Batch
Petroleum Hydrocarbons				
Benzene	mg/kg	ND	0.025	6449669
Toluene	mg/kg	ND	0.050	6449669
Ethylbenzene	mg/kg	ND	0.025	6449669
Total Xylenes	mg/kg	ND	0.050	6449669
C6 - C10 (less BTEX)	mg/kg	ND	2.5	6449669
>C10-C16 Hydrocarbons	mg/kg	ND	10	6447610
>C16-C21 Hydrocarbons	mg/kg	28	10	6447610
>C21-<C32 Hydrocarbons	mg/kg	90	15	6447610
Modified TPH (Tier1)	mg/kg	120	15	6444402
Reached Baseline at C32	mg/kg	Yes	N/A	6447610
Hydrocarbon Resemblance	mg/kg	COMMENT (1)	N/A	6447610
Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	91		6447610
n-Dotriacontane - Extractable	%	107		6447610
Isobutylbenzene - Volatile	%	111		6449669

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected
N/A = Not Applicable
(1) Unidentified compound(s) in fuel / lube range.

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BV Labs Job #: B9W2570
Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

POLYCHLORINATED BIPHENYLS BY GC-ECD (SEDIMENT)

BV Labs ID		LHX920			LHX920			LHX921	LHX922		
Sampling Date		2019/11/11			2019/11/11			2019/11/11	2019/11/11		
COC Number		6-109			6-109			6-109	6-109		
	UNITS	SAMPLE 1	RDL	QC Batch	SAMPLE 1 Lab-Dup	RDL	QC Batch	SAMPLE 2	SAMPLE 3	RDL	QC Batch
PCBs											
Aroclor 1016	mg/kg	ND	0.010	6455062	ND	0.010	6455062	ND	ND	0.010	6455062
Aroclor 1221	mg/kg	ND	0.010	6455062	ND	0.010	6455062	ND	ND	0.010	6455062
Aroclor 1232	mg/kg	ND	0.010	6455062	ND	0.010	6455062	ND	ND	0.010	6455062
Aroclor 1248	mg/kg	ND	0.010	6455062	ND	0.010	6455062	ND	ND	0.010	6455062
Aroclor 1242	mg/kg	ND	0.010	6455062	ND	0.010	6455062	ND	ND	0.010	6455062
Aroclor 1254	mg/kg	ND	0.010	6455062	ND	0.010	6455062	ND	ND	0.010	6455062
Aroclor 1260	mg/kg	ND	0.010	6455062	ND	0.010	6455062	ND	ND	0.010	6455062
Calculated Total PCB	mg/kg	ND	0.010	6445088				ND	ND	0.010	6445088
Surrogate Recovery (%)											
Decachlorobiphenyl	%	121		6455062	117		6455062	118	120		6455062

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not detected

BV Labs ID		LHX923	LHX924	LHX925		
Sampling Date		2019/11/11	2019/11/11	2019/11/11		
COC Number		6-109	6-109	6-109		
	UNITS	SAMPLE 4	SAMPLE 5	SAMPLE 6	RDL	QC Batch
PCBs						
Aroclor 1016	mg/kg	ND	ND	ND	0.010	6455062
Aroclor 1221	mg/kg	ND	ND	ND	0.010	6455062
Aroclor 1232	mg/kg	ND	ND	ND	0.010	6455062
Aroclor 1248	mg/kg	ND	ND	ND	0.010	6455062
Aroclor 1242	mg/kg	ND	ND	ND	0.010	6455062
Aroclor 1254	mg/kg	ND	ND	ND	0.010	6455062
Aroclor 1260	mg/kg	ND	ND	ND	0.010	6455062
Calculated Total PCB	mg/kg	ND	ND	ND	0.010	6445088
Surrogate Recovery (%)						
Decachlorobiphenyl	%	116	116	110		6455062

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Report Date: 2019/11/27

Public Works & Government Services Canada
Site Location: LODGER BAY
Sampler Initials: GH

GENERAL COMMENTS

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

Package 1	16.0°C

Non-Bureau Veritas Laboratories jars with metal lids submitted for testing.

Average temperature upon receipt >10°C.

Samples were not field preserved for VPH when received at the laboratory and headspace was present in containers. Analytical results for VPH parameters should be regarded as minimum values.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6444954	YLG	RPD	Moisture	2019/11/18	17		%	25
6447610	DBF	Matrix Spike	Isobutylbenzene - Extractable	2019/11/18		94	%	60 - 130
			n-Dotriacontane - Extractable	2019/11/18		105	%	60 - 130
			>C10-C16 Hydrocarbons	2019/11/18		98	%	30 - 130
			>C16-C21 Hydrocarbons	2019/11/18		91	%	30 - 130
			>C21-<C32 Hydrocarbons	2019/11/18		123	%	30 - 130
6447610	DBF	Spiked Blank	Isobutylbenzene - Extractable	2019/11/18		93	%	60 - 130
			n-Dotriacontane - Extractable	2019/11/18		100	%	60 - 130
			>C10-C16 Hydrocarbons	2019/11/18		98	%	60 - 130
			>C16-C21 Hydrocarbons	2019/11/18		90	%	60 - 130
			>C21-<C32 Hydrocarbons	2019/11/18		111	%	60 - 130
6447610	DBF	Method Blank	Isobutylbenzene - Extractable	2019/11/18		90	%	60 - 130
			n-Dotriacontane - Extractable	2019/11/18		92	%	60 - 130
			>C10-C16 Hydrocarbons	2019/11/18	ND, RDL=10		mg/kg	
			>C16-C21 Hydrocarbons	2019/11/18	ND, RDL=10		mg/kg	
			>C21-<C32 Hydrocarbons	2019/11/18	ND, RDL=15		mg/kg	
6447610	DBF	RPD	>C10-C16 Hydrocarbons	2019/11/18	NC		%	50
			>C16-C21 Hydrocarbons	2019/11/18	NC		%	50
			>C21-<C32 Hydrocarbons	2019/11/18	31		%	50
6449669	YXU	Matrix Spike	Isobutylbenzene - Volatile	2019/11/19		102	%	60 - 130
			Benzene	2019/11/19		87	%	60 - 130
			Toluene	2019/11/19		86	%	60 - 130
			Ethylbenzene	2019/11/19		87	%	60 - 130
			Total Xylenes	2019/11/19		88	%	60 - 130
6449669	YXU	Spiked Blank	Isobutylbenzene - Volatile	2019/11/19		101	%	60 - 130
			Benzene	2019/11/19		100	%	60 - 140
			Toluene	2019/11/19		96	%	60 - 140
			Ethylbenzene	2019/11/19		96	%	60 - 140
			Total Xylenes	2019/11/19		97	%	60 - 140
6449669	YXU	Method Blank	Isobutylbenzene - Volatile	2019/11/19		96	%	60 - 130
			Benzene	2019/11/19	ND, RDL=0.025		mg/kg	
			Toluene	2019/11/19	ND, RDL=0.050		mg/kg	
			Ethylbenzene	2019/11/19	ND, RDL=0.025		mg/kg	
			Total Xylenes	2019/11/19	ND, RDL=0.050		mg/kg	
			C6 - C10 (less BTEX)	2019/11/19	ND, RDL=2.5		mg/kg	
6449669	YXU	RPD	Benzene	2019/11/19	NC		%	50
			Toluene	2019/11/19	NC		%	50
			Ethylbenzene	2019/11/19	NC		%	50
			Total Xylenes	2019/11/19	NC		%	50
			C6 - C10 (less BTEX)	2019/11/19	NC		%	50
6449816	MLB	Matrix Spike	Acid Extractable Antimony (Sb)	2019/11/20		106	%	75 - 125
			Acid Extractable Arsenic (As)	2019/11/20		104	%	75 - 125
			Acid Extractable Barium (Ba)	2019/11/20		113	%	75 - 125
			Acid Extractable Beryllium (Be)	2019/11/20		105	%	75 - 125
			Acid Extractable Bismuth (Bi)	2019/11/20		106	%	75 - 125
			Acid Extractable Boron (B)	2019/11/20		98	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Cadmium (Cd)	2019/11/20		104	%	75 - 125
			Acid Extractable Chromium (Cr)	2019/11/20		106	%	75 - 125
			Acid Extractable Cobalt (Co)	2019/11/20		101	%	75 - 125
			Acid Extractable Copper (Cu)	2019/11/20		100	%	75 - 125
			Acid Extractable Lead (Pb)	2019/11/20		105	%	75 - 125
			Acid Extractable Lithium (Li)	2019/11/20		112	%	75 - 125
			Acid Extractable Manganese (Mn)	2019/11/20		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2019/11/20		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2019/11/20		111	%	75 - 125
			Acid Extractable Nickel (Ni)	2019/11/20		102	%	75 - 125
			Acid Extractable Rubidium (Rb)	2019/11/20		107	%	75 - 125
			Acid Extractable Selenium (Se)	2019/11/20		106	%	75 - 125
			Acid Extractable Silver (Ag)	2019/11/20		105	%	75 - 125
			Acid Extractable Strontium (Sr)	2019/11/20		113	%	75 - 125
			Acid Extractable Thallium (Tl)	2019/11/20		108	%	75 - 125
			Acid Extractable Tin (Sn)	2019/11/20		115	%	75 - 125
			Acid Extractable Uranium (U)	2019/11/20		110	%	75 - 125
			Acid Extractable Vanadium (V)	2019/11/20		109	%	75 - 125
			Acid Extractable Zinc (Zn)	2019/11/20		NC	%	75 - 125
6449816	MLB	Spiked Blank	Acid Extractable Antimony (Sb)	2019/11/20		103	%	75 - 125
			Acid Extractable Arsenic (As)	2019/11/20		99	%	75 - 125
			Acid Extractable Barium (Ba)	2019/11/20		105	%	75 - 125
			Acid Extractable Beryllium (Be)	2019/11/20		100	%	75 - 125
			Acid Extractable Bismuth (Bi)	2019/11/20		104	%	75 - 125
			Acid Extractable Boron (B)	2019/11/20		103	%	75 - 125
			Acid Extractable Cadmium (Cd)	2019/11/20		99	%	75 - 125
			Acid Extractable Chromium (Cr)	2019/11/20		96	%	75 - 125
			Acid Extractable Cobalt (Co)	2019/11/20		96	%	75 - 125
			Acid Extractable Copper (Cu)	2019/11/20		95	%	75 - 125
			Acid Extractable Lead (Pb)	2019/11/20		101	%	75 - 125
			Acid Extractable Lithium (Li)	2019/11/20		103	%	75 - 125
			Acid Extractable Manganese (Mn)	2019/11/20		99	%	75 - 125
			Acid Extractable Mercury (Hg)	2019/11/20		103	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2019/11/20		106	%	75 - 125
			Acid Extractable Nickel (Ni)	2019/11/20		98	%	75 - 125
			Acid Extractable Rubidium (Rb)	2019/11/20		100	%	75 - 125
			Acid Extractable Selenium (Se)	2019/11/20		100	%	75 - 125
			Acid Extractable Silver (Ag)	2019/11/20		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2019/11/20		102	%	75 - 125
			Acid Extractable Thallium (Tl)	2019/11/20		104	%	75 - 125
			Acid Extractable Tin (Sn)	2019/11/20		107	%	75 - 125
			Acid Extractable Uranium (U)	2019/11/20		103	%	75 - 125
			Acid Extractable Vanadium (V)	2019/11/20		99	%	75 - 125
			Acid Extractable Zinc (Zn)	2019/11/20		100	%	75 - 125
6449816	MLB	Method Blank	Acid Extractable Aluminum (Al)	2019/11/20	ND, RDL=10		mg/kg	
			Acid Extractable Antimony (Sb)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Arsenic (As)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Barium (Ba)	2019/11/20	ND, RDL=5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2019/11/20	ND, RDL=2.0		mg/kg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Bismuth (Bi)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Boron (B)	2019/11/20	ND, RDL=50		mg/kg	
			Acid Extractable Cadmium (Cd)	2019/11/20	ND, RDL=0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2019/11/20	ND, RDL=1.0		mg/kg	
			Acid Extractable Copper (Cu)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Iron (Fe)	2019/11/20	ND, RDL=50		mg/kg	
			Acid Extractable Lead (Pb)	2019/11/20	ND, RDL=0.50		mg/kg	
			Acid Extractable Lithium (Li)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2019/11/20	ND, RDL=0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Selenium (Se)	2019/11/20	ND, RDL=1.0		mg/kg	
			Acid Extractable Silver (Ag)	2019/11/20	ND, RDL=0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2019/11/20	ND, RDL=5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2019/11/20	ND, RDL=0.10		mg/kg	
			Acid Extractable Tin (Sn)	2019/11/20	ND, RDL=1.0		mg/kg	
			Acid Extractable Uranium (U)	2019/11/20	ND, RDL=0.10		mg/kg	
			Acid Extractable Vanadium (V)	2019/11/20	ND, RDL=2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2019/11/20	ND, RDL=5.0		mg/kg	
6449816	MLB	RPD	Acid Extractable Aluminum (Al)	2019/11/20	0.76		%	35
			Acid Extractable Antimony (Sb)	2019/11/20	NC		%	35
			Acid Extractable Arsenic (As)	2019/11/20	NC		%	35
			Acid Extractable Barium (Ba)	2019/11/20	0.14		%	35
			Acid Extractable Beryllium (Be)	2019/11/20	NC		%	35
			Acid Extractable Bismuth (Bi)	2019/11/20	NC		%	35
			Acid Extractable Boron (B)	2019/11/20	NC		%	35
			Acid Extractable Cadmium (Cd)	2019/11/20	3.0		%	35
			Acid Extractable Chromium (Cr)	2019/11/20	2.2		%	35
			Acid Extractable Cobalt (Co)	2019/11/20	1.1		%	35
			Acid Extractable Copper (Cu)	2019/11/20	0.76		%	35

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Iron (Fe)	2019/11/20	1.7		%	35
			Acid Extractable Lead (Pb)	2019/11/20	1.8		%	35
			Acid Extractable Lithium (Li)	2019/11/20	2.8		%	35
			Acid Extractable Manganese (Mn)	2019/11/20	0.62		%	35
			Acid Extractable Mercury (Hg)	2019/11/20	NC		%	35
			Acid Extractable Molybdenum (Mo)	2019/11/20	NC		%	35
			Acid Extractable Nickel (Ni)	2019/11/20	2.1		%	35
			Acid Extractable Rubidium (Rb)	2019/11/20	4.2		%	35
			Acid Extractable Selenium (Se)	2019/11/20	NC		%	35
			Acid Extractable Silver (Ag)	2019/11/20	NC		%	35
			Acid Extractable Strontium (Sr)	2019/11/20	4.3		%	35
			Acid Extractable Thallium (Tl)	2019/11/20	NC		%	35
			Acid Extractable Tin (Sn)	2019/11/20	NC		%	35
			Acid Extractable Uranium (U)	2019/11/20	11		%	35
			Acid Extractable Vanadium (V)	2019/11/20	3.2		%	35
			Acid Extractable Zinc (Zn)	2019/11/20	5.0		%	35
6455062	RGE	Matrix Spike [LHX920-01]	Decachlorobiphenyl	2019/11/22		118	%	70 - 130
			Aroclor 1254	2019/11/22		112	%	70 - 130
6455062	RGE	Spiked Blank	Decachlorobiphenyl	2019/11/22		113	%	70 - 130
			Aroclor 1254	2019/11/22		108	%	70 - 130
6455062	RGE	Method Blank	Decachlorobiphenyl	2019/11/22		123	%	70 - 130
			Aroclor 1016	2019/11/22	ND, RDL=0.010		mg/kg	
			Aroclor 1221	2019/11/22	ND, RDL=0.010		mg/kg	
			Aroclor 1232	2019/11/22	ND, RDL=0.010		mg/kg	
			Aroclor 1248	2019/11/22	ND, RDL=0.010		mg/kg	
			Aroclor 1242	2019/11/22	ND, RDL=0.010		mg/kg	
			Aroclor 1254	2019/11/22	ND, RDL=0.010		mg/kg	
			Aroclor 1260	2019/11/22	ND, RDL=0.010		mg/kg	
6455062	RGE	RPD [LHX920-01]	Aroclor 1016	2019/11/22	NC		%	50
			Aroclor 1221	2019/11/22	NC		%	50
			Aroclor 1232	2019/11/22	NC		%	50
			Aroclor 1248	2019/11/22	NC		%	50
			Aroclor 1242	2019/11/22	NC		%	50
			Aroclor 1254	2019/11/22	NC		%	50
			Aroclor 1260	2019/11/22	NC		%	50
6455076	LGE	Matrix Spike [LHX920-01]	D10-Anthracene	2019/11/26		81	%	50 - 130
			D14-Terphenyl	2019/11/26		81	%	50 - 130
			D8-Acenaphthylene	2019/11/26		97	%	50 - 130
			1-Methylnaphthalene	2019/11/26		94	%	50 - 130
			2-Methylnaphthalene	2019/11/26		105	%	50 - 130
			Acenaphthene	2019/11/26		106	%	50 - 130
			Acenaphthylene	2019/11/26		112	%	50 - 130
			Anthracene	2019/11/26		103	%	50 - 130
			Benzo(a)anthracene	2019/11/26		108	%	50 - 130
			Benzo(a)pyrene	2019/11/26		97	%	50 - 130
			Benzo(b)fluoranthene	2019/11/26		107	%	50 - 130
			Benzo(g,h,i)perylene	2019/11/26		93	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(j)fluoranthene	2019/11/26		102	%	50 - 130
			Benzo(k)fluoranthene	2019/11/26		100	%	50 - 130
			Chrysene	2019/11/26		105	%	50 - 130
			Dibenzo(a,h)anthracene	2019/11/26		79	%	50 - 130
			Fluoranthene	2019/11/26		106	%	50 - 130
			Fluorene	2019/11/26		104	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/11/26		88	%	50 - 130
			Naphthalene	2019/11/26		97	%	50 - 130
			Perylene	2019/11/26		94	%	50 - 130
			Phenanthrene	2019/11/26		113	%	50 - 130
			Pyrene	2019/11/26		104	%	50 - 130
6455076	LGE	Spiked Blank	D10-Anthracene	2019/11/26		82	%	50 - 130
			D14-Terphenyl	2019/11/26		82	%	50 - 130
			D8-Acenaphthylene	2019/11/26		96	%	50 - 130
			1-Methylnaphthalene	2019/11/26		97	%	50 - 130
			2-Methylnaphthalene	2019/11/26		107	%	50 - 130
			Acenaphthene	2019/11/26		107	%	50 - 130
			Acenaphthylene	2019/11/26		116	%	50 - 130
			Anthracene	2019/11/26		107	%	50 - 130
			Benzo(a)anthracene	2019/11/26		106	%	50 - 130
			Benzo(a)pyrene	2019/11/26		92	%	50 - 130
			Benzo(b)fluoranthene	2019/11/26		106	%	50 - 130
			Benzo(g,h,i)perylene	2019/11/26		94	%	50 - 130
			Benzo(j)fluoranthene	2019/11/26		101	%	50 - 130
			Benzo(k)fluoranthene	2019/11/26		101	%	50 - 130
			Chrysene	2019/11/26		106	%	50 - 130
			Dibenzo(a,h)anthracene	2019/11/26		76	%	50 - 130
			Fluoranthene	2019/11/26		108	%	50 - 130
			Fluorene	2019/11/26		104	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2019/11/26		87	%	50 - 130
			Naphthalene	2019/11/26		99	%	50 - 130
			Perylene	2019/11/26		94	%	50 - 130
			Phenanthrene	2019/11/26		106	%	50 - 130
			Pyrene	2019/11/26		107	%	50 - 130
6455076	LGE	Method Blank	D10-Anthracene	2019/11/26		76	%	50 - 130
			D14-Terphenyl	2019/11/26		73	%	50 - 130
			D8-Acenaphthylene	2019/11/26		79	%	50 - 130
			1-Methylnaphthalene	2019/11/26	ND, RDL=0.0050		mg/kg	
			2-Methylnaphthalene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Acenaphthene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Acenaphthylene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Anthracene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Benzo(a)anthracene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Benzo(a)pyrene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Benzo(b)fluoranthene	2019/11/26	ND, RDL=0.0050		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(g,h,i)perylene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Benzo(j)fluoranthene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Benzo(k)fluoranthene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Chrysene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Dibenzo(a,h)anthracene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Fluoranthene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Fluorene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Naphthalene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Perylene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Phenanthrene	2019/11/26	ND, RDL=0.0050		mg/kg	
			Pyrene	2019/11/26	ND, RDL=0.0050		mg/kg	
6455076	LGE	RPD [LHX920-01]	1-Methylnaphthalene	2019/11/26	NC		%	50
			2-Methylnaphthalene	2019/11/26	NC		%	50
			Acenaphthene	2019/11/26	NC		%	50
			Acenaphthylene	2019/11/26	NC		%	50
			Anthracene	2019/11/26	NC		%	50
			Benzo(a)anthracene	2019/11/26	NC		%	50
			Benzo(a)pyrene	2019/11/26	NC		%	50
			Benzo(b)fluoranthene	2019/11/26	NC		%	50
			Benzo(g,h,i)perylene	2019/11/26	NC		%	50
			Benzo(j)fluoranthene	2019/11/26	NC		%	50
			Benzo(k)fluoranthene	2019/11/26	NC		%	50
			Chrysene	2019/11/26	NC		%	50
			Dibenzo(a,h)anthracene	2019/11/26	NC		%	50
			Fluoranthene	2019/11/26	154 (1)		%	50
			Fluorene	2019/11/26	NC		%	50
			Indeno(1,2,3-cd)pyrene	2019/11/26	NC		%	50
			Naphthalene	2019/11/26	NC		%	50
			Perylene	2019/11/26	NC		%	50
			Phenanthrene	2019/11/26	NC		%	50
			Pyrene	2019/11/26	144 (1)		%	50
6457266	MLB	Matrix Spike [LHX920-01]	Soluble (Hot Water) Boron (B)	2019/11/22		NC	%	75 - 125
6457266	MLB	Spiked Blank	Soluble (Hot Water) Boron (B)	2019/11/22		96	%	75 - 125
6457266	MLB	Method Blank	Soluble (Hot Water) Boron (B)	2019/11/22	ND, RDL=0.30		mg/kg	
6457266	MLB	RPD [LHX920-01]	Soluble (Hot Water) Boron (B)	2019/11/22	2.6		%	35
6459160	SAC	Matrix Spike	Chromium (VI)	2019/11/25		28 (2)	%	70 - 130
6459160	SAC	Spiked Blank	Chromium (VI)	2019/11/25		96	%	80 - 120
6459160	SAC	Method Blank	Chromium (VI)	2019/11/25	ND, RDL=0.2		ug/g	
6459160	SAC	RPD	Chromium (VI)	2019/11/25	NC		%	35

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6463251	éFQ	Spiked Blank	WAD Cyanide (Free)	2019/11/22		106	%	75 - 125
6463251	éFQ	Method Blank	WAD Cyanide (Free)	2019/11/22	ND, RDL=0.50		mg/kg	
6463252	éFQ	Spiked Blank	Total Cyanide (CN)	2019/11/25		111	%	75 - 125
6463252	éFQ	Method Blank	Total Cyanide (CN)	2019/11/25	ND, RDL=0.50		mg/kg	

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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

(1) Duplicate: results are outside acceptance limit. Sample was past recommended hold time for repeat analysis.

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results.

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VALIDATION SIGNATURE PAGE

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

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VALIDATION SIGNATURE PAGE(CONT'D)

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

Rosemarie MacDonald, Scientific Specialist (Organics)

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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