

SPECIFICATION

BUILDING DEMOLITION AND RECONSTRUCTION  
BEAR COVE POINT, NL

P/N: F6879-184003

PREPARED FOR


Fisheries and Oceans Canada

DATE

February 23, 2018  
Revision 2



PROVINCE OF NEWFOUNDLAND



PERMIT HOLDER  
This Permit Allows  
AFN ENGINEERING INC.

To practice Professional Engineering  
in Newfoundland and Labrador.  
Permit No. as issued by APEGNL **F0292**  
which is valid for the year **2018**

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List of Drawings

Page 1

Building Demolition and Reconstruction  
Bear Cove Point, NL

2018-02-22

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DRAWING NO

TITLE

C1	Demolition Plan
C2	New Site Plan and FRP Building
C3	Sections
E1	Site Plan
E2	Electrical Details
E3	Electrical Specification

<u>Section</u>	<u>Title</u>	<u>Pages</u>
01 10 10	SUMMARY OF WORK	9
01 29 83	PAYMENT PROCEDUREES FOR TESTING LABORATORY SERVICES	2
01 33 00	SUBMITTAL PROCEDURES	5
01 35 24	SPECIAL PROCEDURES ON FIRE SAFETY REQUIREMENTS	5
01 35 25	SPECIAL PROCEDURES ON LOCKOUT REQUIREMENTS	7
01 35 29.06	HEALTH AND SAFETY REQUIREMENTS	12
01 35 43	ENVIRONMENTAL PROCEDURES	2
01 45 00	TESTING AND QULAIY CONTROL	3
01 51 00	TEMPORARY UTILITIES	1
01 56 00	TEMPORARY BARRIERS AND ENCLOSURES	1
01 61 00	COMMON PRODUCT REQUIREMENTS	5
01 74 11	CLEANING	1
01 74 21	CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL	5
01 78 00	CLOSEOUT SUBMITTALS	1
02 41 13	SELECTIVE SITE DEMOLITION	4
02 41 16	STRUCTURE DEMOLITION	5
03 10 00	CONCRETE FORMING AND ACCESSORIES	3
03 20 00	CONCRETE REINFORCING	3
03 30 00	CAST IN PLACE CONCRETE	8
03 35 00	CONCRETE FINISHING	3
06 05 73	WOOD TREATMENT	2
06 10 00	ROUGH CARPENTRY	3
07 21 13	RIGID INSULATION	3
07 26 00	VAPOUR BARRIER	2
07 62 00	SHEET METAL FLASHING AND TRIM	3
07 92 00	JOINT SEALANTS	8
09 28 00	CEMENT BOARD	2
13 00 11	PREFABRICATED MODULAR FIBREGLASS BUILDING	3
31 11 00	CLEARING AND GRUBBING	4
31 23 33	EXCAVATING TRENCHING AND BACKFILLING	12

1.1 SCOPE

- .1 The work consists of the furnishing of all plant, labour, equipment and material for building demolition and reconstruction at Bear Cove Point, NL, in strict accordance with specifications and accompanying drawings and subject to all terms and conditions of the Contract.
- .2 Note that the electrical specifications related to this scope of work are included on the drawings.

1.2 DESCRIPTION OF WORK

- .1 In general, work under this contract consists of removal of the existing building, site backfilling/grading, new concrete foundations and installation of an owner supplied fiberglass building.

Do not proceed with any portion of the work until the Departmental Representative has approved the Contractor's written work plan. Contractor responsible for disposing of all demolition debris at an approved waste site and paying all tipping fees (for Bidding, assume the nearest acceptable waste site is Robin Hood Bay in St. John's).

1.3 SITE OF WORK

- .1 Work will be carried out at Bear Cove Point, Fermeuse, NL.

1.4 DATUM

- .1 If requested by the Contractor, the Departmental Representative will establish a benchmark prior to the start of work activities.

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, 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 29.06 - Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid.
- .3 Obtain prior permission from the Departmental Representative before carrying out such site inspection.

1.6 CODES AND STANDARDS

- .1 Perform work in accordance with the latest edition of the National Building Code of Canada, 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.

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 required to facilitate Departmental Representative's inspection of 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 project. Individual work items will not be measured separately for payment.

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 bi-weekly 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 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. All arrangements for space and access will be made by Contractor.

1.13 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.

1.14 PROTECTION

- .1 Store all materials and equipment to be incorporated into work to prevent damage by any means. Note that there will be no temporary storage space available in the existing building for the Contractor.
- .2 Repair or replace all materials damaged in transit or storage to the satisfaction of Departmental Representative and at no cost to Canada.

1.15 EXISTING

- .1 Where work involves breaking into or



SERVICES

connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to site operations, 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 services. Provide temporary services when directed by Departmental Representative to maintain critical facility systems.

1.16 DOCUMENTS  
REQUIRED

.1 Maintain at job site, one copy each of the following:

.1 Contract Drawings

.2 Specifications

.3 Addenda

.4 Contract and any resulting amendments signed by contracting authority.

.5 Test Reports

.6 Copy of Approved Work Schedule

.7 Site specific Health and Safety Plan and other safety related documents.

1.17 PERMITS

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

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

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

.4 Submit to Departmental Representative,

copy of application submissions and approval documents received for above referenced authorities.

- .5 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.

1.18 CUTTING,  
FITTING AND  
PATCHING

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

1.19 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.

1.20 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.

1.21 CONTRACTOR'S  
USE OF SITE

- .1 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.
- .2 Exercise care so as not to obstruct or damage public or private property in the area.
- .3 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.

1.22 WORK  
COMMENCEMENT

- .1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan and insurance and bonding 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 Delivery challenges, coordination with site users, 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

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Summary of Work

Section 01 11 10

Page 9

Building Demolition and Reconstruction  
Bear Cove Point, NL

2018-02-22

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delivered to site at the earliest possible  
date after acceptance of bid and  
replenished as required.

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 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.  
.4 Tests requested by Departmental Representative to confirm material specifications when the applicable manufacturer's documentation or test results are unavailable.  
.5 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 .1 Provide labour, equipment and facilities

RESPONSIBILITIES

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.
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- .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 Product data.
- .2 Samples.
- .3 Certificates.

1.2 SUBMITTAL  
GENERAL REQUIREMENTS

- .1 Submit to Departmental Representative for review submittals listed, including samples, certificates and other data, as specified in other sections of the Specifications. Note that any and all changes to the contract will have to be approved in writing by the Contracting Authority. Departmental Representative will provide a list of required samples/product data sheets to be provided, after contract award.
- .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 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 PRODUCT DATA
- .1 Product data includes drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
  - .2 Submit sufficient copies of product data 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 Allow 10 calendar days for Departmental Representative's review of each submission.
  - .4 Adjustments or corrections made on product data 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.
  - .5 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 product data are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected product data, through same submission procedures indicated above.
  - .6 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 product data and sample.
    - .5 Other pertinent data.

- .7 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 product data submission addresses.
  - .6 Details of appropriate portions of Work.
- .8 After Departmental Representative's review, distribute copies.
- .9 The review of samples and product data 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 product data, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in product data 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,

- .1 Upon acceptance of bid, submit to

PERMITS AND  
CERTIFICATES

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 29.06 - 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](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](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 five (5) 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 29.06 - Health and Safety Requirements.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.7 HOT WORK  
AUTHORIZATION

- .1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot work on site.
- .2 To obtain authorization submit to Departmental Representative:
  - .1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
  - .2 Description of the type and frequency of Hot Work required.
  - .3 Sample Hot Work Permit to be used.
- .3 Upon review and confirmation that effective fire safety measures will be implemented during performance of hot work, Departmental Representative will provide authorization to proceed as follows:
  - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
  - .2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Departmental Representative. Follow Departmental Representative's directives in this regard.

- .4 Requirement for individual authorization based on:
  - .1 Nature or phasing of work;
  - .2 Risk to Facility operations;
  - .3 Quantity of various trades needing to perform hot work on project or;
  - .4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.
- .5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.

1.8 HOT WORK PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Procedures to include:
  - .1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of Section 01 35 29.06.
  - .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 29.06.
- .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 29.06.

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 - Fire Safety Requirements.  
.2 Section 01 35 29.06 - 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 COSH, Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- 1.4 DEFINITIONS .1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.  
.2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment is isolated.  
.3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).  
.4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that

is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.

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

1.5 COMPLIANCE  
REQUIREMENTS

- .1 Perform lockouts in compliance with:
  - .1 Canadian Electrical Code.
  - .2 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29.06.
  - .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 29.06.

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 29.06.

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.
- 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 to Departmental Representative, copies of the following documents including updates.
- .1 Site specific Health and Safety Plan.
- .2 Building permit, compliance certification and other permits obtained.



- .3 Reports or directives issued by Federal and Provincial Inspectors and other Authorities having jurisdiction.
- .4 Accident or incident reports.
- .5 WHMIS - MSDS data sheets.
- .6 Name of Contractor's Representative designated to perform health and safety supervision in site.
- .7 Certificate of clearance from Workplace Health Safety and Compensation Commission (Assessment Services Department) of Newfoundland and Labrador.

.3 Submit within five (5) work days of notification of Bid Acceptance. Provide one (1) copy.

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

.5 The Contractor will revise the Plan as appropriate and resubmit within five (5) work days after receipt of comments.

.6 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.

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

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/](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](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 through submission of Certificate of Clearance from Workplace Health, Safety and Compensation Commission (Assessment Services Department) of Newfoundland and Labrador.

.7 Obtain and maintain worker medical surveillance documentation where prescribed by legislation or regulation.

#### 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 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.

1.9 PERMITS

- .1 Post permits, licenses and compliance Certificates 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 Heavy lifting.
  - .2 Working at heights.
  - .3 Cutting tools and other construction power tools.
  - .4 Sharp objects (construction debris).

- .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.

1.12 MEETINGS

- .1 Contractor to hold pre-construction health and safety meeting prior to commencement of Work. Ensure attendance of:
  - .1 Superintendent of Work.
  - .2 Contractor's designated Health & Safety Site Representative.
  - .3 Subcontractor's Health and Safety Site Representative.
  - .4 Health and Safety Site Coordinator.

- .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.

- .4 On-site Communication Plan:
  - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
- .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 daily 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 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.

- .4 All workers dealing with hazardous materials are required to provide evidence of training, in accordance with Provincial regulations.

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 safety vest.
  - .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.

.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 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.

1.21 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.

1.1 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.

1.2 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS

- .1 Do not bury rubbish and waste materials on site.
- .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.

1.3 POLLUTION  
CONTROL

- .1 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 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.
- .5 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.

1.1 SECTION  
INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.

1.2 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.

1.3 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 Tests as specified within various

sections designated to be carried out by Contractor under the supervision of Departmental Representative.

.4 Additional tests specified in Clause 1.3.2.

.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.

#### 1.4 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.

#### 1.5 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.

1.6 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.

1.7 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.

- 1.1 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.
- 1.2 WATER SUPPLY
- .1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.
- 1.3 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 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.
- 1.4 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 facilities.
- 1.6 PUBLIC TRAFFIC FLOW .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect the public.
- 1.7 FIRE ROUTES .1 Maintain access to property including overhead clearances for use by emergency response vehicles.
- 1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY .1 Protect surrounding private and public property from damage during performance of work.
- .2 Be responsible for damage incurred.

1.1 GENERAL

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

1.2 PRODUCT QUALITY  
AND REFERENCED  
STANDARDS

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

1.3 ACCEPTABLE  
MATERIALS AND  
ALTERNATIVES

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

1.4 MANUFACTURERS  
INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental representative in writing of any conflict between these specifications and manufacturers instructions, so that Departmental Representative will designate which document is to be followed.

1.5 AVAILABILITY

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

1.6 WORKMANSHIP

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

- .2 Remove unsuitable or incompetent workers from site as stipulated in General Conditions.
- .3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.
- .4 Coordinate work between trades and subcontractors.
- .5 Coordinate placement of openings, sleeves and accessories.

1.7 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.
- .2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.
- .3 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- .4 Fastenings which cause spalling or cracking of material to which anchorage is made, are not acceptable.
- .5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See Section 01 35 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

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- .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 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.
- 1.3 FINAL CLEANING
- .1 In preparation for acceptance of the Work perform final cleaning.

- 1.1 RELATED SECTIONS .1 Section 01 74 11 - Cleaning.
- 1.2 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.
- 1.3 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.

1.4 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.

1.5 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.

1.6 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.

1.7 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 PROJECT RECORD  
DOCUMENTS

- .1 Departmental Representative will provide two white print sets of contract drawings and two copies of Specifications.
- .2 Maintain at site one set of the contract drawings and specifications to record actual "As-Built" site conditions.
- .3 At project completion, submit full manual of products used in new work (complete with manufacturer's data sheets, warranty data, user manuals, etc.).

**PART 1      GENERAL****1.1      SECTIONS INCLUDES**

- .1      Methods and procedures for demolishing, salvaging, recycling and removing sitework items designated to be removed in whole or in part, and for backfilling resulting trenches and excavations.

**1.2      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures
- .2      Section 01 35 29.06 - Health and Safety Requirements
- .3      Section 01 35 43 - Environmental Procedures
- .4      Section 01 45 00 - Quality Control
- .5      Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**1.3      SUBMITTALS**

- .1      Shop drawings:
  - .1      Submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, where required by Authorities-Having-Jurisdiction.
  - .2      Submit drawings stamped and signed by qualified professional engineer licensed in Province of Newfoundland and Labrador, Canada.
- .2      Hazardous Materials: provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.
- .3      Submit plan indicating:
  - .1      Descriptions of and anticipated quantities of materials to be salvaged, reused, recycled and landfilled.
  - .2      Schedule of selective demolition.
- .4      Submit copies of certified weigh bills, bills of lading from authorized disposal sites and reuse and recycling

facilities for material removed from site upon request from Departmental Representative.

#### **1.4 QUALITY ASSURANCE**

- .1 Convene 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.
- .2 Arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work, prior to start of Work.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, replace or make repairs to approval of Departmental Representative and at no cost to Owner.
- .2 Remove and store materials to be salvaged in a manner to prevent damage.
- .3 Store and protect in accordance with requirements for maximum preservation of material.

#### **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.
- .5 Protect trees, plants and foliage on site and adjacent properties where indicated.

**1.7 EXISTING CONDITIONS**

- .1 Prior to start of any demolition work, remove contaminated or hazardous materials as defined by Authorities-Having-Jurisdiction from site and dispose of at designated disposal facilities.

**1.8 SCHEDULING**

- .1 Notify Departmental Representative in writing when unforeseen delays occur.

**PART 2 PRODUCTS (NOT APPLICABLE)**

**PART 3 EXECUTION**

**3.1 PREPARATION**

- .1 Inspect site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.

**3.2 REMOVAL OF HAZARDOUS WASTES**

- .1 Remove contaminated or dangerous materials defined by Authorities-Having-Jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.



**3.3 REMOVAL OPERATIONS**

- .1 Remove items as indicated. Do not disturb items designated to remain in place.
- .2 Interim removal of stockpiled material may be required by Departmental Representative if it is deemed to interfere with operations of Departmental Representative, Owner or other contractors.

**3.4 RESTORATION**

- .1 Restore areas and existing works outside areas of demolition to match conditions of adjacent, undisturbed areas.
- .2 Use soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

**3.5 CLEAN UP**

- .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

**END OF SECTION**

**PART 1**      **GENERAL**

**1.1**            **SECTION INCLUDES**

- .1    Methods and procedures for demolition of structures, parts of structures, basements and foundation walls.

**1.2**            **RELATED SECTIONS**

- .1    Section 01 11 00 - Summary of Work
- .2    Section 01 35 29.06 - Health and Safety Requirements
- .3    Section 01 35 43 - Environmental Procedures
- .4    Section 01 52 00 - Construction Facilities
- .5    Section 01 56 00 - Temporary Barriers and Enclosures
- .6    Section 01 74 21 - Construction/Demolition Waste Management and Disposal

**1.3**            **REFERENCES**

- .1    Canadian Standards Association (CSA).
  - .1    CSA S350, Code of Practice for Safety in Demolition of Structures

**1.4**            **QUALITY ASSURANCE**

- .1    Prior to start of Work arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work.
- .2    Ensure key personnel, site supervisor, project manager, and subcontractor representatives attend.

**1.5**            **WASTE MANAGEMENT AND DISPOSAL**

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

**1.6**            **EXISTING CONDITIONS**

- .1    Should material resembling spray or trowel applied asbestos or any other designated substance be

encountered in the course of demolition, stop work, take preventative measures, and notify Departmental Representative immediately. Do not proceed until written instructions have been received.

- .2 Structures to be demolished to be based on their condition on date that tender is accepted.
- .3 Salvage items as identified by Departmental Representative. Remove, protect and store salvaged items as directed by Departmental Representative. Deliver to Owner as directed.

### **1.7 DEMOLITION DRAWINGS**

- .1 Where required by Authorities-Having-Jurisdiction, submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.
- .2 Submit drawings stamped and signed by qualified professional engineer licensed in Province of Newfoundland and Labrador, Canada.

### **1.8 ENVIRONMENTAL PROTECTION**

- .1 Ensure work is done in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades parts of existing building to remain.
- .3 Support affected structures and, if safety of structure being demolished or adjacent structures or services appears to be endangered cease operations and notify Departmental Representative.
- .4 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .5 Fires and burning of waste or materials is not permitted on site.
- .6 Do not bury waste or materials on site.

- .7 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.
- .8 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .9 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities' requirements.
- .10 Protect trees, plants and foliage on site and adjacent properties where indicated.
- .11 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
- .12 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

**PART 2**      **PRODUCTS (NOT APPLICABLE)**

**PART 3**      **EXECUTION**

**3.1**            **PREPARATION**

- .1 Do work in accordance with 01 35 29.06 - Health and Safety Requirements.
- .2 Do not disrupt active or energized utilities designated to remain undisturbed.

**3.2**            **SAFETY CODE**

- .1 Do demolition work in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and CSA S350, Code of Practice for Safety in Demolition of Structures.

**3.3 DEMOLITION**

- .1 **Demolish foundation walls and footings in their entirety to full depth.**
- .2 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces and replace as work progresses.
- .3 At end of each day's work, leave Work in safe and stable condition. Protect interiors of parts not to be demolished from exterior elements at all times.
- .4 Demolish to minimize dusting. Keep materials wetted as required or directed by Departmental Representative.
- .5 Remove structural framing.
- .6 Contain all fibrous materials (e.g., insulation) to minimize release of airborne fiber while being transported to waste disposal site or alternative disposal location.
- .7 Only dispose of material specified by selected alternative disposal option as approved by Departmental Representative. Ensure that these materials will not be disposed of in a landfill or waste stream destined for landfill.
- .8 Remove and dispose of demolished materials except where noted otherwise and in accordance with Authorities-Having-Jurisdiction.
- .9 Environmental: Remove contaminated or dangerous materials as defined by Authorities-Having-Jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimized danger at site or during disposal.
- .10 Prior to the start of any demolition work, remove contaminated or hazardous materials as defined by Authorities-Having-Jurisdiction from site and dispose of at designated disposal facilities.

**3.4 REMOVAL FROM SITE**

- .1 Notify Departmental Representative in writing of any materials identified as not suitable for alternate

disposal. Provide reasons prior to approval for disposal.

- .2 Remove stockpiled material as directed by Departmental Representative when it interferes with operations of project construction.
- .3 Remove stockpiles of like materials by an alternate disposal option once collection of materials is complete.
- .4 Transport material designated for alternate disposal in accordance with applicable regulations.
- .5 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

### **3.5 REPORTING**

- .1 Record off-site removal of debris and materials and provide following information regarding removed materials to Departmental Representative within two (2) working days.
  - .1 Time and date of Removal.
  - .2 Description of Material.
  - .3 Weight and Quantity of Materials.
  - .4 Breakdown of reuse, recycling and landfill quantities.
  - .5 End Demolition of Materials.

### **3.6 COORDINATION**

- .1 Coordinate alternative disposal activities with Departmental Representative.

**END OF SECTION**

**PART 1      GENERAL****1.1            RELATED SECTIONS**

- .1    Section 03 20 00 - Concrete Reinforcing.
- .2    Section 03 30 00 - Cast-In-Place Concrete.
- .3    Section 03 35 00 - Concrete Finishing

**1.2            REFERENCES**

- .1    Canadian Standards Association (CSA)
  - .1    CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2    CSA-O86S1, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.
  - .3    CSA O121, Douglas Fir Plywood.
  - .4    CSA O151, Canadian Softwood Plywood.
  - .5    CAN/CSA-S269.3, Concrete Formwork.

**1.3            SUBMITTALS**

- .1    Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings. Comply with CAN/CSA-S269.3, for formwork drawings.
- .2    Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.
- .3    Indicate sequence of erection and removal of formwork/falsework as approved by Owner's Representative.
- .4    Each shop drawing submission shall bear stamp and signature of qualified professional engineer licensed in Province of Newfoundland and Labrador, Canada.

**PART 2**      **PRODUCTS****2.1**      **MATERIALS**

- .1 Formwork materials:
  - .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-0121.
- .2 Form ties:
  - .1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm dia. in concrete surface.
  - .2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.
- .3 Form release agent: chemically active release agents containing compounds that react with free lime in concrete resulting in water insoluble soaps, non-toxic, biodegradable.
- .4 Falsework materials: to CSA-S269.1.

**PART 3**      **EXECUTION****3.1**      **FABRICATION AND ERECTION**

- .1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings. Verify Finished Floor Elevation indicated on drawings with Departmental Representative prior to proceeding with work.
- .2 Fabricate and erect falsework in accordance with CSA S269.1.
- .3 Do not place shores and mud sills on frozen ground.
- .4 Provide site drainage to prevent washout of soil supporting mud sills and shores.
- .5 Fabricate and erect formwork in accordance with CAN/CSA-S269.3, to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.



- .6 Align form joints and make watertight. Keep form joints to minimum.
- .7 Form chases, slots, openings, drips, recesses, chamfers, expansion and control joints as indicated.
- .8 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections. Ensure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .9 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

### **3.2 REMOVAL AND RESHORING**

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
  - .1 3 days for slabs.
- .2 Provide all necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.
- .3 Space reshoring in each principal direction at not more than 1500 mm apart.
- .4 Re-use formwork and falsework subject to requirements of CSA-A23.1A23.2.

**END OF SECTION**

**PART 1**      **GENERAL****1.1**      **RELATED SECTIONS**

- .1 Section 03 10 00 - Concrete Forming and Accessories.
- .2 Section 03 30 00 - Cast-In-Place Concrete.

**1.2**      **REFERENCES**

- .1 American Concrete Institute (ACI)
  - .1 SP-66, ACI Detailing Manual, 2004.
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A185/A185M, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
  - .2 ASTM A497/A497M, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
- .3 Canadian Standards Association (CSA)
  - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA-A23.3, Design of Concrete Structures.
  - .3 CSA-G30.18, Carbon Steel Bars for Concrete Reinforcement.
  - .4 CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel /Structural Quality Steel.
  - .5 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .4 Reinforcing Steel Institute of Canada (RSIC)
  - .1 RSIC, Reinforcing Steel Manual of Standard Practice.

**1.3**      **SUBMITTALS**

- .1 Indicate on shop drawings: bar bending details, lists, quantities of reinforcement, sizes, spacings, locations of reinforcement, and mechanical splices, if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to

structural drawings. Indicate sizes, spacings and locations of chairs, spacers and hangers.

- .2 Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada. SP-66, ACI Detailing Manual, 2004, American Concrete Institute.
- .3 Detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated.

## **PART 2      PRODUCTS**

### **2.1      MATERIALS**

- .1 Substitute different size bars only if permitted in writing by Owner's Representative.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .3 Cold-drawn annealed steel wire ties: to ASTM A497/A497M.
- .4 Welded steel wire fabric: to ASTM A185/A185M. Provide in flat sheets only.
- .5 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .6 Plain round bars: to CSA-G40.20/G40.21.

### **2.2      FABRICATION**

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1A23.2, SP-66, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Obtain Departmental Representative approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

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

### **2.3 SOURCE QUALITY CONTROL**

- .1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to commencing reinforcing work.
- .2 Upon request inform Departmental Representative of proposed source of material to be supplied.

## **PART 3 EXECUTION**

### **3.1 FIELD BENDING**

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

### **3.2 PLACING REINFORCEMENT**

- .1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CSA-A23.1/A23.2.
- .2 Prior to placing concrete, obtain Departmental Representative approval of reinforcing material and placement.
- .3 Ensure cover to reinforcement is maintained during concrete pour.
- .4 Support welded wire mesh on approved chairs or supports. The practice of "pulling up" the welded wire mesh during concrete placement is not acceptable.

**END OF SECTION**

**PART 1**      **GENERAL****1.1**      **RELATED SECTIONS**

- .1 Section 03 10 00 - Concrete Forming and Accessories.
- .2 Section 03 20 00 - Concrete Reinforcing.
- .3 Section 03 35 00 - Concrete Finishing.

**1.2**      **REFERENCES**

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM C260, Standard Specification for Air-Entraining Admixtures for Concrete.
  - .2 ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  - .3 ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .3 Canadian Standards Association (CSA)
  - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CAN3-A266.4, Guidelines for the Use of Admixtures in Concrete.
  - .3 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  - .4 CSA-A3001, Cementitious Materials for Use in Concrete.

**1.3**      **ACRONYMS AND TYPES**

- .1 Cement: hydraulic cement or blended hydraulic cement (XXb - where b denotes blended).
  - .1 Type GU or GUb - General use cement.

**1.4 SUBMITTALS**

- .1 At least 4 weeks prior to commencing work, inform Departmental Representative of proposed source of aggregates and provide access for sampling.
- .2 Submit testing results and reports for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.
- .3 Certificates:
  - .1 Minimum 4 weeks prior to starting concrete work submit to Departmental Representative manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials, as applicable, will meet specified requirements:
    - .1 Portland cement.
    - .2 Blended hydraulic cement.
    - .3 Supplementary cementing materials.
    - .4 Grout.
    - .5 Admixtures.
    - .6 Aggregates.
    - .7 Water.
    - .8 Waterstops.
    - .9 Waterstop joints.
    - .10 Joint filler.
  - .2 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CSA-A23.1/A23.2.
  - .3 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1/A23.2.

**1.5 SOURCE QUALITY CONTROL**

- .1 Have all concrete produced and delivered by a ready-mix plant that is a member of the Atlantic Provinces Ready Mixed Concrete Association (APRMCA) and holds a current "Certificate of Ready Mixed Concrete Production Facilities" issued by the Association. Submit a copy of this certificate to the Departmental Representative for approval.

**1.6 QUALITY ASSURANCE**

- .1 Minimum 4 weeks prior to starting concrete work, submit proposed quality control procedures, as applicable, in accordance with Section 01 45 00 - Quality Control for Departmental Representative approval for following items:
  - .1 Falsework erection.
  - .2 Hot weather concrete.
  - .3 Cold weather concrete.
  - .4 Curing.
  - .5 Finishes.
  - .6 Formwork removal.
  - .7 Joints.

**1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Concrete hauling time: maximum allowable time for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching.
  - .1 Modifications to maximum time limit must be agreed to by Departmental Representative and concrete producer as described in CSA A23.1/A23.2.
  - .2 Deviations to be submitted for review by Departmental Representative.
- .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .3 Waste Management and Disposal:
  - .1 Divert unused concrete materials from landfill to local facility approved by Departmental Representative.
  - .2 Provide an appropriate area on the job site where concrete trucks can be safely washed.
  - .3 Divert unused admixtures and additive materials (pigments, fibers) from landfill to official hazardous material collections site as approved by the Departmental Representative.
  - .4 Unused admixtures and additive materials must not be disposed of into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.

- .5 Prevent admixtures and additive materials from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal. Dispose of waste in accordance with applicable local, Provincial and National regulations.

## **PART 2      PRODUCTS**

### **2.1          MATERIALS**

- .1 Portland cement: to CAN/CSA-A3001, Type GU.
- .2 Water: to CAN/CSA-A23.1.
- .3 Aggregates: to CSA-A23.1.
- .4 Coarse aggregates to be normal density to CSA-A23.1/A23.2.
- .5 Admixtures:
  - .1 Air entraining admixture: to ASTM C260.
  - .2 Chemical admixtures: to ASTM C494, Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.

### **2.2          MIXES**

- .1 Proportion normal density concrete in accordance with CSA-A23.1/A23.2, Alternative 1 to give following quality and yield for all concrete.
  - .1 Class of exposure: C-1.
  - .2 Cement: Type GU Portland cement.
  - .3 Minimum compressive strength at 28 days: 35 MPa
  - .4 Air content: 5% to 8%.
  - .5 Maximum Water-to-Cement Ratio: 0.40.
  - .6 Minimum cement content: 300 kg/m<sup>3</sup> of concrete.
  - .7 Nominal size of coarse aggregate: 20 mm.
  - .8 Slump at time and point of discharge: 75 to 100 mm.



- .9 Chemical admixtures: in accordance with ASTM C494.

### **PART 3      EXECUTION**

#### **3.1      PREPARATION**

- .1 Obtain Departmental Representative approval before placing concrete. Provide seven (7) working days' notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 During concreting operations:
  - .1 Development of cold joints is not permitted.
  - .2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
- .4 Pumping of concrete is permitted only after approval of equipment and mix.
- .5 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .6 Prior to placing of concrete obtain Departmental Representative approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .7 Protect previous Work from staining.
- .8 Clean and remove stains prior to application of concrete finishes.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .10 Do not place load upon new concrete until authorized by Departmental Representative.
- .11 Support welded wire mesh on approved chairs or supports. The practice of "pulling up" the welded

wire mesh during concrete placement is not acceptable.

### 3.2 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CSA-A23.1/A23.2.
- .2 Sleeves and inserts.
  - .1 No sleeves, ducts, pipes or other openings shall pass through joists, beams, column capitals or columns, except where indicated or approved by Departmental Representative.
  - .2 Where approved by Departmental Representative, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere. Sleeves and openings greater than 100 x 100 mm not indicated, must be approved by Departmental Representative.
  - .3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Departmental Representative before placing of concrete.
  - .4 Check locations and sizes of sleeves and openings shown on drawings.
  - .5 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.
- .3 Finishing.
  - .1 Finish concrete in accordance with CSA-A23.1/A23.2.
  - .2 Use procedures acceptable to Departmental Representative or those noted in CSA-A23.1/A23.2, to remove excess bleed water. Ensure surface is not damaged.
  - .3 Wet cure using polyethylene sheets placed over sufficiently hardened concrete to prevent damage. Overlap adjacent edges 150 mm and tightly seal with sand on wood planks. Weigh sheets down to maintain close contact with concrete during the entire curing period.

- .4 Where burlap is used for moist curing, place two pre-wetted layers on concrete surface and keep continuously wet during curing period.
  - .5 Finish concrete floor to meet requirements of CSA-A23.1/A23.2.
  - .6 Concrete floor to have finish hardness equal or greater than Mohs hardness in accordance with CSA-A23.1/A23.2.
  - .7 Provide float finish for interior floor slabs.
  - .8 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radius edges unless otherwise indicated.
- .4 Dampproof membrane.
    - .1 Install dampproof membrane under concrete slab-on-grade.
    - .2 Lap dampproof membrane minimum 150 mm at joints and seal.
    - .3 Seal punctures in dampproof membrane before placing concrete. Use patching material at least 150 mm larger than puncture and seal.

### **3.3 SITE TOLERANCE**

- .1 Concrete slab tolerances in accordance with CSA-A23.1/A23.2, F-number Method,  $F_F = 20$ ,  $F_L = 15$ .

### **3.4 FIELD QUALITY CONTROL**

- .1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by Departmental Representative in accordance with CSA-A23.1/A23.2, and Section 01 45 00 - Quality Control.
- .2 Departmental Representative will pay for costs of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services. Costs of retesting due to deficient work will be paid for by Contractor, by credit change order.
- .3 Departmental Representative will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

- .4 Non-destructive Methods for Testing Concrete shall be in accordance with CSA-A23.1/A23.2.
- .5 Provide Certificate of Field Quality Inspection and Testing to Departmental Representative for inclusion in Commissioning Manual.
- .6 Inspection or testing by Departmental Representative will not augment or replace Contractor quality control nor relieve the Contractor of his contractual responsibility.

**END OF SECTION**

**PART 1      GENERAL****1.1      RELATED SECTIONS**

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

**1.2      REFERENCES**

- .1      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-25.20, Surface Sealer for Floors.
- .2      Canadian Standards Association (CSA)
  - .1      CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

**1.3      PERFORMANCE REQUIREMENTS**

- .1      Product quality and quality of work in accordance with Section 01 61 00 - Common Product Requirements.
- .2      Submit written declaration that components used are compatible and will not adversely affect finished flooring products and their installation adhesives.

**1.4      PRODUCT DATA**

- .1      Submit WHMIS MSDS - Material Safety Data Sheets. WHMIS MSDS acceptable to Labour Canada and Health and Welfare Canada for concrete floor treatment materials. Indicate VOC content.
- .2      Include application instructions for concrete floor treatment.

**1.5      ENVIRONMENTAL REQUIREMENTS**

- .1      Temporary lighting:
  - .1      Minimum 1200 W light source, placed 2.5 m above floor surface, for each 40 sq m of floor being treated.
- .2      Electrical power:
  - .1      Provide sufficient electrical power to operate equipment normally used during construction.
- .3      Work area:

- .1 Make the work area water tight to protect against rain and detrimental weather conditions.
- .4 Temperature:
  - .1 Maintain ambient temperature of not less than 10°C from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.
- .5 Moisture:
  - .1 Ensure concrete substrate is within moisture limits prescribed by flooring manufacturer.
- .6 Safety:
  - .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
- .7 Ventilation:
  - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
  - .2 Provide continuous ventilation during and after coating application.

## **PART 2      PRODUCTS**

### **2.1      SEALING COMPOUNDS**

- .1 Surface sealer: to CAN/CGSB-25.20, Type 2 - water based; INTRAGUARD by W. R. Meadows or approved equal.
- .2 Apply surface sealer to horizontal slab and exterior vertical surfaces of slab.

### **2.2      WET CURE**

- .1 Clear polyethylene film to ASTM C171, minimum thickness 0.15 mm (6 mil).

### **2.3      MIXES**

- .1 Mixing, ratios and application in accordance with manufacturer's instructions.

**PART 3**      **EXECUTION**

**3.1**            **PREPARATION OF EXISTING SLAB**

- .1 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radiused edges unless otherwise indicated.
- .2 Use mechanical stripping to remove chlorinated rubber or existing surface coatings.
- .3 Use protective clothing, eye protection, respiratory equipment during stripping of chlorinated rubber or existing surface coatings.

**3.2**            **APPLICATION**

- .1 Apply surface sealer in accordance with manufacturer's written instructions.
- .2 Apply surface sealer to horizontal slab and exterior vertical surfaces of slab.
- .3 Clean overspray. Clean sealant from adjacent surfaces.

**3.3**            **PROTECTION**

- .1 Protect finished installation in accordance with manufacturer's instructions.

**END OF SECTION**

**PART 1**      **GENERAL**

**1.1**            **RELATED SECTIONS**

- .1    Section 01 33 00 - Submittal Procedures.

**1.2**            **REFERENCES**

- .1    American Wood-Preservers' Association (AWPA)
  - .1    AWPA M2, Standard Inspection of Treated Wood Products.
  - .2    AWPA M4, Standard for the Care of Preservative-Treated Wood Products.
- .2    Canadian Standards Association (CSA)
  - .1    CSA O80 Series, Wood Preservation.

**1.3**            **CERTIFICATES**

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

**1.4**            **WASTE MANAGEMENT AND DISPOSAL**

- .1    Do not dispose of preservative treated wood through incineration.
- .2    Do not dispose of preservative treated wood with other materials destined for recycling or reuse.
- .3    Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Owner's Representative.



- .4 Dispose of unused wood preservative material at official hazardous material collections site approved by Owner's Representative.
- .5 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in other location where they will pose health or environmental hazard.

**PART 2      PRODUCTS**

**2.1            MATERIALS**

- .1 Preservative: to CAN/CSA-080 Series.

**PART 3      EXECUTION**

**3.1            APPLICATION: PRESERVATIVE**

- .1 Treat lumber to CAN/CSA-080 Series.
- .2 Following water-borne preservative treatment, dry material to maximum moisture content of 19%.

**3.2            APPLICATION: FIELD TREATMENT**

- .1 Comply with AWPA M4 and revisions specified in CAN/CSA-080 Series, Supplementary Requirements to AWPA Standard M2.
- .2 Treat all field cuts with two (2) coats of clear copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.

**END OF SECTION**

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1    Section 06 05 73 - Wood Treatment.

**1.2            REFERENCES**

- .1    Canadian Standards Association (CSA)
  - .1    CSA B111, Wire Nails, Spikes and Staples.
  - .2    CSA O121, Douglas Fir Plywood.
  - .3    CAN/CSA-0141, Softwood Lumber.
  - .4    CSA O151, Canadian Softwood Plywood.
  - .5    CAN/CSA-0325.0, Construction Sheathing.
- .2    National Lumber Grades Authority (NLGA)
  - .1    Standard Grading Rules for Canadian Lumber.

**1.3            QUALITY ASSURANCE**

- .1    Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2    Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

**1.4            SUBMITTALS**

- .1    Submit proof of compatibility between Alkaline Copper Quaternary (ACQ) pressure treated lumber and fasteners to be utilized.

**PART 2      PRODUCTS**

**2.1            FRAMING AND LUMBER MATERIALS**

- .1    Lumber: unless specified otherwise, softwood, No. 1 or No. 2 grade, S4S, moisture content 19% (S-dry) or less in accordance with following standards:
  - .1    CAN/CSA-0141.
  - .2    NLGA Standard Grading Rules for Canadian Lumber.
- .2    Framing and board lumber: in accordance with NBC.

.3 Furring, blocking, nailing strips, grounds, rough bucks, fascia backing and sleepers:

.1 Board sizes: "Standard" or better grade.

.2 Dimension sizes: "Standard" light framing or better grade.

.3 Post and timbers sizes: "Standard" or better grade.

.4 Pressure treated material to be Alkaline Copper Quaternary (ACQ).

## **2.2 PANEL MATERIALS**

.1 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.0.

.2 Douglas fir plywood (DFP): to CSA 0121, standard construction.

.3 Canadian softwood plywood (CSP): to CSA 0151, standard construction.

## **2.3 ACCESSORIES**

.1 General purpose adhesive: to CSA 0112.9.

.2 Nails, spikes and staples: to CSA B111.

## **2.4 FASTENER FINISHES**

.1 Galvanizing: to ASTM A123/A123M, ASTM A653, use galvanized fasteners for exterior work, interior highly humid areas and fire-retardant treated lumber.

## **2.5 WOOD PRESERVATIVE**

.1 Surface-applied wood preservative: clear or copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.

# **PART 3 EXECUTION**

## **3.1 PREPARATION**

.1 Treat surfaces of material with wood preservative, before installation.

- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3-minute soak on lumber and one-minute soak on plywood.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

### **3.2 INSTALLATION**

- .1 Comply with requirements of NBC latest edition, Part 9 supplemented by following paragraphs.
- .2 Install members true to line, levels and elevations, square and plumb.
- .3 Construct continuous members from pieces of longest practical length.
- .4 Install blocking and other wood supports as required and secure using galvanized steel fasteners.

### **3.3 ERECTION**

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.

**END OF SECTION**

**PART 1**      **GENERAL**

**1.1**            **RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.

**1.2**            **REFERENCES**

- .1      CAN/ULC-S701 (Type 4), Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
- .2      ASTM C518, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- .3      ASTM D1621, Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- .4      ASTM E96, Test Methods for Water Vapor Transmission of Materials
- .5      ASTM D696, Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with a Vitreous Silica Dilatometer.
- .6      ASTM D2842, Standard Test Method for Water Absorption of Rigid Cellular Plastics.
- .7      ASTM D2126, Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
- .8      ASTM C177, Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- .9      ASTM C203, Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Insulation.

**1.3**            **SUBMITTALS**

- .1      Shop Drawing:
  - .1      Submit manufacturer's printed product literature, specifications and data.

- .2 Submit WHMIS MSDS (Material Safety Data Sheets). Indicate VOC's for insulation products and adhesives.
- .3 Submit manufacturer's installation instructions.

**PART 2      PRODUCTS****2.1            INSULATION**

- .1 Extruded Polystyrene Rigid Insulation(XPS): Type 4 to CAN/ULC S701 for use below grade and exterior walls, RSI 0.88 per 25 mm, thickness as indicated on drawings, Styrofoam SM by Dow Chemical or Foamular C-300 by Owens Corning or approved equal.

**PART 3      EXECUTION****3.1            MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions and data sheets.

**3.2            EXAMINATION**

- .1 Examine substrates and immediately inform Owner's Representative in writing of defects.
- .2 Prior to commencement of work ensure substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.
- .3 Apply surface sealer to vertical concrete surfaces prior to installation of rigid insulation.

**3.3            WORKMANSHIP**

- .1 Install insulation after building substrate materials are dry.
- .2 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .3 Fit insulation tight around protrusions.

- .4 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges.
- .5 Use largest possible dimensions to reduce number of joints.
- .6 Offset both vertical and horizontal joints in multiple layer applications.
- .7 Do not enclose insulation until it has been inspected and approved by Owner's Representative.

**3.4 PERIMETER FOUNDATION INSULATION**

- .1 Extend boards vertically below bottom of grade as indicated on drawings.
- .2 Extend boards horizontally below grade, as indicated on drawings.

**3.5 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment.

**END OF SECTION**

**PART 1**      **GENERAL****1.1**      **RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.

**1.2**      **REFERENCES**

- .1 ASTM E-1745, Specification for Water Vapour Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs

**1.3**      **SUBMITTALS**

- .1 Submit manufacturer's printed product literature, specifications and datasheet and include:
  - .1 Product characteristics.
  - .2 Performance criteria.
  - .3 Limitations.
- .2 Submit Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS).
- .3 Quality assurance submittals:
  - .1 Certificates: submit certificates certifying that materials comply with specified performance characteristics and physical properties.
  - .2 Instructions: submit manufacturer's installation instructions and comply with written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

**PART 2**      **PRODUCTS****2.1**      **SHEET VAPOUR BARRIER**

- .1 Polyethylene film: thickness as indicated with a water vapour permeance of not greater than  $45 \text{ ng}/(\text{P}\cdot\text{s}\cdot\text{m}^2)$ :
  - .1 Slab-on-Grade: 0.38mm (15 mil), to ASTM E-1745, Perminator by WRMeadows or approved equal.



**2.2 ACCESSORIES**

- .1 Joint sealing tape: air resistant pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.
- .2 Sealant: compatible with vapour retarder, recommended by vapour retarder manufacturer, to Section 07 92 00 - Joint Sealants.

**PART 3 EXECUTION****3.1 INSTALLATION**

- .1 Ensure services are installed and inspected prior to installation of retarder.
- .2 Install sheet vapour retarder under concrete slab-on-grade and lap and seal all joints, seal to perimeter foundation wall, and seal to all pipe and/or other penetrations.
- .3 Use sheets of largest practical size to minimize joints.
- .4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

**3.2 ELECTRICAL**

- .1 Seal vapour barrier to electrical penetrations (i.e., conduits) that penetrate the vapour barrier in accordance with manufacturer's instructions.

**3.3 CLEANING**

- .1 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

**PART 1**      **GENERAL****1.1**      **RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.

**1.2**      **REFERENCES**

- .1 The Aluminum Association Inc. (AA)
  - .1 Aluminum Sheet Metal Work in Building Construction.
  - .2 AA DAF45, Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials (ASTM International)
  - .1 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2 ASTM A792/A792M, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - .3 ASTM D523, Standard Test Method for Specular Gloss.
  - .4 ASTM D822, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .3 Canadian General Standards Board (CGBS)
  - .1 CAN/CGSB-37.5, Cutback Asphalt Plastic Cement.
- .4 Canadian Roofing Contractors Association (CRCA)
  - .1 Roofing Specifications Manual.
- .5 Canadian Standards Association (CSA International)
  - .1 CSA B111, Wire Nails, Spikes and Staples.

**1.3**      **SAMPLES**

- .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, colour and finish.

**PART 2      PRODUCTS****2.1            SHEET METAL MATERIALS**

- .1 Aluminum-zinc alloy coated steel sheet: to ASTM A792/A792M, commercial quality, grade 33 with AZ150 coating, regular spangle surface, 0.60 mm base metal thickness. Pre-painted to CGSB -GP-71.

**2.2            PREFINISHED STEEL SHEET**

- .1 Prefinished sheet with factory applied polyvinylidene fluoride.
  - .1 Class F1S
  - .2 Colour as selected by Owner's Representative from manufacturer's standard range.
  - .3 Specular gloss: 30 units +/- 5 in accordance with ASTM D523.
  - .4 Coating thickness: not less than 22 micrometres.
  - .5 Resistance to accelerated weathering for caulk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:
    - .1 Outdoor exposure period 2500 hours.
    - .2 Humidity resistance exposure period 5000 hours.

**2.3            ACCESSORIES**

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB 37.5.
- .3 Sealants: to Section 07 92 00.
- .4 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.
- .5 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .6 Touch-up paint: as recommended by prefinished material manufacturer.

**2.4 FABRICATION**

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details as indicated.
- .2 Fabricate aluminum flashings and other sheet aluminum work in accordance with Aluminum Association Aluminum Sheet Metal Work in Building Construction.
- .3 Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints.
- .4 Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.
- .5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

**2.5 METAL FLASHINGS**

- .1 Form flashings, copings and fascia to profiles indicated of 0.60 mm thick prefinished steel.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- .1 Install sheet metal work in accordance with CRCA FL series details and as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Lock end joints and caulk with sealant.

**END OF SECTION**

**PART 1**      **GENERAL****1.1**      **RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.

**1.2**      **REFERENCES**

- .1      American Society for Testing and Materials International, (ASTM)
  - .1      ASTM C834, Standard Specification for Latex Sealants.
  - .2      ASTM C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.
  - .3      ASTM C919, Standard Practice for Use of Sealants in Acoustical Applications.
  - .4      ASTM C920, Standard Specification for Elastomeric Joint Sealants.
  - .5      ASTM C1330, Standard Specification for Cylindrical Sealant Backing for use with Cold Liquid Applied Sealants.
- .2      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-19.21, Sealing and Bedding Compound Acoustical.

**1.3**      **SUBMITTALS**

- .1      Manufacturer's product to describe.
  - .1      Caulking compound.
  - .2      Primers.
  - .3      Sealing compound, each type, including compatibility when different sealants are in contact with each other.
  - .4      Installation instructions, surface preparation and product limitations.
- .2      Manufacturers' instructions to include installation instructions for each product used.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.
- .3 Condition products to approximately 16 to 20 degrees C for use in accordance with manufacturer's recommendations.
- .4 Handle all products with appropriate precautions and care as stated on the Material Safety Data Sheet.

**1.5 PROJECT CONDITIONS**

- .1 Environmental Limitations:
  - .1 Do not proceed with installation of joint sealants under following conditions:
    - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4°C.
    - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
  - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
  - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

**PART 2 PRODUCTS****2.1 SEALANT MATERIALS**

- .1 Sealants and Caulking compounds must:

- .1 Meet or exceed all applicable governmental and industrial safety and performance standards; and
- .2 Be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act (CEPA).
- .2 Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulphate.
- .3 Sealant and caulking compounds must not contain a total of volatile organic compound (VOC's) in excess of 100 grams per litre as calculated from records of the amounts of constituents used to make the product.
- .4 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.
- .5 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .6 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.
- .7 Where sealants are qualified with primers use only these primers.
- .8 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

**2.2 SEALANT MATERIAL DESIGNATIONS**

- .1 Single component, low odor, moisture cure, medium modulus, low VOC sealant for use in sealing air/vapour barrier penetrations, to ASTM C920, Type S, Grade NS, Class 35.
  - .1 ASTM C719:  $\pm 35\%$ .
  - .2 Ultimate Elongation: 450 - 550%.
  - .3 Modulus, 100%: 275 - 345 kPa.
  - .4 Shore A Hardness: 25  $\pm$  5.
  - .5 Tensile Strength: 1034 - 1378 kPa.
  - .6 Maximum VOC: 5 g/L.
- .2 Single component, medium modulus, high-performance, neutral-cure silicone sealant for general purpose exterior use, to ASTM C920, Type S, Grade NS, Class 35, Use NT, M, A and O.
  - .1 ASTM C719:  $\pm 25\%$ .
  - .2 Ultimate Elongation: 550%.
  - .3 Modulus, 50% extension: 380 kPa.
  - .4 Shore A Hardness: 25  $\pm$  5.
  - .5 Tensile Strength: 1240 kPa.
  - .6 Maximum VOC: 35 g/L.
  - .7 Colour to be selected from manufacturer's standard range.
- .3 Single component, low modulus, neutral-cure silicone sealant for general purpose masonry use, to ASTM C920, Type S, Grade NS, Class 50, Use T, NT, M, G, A and O.
  - .1 ASTM C719:  $\pm 50\%$ .
  - .2 Ultimate Elongation: 1600%.
  - .3 Modulus, 50% extension: 193 kPa.
  - .4 Shore A Hardness: 15.
  - .5 Tensile Strength: 690 kPa.
  - .6 Maximum VOC: 22 g/L.
  - .7 Colour to be selected from manufacturer's standard range.
- .4 Two-component, high modulus, neutral-cure flexible silicone rubber sealant for use with aluminum window and curtain wall fabrication, assembly and glazing installation, to ASTM C1184 and ASTM C920, Type M, Grade NS, Class 12  $\frac{1}{2}$ , Use NT.



- .1 ASTM C719:  $\pm$  25%.
  - .2 Ultimate Elongation: 120%.
  - .3 Shore A Hardness: 30 - 40.
  - .4 Tensile Strength: 2000 kPa.
  - .5 Maximum VOC: < 18 g/L.
- .5 Single component, medium modulus, neutral-cure silicone sealant for general roofing applications, to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, A and O.
- .1 ASTM C719:  $\pm$  50%.
  - .2 Shore A Hardness: 35.
  - .3 Tensile Strength: 415 kPa.
  - .4 Maximum VOC: 28 g/L.
  - .5 Colour to be selected from manufacturer's standard range.
- .6 Single component, chemical cure, silicone rubber sealant, for use with plumbing fixtures, showers, sinks, tubs, and junction of counter tops and adjacent wall finishes, to ASTM C920, Type S, Grade NS, Class 25, Use NT.
- .1 Shore A Hardness: 25.
  - .2 Tensile Strength: 2100 kPa.
  - .3 Maximum VOC: 36 g/L.
  - .4 Colour to be selected from manufacturer's standard range.
- .7 Single component, high-performance, elastomeric polyurethane sealant, paintable, for general purpose interior use, to ASTM C920, Type S, Grade NS, Class 35, Use NT, M, A, T, O and I.
- .1 ASTM C719: 35%.
  - .2 Ultimate Elongation: 800%.
  - .3 Shore A Hardness: 25 - 30.
  - .4 Tensile Strength: 2400 kPa.
  - .5 Maximum VOC: 35 g/L.
  - .6 Colour to be selected from manufacturer's standard range.
- .8 Single component, non-skinning, non-hardening, synthetic rubber sealant for use in acoustical applications, to CAN/CGSB 19.21.

- .1 Shrinkage: maximum 20%.
- .2 Maximum VOC: 53 g/L.
- .3 Sag: Maximum 4.0 mm.
- .9 Two-component, non-sag, tamper resistant, elastomeric polyurethane sealant, for use in interior joints, penetrations, doors, windows, perimeters of fixtures, where a flexible security sealant is required due to idle tampering or vandalism, to ASTM C920, type M, Grade NS, Class 12.5, Use T<sub>1</sub>, M and O.
  - .1 Ultimate Elongation: 175 - 200%.
  - .2 Shore A Hardness: 40 - 45.
  - .3 Tensile Strength: 2000 to 2400 kPa.
  - .4 Maximum VOC: Activator - < 25 g/L, Base - < 100 g/L.
  - .5 Colour to be selected from manufacturer's standard range.

### 2.3 ACCESSORIES

- .1 Primer: Type as recommended by sealant manufacturer. Primer to be compatible with joint forming materials.
- .2 Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer and compatible with joint forming materials.
- .3 Preformed Compressible and Non-Compressible back-up materials.
  - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
    - .1 Extruded closed cell foam backer rod.
    - .2 Size: oversize 30 to 50 %.
  - .2 Neoprene or Butyl Rubber.
    - .1 Round solid rod, Shore A hardness 70.
  - .3 High Density Foam.
    - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m<sup>3</sup> density, or neoprene foam backer, size as recommended by manufacturer.
  - .4 Bond Breaker Tape.
    - .1 Polyethylene bond breaker tape which will not bond to sealant.

**PART 3**      **EXECUTION****3.1**            **PROTECTION**

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

**3.2**            **SURFACE PREPARATION**

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

**3.3**            **PRIMING**

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

**3.4**            **BACKUP MATERIAL**

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

**3.5 MIXING**

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

**3.6 APPLICATION**

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

**END OF SECTION**

**PART 1**      **GENERAL**

**1.1**            **RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures

**1.2**            **REFERENCES**

- .1 American Society for Testing and Materials, (ASTM)
  - .1 ASTM C1325-17a: Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units

**1.3**            **SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's product data and installation instructions for approval.

**1.4**            **DELIVERY, STORAGE AND HANDLING**

- .1 Deliver materials in original packaging bearing manufacturers brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
- .3 Handle cement boards to prevent damage to edges, ends or surfaces.

**PART 2**      **PRODUCTS**

**2.1**            **MATERIALS**

- .1 Cement Board: to ASTM C1325-17a, thickness as indicated, PermaBase Brand Cement Board by National Gypsum or approved equal.
- .2 Fasteners: non-corrosive and as recommended by manufacturer.

**PART 3**      **EXECUTION**

**3.1**            **ERECTION**

- .1 Do application and finishing of cement board in accordance with manufacturer's instructions.
- .2 Cut to fit as indicated on drawings. All exposed corners to be factory edges. Caulk all seams and corners.
- .3 Mechanically fasten at edges at max. 300mm o.c. Minimum 38mm embedment depth for fasteners. Use only galvanized or non-corrosive fasteners and as recommended by manufacturer and compatible with product.
- .4 Do not cement gypsum board until substrate and work to be covered are approved.

**END OF SECTION**

**PART 1      GENERAL**

**1.1          SCOPE**

- .1      This technical specification is primarily included for information but includes work to be executed under this contract.
- .2      The building is prefabricated and fully fitted out with mechanical and electrical components and is located at Owner's premises in Bishop Falls, NL.
- .3      **Work under this contract will include taking possession of the building in Bishop Falls, including loading; shipping the building to Bear Cove Point, NL; installation of the building on the new concrete foundation; and making electrical connections to bring the building to a fully operational condition.**

**1.2          REFERENCES**

- .1      Shop Drawings for Prefabricated Modular Fiberglass Building by RM Products Limited will be provided, if requested.

**1.3          SUBMITTALS**

- .1      Reports: Prior to taking possession of the building, photograph and document existing conditions and submit to Departmental Representative. Note any deficiencies, damage or other.

**1.4          DELIVERY, STORAGE AND HANDLING**

- .1      Building is pre-manufactured complete with all architectural, mechanical and electrical components installed.
- .2      Receive, handle, deliver, store and protect building and integral products in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's printed instructions.

- .3 Only use manufacturer's lifting lugs fabricated/installed into building for handling. DO NOT use any other means to lift or move the building.

## **PART 2      PRODUCTS**

### **2.1      Pre-Fabricated Modular Fiberglass Building (Owner-Supplied)**

- .1 Pre-Engineered/Fabricated Modular Building, manufactured by RM Products Ltd, and supplied by Owner, per attached shop drawings.
- .2 Sill Gasket: supplied with building (**confirm upon taking possession of building; advise Owner at this time if sill gasket is not present so as to avoid future delays on site at Bear Cove Point**).
- .3 Anchor Bolts: supplied with building (**confirm upon taking possession of building; advise Owner at this time if anchor bolts are not present so as to avoid future delays on site at Bear Cove Point**).

## **PART 3      EXECUTION**

### **3.1      MOUNTING AND FASTENING**

- .1 The building shall be installed on the concrete floor slab, which is to be constructed as part of this contract.
- .2 The pre-fabricated building incorporates a 75mm (3") wide internal fiberglass mounting flange around the building perimeter and is pre-drilled for anchor bolts.
- .3 An expandable neoprene sponge rubber gasket (to provide a weather tight seal) is supplied separately with the building and shall be installed as part of this contract. The quantity of gasket is the length required plus 20%. Install sill gasket per manufacturer's instructions.



- .4 The building shall be anchored to the slab with Ø12.7mm x 95mm long (½"x 3-3/4") expandable stainless-steel wedge anchors, which are supplied with the building. The quantity of anchors supplied with the building is the number required plus 20%. Drill Ø12.7mm holes at each hole location in the flange and install anchors per manufacturer's instructions.
- .5 Make electrical connections and test and commission all pre-installed equipment to verify operation
- .6 Upon completion, remove surplus materials, rubbish, tools and equipment and clean building and all equipment.

**END OF SECTION**

**PART 1**      **GENERAL**

**1.1**            **RELATED SECTIONS**

- .1    Section 01 35 43 - Environmental Procedures.
- .2    Section 31 23 33.01 - Excavation, Trenching and Backfilling.

**1.2**            **DEFINITIONS**

- .1    Clearing: cutting off trees and brush vegetative growth to not more than a specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.
- .2    Close-cut clearing: cutting off standing trees, brush, scrub, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.
- .3    Clearing isolated trees: cutting off to not more than a specified height above ground of designated trees and disposing of felled trees and debris.
- .4    Underbrush clearing: removal from treed areas of undergrowth, deadwood, and trees smaller than 50 mm trunk diameter and disposing of all fallen timber and surface debris.
- .5    Grubbing: excavation and disposal of stumps and roots boulders and rock fragments of specified size to not less than a specified depth below existing ground surface.

**1.3**            **STORAGE AND PROTECTION**

- .1    Prevent damage to fencing, trees, landscaping, natural features, bench marks, existing buildings, existing pavement, utility lines, site appurtenances, water courses, root systems of trees which are to remain, etc.
- .2    Repair any damaged items to approval of Departmental Representative. Replace any trees designated to

remain, if damaged, as directed by Departmental Representative.

**PART 2**      **PRODUCTS (NOT APPLICABLE)**

**PART 3**      **EXECUTION**

**3.1**            **PREPARATION**

- .1 Inspect site and verify items designated to remain with Departmental Representative.
- .2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site:
  - .1 Notify Departmental Representative immediately of damage to or when unknown existing utility lines are encountered.
  - .2 When utility lines which are to be removed are encountered within area of operations, notify Departmental Representative in ample time to minimize interruption of service.
- .3 Notify utility authorities before starting clearing and grubbing.
- .4 Keep roads and walks free of dirt and debris.

**3.2**            **CLEARING**

- .1 Clearing includes felling, trimming and cutting of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, snags brush and rubbish occurring within cleared areas.
- .2 Clear as directed by Departmental Representative, by cutting at a height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.
- .3 Cut off branches and cut down trees overhanging area cleared as directed by Departmental Representative.

- .4 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

### **3.3 CLOSE CUT CLEARING**

- .1 Close cut clearing to ground level.
- .2 Cut off branches down trees overhanging area cleared as directed by Departmental Representative.
- .3 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

### **3.4 ISOLATED TREES**

- .1 Cut off isolated trees as directed by Departmental Representative at height of not more than 300mm above ground surface.
- .2 Grub out isolated tree stumps.
- .3 Prune individual trees as indicated.
- .4 Trim trees designated to be left standing within cleared areas of dead branches 4.0 cm or more in diameter; and trim branches to heights as indicated.
- .5 Cut limbs and branches to be trimmed close to bole of tree or main branches.

### **3.5 UNDERBRUSH CLEARING**

- .1 Clear underbrush from areas as indicated at ground level.

### **3.6 GRUBBING**

- .1 Remove and dispose of roots larger than 7.5 cm in diameter, matted roots and designated stumps from indicated grubbing area.
- .2 Grub out stumps and roots to not less than 200 mm below ground surface.
- .3 Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension, but less than 0.25 m<sup>3</sup>.

- .4 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.

### **3.7 REMOVAL AND DISPOSAL**

- .1 Remove cleared and grubbed materials off site.
- .2 Cut timber greater than 125 mm diameter to 3000mm lengths and stockpile as indicated. Unless otherwise notified, stockpiled timber becomes property of the Owner.
- .3 Dispose of cleared and grubbed materials off site.
- .4 Remove diseased trees identified by Departmental Representative and dispose of this material to approval of Departmental Representative.

### **3.8 FINISHED SURFACE**

- .1 Leave ground surface in condition suitable for immediate grading operations stripping of topsoil to approval of Departmental Representative.

### **3.9 CLEANING**

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 56 00 - Temporary Barriers and Enclosures.

**1.2      REFERENCES**

- .1      American Society for Testing and Materials (ASTM).
  - .1      ASTM C117, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
  - .2      ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3      ASTM D422, Standard Test Method for Particle-Size Analysis of Soils.
  - .4      ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>).
  - .5      ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup>) (2,700 kN-m/m<sup>3</sup>).
  - .6      ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2      Canadian General Standards Board (CGSB).
  - .1      CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
  - .2      CA/CGSB-8.2, Sieves, Testing, Woven Wire, Metric
- .3      Canadian Standards Association (CSA)
  - .1      CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
    - .1      CSA-A3001, Cementitious Materials for Use in Concrete.

- .2 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/ Methods of Test and Standard Practices for Concrete.

### 1.3 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized:
  - .1 Rock excavation: excavation of material from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass, and boulders or rock fragments having individual volume more than 1m<sup>3</sup>. Frozen material is not classified as rock.
  - .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in work.
- .3 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
- .4 Waste material: excavated material unsuitable for use in work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded and required for construction of fill areas or for other portions of work.
- .6 Unsuitable materials:
  - .1 Weak and compressible materials under excavated areas.
  - .2 Frost susceptible materials under excavated areas.
    - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1.

<u>Sieve Designation</u>	<u>%Passing</u>
2.00 mm	100
0.10 mm	45-100
0.02 mm	10-80
<u>0.005 mm</u>	<u>0-45</u>

- .2 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.

#### 1.4 SUBMITTALS

- .1 Inform Departmental Representative at least 4 weeks prior to commencing work, of proposed source of fill materials and provide access for sampling.
- .2 Submit 70 kg samples of each type of fill specified including representative samples of excavated material.
- .3 Ship samples where directed by Departmental Representative in tightly closed containers to prevent contamination.

#### 1.5 QUALITY ASSURANCE

- .1 Submit design and supporting data at least 2 weeks prior to commencing work.
- .2 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in the province of Newfoundland and Labrador.
- .3 Keep design and supporting data on site.
- .4 Do not use soil material until written report of soil test results are reviewed and approved by Departmental Representative.

#### 1.6 EXISTING CONDITIONS

- .1 Buried services:  
.1 Before commencing work verify location of buried services on and adjacent to site. Hand dig if required.



- .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
  - .3 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
  - .4 Prior to commencing excavation work, notify applicable Owner or Authorities-having-Jurisdiction, establish location and state of use of buried utilities and structures. Owners or Authorities-having-Jurisdiction to clearly mark such locations to prevent disturbance during work.
  - .5 Confirm locations of buried utilities by careful test excavations or hand digging.
  - .6 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
  - .7 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing.
  - .8 Record location of maintained, re-routed and abandoned underground lines.
  - .9 Confirm locations of recent excavations adjacent to area of excavation.
- .2 Existing buildings and surface features:
- .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, pavement, survey bench marks and monuments which may be affected by work.
  - .2 Protect existing buildings and surface features from damage while work is in progress. In event of damage, immediately make repair to approval of Departmental Representative.
  - .3 Where required for excavation, cut roots or branches as approved by Departmental Representative.

**PART 2**      **PRODUCTS**

**2.1**      **MATERIALS**

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
- .2 Flat and elongated particles of coarse aggregate: to ASTM D4791, greatest dimension to exceed five times least dimension.
- .3 Fine aggregates to be one of or a blend of following:
  - .1 Natural sand.
  - .2 Manufactured sand.
  - .3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
- .4 Coarse aggregates to be one of or a blend of following:
  - .1 Crushed rock or slag.
  - .2 Gravel and crushed gravel composed of naturally formed particles of stone.
- .5 Backfill Type 1 (Class A) and Type 2 (Class B) Fills: to the following requirements:
  - .1 Crushed, pit-run or screened stone, gravel or sand.
  - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.

<u>Sieve Designation</u>	<u>%Passing</u>	
	<u>Type1 (A)</u>	<u>Type2 (B)</u>
75 mm	-	100
50 mm	-	-
37.5 mm	-	-
25 mm	100	-
19 mm	75-100	-
12.5 mm	-	-
9.5 mm	50-100	-
4.75 mm	30-70	22-85
2.00 mm	20-45	-
0.425 mm	10-25	5-30
0.180 mm	-	-
<u>0.075 mm</u>	<u>3-8</u>	<u>0-10</u>

- .6 Type 3 (Class C) Fill: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.

### **PART 3      EXECUTION**

#### **3.1      SITE PREPARATION**

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

#### **3.2      PREPARATION/PROTECTION**

- .1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative's approval.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction,

protect existing trees from damage. Protect buried services that are required to remain undisturbed.

### **3.3 STRIPPING OF TOPSOIL**

- .1 Commence topsoil stripping of areas as indicated by Departmental Representative after area has been cleared of brush, weeds and grasses and removed from site.
- .2 Strip topsoil to depths as indicated by Departmental Representative. Do not mix topsoil with subsoil.
- .3 Stockpile in locations as directed by Departmental Representative. Stockpile height not to exceed 2 m.
- .4 Dispose of unused topsoil as directed by Departmental Representative.

### **3.4 STOCKPILING**

- .1 Stockpile fill materials in areas designated by Departmental Representative. Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.

### **3.5 TEMPORARY WORKS**

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 30 - Health and Safety Requirements and Occupational Health and Safety Act for the Province of Newfoundland and Labrador.
- .2 Obtain permit from Authority-Having-Jurisdiction for temporary diversion of water course.
- .3 Construct temporary works to depths, heights and locations as indicated or required to execute the Work or approved by Departmental Representative.
- .4 During backfill operation:
  - .1 Unless otherwise as indicated or as directed by Departmental Representative remove sheeting and shoring from excavations.

- .2 Do not remove bracing until backfilling has reached respective levels of such bracing.
- .3 Pull sheeting in increments that will ensure compacted backfill is maintained at an elevation at least 500 mm above toe of sheeting.
- .5 When sheeting is required to remain in place, cut off tops at elevations as indicated.
- .6 Upon completion of substructure construction:
  - .1 Remove shoring and bracing.
  - .2 Remove excess materials from site and restore water courses as indicated or as directed by Departmental Representative.

### **3.6 DEWATERING AND HEAVE PREVENTION**

- .1 Keep excavations free of water while work is in progress.
- .2 Submit for Departmental Representative's review details of proposed dewatering or heave prevention methods, such as dikes, well points, and sheet pile cut-offs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to public and private property, or any portion of work completed or under construction.
- .6 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, water courses or drainage areas.

**3.7 EXCAVATION**

- .1 Excavate to lines, grades, elevations and dimensions as indicated or as required to execute the Work.
- .2 Remove concrete, masonry, paving, walks, demolished foundations and rubble and other obstructions encountered during excavation in accordance with Section 02 41 13 - Selective Site Demolition and/or Section 02 41 16 - Structure Demolition.
- .3 Excavation must not interfere with bearing capacity of adjacent foundations.
- .4 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .5 For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.
- .6 Keep excavated and stockpiled materials a safe distance away from edge of trench.
- .7 Restrict vehicle operations directly adjacent to open trenches.
- .8 Dispose of surplus and unsuitable excavated material off site.
- .9 Do not obstruct flow of surface drainage or natural watercourses.
- .10 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .11 Notify Departmental Representative when bottom of excavation is reached.
- .12 Obtain Departmental Representative approval of completed excavation.

- .13 Remove unsuitable material from trench bottom to extent and depth as directed by Departmental Representative.
- .14 Correct unauthorized over-excavation as follows:
  - .1 Fill under bearing surfaces and foundations with concrete specified for footings.
  - .2 Fill under other areas with Type 2 fill compacted to not less than 95% of corrected maximum dry density.
- .15 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.

### **3.8 FILL TYPES AND COMPACTION**

- .1 Use fill of types as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D698 corrected maximum dry density.
  - .1 Exterior side of perimeter walls: use Type 3 fill to subgrade level. Compact to 95%.
  - .2 Within building area: use Type 2 to underside of base course for floor slabs. Compact to 98%.
  - .3 Under concrete slabs: provide 150 mm compacted thickness base course of Type 1 fill to underside of slab. Compact base course to 100%.
  - .4 Retaining walls: use Type 2 fill to subgrade level on high side for minimum 500 mm from wall and compact to 95%. For remaining portion, use Type 3 fill compacted to 95%.
  - .5 To correct over excavation in trenches: use Type 2 fill to underside of sand bedding compacted to 95%.

### **3.9 BEDDING AND SURROUND OF UNDERGROUND SERVICES**

- .1 Place and compact granular material for bedding and surround of underground services as indicated.

- .2 Place bedding and surround material in unfrozen condition.

### 3.10 BACKFILLING

- .1 Vibratory compaction equipment: to be approved by Departmental Representative.
- .2 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.
- .3 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .4 Do not use backfill material which is frozen or contains ice, snow or debris.
- .5 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .6 Backfill around installations.
  - .1 Place bedding and surround material as specified elsewhere.
  - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
  - .3 Place layers simultaneously on both sides of installed work to equalize loading. Difference not to exceed 600 mm.
  - .4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures.
    - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure, and approval obtained from Departmental Representative, or
    - .2 If approved by Departmental Representative, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Departmental Representative.



**3.11 RESTORATION**

- .1 Upon completion of work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Replace topsoil as indicated.
- .3 Reinstate lawns to elevation which existed before excavation.
- .4 Reinstate pavement and sidewalks distributed by excavation to thickness, structure, and elevation which existed before excavation.
- .5 Clean and reinstate areas affected by work as directed by Departmental Representative.
- .6 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 h.

**END OF SECTION**