SPECIFICATION

WHARF AND BUILDING DEMOLITION

SANDY COVE, NL

P/N: 704284

PREPARED FOR

Fisheries and Oceans Canada

DATE

January 18, 2018

PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
This Permit Allows
APN ENGINEERING INC.
To practise Professional Engineering
In Newfoundland and Labrador.
Permit No. as issued by APEGN F0292
which is valid for the year 2018

NEIL C. HUNT
Feb 13/18

DRAWING NO	TITLE
C1 of 5	Demolition Plan
C2 of 5	Building/Warehouse Elevations
C3 of 5	Fish Plant Elevations/Sections
C4 of 5	Marginal Wharf Demolition Plan, Elevation and Section
C5 of 5	New Site Plan and Details

1.1 SCOPE

.1 The work consists of the furnishing of all plant, labour, equipment and material for wharf and building demolition in Sandy Cove, NL, in strict accordance with specifications and accompanying drawings and subject to all terms and conditions of the Contract.

1.2 DESCRIPTION OF WORK

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

.1 Supply and installation of rock and gravel fill, filter stone and armour stone, as noted on the drawings.
.2 Supply and installation of Class “B” and Class “A” granulars.
.3 Demolition and removal of the existing marginal wharf and surrounding building infrastructure, as noted on the drawings. Review the hazardous building material assessment report as it relates to the hazardous building materials present on site.

Note that the Contractor will be permitted to use the provincial dumpsite located between St. Barbe and Anchor Point (approximately 22kms from Sandy Cove). Contact the dump operator for tipping rates, as the Contractor will be responsible for all tipping fees. The only exception is creosote timber, which must be disposed of at the Provincially approved Regional Waste site in Norris Arm, NL.

1.3 SITE OF WORK

.1 Work will be carried out at Sandy Cove, NL, in the location shown on the accompanying drawings.

1.4 DATUM

.1 Datum used for this project is Lowest Normal Tide (LNT) and is assumed to be 3.462 metres below BM1-1989 (refer to drawings). Confirm with the Departmental Representative prior to construction.

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

1.5 FAMILIARIZATION WITH SITE

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

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, 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 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.

1.21 FISH HABITAT

.1 This work is being conducted in an area where fish habitat may be affected. Perform work to conform with rules and regulations governing fish habitat and in accordance with authorization for work or undertakings affecting fish habitat.

.2 Contact the 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.

1.22 NOTICE TO SHIPPING/MARINERS

.1 Notify the Marine Communications and Traffic Services' Centre, of Fisheries and Oceans Canada, at (709) 772-2083, ten (10) days prior to commencement and upon completion of the work, in order to allow for the issuance of Notices to Shipping/Mariners.

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

1.23 ACCEPTANCE

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

1.24 WORKS COORDINATION

.1 Responsible for coordinating the work of the various trades, where the work of such

trades interfaces with each other.

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

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

1.25 CONTRACTOR'S USE OF SITE

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

.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. Note that no heavy equipment will be permitted atop the existing wharf.

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

area.

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

1.26 WORK COMMENCEMENT

.1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan 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.

1.27 FACILITY SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

1.28 INTERPRETATION OF DOCUMENTS

.1 Supplementary to the Order of Precedence article of the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

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, where required.

.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 National Fire Code - Standard for Construction Operations – latest edition (http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/301/page00.shtml).
.2 National Fire Code - Standard for Welding and Cutting – latest edition (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 Labour Canada Office located at Baine Johnson Centre, 10 Fort William Place, St. John’s, NL, A1C 1K4; Telephone 1-800-641-4049; fax 1-709-772-5985.

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, latest edition.
.2 Fire Protection Standards FCC 301 and FCC 302 – latest edition.
.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, latest edition.
.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.

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

.7 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 conditions.

.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.
.14 Hazardous building materials (review the HAZMAT report appended to the specifications).

.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.
- .2 Submit copy to Departmental Representative.

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.

1.9 WILDLIFE PROTECTION

.1 Should nests of migratory birds in wetlands be encountered during work, immediately notify Departmetnal 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.

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.

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.

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

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

1.4 SANITARY FACILITIES

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

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

1.5 POWER

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

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

1.6 WATER SUPPLY

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

1.7 SCAFFOLDING

.1 Design, construct and maintain scaffolding

in rigid, secure and safe manner in accordance with 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 as required by governing authorities and to approval of Departmental Representative.
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 Monitor.

.2 It is a requirement of this contract that the Contractor provide and pay for all board and lodgings for the Site Monitor's sole use for the duration of the project. Provide for and maintain acceptable living accommodations on site for the Site Monitor's sole use. The minimum requirement would be a hotel within 5km of the project site, or other arrangement approved by the Departmental Representative. The minimum daily allowance for the site monitor'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.

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 Monitor.

.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

.1 Acceptable Materials: When materials

MATERIALS AND ALTERNATIVES

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.

1.2 WASTE MANAGEMENT PLAN

.1 Prior to commencement of work, prepare waste Management Workplan.

.2 Workplan to include:
.1 Waste audit.
.2 Waste reduction practices.
.3 Material source separation process.
.4 Procedures for sending recyclables to recycling facilities.
.5 Procedures for sending non-salvageable items and waste to approved waste processing facility or landfill site.
.6 Training and supervising workforce on waste management at site.

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

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

.5 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 salvageable

and non-salvageable items and waste resulting from demolition and removal work.
.2 Projected waste resulting from product packaging and from material leftover after installation work.

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

1.4 WASTE REDUCTION

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

.2 Structure program to prioritize actions, with waste reduction as first priority, followed by salvage and recycling effort, then disposal as solid waste.

.3 Identify materials and equipment to be:
.1 Protected and turned over to Departmental Representative when indicated.
.2 Salvaged for resale by Contractor.
.3 Sent to recycling facility.
.4 Sent to waste processing/landfill site for their recycling effort.
.5 Disposed of in approved landfill site.

.4 Reduce construction waste during installation work. Undertake practices which will minimize waste and optimize full use of new materials on site, such as:
.1 Use of a central cutting area to allow for easy access to off-cuts;
.2 Use of off-cuts for blocking and bridging elsewhere.
.3 Use of effective and strategically placed facilities on site for storage and staging of left-over or partially cut materials to allow for easy incorporation into work whenever possible avoiding

unnecessary waste.

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

1.5 MATERIAL SOURCE SEPARATION PROCESS

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

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

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

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

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

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

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

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

1.6 WORKER TRAINING AND SUPERVISION

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

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

.1 Oversee and supervise waste management during work.

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

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

1.7 CERTIFICATION OF MATERIAL DIVERSION

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

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

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

1.8 DISPOSAL REQUIREMENTS

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

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

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

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

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

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

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

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

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

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

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 SECTIONS INCLUDES

.1 Methods and procedures for demolishing, salvaging, recycling and removing hazardous building materials. The Hazardous Building Material Assessment report is appended to the specifications.

1.2 GENERAL REQUIREMENTS

.1 Prior to general disturbance activity, all asbestos containing materials is to be safely removed from the building and disposed of in accordance with the NL Asbestos Abatement Regulations (Reg. 111/98). Refer to specification section 02 82 00.02 “Asbestos Abatement”, for specific requirements.

.2 Mercury-containing fluorescent light tubes or bulbs are to be removed intact and returned to the manufacturer for recycling, or disposed of at an approved facility.

.3 Precautions are to be taken during removal or disturbance of painted surfaces to limit workers occupational exposure to lead dust (refer to minimum requirements outlined in this specification section).

.4 Workers are to wear appropriate PPE when handling mould stained building materials. There are no provincial disposal guidelines for mould-impacted building materials. These materials may be disposed of at any municipal landfill, provided they do not contain unacceptable levels of other hazardous materials (e.g., metals-based paint, asbestos, etc.).

.5 All light ballasts are to be handled, decontaminated, transported and disposed of by a registered hazardous waste transporter in accordance with applicable regulations governing PCBs. In cases where the ballast is clearly stamped as “non-PCBs”, the ballast may be disposed of in the regular waste stream.

.6 All debris scattered throughout the buildings is to be disposed of in accordance with the NL Waste Management Regulations” under the “Waste Management Act”. Take inventory of materials during pre-tender site visit and carry all costs for disposal of the debris.

.7 ODS equipment containing refrigerants are regulated at both a Provincial and Federal level, and disposal of this equipment must

comply with the most recent NL Halocarbon Regulations and the Federal Halocarbon Regulations. Take inventory of any refrigeration equipment during the pre-tender site visit and carry all costs for disposal of this equipment.

.8 When disturbing concrete surfaces, wet the surface before disturbing it, to prevent dust emissions and exposure to silica. If there is potential for workers to be exposed to dust, don respiratory protection during work activities.

1.3 RELATED SECTIONS

.1 Section 02 82 00.02 – Asbestos Abatement

1.4 SUBMITTALS

.1 Shop drawings

.1 Submit shop drawing showing layout of any proposed decontamination units.

.2 Submit copies of certified weigh bills, bills of landing from authorized disposal sites, hazardous waste transfer sites and reuse and recycling facilities for material removed from upon request from Owner’s Representative.

1.5 QUALITY ASSURANCE

.1 Convene pre-installation meeting one week prior to beginning work of this section to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with building subtrades.

1.6 SITE CONDITIONS

.1 In all circumstances ensure that demolition work does not adversely affect adjacent water courses groundwater and wildlife, or contribute to excess air and noise pollution.

.2 Do not dispose, of waste or volatile materials such as mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.

.3 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.

.4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

1.7 EXISTING CONDITIONS

.1 Prior to start of any major demolition work, remove contaminated or hazardous materials as defined in this section.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PREPARATION

.1 Inspect site with Owner’s Representative and verify extent and location of items designated for removal, disposal, alternative disposal and recycling.

.2 Notify and obtain approval of utility companies before starting demolition.

3.2 REMOVAL OPERATIONS

.1 Remove items as defined in Section 1.2.

3.3 PROTECTIVE EQUIPMENT/PROCEDURES

.1 For asbestos abatement, refer to Section 02 82 00.02.

.2 For lead paint removal operations, protective equipment and clothing to be worn by workers and visitors in work area, including:

.1 Respirator - NIOSH approved and equipped with replaceable P100 HEPA filter cartridges, acceptable to NL Labour Relations and NL OSHA. Respirator must be suitable for the type and level of lead dust and mould spore exposure in the work area. Provide sufficient filters so workers can install new filters following disposal of used filters and before re-entering contaminated areas. Workers must not have facial hair that affects the seal between the respirator and face.

.2 Gloves and eye protection.

.3 Disposable protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.

.4 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead/mould contaminated materials. Upon completion of lead/mould abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area.

.5 Eating, drinking, chewing and smoking must not be permitted in the work area. Workers must wash hands and face when leaving the work area.

.6 Workers must be trained in hazards of lead/mercury and mould exposure, personal hygiene, work procedures and the proper use of respirators. Provide proof to Departmental Representative prior to work.

.3 Use procedures and equipment required to limit occupational and environmental exposure to lead when lead-containing paint is removed. Minimum mitigation procedures are defined in the document “Guideline for Lead on Construction Projects, 2011”, published by Ontario’s Ministry of Labour’s Occupational Health and Safety Branch. Note that the Departmental Representative reserves the right to enforce the use of full enclosures during disturbance of any lead paint, in the event the Contractor’s methods for removing the paint involve abrasive blasting or the use of power tools without an effective dust collection system. Minimum requirements for full enclosures related to lead paint remediation are defined in the document “Guideline for Lead on Construction Projects, 2011”, published by Ontario’s Ministry of Labour’s Occupational Health and Safety Branch.

PART 1 - GENERAL

1.1 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.

.4 Review the HAZMAT report appended to the specifications with respect to hazardous materials known to existing on the site (asbestos, lead paint, etc.). Abide by all Regulatory bodies (including Provincial OHS) during removal, handling and disposal of hazardous building materials. Contractor responsible for all costs under this lump sum contract.

1.2 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 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 WORK

.1 Comply with Asbestos Abatement Regulations, Latest Edition.

1.2 SECTION INCLUDES

.1 Removal of all spray or trowel-applied asbestos-containing material.

.2 Removal of friable and non-friable materials containing asbestos.

.3 Use of power tools that are fitted with dust collectors equipped with a HEPA filter to cut, shape, grind, drill, scrape, or abrade manufactured products containing asbestos.

1.3 REFERENCES

.1 Codes and standards referenced in this section refer to the latest edition thereof.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.205, Sealer for Application to Asbestos-Fibre-Releasing Materials.

1.4 DEFINITIONS

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Amended Water: Water with a non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): Materials identified under Existing Conditions (Article 1.7), including fallen materials and settled dust.

.4 Asbestos Work Area: Area where actual removal, sealing and enclosure of spray or trowel-applied asbestos-containing materials takes place.

.5 Authorized Visitors: Building Owner, Asbestos Abatement Consultant or designated representative, and persons representing regulatory agencies.

.6 Friable Material: Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

.7 Occupied Area: Any area of the building or work site that is outside the Asbestos Work Area.

.8 Polyethylene sheeting sealed with tape: Polyethylene sheeting of type and thickness specified sealed with tape along all edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide a continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through the sheeting into a clean area.

.9 Glove Bag: Prefabricated glove bag as follows:

.1 Minimum thickness 0.25 mm (10 mil) polyvinyl-chloride bag.

.2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.

.3 Equipped with reversible double-pull double throw zipper on top.

.4 Straps for sealing ends around pipe.

.5 Must incorporate internal closure strip if it is to be moved or used in more than one specific location.

.10 DOP Test: A testing method used to determine the integrity of the Negative Pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.

.11 Sprayer: Garden reservoir type sprayer or airless spray equipment capable of producing a mist or fine spray. Must be appropriate capacity for scope of work.

.12 Negative pressure: A system that extracts air directly from work area, filters such extracted air through a High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building. This system shall maintain a minimum pressure differential of 5 Pa relative to adjacent areas outside of work areas, be equipped with an alarm to warn of system breakdown, and be equipped with an instrument to continuously monitor and automatically record pressure differences.

.13 Airlock: A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 2 m apart.

.14 Curtained doorway: An arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows: Place two overlapping sheets of polyethylene over an existing or temporarily framed doorway, secure each along the top of the doorway, secure the vertical edge of one sheet along one vertical side of the doorway, and secure the vertical edge of the other sheet along the opposite vertical side of the doorway. Reinforce free edges of polyethylene with duct tape and weight the bottom edge to ensure proper closing. Each polyethylene sheet shall overlap openings not less than 1.5 m on each side.

.15 Competent person: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.

.3 Has knowledge of all potential or actual danger to health or safety in the work.

.16 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

1.5 SUBMITTALS

.1 Before commencing work:

.1 Obtain from the appropriate agency and submit to Owner’s Representative all necessary permits for transportation and disposal of asbestos waste. Ensure that dump operator is fully aware of hazardous nature of material being dumped, and proper methods of disposal. Submit proof satisfactory to Owner’s Representative that suitable arrangements have been made to receive and properly dispose of asbestos waste.

.2 Submit proof satisfactory to Owner’s Representative that all employees have had instruction on the hazards of asbestos exposure, respirator use, dress, use of showers, entry and exit from work areas, and all aspects of work procedures and protective measures. Supervisory personnel shall have attended an asbestos abatement course, of not less than two days duration, approved by the Owner’s Representative. Submit proof of attendance in the form of a certificate. Minimum of one Supervisor for every five workers.

.3 Submit layout of proposed enclosures and decontamination facilities to Owner’s Representative for review.

.4 Submit documentation including test results for sealer proposed for use.

.5 Submit Provincial and/or local requirements for Notice of Project Form.

.6 Submit proof of Contractor’s Asbestos Liability Insurance.

.7 Submit proof satisfactory to the Owner’s Representative that all employees have respirator fitting and testing. Workers must be fit-tested with the respirator that is personally issued.

.8 Submit Workplace Health, Safety and Compensation Commission status and transcription of insurance.

.9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets for chemicals or materials including but not limited to the following:

.1 encapsulants;

.2 amended water;

.3 slow-drying sealer.

1.6 REGULATORY REQUIREMENTS

.1 Comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among those requirements or with these specifications the more stringent requirement applies. Comply with regulations in effect at the time the work is performed.

.2 Follow Newfoundland Regulation of the Occupation Health and Safety Act, Asbestos Abatement Regulations, Latest Edition. All work as defined under this section must be completed by a “Qualified Asbestos Abatement Contractor” (registered with the Government of Newfoundland and Labrador)

.3 Follow regulations for the transport of asbestos waste, specifically the Transportation of Dangerous Goods Act, latest edition.

.4 Follow regulations for the disposal of asbestos waste, specifically Waste Management Regulations and Waste Material Disposal Areas Regulations.

1.7 EXISTING CONDITIONS

.1 Information contained in the hazmat report is for general information only and is not necessarily representative of all asbestos containing materials covered within the scope of this project.

.2 Materials believed to contain asbestos encountered during the execution of work, not contained in the hazmat report, is to be removed by the Contractor at no additional contract cost. This includes materials concealed behind walls or other inaccessible areas noted in the hazmat report. For the purposes of this contract, asbestos has been confirmed or is suspected to be present as follows:

.1 In the roofing shingles, underlying building paper and mastic material at roofing penetrations. Refer to the hazmat report for documented concentrations of chrysotile asbestos in the shingles.

.2 All transite board material encountered inside/outside the buildings.

.3 Any fire rated doors, piping insulation (concealed behind walls or in underground systems) or cement compound at pipe joins is to be assumed as containing asbestos.

1.8 INSTRUCTION AND TRAINING

.1 Before commencing work, provide to the Owner’s Representative satisfactory proof that every worker has had instruction and training in the hazards of asbestos exposure, in personal hygiene including dress and showers, in entry and exit from the Asbestos Work Area, in all aspects of work procedures including glove bag procedures, and in the use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, at a minimum:

.1 Proper fitting of the equipment.

.2 Inspection and maintenance of the equipment.

.3 Disinfecting of the equipment.

.4 Limitations of the equipment.

.3 Instruction and training must be provided by a competent, qualified person.

.4 Supervisory personnel to complete required training.

1.9 WORKER PROTECTION

.1 Protective equipment and clothing to be worn by workers while in the Asbestos Work Area includes:

.1 Respirator equipped with HEPA filter cartridges, personally issued to the worker and marked as to efficiency and purpose, and acceptable to the Provincial Authority having jurisdiction as suitable for the type of asbestos and the level of asbestos exposure in the Asbestos Work Area. If disposable type filters are used, provide sufficient filters so that workers can install new filters following disposal of used filters and before re-entering contaminated areas.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.

.2 Each worker shall:

.1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters that have been tested as satisfactory, clean coveralls and head covers before entering Equipment and Access Rooms or Asbestos Work Area . All street clothes, uncontaminated footwear, towels, and similar uncontaminated articles shall be stored in clean change room.

.2 Remove gross contamination from clothing before leaving work area then proceed to Equipment and Access Room. Place contaminated worksuits in receptacles for disposal with other asbestos - contaminated materials Clean outside of respirator with soap and water. Remove respirator; remove filters and wet them and dispose of filters in the container provided for the purpose; and wash and rinse the inside of the respirator. When not in use in the work area, store work footwear in Equipment and Access Room. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.

.3 Provide facilities for washing and/or showering when leaving Asbestos Work Area, which shall be used by every worker. Hot and cold water supply is to be provided in such a manner to allow workers to adjust water temperature during decontamination.

.4 Enter the unloading room from outside dressed in clean coveralls to remove waste containers and equipment from the Holding Room of the Container and Equipment Decontamination Enclosure system. No worker shall use this system as a means to leave or enter the work area.

.3 Workers shall not eat, drink, smoke or chew gum or tobacco at the work site except in established clean room.

.4 Workers shall be fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.

.5 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in 1.9 of this section.

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects the seal between the respirator and the face.

1.10 VISITOR PROTECTION

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing and respirators.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from work areas.

1.11 NOTIFICATION

.1 Not later than ten (10) working days before commencing work on this project notify the Occupational Health and Safety Division in writing as per Regulation 194/91, Section 34 Sub-Section (7). Provide telephone notification immediately prior to start of work.

.2 Notify Sanitary Landfill site.

.3 Inform all sub-trades of the presence of friable asbestos-containing materials identified in the Existing Conditions.

.4 Submit to the Owner’s Representative a copy of all notifications prior to the start of work.

PART 2 PRODUCTS

2.1 MATERIALS

.1 All materials and equipment brought to work site must be in good condition and free of asbestos, asbestos debris, and fibrous materials. Disposable items must be of new materials only.

.2 Polyethylene: Minimum 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.

.3 Tape: Fibreglass reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.

.4 Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by Owner's Representative, mixed with water in a concentration to provide adequate penetration and wetting of asbestos-containing material.

.5 Asbestos waste containers: Metal or fibre - type acceptable to dump operator with tightly fitting covers and 0.15 mm minimum thickness sealable polyethylene liners. Labelling requirements: Affix a pre-printed cautionary asbestos warning, that is clearly visible when ready for removal to disposal site.

.6 Encapsulants : Type 2 surface film forming type Class A water based conforming to CAN/CGSB-1.205, ULC listed.

.7 Glove bag: Acceptable materials include safe-T-strip products in configuration suitable for work, or alternative material approved by addendum during the tendering period in accordance with the Instructions to Tenderers. Glove bags intended for use in more than one location must be equipped with a reversible, double-pull, double-throw zipper on the top and at approximately the mid-section of the bag.

.8 Slow drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for the purpose of trapping residual asbestos fibres. Sealer shall have flame spread and smoke developed rating less than 50

PART 3 EXECUTION

3.1 PREPARATION

.1 Work Areas:

.1 Clean proposed work area using, where practicable, HEPA vacuum cleaning equipment. If not practicable, use a wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum equipment.

.2 If required by Provincial OHS, put negative pressure system in operation and operate continuously from the time the first polyethylene is installed to seal openings until final completion of the work including final cleanup. Provide continuous monitoring of pressure difference using an

automatic recording instrument. The negative pressure system may be waived if deemed not necessary by Provincial OHS.

.3 Seal off all openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.

.4 Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Cover floors first so that polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.

.5 Build airlocks at all entrances to and exits from work area so that work area is always closed off by one curtained doorway when workers enter or exit.

.6 At each access to work areas install warning signs cautioning of asbestos.

.7 Remove ceiling - mounted objects such as lights, partitions, other fixtures not previously sealed off, and other objects that interfere with asbestos removal, as directed by Owner’s Representative. Use localized water spraying during fixture removal to reduce fibre dispersal.

.8 Maintain emergency and fire exits from work area, or establish alternative exits satisfactory to Provincial Fire Commissioner.

.9 Where application of water is required for wetting asbestos-containing materials, ensure electrical power is hut down to building.

.2 Worker Decontamination Enclosure System:

.1 Worker Decontamination Enclosure System shall comprise an Equipment and Access Room, a Wash Area Room, and a Clean Room, as follows:

.1 Equipment and Access Room: Build an Equipment and Access Room between Wash Area Room and work area, with two curtained doorways, one to the Wash Area Room and one to work area . Install portable toilet, waste receptor, and storage facilities for workers' shoes and any protective clothing to be reworn in work area. The Equipment and Access Room shall be large enough to accommodate specified facilities, any other equipment needed, and at least one worker allowing him /her sufficient space to undress comfortably.

.2 Wash Area Room: Build a Wash Area Room between the Clean Room and Equipment and Access Room, with two curtained doorways, one to the Clean Room and one to Equipment and Access Room. Provide a constant supply of

hot and cold or warm water. Provide piping and connect to water sources and drains. Pump waste water through a 5 micrometre filter system acceptable to Owner’s Representative before directing into drains. Provide soap, clean towels , and appropriate containers for disposal of used respirator filters.

.3 Clean Room: Build a Clean Room between the Wash Area Room and clean areas outside of enclosures, with two curtained doorways, one to outside of enclosures and one to Wash Area Room. Provide lockers or hangers and hooks for workers‘ street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install a mirror to permit workers to fit respiratory equipment properly.

.3 Container and Equipment Decontamination Enclosure System:

.1 Container and Equipment Decontamination Enclosure System consists of a Staging Area within the work area, a Holding Room, and an Unloading Room. The purpose of this system is to provide a means to decontaminate waste containers, scaffolding, waste and material containers, vacuum and spray equipment, and other tools and equipment for which the Worker Decontamination Enclosure System is not suitable.

.1 Staging Area: Designate a Staging Area in the work area for gross removal of dust and debris from waste containers and equipment, labelling and sealing of waste containers, and temporary storage pending removal to Washroom. Staging Area shall have a curtained doorway to the Washroom.

.2 Holding Room: shall be of sufficient size to accommodate at least two waste containers and the largest item of equipment used.

.3 Unloading Room: Build an Unloading Room between the Holding Room and outside, with two curtained doorways, one to the Holding Room and one to outside.

.4 Construction of Decontamination Enclosures:

.1 Build suitable framing for enclosures or use existing rooms where convenient, and line with polyethylene sheeting sealed with tape.

.2 Build curtained doorways between enclosures so that when people move through or when waste containers and equipment are moved through a doorway, one of the two closures comprising the doorway always remains closed.

.5 Maintenance of Enclosures:

.1 Maintain enclosures in tidy condition.

.2 Ensure that barriers and polyethyene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

.3 Visually inspect enclosures at the beginning of each working period.

.4 Use smoke methods to test effectiveness of barriers when directed by Owner’s Representative.

.6 Asbestos Abatement work shall not commence until:

.1 Arrangements have been made for disposal of waste.

.2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.

.3 Tools, equipment , and materials waste containers are on hand.

.4 Arrangements have been made for building security.

.5 Warning signs are displayed where access to contaminated areas is possible.

.6 All notifications have been completed and other preparatory steps have been taken.

3.2 SUPERVISION

.1 A minimum of one Supervisor for every five workers is required. Refer to Asbestos Abatement Regulations for definition and training of supervisor.

.2 An approved Supervisor must remain within the Asbestos Work Area at all times during the disturbance, removal, or other handling of asbestos-containing materials.

3.3 ASBESTOS REMOVAL

.1 Before removing asbestos:

.1 Prepare site.

.2 Spray asbestos material with water containing the specified wetting agent, using airless spray equipment capable of providing a "mist" application to prevent release of fibres. Saturate the asbestos material sufficiently to wet it to the substrate without causing excess dripping. Spray the asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.

.2 Remove the saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed pack

the material in sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.

.3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure that containers are removed from the Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.

3.4 PIPE INSULATION REMOVAL USING GLOVE BAG

.1 Place tools necessary to remove insulation in tool pouch. Wrap the bag around pipe and close zippers. Seal bag to pipe with cloth straps.

.2 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.

.3 Insert nozzle of a garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.

.4 When glove bags are intended for use at more than one location: After wash-down and application of sealer, seal off waste in lower section of bag using zipper at mid-section of bag. Remove air from top section of bag through the elasticized valve using a HEPA vacuum. Remove bag from pipe, reinstall in new location, and reseal to pipe prior to opening the lower section of the bag. Repeat stripping operation.

.5 If bag is to be moved along pipe, first remove air from top section through the elasticized valve using a HEPA vacuum. Next loosen straps, move bag, re-seal to pipe using double-pull zipper to pass hangers. Repeat stripping operation.

.6 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through the elasticized valve using a HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.

.7 After removal of bag ensure that pipe is free of all residue. Remove all residue using HEPA vacuum or wet cloths. Ensure that surfaces are free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow-drying sealer to seal in any residual fibres.

.8 Upon completion of work shift, cover exposed ends of remaining pipe insulation with polyethelene taped in place.

3.5 FINAL CLEANUP

.1 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum all visible asbestos-containing particles observed during cleanup, immediately, using HEPA vacuum equipment.

.2 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.

.3 Work areas, Equipment and Access Room, Wash Area Room, and other enclosures that may be contaminated shall be included in the clean-up.

.4 Sealed waste containers and all equipment used in the work shall be included in the cleanup and shall be removed from work areas, via the Container and Equipment Decontamination Enclosure System, at an appropriate time in the cleaning sequence.

3.6 AIR MONITORING

.1 If required by the Regulators, air samples will be taken on a daily basis both inside and outside of work area enclosure in accordance with Asbestos Abatement Regulations (personal, perimeter and clearance) and conforming to applicable NIOSH sampling protocol. (ie: NIOSH 7400)

3.7 INSPECTION

.1 Deviation from the Asbestos Abatement Regulations is not accepted without prior approval of the governing authority. Any deviation from these requirements that have not been approved in writing by the Owner’s Representative and the governing authority may result in a stoppage of work, at no cost to the Owner.

.2 The Owner’s Representative is empowered to inspect adherence to specific procedures and materials, and to inspect for final

cleanliness and completion. Additional labour or materials expended by the Contractor to provide performance to the level specified shall be at no additional cost.

.3 The Owner’s Representative is empowered to order a shutdown of work when a leakage of asbestos from the Asbestos Work Area has occurred or is likely to occur. Additional labour or materials expended by the Contractor to provide performance to the level specified shall be at no additional cost.

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.

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 (beneath the granular base courses) 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, 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.

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/m^2.
.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: same as 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.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Place two (2) layers of geotextile material as noted on the drawings.

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

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

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

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

.6 Join successive strips of geotextile by sewing.

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

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

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

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

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 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.

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	% Passing

Designation	
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

.8 Each layer of granular base shall be bladed shaped and compacted as necessary to produce the required profile and cross-section. The finished surface shall not deviate at any place on a 3 m straight edge by more than 10mm for Class “A” and Class "B". The upper layer shall be maintained to these tolerances and to the specified density until compaction of the contract. This may require keeping the moisture content at the appropriate value during periods of dry weather in addition to regarding and

re-compacting as frequently as may be deemed necessary by the Departmental Representative.

.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 GENERAL

.1 This is a lump sum contract. Contractor responsible to visit site and review existing sounding/topographic data to confirm all quantities to meet the lines and grades shown on the drawings.

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.

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 (sized as per drawings), in categories specified, well graded within each category.

.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 as indicated on the drawings, in categories specified, 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. Contractor should realize the large distance required to place the filter stone out into the water, supply necessary equipment to complete as shown on drawings.

.2 Place filter stone in layers as indicated on the drawings.

.3 Side slopes as indicated 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.

.5 The Contractor is to provide cross sections to the Departmental Representative at 10 metre stations to show that lines and grades have been achieved as shown on the drawings.

3.4 ARMOUR STONE

.1 Place armour stone to lines, grades and dimensions indicated on the drawings. Contractor should realize the large distance required to place the armour stone out into

the water, supply necessary equipment to complete as shown on drawings.

.2 Dumping of armour stone will not be permitted. Each stone will be lifted and individually placed.

.3 Side slopes as indicated 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.

.6 Contractor to provide cross sections to the Departmental Representative at 10 metre stations to show that lines and grades have been achieved as shown on the drawings.

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 +/-300 mm.

Appendix A:

HAZMAT Report

Hazardous Building Material Assessment

Former Fish Plant and Storage Building
Adjacent to DFO Small Craft Harbour

Sandy Cove, NL

Submitted to:

Fisheries and Oceans Canada
4th Floor, John Cabot Building, 10 Barter's Hill
P.O. Box 5667
St. John's, NL, A1X 5X1

Submitted by:

AFN Engineering Inc.
29 Brad Gushue Crescent
St. John’s, NL, A1H 0A3

July, 2017

Executive Summary

AFN Engineering Inc. (AFN) was retained by Fisheries and Oceans Canada (DFO) to conduct a Hazardous Building Material assessment of the former fish plant and storage building located adjacent to DFO's Small Craft Harbour marine infrastructure in Sandy Cove, NL. The fish plant is believed to have been built in 1960 as a community stage, with the adjoining ice house structures and storage building built sometime shortly after the original development of the plant.

The purpose of the assessment was to identify the presence of hazardous building materials in the building, to ensure the materials are properly handled and disposed during future facility demolition activities.

A summary of the findings is included below:

- Asbestos was detected in the roofing shingles on the fish plant. Asbestos was also detected in the transite material in amongst the collapsed rubble on the west side of the fish plant. The amount of transite material associated with the fish plant is unknown, since it was unsafe to enter the building. Due to the age of the site, it is noted that there is potential for asbestos to be present in areas that were not sampled, including but not limited to, electrical and mechanical components and insulators such as wiring and gaskets inside electrical panels, electronic and/or mechanical equipment, hidden fire rated building materials, and underground infrastructure and piping.

- There are fluorescent lights (with ballasts) in the fish plant. The ballast codes could not be checked since the building was not safe to enter. During future demolition activities, the ballast codes should be checked to determine the presence/absence of PCBs.

- Paint samples collected from both the fish plant and the storage building indicated that any lead based paint adhered to building materials is likely non-leachable and can be disposed of in the regular waste stream.

- There is equipment remaining in the cold storage rooms of the storage building. Should refrigeration equipment be uncovered that potentially contains ozone depleting substances, it should be removed by an approved contractor in accordance with the most recent NL Halocarbon Regulations and the Federal Halocarbon Regulations.

- There is mould in the storage building (and likely mould in the fish plant, although this was not confirmed since the building was not safe to enter). During future demolition activities workers should don PPE when working inside the structures.

- There is a lot of rubble around the site buildings including potential household hazardous waste products (cleaners, paint cans, etc.), treated timbers, plastics, etc. Disposal of these items should be to a hazardous waste facility or otherwise in accordance with the NL Waste Management Regulations" under the "Waste Management Act".

As a general note, the two (2) buildings that were assessed are considered to be structurally unsafe and should be torn down. The fish plant concrete floor has completely collapsed and the roof is caving-in (essentially, the entire fish plant building is about to fall down). There has been an attempt to barricade the building, but there are numerous entry points where individuals (including kids) can get into the building beneath the main floor slab around the dilapidated posts that are barely holding up the building. There is also a pile of rubble on the west side of the fish plant and in amongst the rubble is asbestos transite material.

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List of Tables

Appendices

1.0 Introduction

AFN Engineering Inc. (AFN) was retained by Fisheries and Oceans Canada (DFO) to conduct a Hazardous Building Material assessment of the former fish plant and storage building located adjacent to DFO's Small Craft Harbour (SCH) marine infrastructure in Sandy Cove, NL. The fish plant is believed to have been built in 1960 as a community stage, with the adjoining ice house structures and storage building built sometime shortly after the original development of the plant.

The purpose of the assessment was to identify the presence of hazardous building materials in the building, to ensure the materials are properly handled and disposed during future facility demolition activities.

A site plan, building elevations and section views through the adjacent SCH wharf are included in **Appendix A**. Photographs of the buildings are included in **Appendix B**. The Laboratory Certificates associated with the sampling program are included in **Appendix C**.

The building descriptions are as follows:

<u>Former fish plant</u>
The former fish plant covers a footprint area of approximately 30.533m long by 12.266m wide. There are several ice sheds on the west side of the fish plant which are connected by a walkway. On the northwest side of the fish plant, there is a pile of rubble which appears to have been remnants of a storage shed or ice house. The fish plant is a wood frame structure with an asphalt shingled roof. The foundation consists of untreated timber posts supporting a wooden floor (beams/joists/decking). There is a concrete floor poured directly atop the wooden decking, which covers most of the building.

Note that the fish plant was not entered during the assessment due to safety concerns, so observations were limited to viewing from the doors and window locations.

<u>Storage building</u>
The storage building cover a footprint area of approximately 20.265m by 20.265m. There is an attached shed which measures 3.547m by 3.897m. The building is a wood frame structure with concrete foundation walls and a concrete floor. The building has two (2) levels and overhead doors in the front (south side). The first floor level has several cold storage rooms and the second level appears to have been an office space. The building contains painted plywood covered by siding and an asphalt shingled roof. There are remnants (only concrete remaining) of a shed on the south side near the entrance which measures 5.072m by 5.5m.

Adjacent marginal wharf

The adjacent marginal wharf is owned by DFO. The length of the wharf is approximately 30.025m. The width of the wharf in front of the fish plant varies from 7.62m to 9.15m. The wharf is constructed of untreated round timber cribs (rock filled), with a reinforced concrete deck. The wharf has collapsed and is in an overall state of disrepair. There is a timber wheelguard restricting vehicle access on the north and south ends.

2.0 Scope of Work

The scope of work for this project consisted of the following:

- Conduct a walk-through inspection of the building to identify the potential and/or actual presence of hazardous building materials, including:
  - Asbestos-Containing Materials (ACMs)
  - Lead based paint (LBP)
  - Mercury based thermostats
  - Polychlorinated biphenyls (PCBs)
  - Sources of ozone depleting substances (ODSs)
  - Other potentially hazardous building materials
- Inspect the Site for evidence of areas that are impacted by suspected visible mould growth.
- Sampling and laboratory testing of suspected ACMs to confirm the presence or absence of asbestos fibres.
- Sampling and laboratory testing of paint to determine concentrations of lead, mercury and PCBs.
- Review of accessible fluorescent lights for PCB containing light ballasts.
- Review of the Site for the presence of potential sources of ODSs and other hazardous materials.
- Prepare a written report documenting the methodologies and findings of the hazardous building material assessment.

3.0 Hazardous Material Assessment

The Regulatory framework and results of the sampling program are outlined in the following sections. Note that all samples were submitted to Maxxam Analytics Inc. (Maxxam) in St. John's, Newfoundland. Maxxam are a Canadian Association for Laboratory Accreditation (CALA) certified laboratory. Maxxam has an in-house Quality Assurance (QA) program that consists of analyzing matrix spike, spiked blank, and method blank samples. The results of the matrix spike and blank samples are compared to established Quality Control (QC) limits to assess the quality of the results.

3.1 Asbestos Containing Materials (ACMs)

General

ACMs are regulated by the Asbestos Abatement Regulations, 1998 under the Occupational Health and Safety Act (O.C. 98-730) in Newfoundland and Labrador. These regulations provide safe handling procedures for ACMs to minimize exposure to airborne asbestos fibres. Materials containing greater than 1% asbestos by dry weight is considered asbestos material.

Assessment

Suspect asbestos containing materials were identified in the building. The suspect areas were identified as insulation, roofing shingles and transite wall material.

A total of six (6) samples were collected for analysis. All samples were collected by removing approximately 6 cm^2 of materials (where possible) and placing the sampled materials in a ziploc plastic bag.

The results of the asbestos analysis are summarized in Table 1.

Table 1: Summary of Asbestos Sampling

Structure	Sample ID	Location	Condition	Results*
Fish plant	Building 1-A-1	Wall board (east side wall)	Poor condition	Not detected
Fish plant	Building 1-A-2	Transite material in amongst rubble on west side of building	Poor condition (in amongst rubble)	**12% chrysotile asbestos**
Fish plant	Building 1-A-3	Shingle on fish plant	Poor condition	**2% chrysotile asbestos**
Storage Building	Building 2-A-1	Wall insulation around overhead door (foam)	Poor condition	Not detected
Storage Building	Building 2-A-2	Shingle on roof of shed attached to main building	Poor condition	Not detected
Storage Building	Building 2-A-3	Wall insulation around cold storage room (foam)	Poor condition	Not detected

***Shading and bold indicates asbestos containing material (ACM) 1% by volume or greater.**

As noted in Table 1, the shingles on the roof of the fish plant and the transite material in amongst the rubble on the west side of the fish plant contained asbestos.

It is noted that there is potential for asbestos to be present in areas that were not sampled, including but not limited to, electrical and mechanical components and insulators such as wiring and gaskets inside electrical panels, electronic and/or mechanical equipment, hidden fire rated building materials, and underground infrastructure and piping. The main roof of the storage building was not accessible (due to height restrictions) and in this regard, no samples of the roofing compound (or compounds at roofing penetrations) were taken from either the storage building or the fish plant.

3.2 Polychlorinated Biphenyls (PCBs)

General

PCBs are commonly associated with dielectric fluids within electrical equipment such as transformers, fluorescent light ballasts and capacitors manufactured in Canada prior to approximately 1980. The federal Environment Contaminants Act (1976) prohibited the use of PCBs in heat transfer equipment installed after September 1, 1977 and in transformers and capacitors installed after July 1, 1980.

PCB containing equipment is considered hazardous waste upon removal for the purpose of disposal. PCB wastes were previously regulated by the federal Storage of PCB Material Regulations (SOR/92-507) under the Canadian Environmental Protection Act and the provincial

Storage of PCB Waste Regulations, 2003 under the Environmental Protection Act. The Storage of PCB Material Regulations have been repealed by new PCB Regulations (SOR/2008-273).

Assessment

Fluorescent light ballasts were identified throughout the fish plant building. The ballast codes could not be checked for the presence/absence of PCBs because the building was not safe to enter.

Both the paint sample collected from the interior walls of the storage building and the exterior door frames of the fish plant building did not contain PCBs (see Appendix C).

3.3 Lead

General

There are no provincial guidelines available to regulate the concentration of lead in paint. In 1976, the Hazardous Materials Product Act – Liquid Coating established the maximum acceptable limit for amount of lead in interior paint at 0.5% (equivalent to 5000 mg/kg). An industry agreement excluded it from exterior paint in 1990. Subsequent to this, the Surface Coating Materials Regulations were promulgated (in 2005), reducing the allowable lead content of paints to 0.06% (600 mg/kg). This level was later reduced in 2009 to 0.009% (90 mg/kg).

Samples in excess of 5000 mg/kg of lead are subject to leachate extraction analysis. The Transportation of Dangerous Goods (TDG) Regulations, the Export and Import of Hazardous Waste and Hazardous Recyclable Materials (EIHW&HRM) Regulations apply to material with a lead leachate concentration in excess of 5mg/L, and therefore require regulated disposal.

Assessment

Four (4) paint samples were collected during the site visit. Approximately 5g of sample was collected at each sample location, as required by the analytical laboratory. The results of the analysis is included in Table 2.

Table 2: Summary of Paint Sampling – Lead

Building	Sample ID	Description	Condition	Lead Concentration (mg/kg)
Fish plant	Building 1 – P-1	Around the exterior door frames of the fish plant	Poor condition – peeling/flaking	57 mg/kg
Storage Building	Building 2 – P1	Exterior paint on siding	Poor condition – peeling/flaking	**120 mg/kg**
Storage Building	Building 2 – P2	Interior paint on concrete surfaces (composite sample throughout)	Poor condition – peeling/flaking	**190 mg/kg**
Storage Building	Building 2 – P3	Interior paint on wall surfaces (composite sample throughout)	Poor condition – peeling/flaking	**340 mg/kg**

* Shading indicates concentrations exceed guidelines

Notes:

1. Surface Coating Materials Regulations for lead in paint is 90 mg/kg. The TDG and EIHW&HRM regulations for lead in leachate is 5 mg/L.
2. Bold and shading indicate levels of lead leachate > 90mg/kg.

The documented concentrations of lead in paint were less than 5,000 mg/kg at each sample location, indicating that the paint is likely non-leachable and permitted disposal in the regular waste stream.

3.4 Mercury

General

There are no provincial guidelines available to regulate the concentration of mercury in paint. The management of mercury is regulated under the Surface Coating Materials Regulations, 2005 under the Hazardous Products Act (0.001% or 10 mg/kg) to determine the maximum acceptable concentration of mercury in paint. For comparison purposes, the 2006 Canadian Council of Ministers of the Environment Canadian Environmental Quality Guidelines (CCME-CEQG) for mercury in soil at commercial sites have been used (24 mg/kg).

Samples in excess of 24 mg/kg (commercial) of mercury are subject to leachate extraction analysis. The Transportation of Dangerous Goods Regulations, the Export and Import of Hazardous Waste and Hazardous Recyclable Materials Regulations apply to material with a mercury leachate concentration in excess of 0.1mg/L, and therefore require regulated disposal.

Assessment

Two (2) paint samples were collected during the site investigation for mercury analysis. At each sample location, approximately 5g of sample was collected as required by the analytical laboratory. The results of the analysis is included in Table 3.

The results of the analysis are included in Table 3.

Table 3: Summary of Paint Sampling – Mercury

Building	Sample ID	Description	Condition	Mercury Concentration (mg/kg)
Fish plant	Building 1 – P-1	Around the exterior door frames of the fish plant	Poor condition – peeling/flaking	1.2 mg/kg
Storage Building	Building 2 – P2	Interior paint on concrete surfaces (composite sample throughout)	Poor condition – peeling/flaking	3.9 mg/kg

* Shading indicates concentrations exceed guidelines

Notes:

1. Surface Coating Materials Regulations for mercury in paint is 10 mg/kg. The TDG and EIHW&HRM regulations for lead in leachate is 0.1 mg/L.
2. Bold and shading indicate levels of lead leachate > 10mg/kg.

Since the results of the analysis were less than 10mg/kg for mercury, the paint is considered to be non-mercury based.

3.5 Ozone Depleting Substances (ODSs)

General

Ozone depleting substances are regulated under the provincial Halocarbon Regulations, 2005 under the Environmental Protection Act and the Ozone-depleting Substances Regulations, 1998 under the Canadian Environmental Protection Act, 1999. The federal regulations were amended in 2001, 2002 and 2004. The Federal Halocarbon Regulations 2003 under the Canadian Environmental Protection Act, 1999 applies to refrigeration and air-conditioning systems on federal government properties. Halocarbon containing equipment should be serviced, charged, and/or properly disposed of by a licensed contractor. An equipment service log should be maintained for each piece of equipment. Halocarbon containing equipment with a capacity greater than 19 kW requires an annual leak testing.

Assessment

There is equipment remaining in the cold storage rooms of the storage building (see pictures in Appendix B). Should refrigeration equipment be uncovered that potentially contains ozone depleting substances, it should be removed by an approved contractor in accordance with the most recent NL Halocarbon Regulations and the Federal Halocarbon Regulations.

3.6 Mould

General

There are currently no regulations in Canada related specifically to mould in buildings. There have been no exposure limits established for concentrations of mould in air. However, a safe work environment is mandated in Canada by federal and provincial occupational health and safety acts and related regulations. In addition, Health Canada outlines investigation methods and guidelines for mould in private and public buildings:

- "Residential Indoor Air Quality Guidelines: Moulds", Health Canada, 2007;
- "Fungal Contamination in Public Buildings: Health Effects and Investigation Methods", Health Canada, 2004; and
- "Indoor Air Quality in Office Buildings: A Technical Guide", Health Canada, Report of the Federal-Provincial Advisory Committee on Environmental and Occupational Health, 1995.

There are numerous resources for the investigation and remediation of mould. The following documents provide procedures for remediation of mould in buildings:

- "Mould Guidelines for the Canadian Construction Industry", Canadian Construction Association, 2004;
- "Fighting Mould – The Homeowners Guide", Canada Mortgage and Housing Corporation (CMHC), 2007; and
- "Should You Test the Air in Your Home for Mould?", CMHC, 2006.

Assessment

There is mould in the storage building (see pictures in Appendix B). There is likely mould in the fish plant, although this was not confirmed since the building was not safe to enter. During future demolition activities workers should don PPE when working inside the structures.

3.7 Urea Formaldehyde Foam Insulation

General

UFFI was developed in Europe in the 1950s. It was used in Canada, primarily between 1977 and 1980, when it was banned from use under the federal Hazardous Products Act. To produce the urea formaldehyde foam, excess formaldehyde is added to the urea to ensure complete curing during the insulation process. Excess formaldehyde was given off within one to two days of injection during the curing process. If exposed to water or moisture, the UFFI may start to deteriorate, resulting in a release of formaldehyde gas.

Assessment

There was no evidence noted in the current investigation, to suggest that UFFI is present in the buildings. In this regard, no potential UFFI samples were collected.

3.8 Other

There is a lot of rubble around the site buildings including potential household hazardous waste products (cleaners, paint cans, etc.), treated timbers, plastics, etc. Disposal of these items should be to a hazardous waste facility or otherwise in accordance with the NL Waste Management Regulations" under the "Waste Management Act".

The buildings (particularly the fish plant) are considered structurally unsafe. There has been an attempt to barricade the buildings, however access can be gained quite easily.

The adjacent wharf (owned by DFO) was not considered as part of the current hazardous material assessment, but it is noted that this structure has collapsed and is in an overall state of disrepair.

4.0 Conclusions and Recommendations

- Asbestos was detected in the roofing shingles on the fish plant. Asbestos was also detected in the transite material in amongst the collapsed rubble on the west side of the fish plant. The amount of transite material associated with the fish plant is unknown, since it was unsafe to enter the building. Due to the age of the site, it is noted that there is potential for asbestos to be present in areas that were not sampled, including but not limited to, electrical and mechanical components and insulators such as wiring

and gaskets inside electrical panels, electronic and/or mechanical equipment, hidden fire rated building materials, and underground infrastructure and piping. All asbestos materials should be removed in accordance with the Asbestos Abatement Regulations, 1998 under the Occupational Health and Safety Act (O.C. 98-730) in Newfoundland and Labrador.

- There are fluorescent lights (with ballasts) in the fish plant. The ballast codes could not be checked since the building was not safe to enter. During future demolition activities, the ballast codes should be checked to determine the presence/absence of PCBs. In the event PCBs are present in the ballasts, they should be handled, transported and disposed of in accordance with the PCB Regulations (SOR/2008-273).

- Paint samples collected from both the fish plant and the storage building indicated that any lead based paint adhered to building materials is likely non-leachable and can be disposed of in the regular waste stream. To limit occupational exposure to lead dust, workers should don PPE when cutting/grinding or otherwise disturbing painted building materials.

- There is equipment remaining in the cold storage rooms of the storage building. Should refrigeration equipment be uncovered that potentially contains ozone depleting substances, it should be removed by an approved contractor in accordance with the most recent NL Halocarbon Regulations and the Federal Halocarbon Regulations.

- There is mould in the storage building (and likely mould in the fish plant, although this was not confirmed since the building was not safe to enter). During future demolition activities workers should don PPE when working inside the structures.

- There is a lot of rubble around the site buildings including potential household hazardous waste products (cleaners, paint cans, etc.), treated timbers, plastics, etc. Disposal of these items should be to a hazardous waste facility or otherwise in accordance with the NL Waste Management Regulations" under the "Waste Management Act". Soil samples would be required to determine potential impacts to site soils.

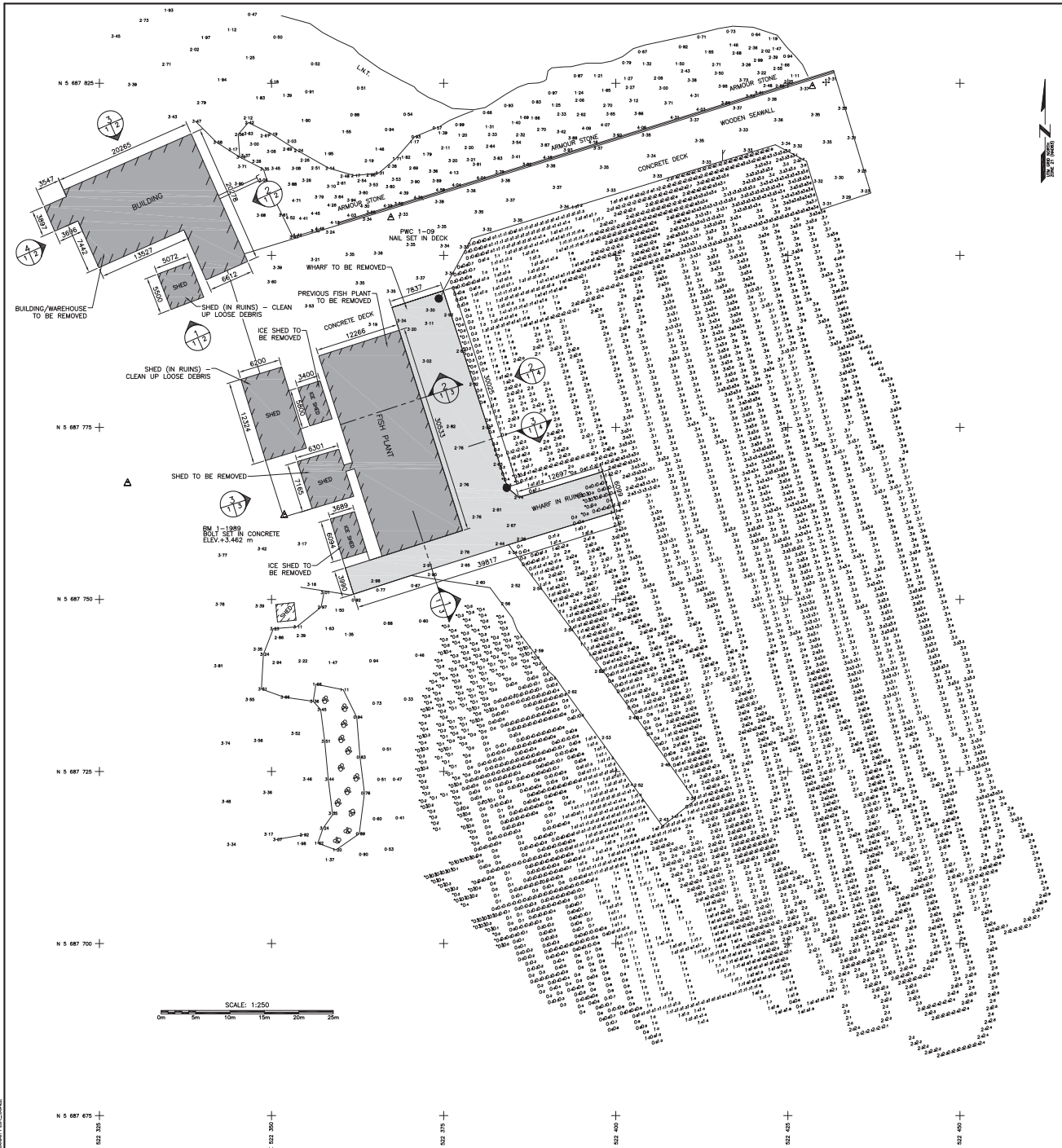
As a general note, the two (2) buildings that were assessed are considered to be structurally unsafe and should be torn down. The fish plant concrete floor has completely collapsed and the roof is caving-in (essentially, the entire fish plant building is about to fall down). There has been an attempt to barricade the building, but there are numerous entry points where individuals (including kids) can get into the building beneath the main floor slab around the dilapidated posts that are barely holding up the building. There is also a pile of rubble on the west side of the fish plant and in amongst the rubble is asbestos transite material.

5.0 Limitations

This report was prepared exclusively for the purposes, project and Site location outlined in the report. The report is based on information provided to, or obtained by AFN Engineering Inc. ("AFN") as indicated in the report, and applies solely to Site conditions existing at the time of the Site investigation. Although a reasonable investigation was conducted by AFN, AFN's investigation was by no means exhaustive and can not be construed as a certification of the absence of any contaminants from the Site. Rather, AFN's report represents a reasonable review of available information within an agreed work scope, schedule and budget. It is therefore possible that currently unrecognized contamination or potentially hazardous materials may exist at the Site, and that the levels of contamination or hazardous materials may vary across the Site. Further review and updating of the report may be required as local and Site conditions, and the regulatory and planning frameworks, change over time.

This report was prepared by AFN for the sole benefit of our Client (DFO). The material in the report reflects AFN's judgment in light of the information available to AFN at the time of preparation. Any use which a third party (eg., a party other than our Client) makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. AFN accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Appendix A
Figures



LEGEND

SYMBOLS

- AQUACULTURE
- ANCHOR BLOCK
- BOLLARD
- BORDICKLE
- 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
- 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 GAUGE/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 BREAKWEAK
- 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

NOTES

SURVEY PARTY CHIEF EDDIE BEARNS
SURVEY VESSEL ALUMINUM BOAT
SURVEY DATE(S) AUGUST 20,2016

SOUNDER TYPE: SINGLE TRANSDUCER
SOUNDER SETTING MIN/MST **VEL. OF SOUND** 1520 m/s
DEPTH GATE USED N/A **FRE. OF TRANS.** 210 kHZ

POSITIONING SYSTEM USED DGPS (WITH OTF)
LAND SURVEY POSITION BY DGPS (WITH OTF)

DATA TAPE/DISC(S) USED
CAD DRAWING FILE(S):

TIDAL REDUCTION SCHEME

OFFICE PROCESSOR EDDIE BEARNS
DATE OF PROCESSING SEPTEMBER 2016

MODE OF PLOTTING LEAST OF MINIMUM DEPTHS
MATRIX CELL WIDTH X LENGTH
REDUCTION OF MATRIX CELLS

CONTROL POINTS:

PL NAME	EASTING	NORTHING	CD ELEV	DESCRIPTION
BBC4088	523042.849	5688025.846		PROVINCIAL BRASS PLAQUE IN ROCK
BBC4087	522984.031	5687330.001		PROVINCIAL BRASS PLAQUE IN ROCK
PWC 1-09	523442.336	5688030.820		NAIL SET IN CONCRETE DECK
PWC 2-09	522625.582	5688049.701		NAIL SET IN CONCRETE DECK
BM 2-1989	522404.109	5688069.130	+2.330 m	BOLT SET IN LARGE BOULDER
BM 1-1989			+3.462 m	BOLT SET IN CONCRETE DECK

ALL SOUNDINGS & ELEVATIONS IN METRES.

ALL SOUNDINGS & ELEVATIONS REFERRED TO BM 1-1989 ELEV.+3.462 m (BOLT SET IN CONCRETE DECK) ESTABLISHED BY WATER LEVEL TRANSFER FROM SAVAGE COVE USING CHS BM 3-69 (ELEV.+1.253) ON AUG.01-02,1989.

SOUNDINGS TAKEN USING MAXSOUND 210 ECHO SOUNDER AND POSITIONED BY TRIMBLE DIFFERENTIAL GPS POSITIONING SYSTEM ON AUGUST 20,2016 BY PWSC 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 USING A SOUNDING BAR GRADUATED IN 1m INTERVALS.

ALL FIELD NOTES ARE IN SANDY COVE BOOK #106.

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.

STAMP

revisions | date

project | projet

SANDY COVE, NL

drawing | dessin

designed N.H. | concu
date JULY 6, 2017
drawn P.H. | dessine
date JULY 6, 2017
approved | approuve

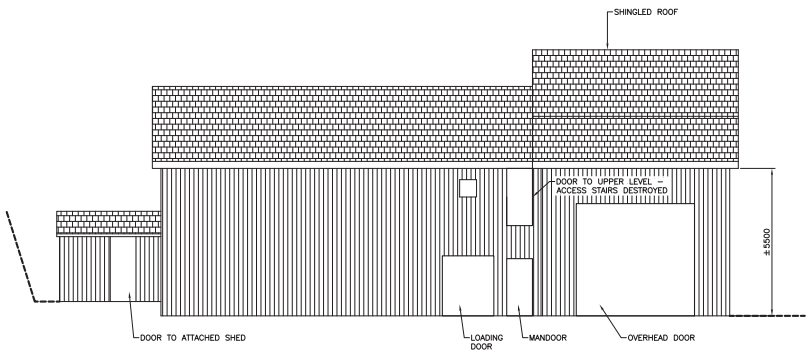
Tender | Soumission
DFO Project Manager
project number | no. du projet XXXX
drawing no. | no. du dessin C1

EDRM Document No. XXXX

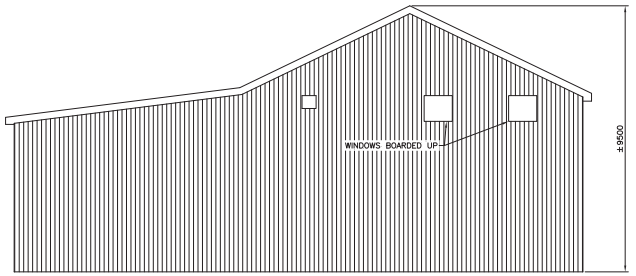
Plot Scale: PLOT_SCALE

NOTE:

1. BUILDING IS IN OVERALL STATE OF DISREPAIR AND ITS CONSIDERED STRUCTURALLY UNSAFE.



ELEVATION 1 (1 | 2)
SCALE: N.T.S.



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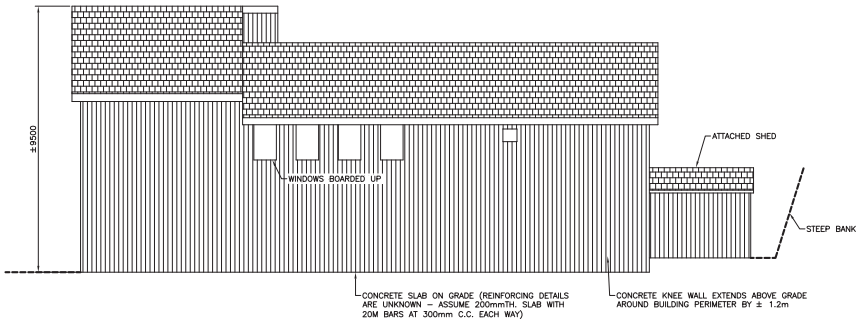
SCALE: N.T.S.



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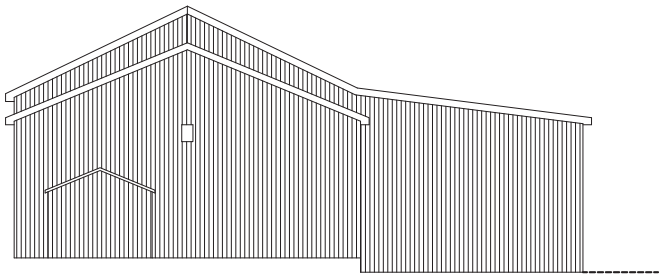
SCALE: N.T.S.



ELEVATION 4 (1 | 2)
SCALE: N.T.S.

Fisheries and Oceans Canada / Pêches et Océans Canada

SMALL CRAFT HARBOURS

NOTES:

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2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

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project		projet

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date JULY 6, 2017
drawn P.H. / dessine
date JULY 6, 2017
approved / approuve

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DFO Project Manager
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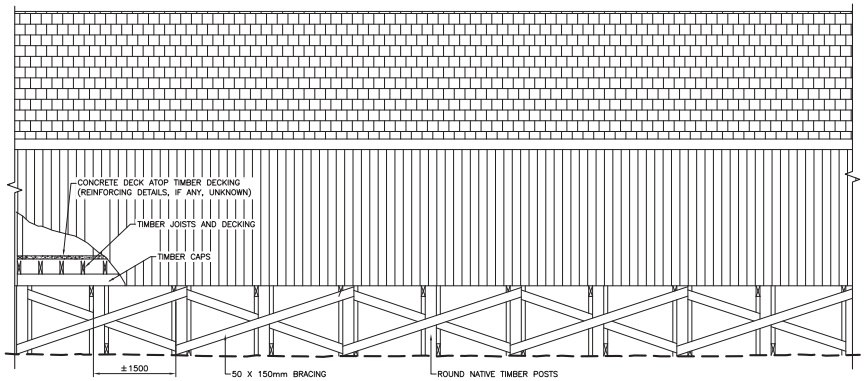
drawing no. / no. du dessin: C2

EDRM Document No. XXXX

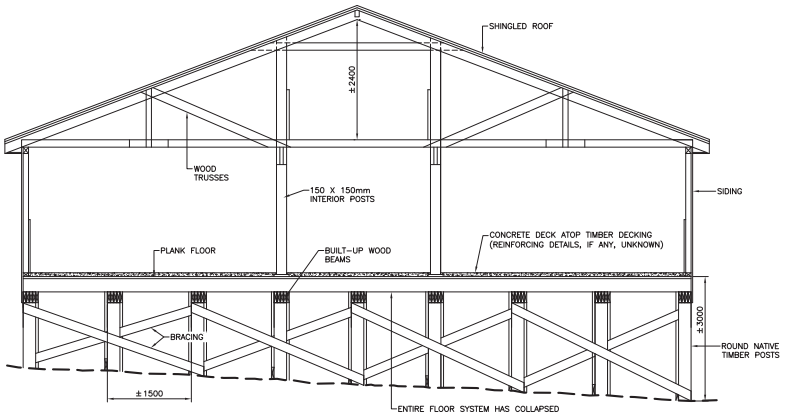
Plot Scale: PLOT_SCALE



TYPICAL LONGITUDINAL SECTION THROUGH FISH PLANT 1 (1 | 3)

SCALE: 1:40

0mm 1mm 2mm 3mm 4mm 5mm



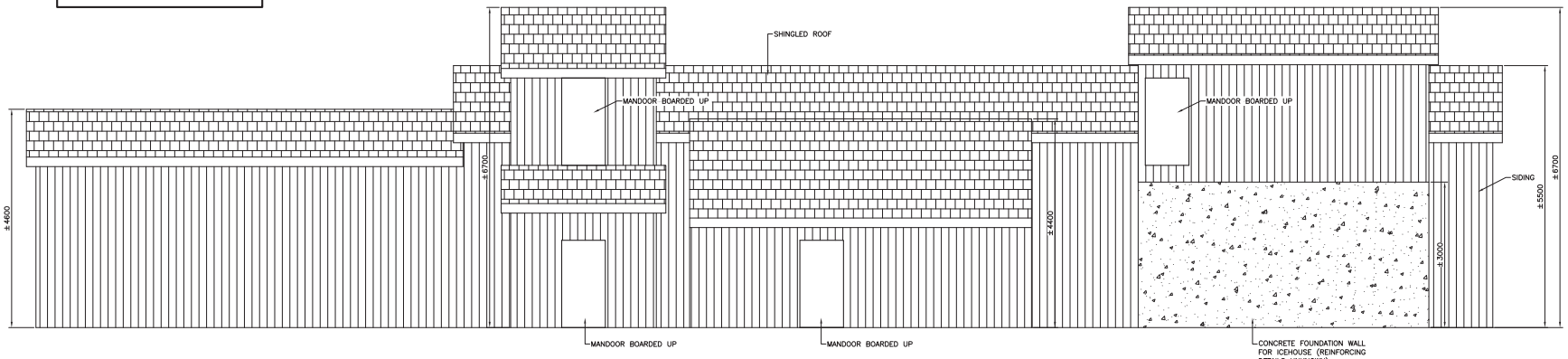
TRANSVERSE SECTION THROUGH FISH PLANT 2 (1 | 3)

SCALE: 1:40

0mm 1mm 2mm 3mm 4mm 5mm

NOTE:

1. BUILDING IS IN OVERALL STATE OF DISREPAIR AND ITS CONSIDERED STRUCTURALLY UNSAFE.



ELEVATION – WEST SIDE 3 (1 | 3)

SCALE: 1:40

0mm 1mm 2mm 3mm 4mm 5mm

Plot Scale: PLOT_SCALE

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.

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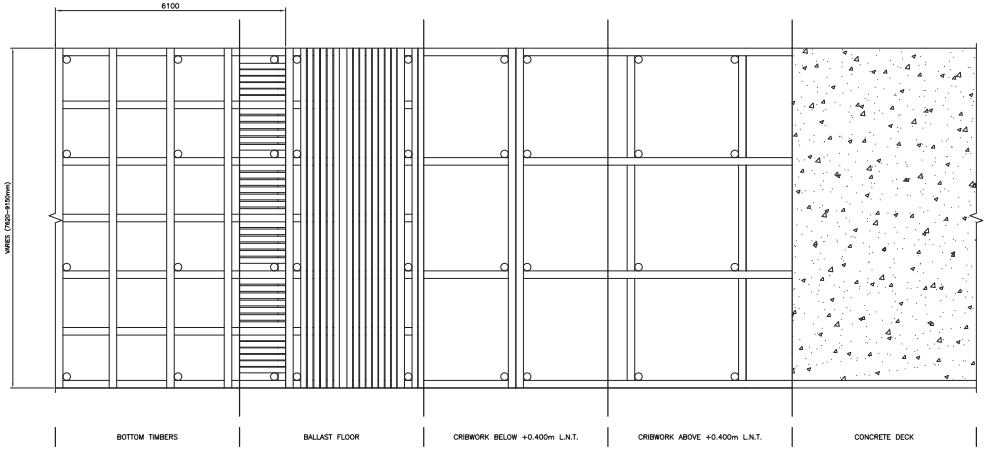
drawing no. / no. du dessin: C3

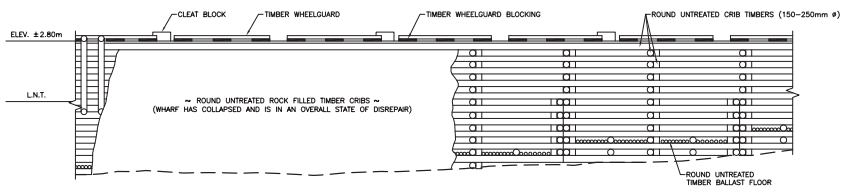
EDRM Document No. XXXX



TYPICAL LAYOUT – MARGINAL WHARF 1/4

SCALE: 1:50

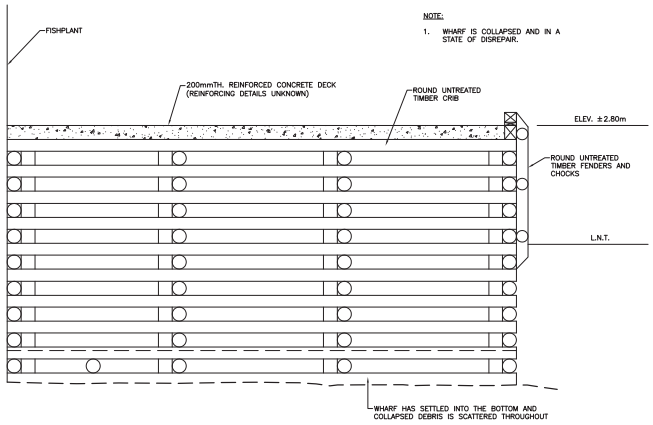
0m 1m 2m 3m 4m 5m



TYPICAL ELEVATION – MARGINAL 2/4

SCALE: 1:40

0mm 1mm 2mm 3mm 4mm 5mm



TYPICAL SECTION – MARGINAL 1/4

SCALE: 1:40

0mm 1mm 2mm 3mm 4mm 5mm

Fisheries and Oceans Canada / Pêches et Océans Canada

SMALL CRAFT HARBOURS

NOTES:

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EDRM Document No. XXXX

PH4 Sheet PLOT_SCALE

B1 – 707 x 1000

Appendix B
Photographs

General view – front (east side) of fish plant

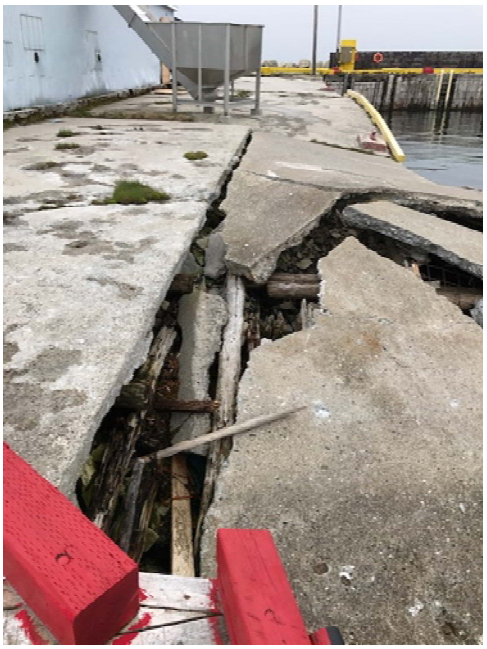
Dilapidated foundation (fish plant)

General view – interior of fish plant

General view – piling foundation of fish plant

General view – interior of fish plant

General view – interior of fish plant



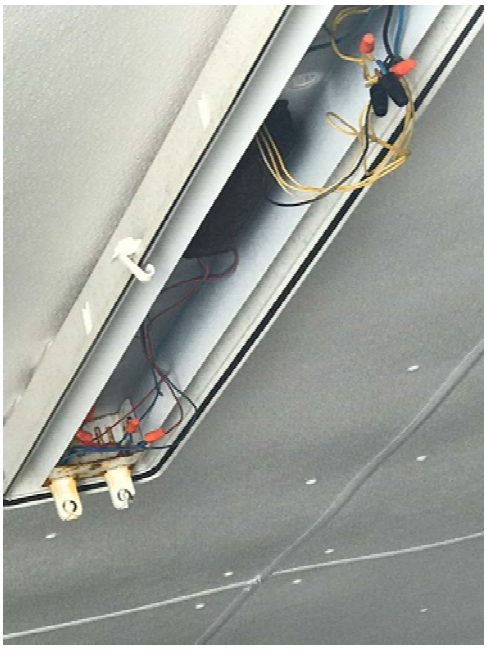
Collapsed wharf (east side of fish plant)

Collapsed wharf (east side of fish plant)

Back of fish plant (west side)

Former ice house building

Back of fish plant (ice house and office area)



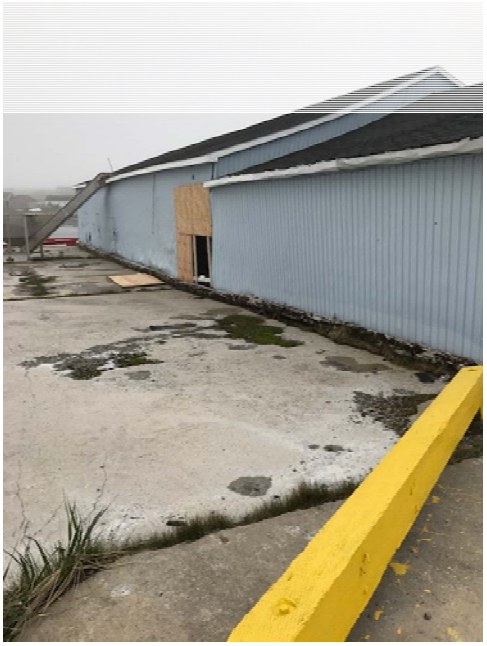
Typical fluorescent light ballast (fish plant)

Collapsed floors (fish plant)

Collapsed floors (fish plant)

Collapsed floors (fish plant)

Collapsed floors (fish plant)



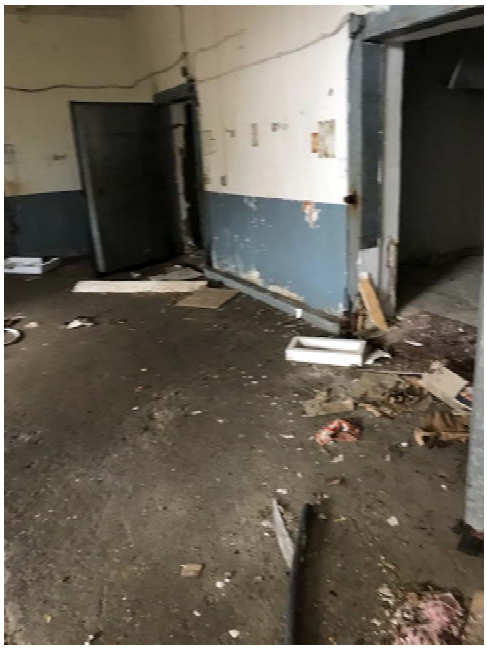
East side – fish plant

North side – fish plant

West side – fish plant

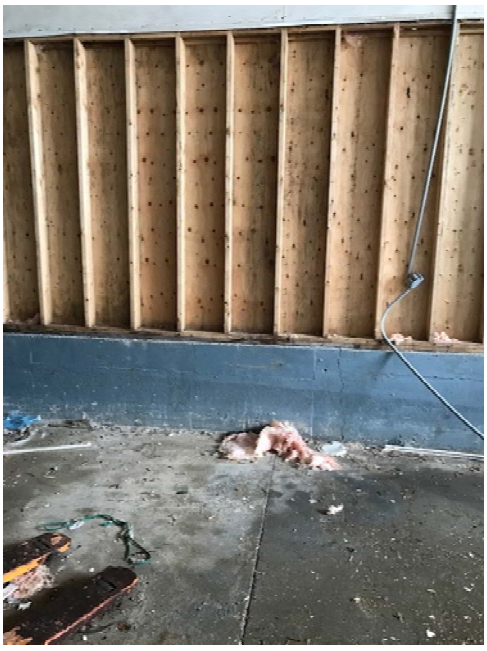
Transite (asbestos) – west side of fish plant

Interior view – storage building



Interior view – storage building

Interior view – storage building



Interior view – storage building

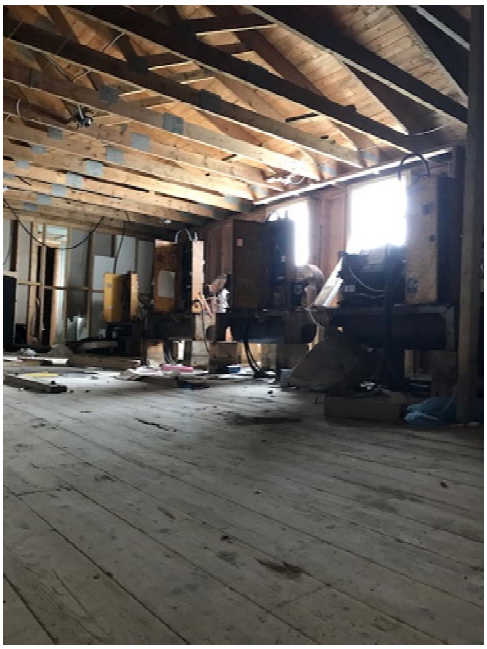
Interior view – storage building

Mould on walls/ceiling - storage building

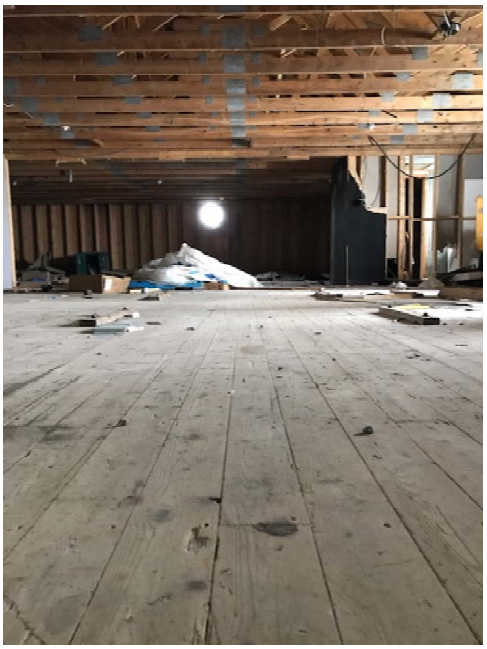
Fans associated with cold storage room

Fans associated with cold storage room

Fans associated with cold storage room



Second level office area – storage building



Second level office area – storage building

General view – storage building (south side)

Appendix C
Laboratory Certificates

Maxxam
A Bureau Veritas Group Company

Your Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Your C.O.C. #: 5-929

Attention:Neil Hunt

AFN Engineering Inc
29 Brad Gushue Crescent
St. John's, NL
A1H 0A3

Report Date: 2017/07/12
Report #: R4592067
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E2394
Received: 2017/07/06, 09:17

Sample Matrix: SOLID
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Asbestos by PLM (1, 3)	3	N/A	2017/07/11	CAM SOP-00475	EPA/600/R-93/116
Metals Bulk Acid Extr. ICPMS (2)	1	2017/07/10	2017/07/11	ATL SOP 00058	EPA 6020A R1 m
PCBs in Paint by GC/ECD (2, 4)	1	2017/07/10	2017/07/12		EPA 8082A m
PCB Aroclor sum (paint) (2)	1	N/A	2017/07/12	N/A	Auto Calc.

Remarks:

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

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

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

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.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Analytics Mississauga
(2) This test was performed by Maxxam Bedford
(3) Maxxam Analytics' Asbestos Laboratory is accredited by NVLAP for bulk asbestos analysis by polarized light microscopy, NVLAP Code 600136-0.
This report may not be reproduced, except in full, without the written approval of Maxxam Analytics. This report may not be used by the client to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.
Maxxam Analytics' scope of accreditation includes EPA-600/M4-82-020: "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" and EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".
(4) Non accredited test method. Best laboratory practices and all routine QC procedures were employed.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax: 709-754-8612 www.maxxamanalytics.com

Your Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Your C.O.C. #: 5-929

Attention:Neil Hunt

AFN Engineering Inc
29 Brad Gushue Crescent
St. John's, NL
A1H 0A3

Report Date: 2017/07/12
Report #: R4592067
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E2394
Received: 2017/07/06, 09:17

Encryption Key

Maxxam
12 Jul 2017 16:14:53

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Melissa DiPinto, Project Manager
Email: mdipinto@maxxam.ca
Phone# (709) 754 0203

==========

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

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Maxxam Job #: B7E2394
Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Sampler Initials: PH

ASBESTOS (SOLID)

Maxxam ID		ERU647	ERU648	ERU649		
Sampling Date		2017/07/04	2017/07/04	2017/07/04		
COC Number		5-929	5-929	5-929		
	UNITS	**BUILDING 1-A1**	**BUILDING 1-A2**	**BUILDING 1-A3**	**RDL**	**QC Batch**
Number of Layers	%	1.0	1.0	1.0		5067010
Layer 1 Homogenous?	%	Yes	Yes	No		5067010
Layer 1 Colour	%	WHITE	GREY	BLACK		5067010
Layer 1 Description	%	CFM	TRANSITE	ROOFING		5067010
Layer 1 Asbestos	%	ND	DETECTED	DETECTED		5067010
Layer 1 Chrysotile	%		12	2.0	0.5	5067010
Layer 1 Cellulose	%			25	0.5	5067010
Layer 1 Fibrous Glass	%	25			0.5	5067010
Layer 1 Non Fibrous Material	%	75	88	73	0.5	5067010

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Maxxam Job #: B7E2394
Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Sampler Initials: PH

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Maxxam ID		ERU646		
Sampling Date		2017/07/04		
COC Number		5-929		
	UNITS	**BUILDING 1-P1**	**RDL**	**QC Batch**
Metals				
Acid Extractable Lead (Pb)	mg/kg	57	5.0	5065030
Acid Extractable Mercury (Hg)	mg/kg	1.2	1.0	5065030

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7E2394
Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Sampler Initials: PH

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOLID)

Maxxam ID		ERU646		
Sampling Date		2017/07/04		
COC Number		5-929		
	UNITS	**BUILDING 1-P1**	**RDL**	**QC Batch**
PCBs				
Aroclor 1016	mg/kg	<5.0	5.0	5065442
Aroclor 1221	mg/kg	<5.0	5.0	5065442
Aroclor 1232	mg/kg	<5.0	5.0	5065442
Aroclor 1248	mg/kg	<5.0	5.0	5065442
Aroclor 1242	mg/kg	<5.0	5.0	5065442
Aroclor 1254	mg/kg	<5.0	5.0	5065442
Aroclor 1260	mg/kg	<5.0	5.0	5065442
Calculated Total PCB	mg/kg	<5.0	5.0	5062411
Surrogate Recovery (%)				
Decachlorobiphenyl	%	45		5065442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7E2394
Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Sampler Initials: PH

GENERAL COMMENTS

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

Package 1	21.8°C

ASBESTOS (SOLID)

Asbestos by PLM: CFM = Compressed Fibrous Material

Results relate only to the items tested.

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Maxxam Job #: B7E2394
Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Sampler Initials: PH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5065030	MLB	Matrix Spike	Acid Extractable Lead (Pb)	2017/07/11		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2017/07/11		NC	%	75 - 125
5065030	MLB	Spiked Blank	Acid Extractable Lead (Pb)	2017/07/11		98	%	75 - 125
			Acid Extractable Mercury (Hg)	2017/07/11		102	%	75 - 125
5065030	MLB	Method Blank	Acid Extractable Lead (Pb)	2017/07/11	<5.0		mg/kg	
			Acid Extractable Mercury (Hg)	2017/07/11	<1.0		mg/kg	
5065030	MLB	RPD	Acid Extractable Lead (Pb)	2017/07/11	11		%	35
5065442	LGE	Matrix Spike	Decachlorobiphenyl	2017/07/12		34	%	30 - 130
			Aroclor 1254	2017/07/12		16 (1)	%	30 - 130
5065442	LGE	Spiked Blank	Decachlorobiphenyl	2017/07/12		56	%	30 - 130
			Aroclor 1254	2017/07/12		92	%	30 - 130
5065442	LGE	Method Blank	Decachlorobiphenyl	2017/07/12		94	%	30 - 130
			Aroclor 1016	2017/07/12	<5.0		mg/kg	
			Aroclor 1221	2017/07/12	<5.0		mg/kg	
			Aroclor 1232	2017/07/12	<5.0		mg/kg	
			Aroclor 1248	2017/07/12	<5.0		mg/kg	
			Aroclor 1242	2017/07/12	<5.0		mg/kg	
			Aroclor 1254	2017/07/12	<5.0		mg/kg	
			Aroclor 1260	2017/07/12	<5.0		mg/kg	
5065442	LGE	RPD	Aroclor 1016	2017/07/12	NC		%	50
			Aroclor 1221	2017/07/12	NC		%	50
			Aroclor 1232	2017/07/12	NC		%	50
			Aroclor 1248	2017/07/12	NC		%	50
			Aroclor 1242	2017/07/12	NC		%	50
			Aroclor 1254	2017/07/12	NC		%	50
			Aroclor 1260	2017/07/12	NC		%	50

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) Matrix Spike: results are outside acceptance limit. Analysis was repeated with similar results.

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Maxxam Job #: B7E2394
Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929
Site Location: SANDY COVE - BUILDING 1
Sampler Initials: PH

VALIDATION SIGNATURE PAGE

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

Banu Gurgen-Keough, Supervisor

Eric Dearman, Scientific Specialist

Rosemarie MacDonald, Scientific Specialist (Organics)

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Your Project #: 5-929-A
Site Location: SANDY COVE - BUILDING 2
Your C.O.C. #: 5-929-A

Attention:NEIL HUNT

AFN Engineering Inc
29 Brad Gushue Crescent
St. John's, NL
A1H 0A3

Report Date: 2017/07/12
Report #: R4592073
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E2427
Received: 2017/07/06, 09:17

Sample Matrix: Paint
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Metals Paint Acid Extr. ICPMS (1)	1	2017/07/10	2017/07/11	ATL SOP 00058	EPA 6020A R1 m
PCBs in Paint by GC/ECD (1, 2)	1	2017/07/10	2017/07/12		EPA 8082A m
PCB Aroclor sum (paint) (1)	1	N/A	2017/07/12	N/A	Auto Calc.

Sample Matrix: SOLID
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Asbestos by PLM (3, 4)	3	N/A	2017/07/11	CAM SOP-00475	EPA/600/R-93/116
Metals Bulk Acid Extr. ICPMS (1)	2	2017/07/10	2017/07/11	ATL SOP 00058	EPA 6020A R1 m

Remarks:

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

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

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

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.

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.

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CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7E2427
Received: 2017/07/06, 09:17

(1) This test was performed by Maxxam Bedford
(2) Non accredited test method. Best laboratory practices and all routine QC procedures were employed.
(3) This test was performed by Maxxam Analytics Mississauga
(4) Maxxam Analytics' Asbestos Laboratory is accredited by NVLAP for bulk asbestos analysis by polarized light microscopy, NVLAP Code 600136-0.

Maxxam Analytics' scope of accreditation includes EPA-600/M4-82-020: "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" and EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Encryption Key

Maxxam
12 Jul 2017 16:15:18

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Melissa DiPinto, Project Manager
Email: mdipinto@maxxam.ca
Phone# (709) 754 0203

==========

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Maxxam Job #: B7E2427
Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929-A
Site Location: SANDY COVE - BUILDING 2
Sampler Initials: PH

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		ERU759		
Sampling Date		2017/07/04		
COC Number		5-929-A		
	UNITS	**BUILDING 2-P2**	**RDL**	**QC Batch**
Metals				
Acid Extractable Lead (Pb)	mg/kg	190	5.0	5065027
Acid Extractable Mercury (Hg)	mg/kg	3.9	1.0	5065027

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2017/07/12

AFN Engineering Inc
Client Project #: 5-929-A
Site Location: SANDY COVE - BUILDING 2
Sampler Initials: PH

POLYCHLORINATED BIPHENYLS BY GC-ECD (PAINT)

Maxxam ID		ERU759		
Sampling Date		2017/07/04		
COC Number		5-929-A		
	UNITS	**BUILDING 2-P2**	**RDL**	**QC Batch**
PCBs				
Aroclor 1016	mg/kg	<5.0	5.0	5065442
Aroclor 1221	mg/kg	<5.0	5.0	5065442
Aroclor 1232	mg/kg	<5.0	5.0	5065442
Aroclor 1248	mg/kg	<5.0	5.0	5065442
Aroclor 1242	mg/kg	<5.0	5.0	5065442
Aroclor 1254	mg/kg	<5.0	5.0	5065442
Aroclor 1260	mg/kg	<5.0	5.0	5065442
Calculated Total PCB	mg/kg	<5.0	5.0	5062411
Surrogate Recovery (%)				
Decachlorobiphenyl	%	36		5065442

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Site Location: SANDY COVE - BUILDING 2
Sampler Initials: PH

ASBESTOS (SOLID)

Maxxam ID		ERU761	ERU762	ERU763		
Sampling Date		2017/07/04	2017/07/04	2017/07/04		
COC Number		5-929-A	5-929-A	5-929-A		
	UNITS	**BUILDING 2-A1**	**BUILDING 2-A2**	**BUILDING 2-A3**	**RDL**	**QC Batch**
Number of Layers	%	1.0	1.0	1.0		5067010
Layer 1 Homogenous?	%	Yes	No	Yes		5067010
Layer 1 Colour	%	YELLOW	BLACK	BLACK		5067010
Layer 1 Description	%	FOAM	ROOFING	FOAM		5067010
Layer 1 Asbestos	%	ND	ND	ND		5067010
Layer 1 Cellulose	%		30		0.5	5067010
Layer 1 Synthetic Fibres	%			<0.5	0.5	5067010
Layer 1 Non Fibrous Material	%	100	70	100	0.5	5067010

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not detected

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Client Project #: 5-929-A
Site Location: SANDY COVE - BUILDING 2
Sampler Initials: PH

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Maxxam ID		ERU758	ERU760		
Sampling Date		2017/07/04	2017/07/04		
COC Number		5-929-A	5-929-A		
	UNITS	**BUILDING 2-P1**	**BUILDING 2-P3**	**RDL**	**QC Batch**
Metals					
Acid Extractable Lead (Pb)	mg/kg	120	340	5.0	5065030

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B7E2427
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AFN Engineering Inc
Client Project #: 5-929-A
Site Location: SANDY COVE - BUILDING 2
Sampler Initials: PH

GENERAL COMMENTS

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

Package 1	21.5°C

ASBESTOS (SOLID)

Asbestos by PLM: CFM = Compressed Fibrous Material

Results relate only to the items tested.

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AFN Engineering Inc
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Site Location: SANDY COVE - BUILDING 2
Sampler Initials: PH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5065027	MLB	Matrix Spike [ERU759-01]	Acid Extractable Lead (Pb)	2017/07/11		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2017/07/11		101	%	75 - 125
5065027	MLB	Spiked Blank	Acid Extractable Lead (Pb)	2017/07/11		98	%	75 - 125
			Acid Extractable Mercury (Hg)	2017/07/11		102	%	75 - 125
5065027	MLB	Method Blank	Acid Extractable Lead (Pb)	2017/07/11	<5.0		mg/kg	
			Acid Extractable Mercury (Hg)	2017/07/11	<1.0		mg/kg	
5065027	MLB	RPD [ERU759-01]	Acid Extractable Lead (Pb)	2017/07/11	1.5		%	35
			Acid Extractable Mercury (Hg)	2017/07/11	5.4		%	35
5065030	MLB	Matrix Spike	Acid Extractable Lead (Pb)	2017/07/11		NC	%	75 - 125
5065030	MLB	Spiked Blank	Acid Extractable Lead (Pb)	2017/07/11		98	%	75 - 125
5065030	MLB	Method Blank	Acid Extractable Lead (Pb)	2017/07/11	<5.0		mg/kg	
5065030	MLB	RPD	Acid Extractable Lead (Pb)	2017/07/11	11		%	35
5065442	LGE	Matrix Spike [ERU759-01]	Decachlorobiphenyl	2017/07/12		34	%	30 - 130
			Aroclor 1254	2017/07/12		16 (1)	%	30 - 130
5065442	LGE	Spiked Blank	Decachlorobiphenyl	2017/07/12		56	%	30 - 130
			Aroclor 1254	2017/07/12		92	%	30 - 130
5065442	LGE	Method Blank	Decachlorobiphenyl	2017/07/12		94	%	30 - 130
			Aroclor 1016	2017/07/12	<5.0		mg/kg	
			Aroclor 1221	2017/07/12	<5.0		mg/kg	
			Aroclor 1232	2017/07/12	<5.0		mg/kg	
			Aroclor 1248	2017/07/12	<5.0		mg/kg	
			Aroclor 1242	2017/07/12	<5.0		mg/kg	
			Aroclor 1254	2017/07/12	<5.0		mg/kg	
			Aroclor 1260	2017/07/12	<5.0		mg/kg	
5065442	LGE	RPD [ERU759-01]	Aroclor 1016	2017/07/12	NC		%	50
			Aroclor 1221	2017/07/12	NC		%	50
			Aroclor 1232	2017/07/12	NC		%	50
			Aroclor 1248	2017/07/12	NC		%	50
			Aroclor 1242	2017/07/12	NC		%	50
			Aroclor 1254	2017/07/12	NC		%	50
			Aroclor 1260	2017/07/12	NC		%	50

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) Matrix Spike: results are outside acceptance limit. Analysis was repeated with similar results.

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Maxxam Job #: B7E2427
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AFN Engineering Inc
Client Project #: 5-929-A
Site Location: SANDY COVE - BUILDING 2
Sampler Initials: PH

VALIDATION SIGNATURE PAGE

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

Banu Gurgen-Keough, Supervisor

Eric Dearman, Scientific Specialist

Rosemarie MacDonald, Scientific Specialist (Organics)

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