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PART 1 - GENERAL

- 1.1 Description of Work
- .1 Site of work is at the Harbour Authority facility located at Redhead, PEI.
 - .2 The work of this contract includes but is not limited to:
 - .1 Removal and disposal of existing concrete deck, timber stringers, pile cap, fenders, front wales and fascia to the limits shown on the drawings.
 - .2 Cutting and disposal (or removal and disposal as necessary) of existing asphalt to limits shown on drawings.
 - .3 Removal and reinstatement of any service pipes, lines, etc.
 - .4 Reconstruction of wharf with new steel H-piles and concrete lagging panels (Berlin-wall), tied back to new steel H-piles to limits and in areas as shown on the drawings.
 - .5 Supply of material as indicted herein.
 - .6 Supply and placement of tremie concrete, and filter fabric to grade and limits as shown on the drawings.
 - .7 Removal, sorting, salvage and reinstatement of existing sandstone backfill to the grades and limits shown on the drawings.
 - .8 Reinstatement of service area including supply and placement of sandstone backfill, granular asphalt base and asphalt.
 - .9 Removal, relocation and reinstatement of power poles where necessary to carry out the work. This will also include high-voltage lines as may be encountered onsite.
 - .3 All work to be carried out in accordance with the requirements of these specifications and drawings, construction schedule and time and order of completion.
- 1.2 Familiarization with Site
- .1 All bidders, before submitting their tender, should inspect and examine the site and its surroundings and the extent of underground facilities and shall satisfy themselves as to the form and nature of the work and materials necessary for the completion of the work, the means of access to the site, the accommodation they may require, and in general shall themselves obtain all necessary information as

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- 1.2 Familiarization with Site
(Cont'd)
- .1 (Cont'd)
to risks, contingencies and other circumstances which may influence or affect their tender. 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 Obtain prior permission from the Departmental Representative before carrying out such site inspection.
 - .3 No extra payment will be made to the Contractor, above the Contract Price, for costs resultant from failure to determine the conditions that affect the Work.
 - .4 Bidders are required to wear all appropriate personal protective equipment and take all precautionary measures necessary to ensure their safety during any pre-tender site visits.
- 1.3 Codes and Standards
- .1 Perform work in accordance with the National Building Code of Canada, National Fire Code of Canada and any other code of provincial or local application, including all amendments up to project tender 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.
 - .3 Unless otherwise indicated, the latest editions of referenced standards, codes and documents will apply.
- 1.4 Cost Breakdown
- .1 Notify Departmental Representative in advance, prior to submission of progress claim, to permit measurement of quantities by Departmental Representative.
 - .2 The project is scheduled to be completed over 2 fiscal years within the following sequence of construction to meet fiscal funding limitations.

January 1 2014 to March 31 2014
Scope of Work to be completed:
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- 1.4 Cost Breakdown .2 (Cont'd)
(Cont'd)
- .1 Purchase and delivery of piles, tie rods and miscellaneous steel to site.
- April 1 2014 to May 31 2014
Scope of Work to be completed:
- .2 Remainder of contract.
- Additional work may be completed under the contract during the period of January 1 2014 to March 31 2014 however there would be no payment for this work until after March 31 2014.
- .3 Measurements for payments are detailed in subsequent sections.
- 1.5 Documents .1 Maintain at job site, one copy each of the
Required following:
- .1 Contract Drawings
.2 Specifications
.3 Addenda
.4 Reviewed Shop Drawings
.5 Change orders
.6 Other modifications to contract
.7 Field test reports
.8 Copy of approved work schedule
.9 Health and Safety Plan and other safety related documents. Copy of the Health & Safety Plan to be posted on site.
.10 Other documents as stipulated elsewhere in the Contract Documents.
.11 Lockout procedures
.12 Hot work procedures
- 1.6 Permits .1 In accordance with the General Conditions obtain and pay for building permit, certificates, licenses and other permits as required by municipal, provincial and federal authorities.
- .2 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.
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1.7 Existing
Services

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian and vehicular traffic.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .5 Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed and abandoned service lines.

1.8 Contractor's
Use of Site

- .1 The Contractor is advised that the construction operations, including storage of materials, for this contract must not interfere with the fishing activity and/or the operations at the wharf. Plan and execute work to minimize interference. Do not unreasonably encumber site with materials or equipment.
 - .2 The Contractor will be solely responsible for arranging the storage of materials on or off the 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 of the Departmental Representative.
 - .3 Exercise care so as not to obstruct or damage public or private property in the area.
 - .4 Maintain all roads, streets, lanes, walks, driveways, free from mud and debris tracked from construction site, on a daily basis.
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- 1.9 Datum .1 All elevation used in this specification and accompanying drawings are referred to the Chart Datum which is Lowest Normal Tides (L.N.T.) for the purpose of this contract. The new deck elevation will match the existing deck elevation as noted on the drawings.
- 1.10 Snow and Ice Removal .1 Assume full responsibility for snow and ice removal to gain access to the construction site, access to wharf, disposal site and storage areas when required.
- 1.11 Security .1 Watch the site at all times, including weekends and holidays. No compensation will be paid by Public Works and Government Services Canada (PWGSC) for materials of work stolen, lost, damaged or destroyed.
- 1.12 Field Dimensions .1 Take all field measurements required to verify or supplement drawings dimensions. The Departmental Representative's review of shop drawings and erection diagrams does not relieve the contractor of this responsibility.
- .2 The dimensions of the existing structure shown on drawings are approximate only and may differ from actual site measurements. No compensation will be paid by Public Works and Government Services Canada for this circumstance.
- 1.13 Setting Out the Work .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices and qualified personnel as required to layout and construct work.
- .3 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.
- .4 Supply all stakes and markers required for laying out work.
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- 1.14 Acceptance .1 Notify Departmental Representative in writing when work is complete and ready for final inspection.
- .1 Make a check of all work and correct all discrepancies, defects and outstanding work before sending notification.
 - .2 Accompany Departmental Representative during final inspection.
 - .3 Rectify all defects, faults and outstanding items indentified by Departmental Representative during inspection.
 - .4 Be aware that the Final Certificate of Completion will not be issued until such time that Contractor has fully completed and turned over all specified as-built project documents.
- 1.15 Relics and Antiquities .1 Relics and antiquities and items of historical or scientific interest such as cornerstones and contents, commerative plaques, inscribed tablets, and similar objects found during the excavation work, shall remain the property of the Government, except when excavation is on private property when it becomes the property of the property owner. Protect such articles and request directives from the Departmental Representative.
- .2 Give immediate notice to Departmental Representative if evidence of archaeological finds are encountered during construction, and await Departmental Representative's written instructions before proceeding with work in this area.
- 1.16 Limit of Operations .1 The Contractor will only be allowed to limit operations within the defined project limits unless authorized in writing by Departmental Representative.
- .2 The Contractor shall facilitate and make safe the continued use and operation of all other areas if the site at all times.

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- 1.1 Related Sections .1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 35 29 - Health and Safety Requirements.
.3 Section 01 74 21 - Construction/ Demolition Waste Management.
- 1.2 Submittals Sections .1 Upon award of contract and prior to commencement of work, submit to Departmental Representative the following work management documents:
.1 Work Schedule as specified herein;
.2 Shop Drawing Submittal Schedule specified in Section 01 33 00;
.3 Waste Management Plan specified in Section 01 74 21;
.4 Health and Safety Plan specified in Section 01 35 29.
- 1.3 Work Schedule .1 The project is scheduled to be completed over 2 fiscal years within the following sequence of construction to meet fiscal funding limitations.
- January 1 2014 to March 31 2014
Scope of Work to be completed:
.1 Purchase and delivery of piles, tie rods and miscellaneous steel to site.
- April 1 2014 to May 31 2014
Scope of Work to be completed:
.2 Remainder of contract.
- Additional work may be completed under the contract during the period of January 1 2014 to March 31 2014 however there would be no payment for this work until after March 31 2014.
- .2 Upon acceptance of bid submit:
.1 Detailed work schedule submitted within 7 calendar days of contract award.
- .3 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.
- .4 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and
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- 1.3 Work Schedule .4 (Cont'd)
(Cont'd)
- resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .5 Work schedule content to include as a minimum the following:
- .1 Bar (GANTT) Charts, indicating all work activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
- .2 Generally bar charts derived from commercially available computerized project management system are preferred but not mandatory.
- .6 Schedule work in cooperation with the Department Representative. Incorporate within work schedule, items identified by Departmental Representative during review of schedule.
- .7 Completed schedule shall be approved by Departmental Representative. When approved, take necessary measures to complete work within scheduled time. Do not change schedule without Departmental Representative's approval.
- .8 Schedule updates:
- .1 Submit on a minimum monthly, or more often when requested by Departmental Representative.
- .2 Provide information and pertinent details explaining reasons for necessary changes to implementation of plan.
- .3 Identify problem areas, anticipate delays, impact on schedule and proposed corrective measures to be taken.
- .9 Departmental Representative will make interim reviews and evaluate progress of work based on approved schedule. Frequency of such reviews will be as decided by Departmental Representative. Address and take corrective measures on items identified by reviews and as directed by Departmental Representative. Update schedule accordingly.
- .10 In every instance, change or deviation from the work schedule, no matter how minimal the risk or impact on safety or inconvenience to tenant or public might appear, will be subject to prior review and approval by the Departmental Representative.
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- 1.3 Work Schedule (Cont'd)
- .11 Be aware that the facility must be kept operational for the full duration of work of this contract.
 - .12 Make allowance in the construction schedule of the following specific activities:
 - .1 Preconstruction meeting
 - .2 Deficiency review
 - .3 Deficiency clean-up
 - .4 Construction close-out
 - .5 Substantial completion
 - .6 Project record drawings (as-built) submission
 - .7 Warranties submission
- 1.4 Operational Restrictions
- .1 Parking Area/Wharf Access:
 - .1 The Contractor must recognize that nearby parking area and wharf access will be affected by implementation of this contract. The Contractor must perform the work with utmost regard to the safety and convenience of the general public. All work activities must be planned and scheduled with this in mind. The Contractor will not be permitted to disturb any portion of the area without providing temporary facilities as necessary to ensure safe and direct passage through disturbed or otherwise affected areas.
 - .2 Facility circulation maintained:
 - .1 Ensure that entrances, roadways, loading zones and other circulation routes are maintained free and clear providing safe and uninterrupted passage for facility users and public at all times during the entire work.
 - .2 Maintain those areas clean and free of construction materials and equipment.
 - .3 Maintain fire escape routes accessible and fire fighting access open all times for the duration of the project.
 - .4 Supply, place and maintain barriers around all buildings to permit safe access to buildings. No heavy equipment or trucks will be permitted to cross barriers.
 - .3 Dust and Dirt Control:
 - .1 Effectively plan and implement dust control measures and cleaning activities as an integral part of all construction activities. Review all measures with the Departmental
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- 1.4 Operational Restrictions (Cont'd)
- .3 Dust and Dirt Control:(Cont'd)
- .1 (Cont'd)
Representative before undertaking work, especially for major dust generating activities.
- .2 Dust Control shall be considered incidental to the project. No extra compensation will be paid for water ordered and applied on Saturdays, Sundays or holidays
- .3 Fresh water to Departmental Representative's approval. Sea water not to be used.
- .4 Apply water with equipment approved by Departmental Representative. Exact rate and number of applications to be determined by the Departmental Representative.
- .5 Apply water with distributors equipped with a spray system that will ensure uniform application with a positive means of opening and closing valve from cab of hauling unit.
- .6 The intake hose to the tank shall be equipped with a device satisfactory to the Departmental Representative to prevent fish from being pumped into the tank.
- .7 Do not allow debris and construction waste to accumulate on site and contribute to the propagation of dust.
- .8 As work progresses, maintain construction areas in a tidy condition at all times.
- .9 Inform workers and make them sensitive to the need for dust and dirt control. Stringently enforce rules and regulations, immediately address non-compliance.
- 1.5 Project Meetings
- .1 Schedule and administer project meetings, held on a minimum bi-monthly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work of particular situation.
- .2 Prepare agenda for meetings.
- .3 Notify participants in writing 4 working days in advance of meeting date.
- .1 Ensure attendance of all subcontractors;
.2 Departmental Representative will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Departmental Representative.
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1.6 Work
Coordination
(Cont'd)

.5 (Cont'd)
a result of Contractor's failure to effectively coordinate all portions of the 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 to be resolved at own cost.

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- 1.1 Testing Requirements Specified Elsewhere .1 Particular requirements for inspection and testing to be carried out by testing laboratory are specified under various technical sections of the specifications.
- 1.2 Appointment and Payment .1 The 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 order of public authorities.
.2 Inspection and testing performed exclusively for Contractor's convenience.
.3 Tests specified to be carried out by the Contractor under the supervision of Departmental Representative.
.4 Test requested by Departmental Representative to confirm material specification when the applicable manufacturer's documentation or test results are unavailable.
.5 Available tests specified in paragraph 2.2.
- .2 Where tests or inspections by designated testing laboratory reveal work not in accordance with contract requirements Contractor shall pay costs for additional tests or inspections as may be required to verify acceptability of corrected work.
- 1.3 Contractor's Related Responsibilities .1 Furnish labour and facilities to:
.1 Provide access to work to be inspected and tested.
.2 Facilitate inspections and tests.
.3 Make good work disturbed by inspection and test.
.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of tests.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
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PART 1 - GENERAL

- 1.1 Related Sections
- .1 Section 01 14 10 - Scheduling and Management of Work.
 - .2 Section 01 35 29 - Health and Safety Requirements.
 - .3 Section 01 78 00 - Closeout Submittals.
 - .4 Section 31 23 33 - Excavating, Trenching and Backfilling.
 - .5 Section 31 32 21 - Filter Fabric.
- 1.2 Administrative
- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
 - .2 Do not proceed with Work affected by submittal until review is complete.
 - .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
 - .4 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
 - .5 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
 - .6 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
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- 1.2 Administrative (Cont'd) .7 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .8 .1 Submittal Format:
- .1 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 re-submission.
- .9 Make changes or revision to submissions which Departmental Representative may require, consistent with contract documents and resubmit.
- .10 Keep one reviewed copy of each submission on site.
- 1.3 Shop Drawings and Product Data .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by the Contractor to illustrate details of a portion of work.
- .2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in the Province of Prince Edward Island, Canada.
- .3 Shop Drawing Submittal Schedule:
- .1 Submit, within 10 working days of contract award, in format acceptable to Departmental Representative, a submittal schedule listing all shop drawings to be submitted for project as specified in various sections of the specifications.
- .2 Schedule to indicate proposed submission date for each item, status of review and anticipated product delivery date to site. Track all submissions for entire project.
- .3 As work progresses, revise schedule identifying items which have been reviewed and finalized and indicating those outstanding.
- .4 Update schedule at stipulated dates or project time intervals predetermined and agreed upon with Departmental Representative at commencement of work.
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- 1.3 Shop Drawings and Product Data (Cont'd)
- .4 Shop Drawing Quantities: submit sufficient copies required by the General Contractor and sub-contractors, plus 2 copies which will be retained by Departmental Representative.
- .5 Shop Drawings Format:
- .1 Opaque white prints or photocopies of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
- .2 Product data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
- .3 Non or poorly legible drawings, photocopies or facsimiles will not be accepted and returned not reviewed.
- .6 Shop Drawings Content:
- .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work have been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.
- .7 Allow 7 days for Departmental Representative's review of each submission.
- .8 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .9 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .10 Be advised that costs and expenses incurred by Departmental Representative to conduct more than one review of incorrectly prepared shop drawing
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- 1.3 Shop Drawings and Product Data (Cont'd)
- .10 (Cont'd)
submittal for a particular material, equipment or component of work may be assessed against the Contractor in the form of a financial holdback to the Contract.
- .11 Accompany submissions with transmittal letter containing:
- .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .12 Submissions include:
- .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Relationship to adjacent work.
- .13 After Departmental Representative's review, distribute copies.
- .14 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
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1.3 Shop Drawings .15
and Product Data
(Cont'd)

The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 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 sub-trades.

- 1.1 SECTION INCLUDES .1 Fire Safety Requirements
.2 Hot Work Permit
- 1.2 RELATED WORK .1 Section 01 35 29 - Health and Safety Requirements.
.2 Section 01 35 25 - Special Procedures on Lockout Requirements.
- 1.3 REFERENCES .1 Fire Protection Standards issued by Fire Protection Services, Labour Program Division of Service Canada:
.1 FCC No. 301-June 1982 Standard for Construction Operations.
.2 FCC No. 302-June 1982 Standard for Welding and Cutting.
.2 FCC standards may be viewed at:
.1 <http://www.hrsdc.gc.ca/en/lp/lo/fp/standards/commissioner.shtml>
.2 Fire Protection Services - Atlantic Region office, Halifax, N.S, Tel. (902) 426-6053.
- 1.4 DEFINITIONS .1 Hot Work defined as:
.1 Welding work
.2 Cutting of materials by use of torch or other open flame devices
.3 Grinding with equipment which produces sparks.
- 1.5 SUBMITTALS .1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days of acceptance of bid.
.2 Submit in accordance with 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.
.2 Fire Protection Standards FCC 301 and FCC 302.
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1.9 HOT WORK
PERMIT

- .1 Hot Work Permit to include the following:
 - .1 Project name and project number;
 - .2 Building name and specific room or area where hot work will be performed;
 - .3 Date of issue;
 - .4 Description of hot work type needed;
 - .5 Special precautions to be followed, including type of fire extinguisher needed;
 - .6 Name and signature of permit issuer.
 - .7 Name of worker to which the permit is issued.
 - .8 Permit validity period not to exceed 8 hours. Indicate start time/date and termination time/date.
 - .9 Worker's signature with time/date of hot work completion.
 - .10 Stipulated time period of safety watch.
 - .11 Fire Safety Wather's signature with time/date.
- .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, signed and returned to Contractor's Superintendent for safe keeping on site.

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 and other equipment from energy sources.
- 1.2 RELATED WORK .1 Section 01 35 29 - Health and Safety Requirements.
- .2 Section 01 35 24 - Special Procedures on Fire Safety Requirements.
- 1.3 REFERENCES .1 CSA C22.1-06 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
- .2 CAN/CSA C22.3 No.1-06 - Overhead Systems.
- .3 CSA C22.3 No.7-06 - Underground Systems.
- .4 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- 1.4 DEFINITIONS .1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
- .2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment has been isolated.
- .3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
- .4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.
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1.4 DEFINITIONS
(Cont'd)

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

1.5 COMPLIANCE
REQUIREMENTS

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

1.6 SUBMITTALS

- .1 Submit copy of lockout procedures, sample of lockout permit and lockout tags proposed for use in accordance with Section 01 33 00 - Submittal Procedures. , Submit within 14 calendar days of acceptance of bid.

1.7 ISOLATION OF
EXISTING SERVICES

- .1 Obtain Departmental Representative's written authorization prior to working on existing live or active electrical facilities and equipment and before proceeding with isolation of such item.
- .2 To obtain authorization, submit to Departmental Representative the following documentation:
 - .1 Written request to isolate the particular service or facility and;
 - .2 Copy of Contractor's Lockout Procedures.

1.7 ISOLATION OF
EXISTING SERVICES
(Cont'd)

- .3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, as follows:
 - .1 Fill-out standard form in current use at the Facility as provided by Departmental Representative or;
 - .2 Where no form exist, make written request indicating:
 - .1 The equipment, system or service to be isolated and it's location;
 - .2 Duration of isolation period (ie: start time & date and completion time & date).
 - .3 Voltage of service feed to system or equipment being isolated.
 - .4 Name of person making the request.
 - .4 Do not proceed with isolation until receipt of written notification from Departmental Representative granting the Isolation Request and authorizing to proceed with the work.
 - .1 Note that Departmental Representative may designate another person at the Facility being authorized to grant the Isolation Request.
 - .5 Conduct safe, orderly shut down of equipment or facility. De-energize, isolate and lockout power and other sources of energy feeding the equipment or facility.
 - .6 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require isolation of existing services.
 - .7 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of Facility operations. Follow Departmental Representative's directives in this regard.
 - .8 Conduct hazard assessment as part of the process in accordance with health and safety requirements specified Section 01 35 29 - Health and Safety.
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1.8 LOCKOUTS

- .1 De-energize, isolate and lockout electrical facility, mechanical equipment and machinery from all potential sources of energy prior to working on such items.
- .2 Develop and implement clear and specific lockout procedures to be followed as part of the Work.
- .3 Prepare typed written Lockout Procedures describing safe work practices, procedures, worker responsibilities and sequence of activities to be followed on site by workforce to safely isolate an active piece of equipment or electrical facility and effectively lockout and tagout it's sources of energy.
- .4 Include as part of the Lockout Procedures a system of lockout permits managed by Contractor's Superintendent or other qualified person designated by him/her as being "in-charge" at the site.
 - .1 A lockout permit shall be issued to specific worker providing a Guarantee of Isolation before each event when work must be performed on a live equipment or electrical facility.
 - .2 Duties of person managing the permit system to include:
 - .1 Issuance of permits and lockout tags to workers.
 - .2 Determining permit duration.
 - .3 Maintaining record of permits and tags issued.
 - .4 Making a Request for Isolation to Departmental Representative when required as specified above.
 - .5 Designating a Safety Watcher, when one is required based on type of work.
 - .6 Ensuring equipment or facility has been properly isolated.
 - .7 Collecting and safekeeping lockout tags returned by workers as a record of the event.
- .5 Clearly establish, describe and allocate responsibilities of:
 - .1 Workers.
 - .2 Person managing the lockout permit system.
 - .3 Safety Watcher.
 - .4 Subcontractor(s) and General Contractor.

- 1.8 LOCKOUTS
(Cont'd)
- .6 Generic procedures, if used, must be edited and supplemented with pertinent information to reflect specific project requirements.
 - .1 Incorporate site specific rules and procedures in force at site as provided by Facility Manager through the Departmental Representative.
 - .2 Clearly label the document as being the Lockout procedures applicable to work of this contract.
 - .7 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
 - .8 Use industry standard lockout tags.
 - .9 Provide appropriate safety grounding and guards as required.
- 1.9 CONFORMANCE
- .1 Brief all workers and subcontractors on requirements of this section. Stringently enforce use and compliance.
- 1.10 DOCUMENTS
ON SITE
- .1 Post Lockout Procedures on site in common location for viewing by workers.
 - .2 Keep copies of Request for Isolation forms and lockout permits and tags issued to workers on site for full duration of Work.
 - .3 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

1.1 RELATED WORK

- .1 Section 01 35 24: Special Procedures on Fire Safety Requirements.
- .2 Section 01 35 25: Special Procedures on Lockout Requirements.

1.2 DEFINITIONS

- .1 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
 - .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
 - .2 Knowledgeable about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
 - .3 Knowledgeable about potential or actual danger to health or safety associated with the Work.
- .3 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
- .4 PPE: personal protective equipment
- .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00.
 - .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
 - .1 Submit within 5 work days of notification of Bid Acceptance. Provide 2 copies.
 - .2 Departmental Representative will review Health and Safety Plan and provide comments.
 - .3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
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- 1.3 SUBMITTALS .2 (Cont'd)
- (Cont'd)
- .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
- .5 Submit revisions and updates made to the Plan during the course of Work.
- .3 Submit name of designated Health & Safety Site Representative and support documentation specified in the Safety Plan.
- .4 Submit building permit, compliance certificates and other permits obtained.
- .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
- .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
- .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit copies of incident reports.
- .8 Submit WHMIS MSDS - Material Safety Data Sheets.
- 1.4 COMPLIANCE .1 Comply with Occupational Health and Safety Act REQUIREMENTS for Province of Prince Edward Island, and Occupational Health and Safety Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code - Part II (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations (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:
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- 1.4 COMPLIANCE REQUIREMENTS (Cont'd)
- .2 (Cont'd)
 - .3 A copy may be obtained at:(Cont'd)
(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 above specified requirements, the more stringent shall apply.
 - .5 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter in Good Standing.
 - .6 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.
- 1.5 RESPONSIBILITY
- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of Work.
 - .2 Comply with and enforce compliance by all workers, sub-contractors and other persons granted access to Work Site with safety requirements of Contract Documents, applicable federal, provincial, and local by-laws, regulations, and ordinances, and with site-specific Health and Safety Plan.
- 1.6 SITE CONTROL AND ACCESS
- .1 Control the Work and entry points to Work Site. Approve and grant access only to workers and authorized persons. Immediately stop and remove non-authorized persons.
 - .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter 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.
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1.6 SITE CONTROL
AND ACCESS
(Cont'd)

- .2 Isolate Work Site from other areas of the premises by use of appropriate means.
 - .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment.
 - .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
 - .3 Use professionally made signs with bilingual message in the 2 official languages or international known graphic symbols.
- .3 Provide safety orientation session to persons granted access to Work Site. Advise of hazards and safety rules to be observed while on site.
- .4 Ensure persons granted site access wear appropriate PPE. Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
- .5 Secure Work Site against entry when inactive or unoccupied and to protect persons against harm. Provide security guard where adequate protection cannot be achieved by other means.

1.7 PROTECTION

- .1 Give precedence to safety and health of persons and protection of environment over cost and schedule considerations for Work.
- .2 Should unforeseen or peculiar safety related hazard or condition become evident during performance of Work, immediately take measures to rectify situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

1.8 FILING OF
NOTICE

- .1 File Notice of Project with pertinent provincial health and safety authorities prior to beginning of Work.
 - .1 Departmental Representative will assist in locating address if needed.
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1.9 PERMITS

- .1 Post permits, licenses and compliance certificates on 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 Following are potential health, environmental and safety hazards at the site for which Work may involve contact with:
 - .1 Existing hazardous substances or contaminated materials:
 - .1 Cresote timbers
 - .2 Known latent site and environmental conditions:
 - .1 Overhead electrical wires
 - .2 Tidal water
 - .3 Winter works:
 - .1 Cold and freezing temperatures
 - .2 Cold winds
 - .3 Frost bite
 - .4 Ice in harbour may not be suitable to support weight
 - .5 Freezing water
 - .4 Falling objects, falling into water, slippery and uneven surface conditions.
 - .5 Unstable earth conditions and vehicle movement
 - .6 Rusty nails, spikes, metal parts, bolts and creosole materials.
 - .7 Sharp Objects
 - .8 Material handling equipment, including cranes, may be present.

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- 1.11 PROJECT/SITE .1 (Cont'd)
CONDITIONS .2 (Cont'd)
(Cont'd)
- .9 Trucking material on and off site
 - .10 State of existing structures
 - .11 Structures not posted for loads
 - .12 Harbour users and recreational boaters
 - .13 Loading trucks, traps, gear, etc.
- .3 Facility on-going operations:
.1 Harbour users and recreational boaters
- .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 in the hazard assessment of the Work.
- .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.
- 1.12 MEETINGS
- .1 Attend pre-construction health and safety meeting, convened and chaired by Departmental Representative, prior to commencement of Work, at time, date and location determined by Departmental Representative. Ensure attendance of:
 - .1 Superintendent of Work
 - .2 Designated Health & Safety Site Representative
 - .3 Subcontractors
 - .2 Conduct regularly scheduled tool box and safety meetings during the Work in conformance with Occupational Health and Safety regulations.
 - .3 Keep documents on site.
- 1.13 HEALTH AND SAFETY PLAN
- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
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1.13 HEALTH AND
SAFETY PLAN
(Cont'd)

- .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified.
 - .3 On-site Contingency and Emergency Response Plan as specified below.
 - .4 On-site 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, marshalling areas. Details on alarm notification methods, fire drills, location of fire fighting equipment and other related data.
 - .3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.
 - .4 Emergency Contacts: name and telephone number of officials from:
 - .1 General Contractor and subcontractors.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
 - .5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name of PWGSC and Facility Management contacts.
- .4 On-site Communication Plan:
 - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.

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- 1.14 SAFETY SUPERVISION (Cont'd)
- .3 (Cont'd)
 - .3 Be on Work Site at all times during execution of the Work.
 - .4 All supervisory personnel assigned to the Work shall also be competent persons.
 - .5 Inspections:
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
 - .6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
 - .7 Keep inspection reports and supervision related documentation on site.
- 1.15 TRAINING
- .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
 - .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.
 - .3 When unforeseen or peculiar safety-related hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.
- 1.16 MINIMUM SITE SAFETY RULES
- .1 Notwithstanding requirement to abide by federal and provincial health and safety regulations; ensure the following minimum safety rules are obeyed by persons granted access to Work Site:
 - .1 Wear appropriate PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, safety glasses, hearing protection and floatation device.
 - .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.
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- 1.16 MINIMUM .1 (Cont'd)
SITE SAFETY RULES .4 Obey warning signs and safety tags.
(Cont'd)
- .2 Brief persons of disciplinary protocols to be taken for non compliance. Post rules on site.
- 1.17 CORRECTION OF .1 Immediately address health and safety
NON-COMPLIANCE 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 .1 Investigate and report the following incidents
REPORTING to Departmental Representative:
.1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
.2 Medical aid injuries.
.3 Property damage in excess of \$10,000.00,
.4 Interruptions to Facility operations resulting in an operational lost to a Federal department in excess of \$5000.00.
- .2 Submit report in writing.
- 1.19 HAZARDOUS .1 Comply with requirements of Workplace Hazardous
PRODUCTS 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.
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- 1.20 BLASTING .1 Blasting or other use of explosives is not permitted on site without prior receipt of written permission and instructions from Departmental Representative.
- 1.21 POWDER ACTUATED DEVICES .1 Use powder actuated fastening devices only after receipt of written permission from Departmental Representative.
- 1.22 CONFINED SPACES .1 Abide by occupational health and safety regulations regarding work in confined spaces.
- 1.23 SAFETY BOAT .1 Maintain on site at all times one boat complete with gass motor and operator to assist in resuce operations if needed.
- 1.24 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.
- 1.25 POSTING OF DOCUMENTS .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post other documents as specified herein, including:
.1 Site specific Health and Safety Plan
.2 WHMIS data sheets

1.1 PERMITS .1 Secure all necessary municipal, provincial and federal permits/approvals and/or authorizations before commencing the work.

- 1.2 REFERENCES
- .1 WHMS: Workplace Hazardous Materials Information System, Health Canada.
 - .2 Transportation of Dangerous Goods Act. Transport Canada, updated 2008-02-21.
 - .3 Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters, Department of Fisheries and Oceans Canada, 1998.
 - .4 MBCA: Migratory Birds Convention Act, Environment Canada, 1994.
 - .5 Canadian Coast Guard Regulations, Department of Fisheries and Oceans Canada.
 - .6 Canadian Shipping Act, Transport Canada, 2001.
 - .7 AWPA: American Wood Preserver Association
 - .8 NWPA: Navigable Waters Protection Act, 2009.

- 1.3 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.
 - .2 Wetlands: land where the water table is at, near or above the surface or which is saturated for a long enough period to promote such features as wet-altered soils and water tolerant vegetation. Wetlands include organic wetlands or "peatlands," and mineral wetlands or mineral soil areas that are influenced by excess water but produce little or no peat
 - .3 Watercourse: refers to the bed and shore of a river, stream, lake, creek, pond, marsh, estuary or salt-water body that contains water for at least part of each year.
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1.3 DEFINITIONS
(Cont'd)

- .4 Alien species: refers to a species or subspecies introduced outside its normal distribution whose establishment and spread threaten ecosystems, habitats or species with economic or environmental harm.
- .5 Buffer zone: a vegetated land that protects watercourses from adjacent land uses. It refers to the land adjacent to watercourses, such as streams, rivers, lakes, ponds, oceans, and wetlands, including the floodplain and the transitional lands between the watercourse and the drier upland areas.

1.4 TRANSPORTATION

- .1 Transport hazardous materials and hazardous waste in compliance with Federal Transportation of Dangerous Goods Act.
- .2 Do not overload trucks when hauling material. Secure contents against spillage.
- .3 Maintain trucks clean and free of mud, dirt and other foreign matter.
- .4 Avoid potential release of contents and of any foreign matter onto highways, roads and access routes used for the Work. Take extra care when hauling material and other hazardous materials. Immediately clean any spillage and soils.
- .5 Before commencement of work, advise the Departmental Representative of the existing roads and temporary routes proposed to be used to access work areas and to haul material to and from the site.
- .6 All project work must follow the Canada Shipping Act regulations and requirements for inspection and certification of vessels used in the project as well as the appropriate training and certification of competency for operators.
- .7 Comply with any/all conditions of the Navigable Water Protection Act permit issued by Navigable Waters Protection Program.

1.5 HAZARDOUS
MATERIAL HANDLING

- .1 Handle and store hazardous materials on site in accordance with WHMIS procedures and requirements.
- .2 Store all hazardous liquids in location and manner to prevent their spillage into the environment.
- .3 Maintain written inventory of all hazardous materials kept on site. List product name, quantity and storage date.
- .4 Keep MSDS data sheets on site for all items.

1.6 PETROLEUM, OIL
AND LUBRICANTS

- .1 Comply with Federal and Provincial laws, regulations, codes and guidelines for the storage of fuel and petroleum products on site.
- .2 Do not place fuel storage tanks and store fuel or other petroleum products within a 30 metre buffer zone of watercourses and wetlands. Do not fuel or lubricate equipment within this 30 metre buffer zone. Obtain approval from Departmental Representative of acceptable location on site for fuel storage and equipment service.
- .3 Do not dump petroleum products or any other deleterious substances on ground or in the water.
- .4 Be diligent and take all necessary precautions to avoid spills and contaminate the soil and water (both surface and subsurface) when handling petroleum products on site and during fueling and servicing of vehicles and equipment.
- .5 Maintain on site appropriate emergency spill response equipment consisting of at least one 250-litre (55 gallon) overpack spill kit for containment and cleanup of spills.
- .6 Maintain vehicles and equipment in good working order to prevent leaks on site.
- .7 In the event of a petroleum spill, immediately notify the Departmental Representative and the Canadian Coast Guard (CCG) at 1-800-565-1633 (24 hour report line). Perform clean-up in accordance with all regulations and procedures stipulated by authority having jurisdiction.

- 1.6 PETROLEUM, OIL AND LUBRICANTS (Cont'd) .8 All work equipment must be free from loose petroleum fluid or lubricants harmful to the marine environment.
- 1.7 DISPOSAL OF WASTES
- .1 Do not bury rubbish, demolition debris and waste materials on site.
 - .2 Dispose and recycle demolition debris and waste materials in accordance with project waste management requirements specified in section 01 74 21.
 - .3 Do not dispose of hazardous waste, volatile materials (such as mineral spirits, paints, thinners etc.) and petroleum products into waterways, storm or sanitary sewers or in waste landfill sites.
 - .4 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.
- 1.8 SOIL QUALITY
- .1 All stockpiled soil must be covered and/or dyked to prevent erosion and release of sediment laden water. Wherever possible, exposed soil should be replanted or sodded to ensure soil stabilization.
 - .2 Any excavated material must be tested before it is transferred from DFO-SCH property. If testing of material is required the cost will be the responsibility of the Crown.
 - .3 If any material is excavated during the proposed project activities then the Departmental Representative must be consulted to identify an appropriate stockpile location for the excavated material.
- 1.9 WATER QUALITY .1 Conduct work in such a manner to limit turbidity and reduce sediment suspension in the water to an absolute minimum at all times.
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- 1.9 WATER QUALITY (Cont'd)
- .2 Visually monitor the water turbidity of the surrounding areas adjacent to the work and up to the established dredge limit of 200 metre.
 - .1 Should excessive change occur in the turbidity beyond the the 200 metres which differs from existing conditions of the surrounding water bodies, such as a distinct color difference; notify the Departmental Representative to obtain appropriate mitigation measures to be followed.
 - .3 Water contamination by preservative treated wood:
 - .1 Preservative treated lumber and timber, whether plant or site treated, shall be cured for a minimum of 30 days from date of the treatment application before their installation in areas which will be in contact with the water.
 - .2 Wood treated with Chromate Copper Arsenate (CCA) or Ammoniac Copper Zinc Arsenate (ACZA) must be CSA or AWPA approved.
 - .3 Do not use timber and lumber treated with cresote, petroleum and pentachlorophenol for any part of the Work.
 - .4 Do not washdown equipment within a 30 metre buffer zone of a wetland, watercourse or other identified environmentally sensitive area.
 - .5 Any construction debris entering the marine environment will be retrieved.
 - .6 The construction material used must be clean and non-toxic (free of fuel, oil, grease, and/or any contaminants).
 - .7 If dredge material is used in the construction of the service area it must be held in place with a granular fill layer.
 - .8 The material in the service area must be stabilized to ensure that the material remains in the service area and does not enter any water body.
 - .9 Do not enter/impact any wetlands without prior approval from the Departmental Representative.
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1.10 SOCIOECONOMIC
RESTRICTIONS

- .1 Abide by municipal and provincial regulations for any restrictions on work performed during the night time and on flood lighting of the site. Obtain applicable permits.
- .2 Place flood lights in opposite direction of adjacent residential and business areas.
- .3 Equipment and machinery with purposely designed mufflers to reduce noise on site to lowest possible level. Maintain mufflers in good operating condition at all times. All loads are to be properly secured.
- .4 Adequate signage and safety measures must be supplied during transportation of materials and equipment to the harbour.
- .5 Ensure there are no impacts to water quality in the vicinity of the water intake line.

1.11 BIRD AND
BIRD HABITAT

- .1 Become knowledgeable with abide by the Migratory Birds Convention Act (MBCA) in regards to the protection of migratory birds, their eggs, nests and their young encountered on site and in the vicinity.
- .2 Minimize disturbance to all birds on site and adjacent areas during the entire course of the Work.
- .3 Do not approach concentrations of seabirds, waterfowl and shorebirds when anchoring equipment, accessing wharves or ferrying supplies.
- .4 During night time work, position flood lights in opposite direction of nearby bird nesting habitat.
- .5 Do not use beaches, dunes and other natural previously undisturbed areas of the site to conduct work unless specifically approved by the Departmental Representative.
- .6 Should nests of migratory birds in wetlands be encountered during work, immediately notify Departmental Representative for directives to be followed.
 - .1 Do not disturb nest site and neighbouring vegetation until nesting is completed.

1.11 BIRD AND
BIRD HABITAT
(Cont'd)

- .6 (Cont'd)
 - .2 Minimize work immediately adjacent to such areas until nesting is completed.
 - .3 Protect these areas by following recommendations of Canadian Wildlife Service.
- .7 Ensure that food scraps and garbage are not left at the work site.
- .8 Vegetated buffer zones will be created around nests to avoid impacting nests or birds caring for pre-fledged chicks at the direction of the Departmental Representative.
- .9 Prior to any work commencing between the dates of April 1 - September 1, at the cost of the Crown, a Piping Plover expert will inspect the area to ensure no Plovers will be disrupted. In the event that the Plovers are found within a 1km distance to the site, the Departmental Representative may prescribe additional mitigation measures to avoid disturbance to the species.
- .10 Any dredge material must be disposed of at an appropriate location to ensure that the material, or any part of the material, does not affect Piping Plovers or re-enter any waterbody.

1.12 FISH AND
FISH HABITAT

- .1 Be aware of the risk for contamination of the fish habitat at the site as a result of alien species being introduced in the water.
- .2 To minimize the possibility of fish habitat contamination, all construction equipment which will be immersed into the water of a watercourse, or has the possibility of coming into contact with such water during the course of the work, must be cleaned and washed to ensure that they are free of marine growth and alien species.
 - .1 Equipment shall include boats, barges, cranes, excavators, haul trucks, pumps, pipe lines and other all miscellaneous tools and equipment previously used in a marine environment.
- .3 Cleaning and washing of equipment shall be performed immediately upon their arrival at the site and before use in or over the body of water.

1.12 FISH AND
FISH HABITAT
(Cont'd)

- .4 Conduct cleaning and washing operations as follows:
 - .1 Scrap and remove heavy accumulation of mud and dispose appropriately.
 - .2 Wash all surfaces of equipment by use of a pressurized fresh water supply.
 - .3 Immediately follow with application of a heavy sprayed coating of undiluted vinegar or other environmentally approved cleaning agent to thoroughly remove all plant matter, animals and sediments.
 - .4 Check and remove all plant, animal and sediment matter from the all bilges and filters.
 - .5 Drain standing water from equipment and let fully dry before use.
 - .6 Upon removal from the water, drain standing water from equipment and let fully dry before removal off the site.
- .5 Do not perform cleaning and washdown within a 30 metre buffer zone of a wetland, watercourse or other identified environmentally sensitive area.
- .6 Record of Assurance Logbook:
 - .1 Maintain an on-going log of past and present usage and washdowns of all equipment to illustrate mitigation measures undertaken against fish habitat contamination by alien species.
 - .2 Write data in a hard cover bound logbook,
 - .3 Include the following:
 - .1 Date and location where equipment was previously used in a watercourse or wetland;
 - .2 Type of work performed.
 - .3 Dates of washdown for each piece of equipment;
 - .4 Cleaning method and cleaning agent(s) used.
- .7 Keep Record of Assurance Logbook updated from project to project. Upon request, submit logbook to Departmental Representative for review.
- .8 Abide by requirements and recommendations of the Federal Department of Environment Canada and the Department of Fisheries and Oceans - Habitat Protection and Sustainable Development Branch in cleaning and washdown of equipment.

- 1.13 AIR QUALITY .1 Keep airborne dust and dirt resulting from the work on site to an absolute minimum.
- .2 Apply dust control measures to roads, parking lots and work areas.
- .3 Spray surfaces with water or other environmentally approved product. Use purposely suited equipment or machinery and apply in sufficient quantity and frequency to provide effective result and continued dust control during the entire course of the work.
- .4 Do not use oil or any other petroleum products for dust control.
- 1.14 FIRES .1 Fires and burning of rubbish on site is not permitted.

PART 1 - GENERAL

- 1.1 Site Access .1 Provide and maintain adequate access to project site.
- .2 If authorized to use existing roads for access to project site, maintain such roads for duration of contract.
- .1 Keep clean and free of mud and dirt by washing on a regular basis.
- .2 Provide snow removal in areas located within construction site or enclosed by work (if required).
- .3 Make good and repair damage resulting from Contractor's use of existing roads, asphalted areas and lawns on site.
- 1.2 Material Storage .1 Locate site storage trailers in location of least interference with existing facility operations.
- .2 Provide adequate weather tight sheds with raised floors for storage of materials, tools and equipment subject to damage by weather.
- .3 Provide heat when materials being stored are subject to frost damage.
- .4 Material storage space on site is limited.
- .5 Under no circumstance will Departmental Representative accept materials damaged due to exposure to weather elements, for incorporation into construction. Departmental Representative will determine what constitutes damaged materials.
- 1.3 Sanitary Facilities .1 Provide sanitary facilities for workforce 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.
-

- 1.4 Power .1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.
- .2 Supply and install all temporary facilities for power such as pole lines, meter socket, underground cables, etc., as required and to approval of local power supply authority.
- 1.5 Water Supply .1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.
- 1.6 Construction Sign and Notices .1 Provide and maintain signs, barricades and other devices required to indicate construction activities or other temporary and unusual conditions resulting from project work.
- .2 Provide project identification site sign comprising of foundation, framing and one 1200 x 2400 mm signboard as detailed and as described below.
- .1 Framework and battens: SPF, pressure treated minimum 89 x 89 mm
- .2 Signboard: 19 mm medium density overlaid Douglas fir plywood to CSA 0121.
- .3 Paint: Alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CGSB 1-GP-189.
- .4 Fasteners: Hot-dip galvanized steel nails and carriage bolts.
- .5 Vinyl sign face: printed project identification, self adhesive, vinyl film overlay, supplied by Departmental Representative.
- .3 Locate project identification sign as directed by Departmental Representative and construct as follows:
- .1 Build concrete foundation, erect framework and attach signboard to framing.
- .2 Paint all surfaces of signboard and framing with one coat primer and two coats enamel. Color white on signboard face, black on other surfaces.
- .3 Apply vinyl sign face overlay to painted signboard in accordance with installation instruction supplied.
-

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- 1.6 Construction Sign and Notices (Cont'd) .4 Install sign plumb and level in neat wood framework and securely anchor in ground by posts to withstand wind pressure of 160 km/h.
- .5 Contractor or subcontractor advertisement sign boards are not permitted on site.
- .6 Safety and Instruction Signs and Notices:
.1 Signs and notices for safety and instruction shall be in both official languages or commonly understood graphic symbols conforming to CAN3-Z321.
- .7 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.
- 1.7 Parking .1 Parking space for worker's vehicles may not be available. Arrange and pay for parking if required.
- 1.8 Removal of Temporary Facilities .1 Remove temporary facilities from site when directed by Departmental Representative.

PART 1 - GENERAL

- 1.1 General
- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - .2 Sort volatile waste in covered metal containers, and remove from premises at end of each working day.
- 1.2 Project Cleanliness
- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
 - .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative.
 - .3 Provide on-site containers for collection of waste materials and debris.
 - .4 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
 - .5 Provide adequate ventilation during use of volatile or noxious substances.
- 1.3 Final Cleaning
- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
 - .2 Broom clean wood and concrete surfaces, rake clean other surfaces of grounds.
 - .3 Remove dirt and other disfiguration from exterior surfaces.
 - .4 Sweep and wash clean paved areas affected by work.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 01 33 00 - Submittal Procedures.
- 1.2 DEFINITIONS .1 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .2 Separate Condition: refers to waste sorted into individual types.
- .3 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .4 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule A.
- 1.3 DOCUMENTS .1 Maintain at job site, one copy of following documents:
- .1 Waste Reduction Workplan.
- .2 Material Source Separation Plan.
- .3 Schedules A completed for project.
- 1.4 SUBMITTALS .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following within 14 days prior to project start-up:
- .1 Submit 1 copy of completed Waste Reduction Workplan (WRW): Schedule A.
- .2 Submit 1 copy of Materials Source Separation Program (MSSP) description.
- .3 The area of the temporary location(s) where the construction waste material will be stored and the location where the staging area will be for the separation of the construction waste material.
-

- 1.4 SUBMITTALS .2 (Cont'd)
(Cont'd)
- .4 Submit to Departmental Representative the location where the waste material will be disposed of for review and approval.
 - .5 Submit to Departmental Representative location(s) where the salvaged construction waste (other than fill) will be stored off site for review and approval.
- 1.5 WASTE REDUCTION .1 Prepare WRW prior to project start-up.
WORKPLAN (WRW)
- .2 WRW should include but not limited to:
 - .1 Destination of materials listed.
 - .2 Deconstruction/disassembly techniques and sequencing.
 - .3 Schedule for deconstruction/disassembly.
 - .4 Location.
 - .5 Security.
 - .6 Protection.
 - .7 Clear labelling of storage areas.
 - .8 Details on materials handling and removal procedures.
 - .9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.
 - .3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
 - .4 Describe management of waste.
 - .5 Post WRW or summary where workers at site are able to review content.
 - .6 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.
 - .7 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.
- 1.6 MATERIALS .1 Implement MSSP for waste generated on project
SOURCE SEPARATION in compliance with approved methods and as
PROGRAM (MSSP) reviewed by Departmental Representative.
-

- 1.9 DISPOSAL OF WASTES
- .1 Do not bury rubbish or waste materials.
 - .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.
 - .3 The Harbour Authority garbage receptacles are not to be used.

PART 2 - PRODUCTS

- 2.1 NOT USED
- .1 Not Used.

PART 3 - EXECUTION

- 3.1 APPLICATION
- .1 Do Work in compliance with WRW.
 - .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.
 - .3 All creosote timber and CCA materials not reused or salvaged will be disposed of at a Provincially approved site.

- 3.2 DIVERSION OF MATERIALS
- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas.
 - .2 On-site sale of reusable materials is not permitted.
 - .3 Construction Waste:

Material Type	Recommended Diversion	Actual Diversion	%
Concrete			
Fill, spoils and rock			
Filter cloth			
Fasteners			
Wood (uncontaminated)	50		
Other			

3.3 WASTE REDUCTION .1 Schedule A:
WORKPLAN (WRW)

(1)	(2)	(3)	(4)	Actual	(5)	Actual	(6)
Material	Person(s)	Total	Reused		Recycle		Material
Category	Responsible	Quantity of	(units)		Amount		Destination
		Waste	Project		(unit)		
		(unit)	ed		Project		
					ed		

Wood
Concrete
Other

3.4 CANADIAN .1 Government Chief Responsibility for the
GOVERNMENTAL Environment:

Province	Address	General	Fax
Prince Edward Island	Department of	902-368-5000	902-368-5830
	t R e s o u r c e s 11 S t r e e t 4th PO 2 C h a r l o t t e t o w n 7N8	I n q u i r e s P E	E n v i r o n m e n t K e n t , F l o o r , B o x 0 0 0 C l A

PART 1 - GENERAL

- 1.1 Related Sections
- .1 Section 01 10 10 - General Instructions.
 - .2 Section 01 33 00 - Submittal Procedures.
- 1.2 Project Record Drawings
- .1 Departmental Representative will provide 2 white print sets of contract drawings specifically for "as-built" purposes.
 - .2 Maintain at site one set of the contract drawings to record actual as-built site conditions.
 - .3 Maintain up-to-date, real time as-built drawings in good condition and make available for inspection by the Departmental Representative upon request.
 - .4 As-Built Drawings:
 - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of work, neatly transfer notations to second set (also by use of red ink).
 - .2 Submit both sets to Departmental Representative prior to application for Certificate of Substantial Performance.
 - .3 Stamp all drawings with "As-Built Drawings." Label and place Contractor's signature and date.
 - .4 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
 - .5 Record the following information:
 - .1 Depths of various elements in relation to site datum;
 - .2 Field changes of dimension and detail;
 - .3 Location of all capped or terminated services and utilities;
 - .4 All design elevations, sections and details dimensioned and marked up to consistently report finished installation conditions;
 - .5 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings;
-

1.2 Project Record .4
Drawings
(Cont'd)

As-Built Drawings:(Cont'd)

.5 (Cont'd)

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

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

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section includes but is not limited to the following:
.1 All work related to any site preparation, removal and/or demolition, salvage, and the storage and reinstatement of existing utilities and facilities at the end of the work. All items to be verified by a site visit prior to submission of a tender.
- 1.2 RELATED SECTIONS .1 Section 01 74 21 - Waste Management and Disposal.
- 1.3 MEASUREMENT AND PAYMENT PROCEDURES .1 Site Work, Demolition, Removals and Restoration: including all labour, plant, and equipment will constitute a lump sum price and will include, but is not limited to, the following:
.1 The removal, temporary storage and reinstatement of material or services that interfere with the installation of the new work such as power poles, high voltage conductors, light fixtures, conduits, etc. Include cost charged by utilities and for storage.
.2 Removal of existing asphalt to the limits shown on drawings and the appropriate disposal of this material.
.3 Removal and disposal of existing concrete deck, timber stringers, pile caps, fascia, fender, front wales to the limits shown on drawings.
.4 Removal and disposal of timber debris from fender, wales, sheathing, no longer secured to the structure in area of work.
.5 Removal and disposal of cross bracing, rear wales and sheathing only as necessary to install tie rods.
.6 Include cost for handling, transportation and disposal of the un-reusable existing material and debris removed from the structure to an approved regional landfill site including all fees to dispose of the waste material at the approval disposal site.
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- 1.4 SUBMITTALS .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Methodology:
.1 When requested provide methodology for carrying out the work.
- 1.5 PROTECTION .1 Prevent movement, settlement or damage of adjacent structures. Provide bracing and shoring as required. In event of damage, immediately replace such items or make repairs to approval of Departmental Representative and at no additional cost to Departmental Representative.
- .2 Prevent debris from going adrift and becoming a navigational hazard.
- .3 All damage to existing structures, roadways, pipelines, electrical systems not specified for removal to be repaired at the Contractor's cost to the satisfaction of the Departmental Representative.
- 1.6 WASTE MANAGEMENT AND DISPOSAL .1 All removals to be carried out as per the Waste Management Disposal Plan, prepared in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

- 2.1 MATERIALS .1 Not Applicable.
-

PART 3 - EXECUTION

- 3.1 PREPARATION
- .1 Inspect site and verify with Departmental Representative, items designated for removal and items designated to remain.
 - .2 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
 - .3 Make arrangement with utility for the removal and reinstatement of electrical wires and light fixtures, if necessary.
 - .4 Relocate existing power poles if required to facilitate the work, such that power services don't interfere with work.
 - .5 Location of relocated power poles to be as directed by Departmental Representative.
 - .6 Temporary lighting and power may be required. Coordination and all costs associated with installing poles, lights, wiring, etc. to Maritime Electric, Provincial Electrical Inspection and PWGSC's satisfaction.
- 3.2 REMOVAL
- .1 Remove in their entirety all materials and objects specified for removal within the limits of work.
 - .2 Do not disturb adjacent work designated to remain in place.
 - .3 At end of each day's work, leave work site in safe condition so no part is in danger of toppling or falling.
- 3.3 DISPOSAL OF MATERIAL
- .1 All construction materials, except materials designated to be reused will become property of Contractor and will be removed from site and disposed of to the satisfaction of Departmental Representative, and to the guidelines of Provincial Authority.
 - .2 Disposal of treated timber must be at a Regional Waste Mangement Facility.
-

- 3.3 DISPOSAL OF MATERIAL
(Cont'd)
- .3 Separate steel and steel products for recycling or reuse.
 - .4 Untreated timber and inert debris to be disposed of as per Provincial Authority.
 - .5 Pay all fees that may be charged to dispose of the materials at licenced sites.
- 3.4 RESTORATION
- .1 Upon completion of the work, remove debris, trim surfaces and leave work site clean.
 - .2 Reinststate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work. Match condition of adjacent, undisturbed areas.

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS
- .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 01 74 11 - Cleaning.
 - .3 Section 01 74 21 - Waste Management and Disposal.
 - .4 Section 03 30 00 - Cast-in-Place Concrete.
 - .5 Section 03 41 00 - Precast Structural Concrete.
- 1.2 MEASUREMENT AND PAYMENT PROCEDURES
- .1 No measurement for payment will be made under this Section. Include reinforcement costs in items of concrete work for which reinforcement is required.
- 1.3 REFERENCES
- .1 CSA International
 - .1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CSA-A23.3-04, Design of Concrete Structures.
 - .3 CSA-G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA-G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 Reinforcing Steel Institute of Canada (RSIC)
 - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.
- 1.4 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.
 - .3 Shop Drawings:
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- 1.4 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)
- .3 Shop Drawings:(Cont'd)
- .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Prince Edward Island Canada.
- .1 Indicate placing of reinforcement and:
- .1 Bar bending details.
- .2 Lists.
- .3 Quantities of reinforcement.
- .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings.
- .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
- .2 Detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated. Provide type C tension lap splices unless otherwise indicated.
- 1.5 QUALITY ASSURANCE
- .1 Submit as described in PART 2 - SOURCE QUALITY CONTROL.
- .1 Mill Test Report: upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, minimum 4 weeks prior to beginning reinforcing work.
- .2 Upon request submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.
- 1.6 DELIVERY, STORAGE AND HANDLING
- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
- .1 Store materials in accordance with manufacturer's recommendations.
- .2 Replace defective or damaged materials with new.
-

1.6 DELIVERY, STORAGE AND HANDLING (Cont'd) .4 Separate and recycle waste materials in accordance with Section 01 74 21 - Waste Management and Disposal.

PART 2 - PRODUCTS

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

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

.3 Reinforcing steel: weldable low alloy steel deformed bars to CSA-G30.18.

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

.5 Deformed steel wire for concrete reinforcement: to ASTM A 82/A 82M.

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

2.2 FABRICATION .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2, ACI 315 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada unless indicated otherwise.

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

.3 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 beginning reinforcing work.

2.3 SOURCE QUALITY CONTROL .2 Upon request inform Departmental Representative of proposed source of material to be supplied.
(Cont'd)

PART 3 - EXECUTION

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

3.2 PLACING REINFORCEMENT .1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.
.2 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
.3 Ensure cover to reinforcement is maintained during concrete pour.

3.3 CLEANING .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
.3 Waste Management: in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS
- .1 Section 03 20 00 - Concrete Reinforcing.
 - .2 Section 03 41 00 - Precast Structural Concrete.
 - .3 Section 05 50 00 - Metal Fabrications.
- 1.2 MEASUREMENT AND PAYMENT PROCEDURES
- .1 Heating of water and aggregates and providing cold weather protection will not be measured for payment but will be considered incidental to the work.
 - .2 Cooling of concrete and providing of hot weather protection will not be measured for payment but will be considered incidental to the work.
 - .3 Supply and installation of anchor bolts, nuts and washers and bolt grouting will not be measured for payment but will be considered incidental to the work.
 - .4 Concrete used in the casting of concrete cylinders for testing will not be measured for payment but will be considered incidental to the work.
- 1.3 REFERENCES
- .1 ASTM International
 - .1 ASTM C 260-06, Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 ASTM C 309-07, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .3 ASTM C 494/C 494M-08a, Standard Specification for Chemical Admixtures for Concrete.
 - .4 ASTM C 1017/C 1017M-07, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - .2 CSA International
 - .1 CSA A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
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- 1.3 REFERENCES .2 (Cont'd)
- (Cont'd)
- .2 CSA A283-06, Qualification Code for Concrete Testing Laboratories.
 - .3 CSA A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- 1.4 ACTION AND INFORMATIONAL SUBMITTALS .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 At least 4 weeks prior to beginning concrete work, provide Departmental Representative with proposed quality control procedures for review for following items:
- .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
- .3 Provide 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.
- .4 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken as described in PART 3 - FIELD QUALITY CONTROL.
- .5 Concrete hauling time: provide for review by Departmental Representative deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.
- .6 Provide two copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements.
- 1.5 QUALITY ASSURANCE .1 Provide Departmental Representative, minimum 4 weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.
- .1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used
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- 1.5 QUALITY ASSURANCE
(Cont'd)
- .1 (Cont'd)
 - .1 (Cont'd)
in concrete mixture will meet specified requirements.
 - .2 Minimum 4 weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative on following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .3 Quality Control Plan: provide written report to Departmental Representative verifying compliance that concrete in place meets performance requirements of concrete as established in PART 2 - PRODUCTS.
- 1.6 DELIVERY, STORAGE AND HANDLING
HANDLING
- .1 Delivery and Acceptance Requirements:
 - .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.
 - .1 Do not modify maximum time limit without receipt of prior written agreement from 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.
 - .2 Packaging Waste Management: in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
-

PART 2 - PRODUCTS

- 2.1 DESIGN CRITERIA .1 Alternative 1 - Performance: to CSA A23.1/A23.2, and as described in MIXES of PART 2 - PRODUCTS.
- 2.2 PERFORMANCE CRITERIA .1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established by Departmental Representative and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.
.1 Ensure concrete supplier's certification: both batch plant and materials meet CSA A23.1 requirements.
- 2.3 MATERIALS .1 Portland Cement: to CSA A5, normal Type 10.
.2 Aggregates: to CSA A23.1, for Class "C-1" exposure. Coarse aggregates to be normal density.
.3 Water: to CSA A23.1.
.4 Admixtures will be permitted only to correct deficiency in mixture as recommended by testing laboratory and as approved by departmental Representative.
.1 Air entraining admixture: to CSA A23.5 and ASTM A 26.
.2 Chemical admixtures: to CSA A23.5 and ASTM C 494.
.5 Non-Shrink grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents, of pouring consistency, capable of developing compressive strength of 50 MPa at 28 days.
.6 Curing compound: to ASTM C 309.
.7 Form Release Agent: chemically active release agent containing compounds that react with free lime present in concrete to provide water soluble soaps, preventing concrete from sticking to forms.
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- 2.4 MIXES
- .1 Prior to starting concrete work, submit to the Departmental Representative the proposed mix design(s) for approval. Mix designs to be in accordance with Alternative 1 - Performance Method for specifying concrete of Table 11 in CSA A23.1-94 (or latest edition). Comply with additional requirements of CSA A23.1-94 (or latest edition), Section 15 for concrete placed near sea water.
 - .2 Use concrete mix designed to produce air entrained concrete meeting the following requirements:
 - .1 Cement to be normal Portland cement, Type 10.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Exposure: C-1
 - .4 Maximum aggregate size: 20mm
 - .5 Air Content: 6 to 8 %
 - .6 3.0 kg of synthetic structural fibre per cubic meter of concrete.
 - .7 Slump at time and point of discharge 20 to 80 mm. Where the nature of work requires larger slumps, they are to be obtained by the usage of admixtures rather than increasing the water content. The use of such admixtures and the increase in slump to be approved by the Departmental Representative prior to implementation in the work.
 - .8 Modify concrete mix to the approval of the Departmental Representative to accommodate pumping.
 - .9 Admixtures to the approval of the Departmental Representative and the recommendation of the manufacturer. Admixtures must be dispersed separately into mixing water. Use of accelerating admixtures, is approved by Departmental Representative, will not relax cold weather placement requirements of CAN3-A23.1-00.
 - .10 Density of air-dry concrete will be in range of 2240 to 2400 kg/m³.
 - .11 Minimum cement content: 385 kg/m³
 - .12 Maximum water/cement ratio: 0.4
 - .3 Do not use calcium chloride or compounds containing calcium chloride.
-

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Obtain Departmental Representative's written approval before placing concrete.
 - .1 Provide 24 hours minimum 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 not allowed.
 - .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's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .7 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .8 Do not place load upon new concrete until authorized by Departmental Representative.

3.2
INSTALLATION/APPLIC
ATION

- .1 Do cast-in-place concrete work to CSA A23.1/A23.2.
- .2 Sleeves and inserts:
 - .1 Where approved by Departmental Representative, set sleeves, ties and other inserts and openings as indicated or specified elsewhere.
 - .2 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Departmental Representative.
 - .3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of

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- 3.2 INSTALLATION/APPLICATION
(Cont'd)
- .2 Sleeves and inserts:(Cont'd)
- .3 (Cont'd)
modifications from Departmental Representative before placing of concrete.
- .4 Confirm locations and sizes of sleeves and openings shown on drawings.
- .3 Anchor bolts:
- .1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.
- .2 Grout anchor bolts in preformed holes or holes drilled after concrete has set only after receipt of written approval from Departmental Representative.
- .3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
- .4 Set bolts and fill holes with epoxy grout.
- .4 Finishing and curing:
- .1 Finish concrete to CSA A23.1/A23.2.
- .2 Deficiencies in concrete shall be corrected to the satisfaction of the Departmental Representative.
- .3 Use curing compounds compatible with applied finish on concrete surfaces. Provide written declaration that compounds used are compatible.
- .4 Provide broom finish surface with coarse bristle obtaining a coarse textured finish with a non-slip finish. All brush strokes to be in the direction perpendicular to traffic.
- .5 Rub exposed sharp edges of concrete with carborundum to produce 3 mm minimum radius edges unless otherwise indicated.
- 3.3 FIELD QUALITY CONTROL
- .1 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Departmental Representative in accordance with CSA A23.1.
- .2 Departmental Representative will pay for costs of tests as specified in Section 01 29 83 - Testing Laboratory Services.
- .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.
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- 3.4 CLEANING .1 Clean in accordance with Section 01 74 11 -
Cleaning.
- .2 Waste Management: separate waste materials for
reuse and recycling in accordance with Section
01 74 21 - Construction/Demolition Waste
Management and Disposal.
- .1 Divert unused concrete materials from
landfill to local facility after receipt of
written approval from Departmental
Representative.
- .2 Provide appropriate area on job site where
concrete trucks and be safely washed.
- .3 Divert unused admixtures and additive
materials (pigments, fibres) from landfill to
official hazardous material collections site as
approved by Departmental Representative.
- .4 Do not dispose of unused admixtures and
additive materials 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.
- .6 Using appropriate safety precautions,
collect liquid or solidify liquid with inert,
noncombustible material and remove for disposal.
- .7 Dispose of waste in accordance with
applicable local, Provincial/Territorial and
National regulations.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .3 Section 03 20 00 - Concrete Reinforcing.
 - .4 Section 03 30 00 - Cast-in-Place Concrete.
- 1.2 MEASUREMENT AND PAYMENT PROCEDURES
- .1 Precast Drop Pannels: Reinforced Precast drop pannels will be measured in cubic meters calculated from neat dimensions indicated or authorized in writing by Departmental Representative.
 - .2 Precast drop pannels will include cost, supply, delivery, storage, erection, hardware for handling, removal and patching of erection devices.
- 1.3 REFERENCES
- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 185/A 185M-05a, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 - .2 ASTM C 260-01, Standard Specification for Air-Entraining Admixtures for Concrete.
 - .2 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-A23.3-04, Design of Concrete Structures.
 - .3 CSA-A23.4-05, Precast Concrete - Materials and Construction.
 - .4 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001-03, Cementitious Materials for Use in Concrete.
 - .5 CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement.

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- 1.3 REFERENCES .2 (Cont'd)
(Cont'd) .6 CAN/CSA-G40.20/G40.21-2004, General
Requirements for Rolled or Welded Structural
Quality Steel/Structural Quality Steel.
- 1.4 SUBMITTALS .1 Submittals in accordance with Section 01 33 00
- Submittal Procedures.
- .2 Shop Drawings: Submit shop drawings in
accordance with CSA-A23.3 and CSA-A23.4 and
include following items:
.1 Design calculations for items designed by
manufacturer.
.2 Details of reinforcement and their
connections.
.3 Methods of handling and erection.
.4 Openings, sleeves, inserts and related
reinforcement.
.5 Storage Facility.
.6 Submit drawings stamped and signed by
qualified professional engineer registered or
licensed in Province of Prince Edward Island,
Canada.
- .3 Certificates:
.1 Provide certification that plant,
equipment and materials to be used in concrete
work comply with requirements of CSA A23.1.
.2 Provide certification that mix proportions
selected will produce concrete of specified
quality and yield and that strength will comply
with CSA A23.1.
- .4 Test Results:
.1 Provide design mix test results upon
request of Departmental Representative.
.2 Provide mill test certificates for
reinforcing steel upon request of Departmental
Representative.
- 1.5 DELIVERY, .1 Deliver, handle and store precast/prestressed
STORAGE AND units according to manufacturer's instructions.
HANDLING .2 Protect unit corners from contacting earth to
prevent from staining.
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- 1.5 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)
- .3 Damaged panel will not be accepted.
- .4 Waste Management and Disposal:
.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- PART 2 - PRODUCTS
- 2.1 MATERIALS
- .1 To Section 03 30 00 - Cast-in-Place Concrete.
- 2.2 MIXES
- .1 Proportion structural normal density concrete in accordance with CAN/CSA-A23.1, Alternative 1 to give the following properties for concrete.
- .2 Precast Panels:
.1 Cement: Type 10, Portland Cement.
.2 Minimum compressive strength at 28 days age: 35 MPa.
.3 Class of exposure: C-1.
.4 Nominal size of coarse aggregate: 20 mm.
.5 Slump at point and time of discharge: 50 mm to 100 mm.
.6 Air Content: 5-8%.
.7 Density of air-dry concrete will be in range of 2240 to 2400 kg/m³
.8 Minimum cement content: 385 kg/m³.
.9 Maximum water/cement ratio: 0.4
- 2.3 INSERTS
- .1 Galvanized items embedded in concrete to be completely separated from reinforcing steel.
- 2.4 FINISHES
- .1 On Seaward side of pannels: steel trowel finish to CSA-A23.4.
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PART 3 - EXECUTION

- 3.1 ERECTION
- .1 Do precast concrete work in accordance with CSA-A23.4.
 - .2 Erect precast elements within 10 mm as shown on drawings.
 - .3 Replace or repair damaged precast elements to satisfaction of Departmental Representative at no additional cost.
 - .4 Ensure joints between slabs are tightly fitted and even along length of slabs.
- 3.2 CLEANING
- .1 Use cleaning methods as reviewed by Departmental Representative before cleaning soiled precast concrete surfaces.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .3 Section 03 30 00 - Cast-in-Place Concrete.
- .4 Section 06 10 00 - Metal Fabrications.
- .5 Section 31 61 13 - Pile Foundations General Requirements.

1.2 MEASUREMENT AND
PAYMENT PROCEDURES

- .1 Steel Sections, Plates, Straps and Miscellaneous Steel: To be paid on a per kilogram basis. This will also include all welding, cutting, drilling and other work necessary in the field to complete the project.
- .2 Ladder Rungs and Holdfasts: Include costs in tendered amount for precast drop-panels.
- .3 Mooring Cleats: Measurement and payment to be per unit supplied and installed in the work including surface preparation and galvanized anchor bolts.
- .4 Tie Rods: Measurement for payment to be per unit supplied and installed in the work where indicated.

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A 307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.
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- 1.3 REFERENCES .2 (Cont'd)
- 1.3 REFERENCES
(Cont'd)
- .4 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
- .5 CSA W59-1989(R2001), Welded Steel Construction (Metal Arc Welding) (Imperial Version).
- 1.4 SUBMITTALS .1 Shop Drawings
- 1.4 SUBMITTALS
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings for inserts, anchor bolts, steel angles and plates proposed for the work. Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
- 1.5 QUALITY ASSURANCE .1 Test Reports: Furnish certified test reports showing compliance with specified performance characteristics and physical properties when requested by Departmental Representative.
- 1.5 QUALITY ASSURANCE
- 1.6 DELIVERY, STORAGE, AND HANDLING .1 Deliver, store, handle and protect materials in accordance with manufacturers instructions.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- 1.7 WASTE MANAGEMENT AND DISPOSAL .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- 1.7 WASTE MANAGEMENT AND DISPOSAL
- .2 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.
-

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 All fasteners, and miscellaneous metals or materials specified in this section and identified on the drawings are to be hot dip galvanized including the ladder rungs and ladder holdfasts. Pile shoes and mooring cleats may be galvanized. Tie-rod bearing plates need not be galvanized.
 - .2 Steel sections, plates and angles: to CAN/CSA-G40.20/G40.21, Grade 350W.
 - .3 Welding materials: to CSA W59 and CSA W48-01.
 - .4 Machine bolts, anchor bolts, ladder rungs, holdfasts, nuts and washers: to ASTM A 307.
 - .5 Machine bolts, nuts and washers:
 - .1 Machine bolts will have standard heads, nuts, and threads, and when in position will be of sufficient length to permit a full nut and two washers. Treads shall be Coarse Thread Series as specified in latest issue of ANS/B1-1 having a Class 2A tolerance.
 - .2 Standard cast iron washers suitable for the size of the bolt specified will be placed under the heads and nuts of all machine bolts bearing on timber surfaces unless noted otherwise on the drawings. Ogee washers to Timber Design Manual 1980 issued by Laminated Timber Institute of Canada and as follows: ogee washers to be cast iron free from injurious defects or impurities.
 - .3 As an alternative to ogee washers, standard galvanized plate washers can be used. The washer is to be three times bolt diameter and a minimum thickness of 8 mm.
 - .4 Square Washers are not permitted.
 - .6 Galvanizing: Hot dip galvanizing with a minimum coating of 610 g/m² to CSA G164.
 - .7 Galvanizing primer: zinc rich, ready mix to CGSB 1-GP-1.
 - .8 Cast iron will conform to CSA S-61.
 - .9 Mooring Cleats: to be cast iron cleats, as dimensioned on drawings..
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- 2.2 FABRICATION .1 The fabrication of all structural steel shall conform to the requirements of CAN/CSA-S16-01.
- .2 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint.
- 2.3 MISCELLANEOUS METAL WORK ITEMS .1 Miscellaneous anchors, bolts and inserts:
.1 Where size, spacing and the like are not indicated, provide as necessary for the purpose.
.2 Galvanize all miscellaneous anchors, bolts and inserts.
- .2 Miscellaneous steel:
.1 Provide miscellaneous steel as required for guide units and the like to the shape, size and details required.
.2 Galvanize all miscellaneous steel items.
- PART 3 - EXECUTION
- 3.1 INSTALLATION OF MACHINE BOLTS, NUTS AND WASHERS .1 Holes for machine bolts will be bored to the same diameter as that of the bolts. The heads of machine bolts that interfere with succeeding parts of the work being placed, or where directed by the Departmental Representative or shown on the drawings will be countersunk.
- .2 Standard cast iron washers of the sizes shown will be placed under the heads and nuts of all machine bolts bearing on timber surfaces, except where specified otherwise.
- 3.2 ERECTION .1 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
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- 3.2 ERECTION .2 Make field connections with bolts to
 (Cont'd)
- .3 Hand items over for casting into concrete or
 building into masonry to appropriate trades
 together with setting templates.
- .4 Touch-up bolts and scratched galvanized
 surfaces with zinc rich primer after completion
 of erection with primer.
-
- 3.3 HANDLING .1 Take necessary care in the handling, packing of
GALVANIZED AND all galvanized steel members to prevent damage
SHIPPING PARTS to the galvanized coating. Evidence of damage to
 the galvanized members due to mishandling or
 lack of adequate protection shall be cause for
 rejection of the damaged members if requested by
 the Departmental Representative
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- 3.4 MOORING CLEATS .1 Secure cleats with 25 mm diameter galvanized
 anchor bolts (for concrete) and with 25 mm
 diameter machine bolts (in timber) of lengths
 required complete with associated nuts and
 washers.
- .2 Grout under base of cleats using non-shrink,
 non-metallic type of grout to obtain smooth
 level surface if required.
- .3 After cleat installation is complete, fill bolt
 holes in cleats with approved waterproofing
 compound.
-
- 3.5 CLEANING .1 Perform cleaning after installation to remove
 construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus
 materials, rubbish, tools and equipment
 barriers.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- 1.2 REFERENCES .1 Canadian Standards Association (CSA International)
.1 CAN/CSA-O80 (most recent edition), Wood Preservation.
.2 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian Lumber 2005.
- 1.3 MEASUREMENT AND PAYMENT PROCEDURES .1 Treated Timber Curbing: Supply and installation of new treated timber curbing will be measured to be paid by lineal meter including chocks and all fastenings.
.2 Treated Timber Fenders (Supply and Install): Supply and installation of new treated dimension timber incorporated in the works, will be measured by the cubic meter of timber secured in place, including all fastenings, plant, material, labour.
.3 Payment for all dimension timber will be based from nominal sizes indicated on drawings.
- 1.4 SUBMITTALS .1 Submit Submittal submissions: in accordance with Section 01 33 00 - Submittal Procedures.
- 1.5 DELIVERY, STORAGE, AND HANDLING .1 Separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
-

PART 2 - PRODUCTS

- 2.1 MATERIALS .1 Timber graded and stamped in accordance with applicable grading rules and standards of associations or agencies approved to grade lumber by Canadian Lumber Standards Administration Board of CSA.
- .1 Species: Hemlock or Douglas Fir, (CCA Treated).
 - .2 Grade: No. 1 Structural Grade with 20% maximum of a lesser grade.
 - .3 Grading Authority: NLGA.
- .2 Preservative Treatment: treat to CAN/CSA-080, for coastal waters. Unnecessary field cutting will not be permitted.

Table 1 and 2 and its referenced standards, with the following minimum assay retentions:

<u>Species</u>	<u>CCA (kg/m3)</u>
Coast Water Treatment	
Dimension Timber:	
- Coast Douglas Fir	19
- Western/Eastern Hemlock	19
- Coast Douglas Fir/ Western/Eastern Hemlock (wheel guard and wheel guard chocks)	10

- .3 Miscellaneous metals: to Section 05 50 00.

PART 3 - EXECUTION

- 3.1 FIELD CUTTING TREATED TIMBER .1 Field cut only minimum required to suit field conditions. Treat in field, cuts and damage to surface of treated materials with an appropriate preservative as described in CAN/CSA-080. Ensure that damages areas such as abrasions, nail and spike holes are thoroughly saturated with field treatment solutions as per CAN/CSA 080.
- .2 Treat bolt holes, cutoffs and field cuts in accordance with CAN/CSA-080.

- 3.2 TIMBER CURBING AND CHOCKS .1 Wheelguard timbers to be 100mm by 200mm and will be in minimum lengths of 4880mm or as specifically required with butt joints made over wheelguard chocks and sized as shown on the drawings.
- .2 Wheelguard chocks will be installed at 1500mm on centre as support for wheelguard.
- .3 Wheelguard will be secured through wheelguard chocks, with 22mm diameter anchor bolts to concrete panels as shown on drawings.
- 3.3 HANDLING OF TREATED TIMBER .1 Handle treated material in a manner which will avoid damage causing alteration in original treatment.
- .2 Ripping of treated timber will not be permitted without prior approval of the Departmental Representative.
- 3.4 PROTECTION .1 Protect work from damage resulting from work.
- .2 Repair or replace portion at no extra cost if damaged by work.

PART 1 - GENERAL

- 1.1 Related Sections
- .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 01 74 21 - Construction/Demolition Waste Management.
 - .3 Section 01 35 44 - Environmental Protection Procedures for Marine Work.
 - .4 Section 31 32 21 - Filter Fabric.
- 1.2 References
- .1 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB, Sieves, Testing, Woven Wire, Metric.
- 1.3 Definitions
- .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation including dense tills, hardpan, frozen materials and partially cemented materials such as asphalt which can be ripped and excavated with heavy construction equipment.
- 1.4 Measurement and Payment Procedures
- .1 Sandstone Backfill supplied and installed under this Section will be paid for based on cubic meters installed in-place or CMPM.
 - .2 Granular Asphalt Base supplied and installed under this section will be paid for based on cubic meters installed in-plcae or CMPM.
- 1.5 Submittals
- .1 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Inform Departmental Representative at least 2 weeks prior to commencing work, of proposed source of materials and provide access for sampling.
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- 1.6 Protection of Existing Features
- .1 Existing buried utilities and structures:
 - .1 Prior to commencing any excavation work, notify applicable owner or authorities, establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during work.
 - .2 Record location of maintained, re-routed and abandoned underground lines.
 - .2 Existing buildings and surface features:
 - .1 Protect existing buildings and surface features which may be affected by work from damage while work is in progress. In the event of damage, immediately make repair to approval of Departmental Representative.
- 1.7 Interference to Navigation
- .1 Be familiar with vessel movements and fishery activities in area affected by construction operations.
 - .2 Plan and execute work, in a manner that will not impede navigation, including movement of vessels at the facility.
 - .3 Plan and execute work, in a manner that will not interfere with fishing operations or access to marine structures by land or water.
 - .4 Departmental Representative will not be responsible for loss of time, equipment, material or other charges related to interference with moored vessels in the harbour or other Contractor's operations.
 - .5 Keep the Marine Communications and Traffic Services' Centre, Fisheries and Oceans Canada, informed of construction operations, in order that necessary Notices to Mariners may be issued.
- 1.8 Regulatory Requirements
- .1 Comply with municipal, provincial and national codes and regulations relating to project.
 - .2 Mark floating equipment with sound and light signals in accordance with Collision Regulations made pursuant to the Canada Shipping Act and Notice to Mariners.
-

PART 2 - PRODUCTS

PART 3 - EXECUTION

- 3.1 Site Preparation .1 Remove obstructions, ice and snow from surfaces to be excavated within limits indicated.
- 3.2 Stockpiling .1 Stockpile materials in areas approved by Departmental Representative. If approved area onsite is not adequate, it is the responsibility of the contractor to arrange and pay for additional area off site.
.1 Stockpile granular materials in manner to prevent segregation.
.2 Protect fill materials from contamination.
- .2 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.
- 3.3 Excavation .1 Excavate to lines, grades, elevations and dimensions as indicated or as directed by Departmental Representative.
- .2 Dispose of surplus materials and unsuitable excavated material in approved location off site.
- .3 Do not obstruct flow of surface drainage or natural watercourses.
- .4 Excavation must not interfere with bearing capacity of adjacent foundations.
- 3.4 Pre-Installation Inspection .1 Excavations require inspection and approval prior to commencement of installation operations.
- 3.5 Backfilling .1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.
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- 3.5 Backfilling (Cont'd)
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
 - .3 Do not use backfill material which is frozen or contains ice, snow or debris.
 - .4 Place Sandstone backfill material in uniform layers not exceeding 300 mm compacted thickness. Compact each layer to 98% of Standard Proctor Dry Density before placing succeeding layer. If the Departmental Representative advises varying lift thickness, then the 300mm may be ammended.
 - .5 Granular Asphalt Base:
 - .1 Do not proceed with surface gravel placement operations until Departmental Representative has inspected and approved installations.
 - .2 Place surface gravel material in uniform layers not exceeding 100 mm compacted thickness. Compact each layer to 100% of Standard Proctor Dry Density.
 - .3 Blend grades with existing service area to ensure runoff of surface water.
- 3.6 Rock Material Washed out of Work
- .1 Should, during the progress of the work, any rock material be washed out of the work, or through neglect of carelessness of the Contractor or their employees or from any other cause, be dumped into the water near the work or anywhere within the harbour or channel so as to interfere, in the opinion of the Departmental Representative, with actual depths of water and/or impede navigation, it will be removed by the Contractor when ordered to do so by the Departmental Representative. Any material washed out of the work or displaced within or beyond the contract limits will be replaced by the Contractor at no cost to Public Works and Government Services Canada.
- 3.7 Protection of Existing Structures
- .1 Prevent movement, settlement or damage of adjacent structures. Provided bracing and shoring as required. In event of damage, immediately replace such items or make repairs to approval of Departmental Representative and
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- 3.7 Protection of Existing Structures (Cont'd)
- .1 (Cont'd)
at no additional cost to Departmental Representative.
 - .2 Prevent debris from going adrift and becoming a menace to navigation.
 - .3 All damage to existing structures, roadways, pipelines, electrical systems not specified for removal to be repaired at the Contractor's cost to the satisfaction of the Departmental Representative.

PART 1 - GENERAL

- 1.1 Related Sections
- .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
 - .3 Section 31 23 33 - Excavating, Trenching and Backfilling.
- 1.2 Measurement and Payment Procedures
- .1 The supply and installation of filter fabric will be measured in square meters. Material is to be placed within the lines and grades indicated on the drawings and approved by the Departmental Representative. The price shall include all material, labour, equipment and all other items necessary to complete the work.
 - .2 Damaged material shall be replaced at no cost to the owner.
 - .3 No separate payment will be made for overlapping of filter fabric when applicable.
- 1.3 References
- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM D 4491-99a, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D 4595, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D 4716, Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .4 ASTM D 4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
 - .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 11.2-M89(April 1997), Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
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- 1.3 References .2 (Cont'd)
- (Cont'd)
- .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
- .1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
- .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
- .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
- .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
- .5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.
- 1.4 Submittals .1 Submit to Departmental Representative copies of mill test data and certificate at least 2 weeks prior to start of Work, and in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Obtain written approval of Departmental Representative for filter fabric before installation of material in work.
- 1.5 Delivery, Storage and Handling .1 During delivery and storage, protect filter fabric from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

- 2.1 Material .1 Filter Fabric: Non-woven synthetic fibre fabric, supplied in rolls of minimum 3 meter width.
- .1 Composed of: minimum 85% by mass of polyester with inhibitors added to base plastic to resist deterioration by ultraviolet and heat exposure for 60 days.
- .2 Standard of acceptance: Terrafix 600R or approved equal meeting the following requirements:
- .1 Grab tensile strength: 1600 N
- .2 Tear Strength: 660 N
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- 2.1 Material (Cont'd)
- .1 Filter Fabric:(Cont'd)
 - .2 Standard of acceptance:(Cont'd)
 - .3 Elongation at break: 70-100%
 - .4 Mullen Burst: 3.7 MPa
 - .5 E.O.S.: 75 to 150 micrometres
 - .6 Permittivity: 0.2 cm/sec
 - .3 Securing pins and washers: to CAN/CSA-G40.21-04, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m².
 - .4 Factory seams: sewn in accordance with manufacturer's recommendations.
 - .5 Thread for sewn seams: equal or better resistance to chemical and biological degradation than filter fabric.
 - .6 Contractor shall note that the material may become buoyant.

PART 3 - EXECUTION

- 3.1 Installation
- .1 Place filter fabric material by unrolling onto surface in orientation, manner and locations indicated and retain in position with securing pins as recommended by manufacturer.
 - .2 Place filter fabric material smooth and free of tension stress, folds, wrinkles and creases.
 - .3 Place filter fabric on prepared surface loosely from top of the slope to the bottom allowing fabric to conform easily to contours of the slope.
 - .4 Anchor in accordance with manufacturer's instructions.
 - .5 Overlap each successive strip of filter fabric 600 mm over previously laid strip.
 - .6 Protect installed filter fabric material from displacement, damage or deterioration before, during and after placement of material layers.
 - .7 After installation, cover with overlying layer within 4 hrs of placement. No equipment will be permitted on fabric.
 - .8 Replace damaged or deteriorated filter fabric to approval of Departmental Representative.

3.1 Installation .9 Place fill layers in accordance with Section 31
(Cont'd) 23 33 - Excavating Trenching and Backfilling.

PART 1 - GENERAL

<u>1.1 RELATED SECTIONS</u>	.1	Section 01 33 00 - Submittal Procedures.
	.2	Section 01 74 11 - Cleaning.
	.3	Section 05 50 00 - Miscellaneous Metals.
	.4	Section 31 62 18 - Steel H Piles.
<u>1.2 MEASUREMENT AND PAYMENT PROCEDURES</u>	.1	This item will not be measured separately.
<u>1.3 SUBMITTALS</u>	.1	Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
	.2	Provide methodology including type of pile driving equipment to carry out the work.
	.3	Submit schedule of planned sequence of driving to Departmental Representative for review not less than two (2) weeks prior to commencement of pile driving for structure.
<u>1.4 DELIVERY, STORAGE AND HANDLING</u>	.1	Deliver, store and handle materials in accordance with manufacturer's instructions.
	.2	Protect piles from damage due to excessive bending stresses, impact, abrasion or other causes during delivery, storage and handling.
	.3	Replace damaged piles as directed by Departmental Representative.
<u>1.5 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

- 1.6 EXISTING CONDITIONS
- .1 Borehole records are included on drawings.
 - .2 Notify Departmental Representative in writing if subsurface conditions at site differ from those indicated and await further instructions from Departmental Representative.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Material requirements for piles are specified in Section 31 62 18 - Steel H Piles.
 - .2 Provide equipment of sufficient capacity to handle full length piles without cutting and splicing.
 - .3 Pile lengths indicated are based on lengths estimated to remain in completed structure.
 - .4 Spliced piles will not be permitted without written approval of Departmental Representative.

PART 3 - EXECUTION

- 3.1 EQUIPMENT REQUIREMENTS
- .1 Equipment information:
 - .1 Prior to commencement of pile installation operation, submit to Departmental Representative for review, details of equipment for installation of piles, pile driving sequence and falsework (i.e. Guides and leads).
 - .2 For impact hammers give manufacturer's name, type, rated energy per blow at normal working rate, mass of striking parts of hammer, mass of driving cap and type of cap block material in hammer and elastic properties of cap block material.
 - .3 For non-impact methods of installation, such as drilling, jacking, use of vibratory hammers, or other means, give full details of characteristics necessary to evaluate performance.
 - .2 Hammer:
 - .1 When required penetration is not obtained by use of hammers, either provide larger hammer or take other measures approved by Departmental

3.1 EQUIPMENT
REQUIREMENTS
(Cont'd)

- .2 Hammer:(Cont'd)
 - .1 (Cont'd)
Representative, including use of non-impact methods of installation.
 - .2 All piles damaged due to over driving to be replaced at the contractor's cost.
- .3 Leads:
 - .1 Provide leads that will enable the hammer to deliver impacts concentrically and in alignment with the pile longitudinal axis without inducing bending moments in pile.
 - .2 Provide fixed leads held in position at top and bottom, with guys, stiff braces, or other means approved by Departmental Representative, to ensure support to pile while being driven.
 - .3 Provide sufficient length of leads to accommodate the combined length of pile and hammer.
 - .4 Performance of the leads will be subject to assessment of Departmental Representative. Any remedial action required will be at the Contractor's own expense.
- .4 Followers:
 - .1 Obtain approval form Departmental Representative prior to using followers.

3.2 PREPARATION

- .1 Protection:
 - .1 Protect adjacent structures, services and work of other sections from hazards due to pile driving operations.
 - .2 Arrange sequencing of pile driving operations and methods to avoid damages to adjacent existing structures.
 - .3 When damages occur, remedy damaged items to restore to original or better condition at own expense.
- .2 Ensure that ground conditions at pile locations are adequate to support pile driving operations.
 - .1 Make provision for access and support of piling equipment during performance of Work.

3.3 FIELD
MEASUREMENTS

- .1 Maintain accurate and daily records of driving for each pile, including:
 - .1 Type and make of hammer, rated energy, observed stroke, and observed number of blows per minute.
 - .2 Other installation equipment including details on use of pile cushion, follower, etc.
 - .3 Pile size, length and location.
 - .4 Sequence of driving piles.
 - .5 Number of blows per meter for entire length of pile and number of blows per 100mm for the last meter.
 - .6 Final tip and cut-off elevations.
 - .7 Other pertinent information such as interruption of continuous driving, pile damage.
 - .8 Record elevation taken on adjacent piles before and after driving of each pile.
- .2 Provide Departmental Representative with two (2) copies of records.

3.4 APPLICATION /
DRIVING

- .1 Use driving caps to protect piles.
- .2 Hold piles securely and accurately in position while driving.
- .3 Deliver hammer blows concentrically and in direct alignment with pile taking care to avoid forcing pile laterally or bending pile.
- .4 Use of water jet is not permitted.
- .5 Piles are to be driven in one continuous operation to avoid freeze-up.
- .6 Reinforce pile heads, if necessary.
- .7 Do not drive piles within a radius of eight meters of concrete which has been in place for less than 3 days.
- .8 Ensure no contact between pile and structure takes place when driving adjacent to existing structures.
- .9 Restrike already driven piles which have settled or lifted during driving of adjacent piles. No additional compensation will be made for piles restruck due to such settlement or heave.

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- 3.4 APPLICATION / DRIVING
(Cont'd)
- .10 Installation of each pile will be subject to the approval of the Departmental Representative, who will be sole judge of acceptability of pile with respect to final penetration resistance, depth of penetration, or other criteria. Departmental Representative to approve final penetration resistance or installation depth of all piles prior to removal of pile driving or installation equipment from site.
- .11 Each pile shall be driven (or installed by non-impact methods) to elevations indicated on drawings. Do not overdrive to cause damage to piles. Piles installed to final elevation by non-impact methods (such as augering) to be set in tremie concrete sockets as indicated on drawings.
- .12 Departmental Representative will determine refusal criteria for piles. Refusal may be taken as 4 blows per 25 mm of pile penetration when driven using a hammer with a maximum rated driving energy in the order of 750 joules times the pile tip diameter in centimetres.
- .13 Cut off piles neatly and squarely at elevations as indicated.
.1 Provide sufficient length above cut-off elevation so that part damaged during driving is cut off.
- .14 Remove cut-off lengths from site on completion of work.
- 3.5 TEMPORARY BRACING AND/OR TEMPLATES
- .1 Provide bracing and/or templates necessary for installation of piles.
- .2 Bracing and/or templates must be capable of providing the necessary support to piles during initial installation and restriking.
- 3.6 DRIVING TOLERANCES
- .1 Pile heads, at cut off elevation, to be within 25 mm of locations indicated.
- .2 Piles not to be more than 2% of length out of straight alignment.
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- 3.7 OBSTRUCTIONS .1 Where obstruction is encountered that causes sudden unexpected change in penetration resistance or deviation from specified tolerances, the Contractor may be required to perform one or all of the following:
- .1 Removal of obstruction.
 - .2 Extracvtion, repositioning and redriving or re-installation by non-impact methods.
 - .3 Addition of extra piles.
- 3.8 REPAIR AND RESTORATION .1 Departmental Representative will reject any pile found to be defective or damaged caused during pile installation. Pull out rejected piles and replace with new piles.
- .2 Leave rejected pile in place, cut off as directed and place adjacent pile as directed by Departmental Representative.
 - .3 No extra compensation will be made for removing and replacing or other work made necessary through rejection of defective piles.
- 3.9 CLEANING .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 01 33 00 - Submittals.
 - .2 Section 01 74 11 - Cleaning.
 - .3 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .4 Section 31 61 13 - Pile Foundations, General Requirements.
- 1.2 MEASUREMENT AND PAYMENT PROCEDURES
- .1 Installation of Steel H-Piles: The installation of steel H-piles acceptably driven and secured in the work will be measured by the lineal metre of piling remaining in the work from final piletip to cut-off elevation of pile to remain in the work.
 - .2 Supply of Steel H-Piles: The supply of steel H-piles will be measured by the lineal meter of piling acceptable to the Departmental Representative and delivered to site.
 - .3 Mobilization of equipment will be measured for payment by the lump sum.
 - .4 Adjustments in contract price due to changes in number and lengths of piles will be based on unit prices established in Contract.
- 1.3 REFERENCES
- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.171M-98, Inorganic Zinc Coating.
 - .2 Canadian Standards Association (CSA International)
 - .1 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel Structures.
 - .2 CSA W47.1S1-M1989, Supplement No.1-M1989 to W47.1-1983, certification of Companies for Fusion Welding of Steel Structures.
 - .3 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.
 - .4 CSA W59-2003, Welded Steel Construction (Metal Arc Welding) (Metric Version).
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- 1.3 REFERENCES .2 (Cont'd)
(Cont'd) .5 CSA-G40.20/G40.21-2004, General
Requirements for Rolled or Welded Structural
Quality Steel/Structural Quality Steels.
- 1.4 SUBMITTALS .1 Submittals in accordance with Section 01 33 00
- Submittal Procedures.
- .2 Each drawing submitted shall bear the stamp and
signature of qualified professional engineer
registered or licensed in Province of Prince
Edward Island, Canada.
- .3 Quality Assurance:
.1 Test Reports: submit 2 copies of mill test
reports indicating yield and chemical analysis
of steel piles if requested by Departmental
Representative.
- 1.5 WASTE .1 Separate waste materials in accordance with
MANAGEMENT AND Section 01 74 21 - Construction/Demolition Waste
DISPOSAL Management and Disposal.
- .2 Divert unused metal materials from landfill to
metal recycling facility as approved by
Departmental Representative.
- .3 Unused paint or coating material must be
disposed of at an official hazardous material
collections site as approved by Departmental
Representative.
- .4 Unused paint and coating materials must not be
disposed of into sewer system, into streams,
lakes, onto ground or in any other location
where it will pose a health or environmental
hazard.
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PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Steel H piles: to CSA-G40.20/G40.21, Type and Grade 350.
 - .1 Size and weight as indicated on drawings.
 - .2 Welding materials: to CSA W48.
 - .3 Steel plates: to CSA-G40.20/G40.21, Type and Grade 350.

PART 3 - EXECUTION

- 3.1 INSTALLATION
- .1 Install piling in accordance with Section 31 61 13 - Pile Foundations, General Requirements.
 - .2 The steel H-piles are to be driven vertically.
 - .3 Cut off piles squarely at required elevation.
 - .4 At harbour bottom, the piles are to be located within 30 mm of the indicated location shown on the drawings. Tolerance at the top of wharf to be within 15 mm.
 - .5 Piles must be installed in such a manner so the face of the H-pile is square with the face of the Berlin wall. Maximum rotation tolerance about axis of pile layout to be within 10 mm.
 - .6 The objective of the pile alignment is to create a 2440 mm centre to centre pile spacing. The pile spacing criteria is based on a required 80mm panel bearing on the H-pile flanges.
- 3.2 WELDING
- .1 Weld to CSA W59.
 - .2 Welding certification of companies: to CSA W47.1 and CSA W47.1S1.
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- 3.3 CLEANING .1 Proceed in accordance with Section 01 74 11 -
Cleaning.
- .2 On completion and verification of performance
of installation, remove surplus materials,
excess materials, rubbish, tools and equipment.