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- 1.1 DESCRIPTION OF WORK
- .1 The work under this contract involves the supply of all labour, materials and equipment required to modify the existing wharf structure as detailed on the plans and in this specification.
  - .2 The work includes but is not limited to:
    - .1 Site work including mobilization, demobilization, removal and disposal of the existing Denso pile wrap system, cleaning and installing a protective wrap and sacrificial anodes on the steel pipe piles. In addition, the work includes the cleaning of a portion of the existing steel sheet pile (S.S.P.) sea wall, local repair of damaged prime coating on the S.S.P. wall, the application of a new protective coating on the S.S.P wall, and the installation of sacrificial anodes on the S.S.P. wall. The work on the S.S.P. wall is limited to both sides of the 1994 Ancelor Mittal AZ36 steel sheet pile wall only.
  - .3 Site of Work is at: Saint John Ferry Terminal Wharf Structure, Saint John, NB.
- 1.2 FAMILIARIZATION WITH SITE
- .1 Before submitting a bid, it is recommended that bidders visit the site to review and verify the form, nature and extent of the work, materials needed, the means of access and the temporary facilities required to perform the work. A single site visit will be scheduled during the tender phase.
  - .2 Obtain prior permission from the Departmental Representative before carrying out such site inspection.
- 1.3 CODES AND STANDARDS
- .1 Perform work in accordance with any code of provincial or local application, including all amendments up to bid closing date, provided that in any case of conflict or

discrepancy, the more stringent requirement shall apply.

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

#### 1.4 INTERPRETATION OF DOCUMENTS

- .1 Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

#### 1.5 TERM ENGINEER

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

#### 1.6 SETTING OUT WORK

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices needed to lay out and construct work.
- .3 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.
- .4 Supply stakes and other survey markers required for laying out work.

#### 1.7 MEASUREMENT FOR PAYMENT

- .1 Notify Departmental Representative sufficiently in advance of operations to permit required measurements for payment.
- .2 Items included under "Measurement for payment"

Item 1: Mobilization and Demobilization:  
Mobilization and demobilization shall constitute a lump sum for measurement purposes.

Item 2: Removal of Existing Denso Wrap System:

The removal of the existing Denso wrap system on all steel pipe piles shall constitute a unit rate price per pile for measurement purposes.

Item 3: Cleaning of Steel Pipe Piles:

The cleaning of all piles shall constitute a unit rate price per pile for measurement purposes.

Item 4: Supply of Steel Pipe Pile Anodes:

Supply of sacrificial anodes shall constitute a unit rate price per anode for measurement purposes.

Item 5: Install of Steel Pipe Pile Anodes:

The installation of sacrificial anodes shall constitute a unit rate price per anode for measurement purposes.

Item 6: Supply of Pile Wrap/Jacket:

The supply of protective pipe pile wrap/jacket shall constitute a unit rate price per linear meter of pile for measurement purposes.

Item 7: Supply of Heavy Duty Pile Wrap/Jacket:

The supply of protective pipe pile wrap/jacket shall constitute a unit rate price per linear meter of pile for measurement purposes.

Item 8: Install of Pile Wrap/Jacket:

The installation of protective pipe pile wrap/jacket shall constitute a unit rate price per linear meter of pile for measurement purposes.

Item 9: Install of Heavy Duty Pile Wrap/Jacket:

The installation of heavy duty protective pipe pile wrap/jacket shall constitute a unit rate price per linear meter of pile for measurement purposes.

Item 10: Cleaning of Steel Sheet Pile Wall:

The cleaning of the S.S.P. shall constitute a unit rate price per square meter for measurement purposes.

Item 11: Supply and Install of Prime Coating:

Supply and installation of the steel sheet pile wall prime coating shall constitute a unit rate price per square meter for measurement purposes.

Item 12: Supply and Install of Protective Coating:

Supply and installation of the steel sheet pile wall protective coating shall constitute a unit rate price per square meter for measurement purposes.

Item 13: Supply of Sheet Pile Wall Anodes:

Supply of sacrificial anodes shall constitute a unit rate price per anode for measurement purposes.

Item 14: Installation of Sheet Pile Wall Anodes:

The installation of sacrificial anodes on the steel sheet pile wall shall constitute a unit rate price per anode for measurement purposes.

1.8 DOCUMENTS  
REQUIRED

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

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|---|----|---|
| <u>1.9 PERMITS</u>  | .1 | In accordance with the General Conditions, obtain and pay for building permits, certificates, licenses and other permits as required by municipal, provincial and federal authorities.          |
|   | .2 | Provide appropriate notifications of project to municipal and provincial inspection authorities.  |
|   | .3 | Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.                |
|   | .4 | Submit to Departmental Representative, copy of application forms and approval documents received from above referenced authorities.   |
| <u>1.10 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING STRUCTURE</u> | .1 | Execute work with least possible interference or disturbance to Ferry Terminal operations and normal use of premises. Arrange with Departmental Representative to facilitate execution of work. |
|   | .2 | Where security has been reduced by work of Contract, provide temporary means to maintain security.  |
|   | .3 | Provide barriers and warning signs in locations where work is adjacent to areas which will be operative during such work.   |
| <u>1.11 CUTTING, FITTING AND PATCHING</u>                           | .1 | Ensure that cutting, fitting and patching required by all trades to make work fit properly are included in total bid price submitted for the work.  |
| <u>1.12 EXISTING SERVICES</u>                                       | .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 operations.

- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection of electrical power. Adhere to approved schedule and provide notice to affected parties.
- .4 Provide temporary services when directed by Departmental Representative to maintain critical systems.
- .5 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .6 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.

1.13 SCHEDULING OF  
PAYMENT

- .1 Available funding for fiscal year 2015/2016 and payment is \$1,130,000. Contractor to complete work to reach this sum and be paid for this fiscal year as this amount. The remaining funds are available in fiscal year 2016/2017.
- .2 Fiscal year starts on April 01 and ends on March 31.

1.1 SUBMITTALS

- .1 Upon acceptance of bid and prior to commencement of work, submit to Departmental Representative the following work management documents:
  - .1 Work Schedule as specified herein.
  - .2 Waste Management Plan specified in section 01 74 21.
  - .3 Environmental Plan specified in section 01 35 44.
  - .4 Health and Safety Plan specified in section 01 35 29.

1.2 WORK SCHEDULE

- .1 Upon acceptance of bid submit:
  - .1 Work schedule within 7 calendar days of contract award.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.
- .3 Project to have 100% completion on or before March 31<sup>st</sup>, 2017. See General Instructions (01 10 10) Section 1.13.
- .4 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .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 Written narrative on key elements of work illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.



- .3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .6 Work schedule must take into consideration and reflect the work phasing, required sequence of work, special conditions and operational restrictions as specified below and indicated on drawings.
- .7 Schedule work in cooperation with the Departmental Representative. Incorporate within Work Schedule, items identified by Departmental Representative during review of schedule.
- .8 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.
- .9 Ensure that all sub trades and subcontractors are made aware of the work restraints and operational restrictions specified.
- .10 Schedule Updates:
  - .1 Submit when requested by Departmental Representative.
  - .2 Provide information and pertinent details explaining reasons for necessary changes to implementation plan.
  - .3 Identify problem areas or anticipated delays which may have an impact on the schedule and proposed corrective measures to be taken.
- .11 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.

- .12 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.

### 1.3 PROJECT PHASING

- .1 Be aware that the Ferry Terminal must be kept operational for the full duration of work of this contract.

### 1.4 OPERATIONAL RESTRICTIONS

- .1 The Contractor must recognize that Ferry Terminal users will be affected by implementation of this contract. The Contractor must perform the work with utmost regard to the safety and convenience of facility occupants and users. All work activities must be planned and scheduled with this in mind. The Contractor will not be permitted to disturb any portion of the structure without providing temporary facilities as necessary to ensure safe and direct passage through disturbed or otherwise affected areas.
- .2 Contractor to meet with the Departmental Representative on a weekly basis to identify intended work areas, activities and scheduling for the coming week.
- .3 Safety Signage:
  - .1 Provide onsite, and erect as required during progress of work, proper signage, mounted on self-supporting stands, warning the public of construction activities progress and alerting need to exercise caution in the area.
  - .2 Signage to be professionally printed and mounted on wooden backing, colored and to express messages as directed by the Departmental Representative.
  - .3 Include costs for the supply and

installation of these signs in the bid price.

- .4 Stock pile materials on site in a location that does not affect the normal operation of the Ferry Terminal and is agreed upon by the departmental representative.
- .5 Dust and Dirt Control:
  - .1 See sections 01 50 00 and 01 74 11 for dust control and cleaning requirements.
  - .2 Effectively plan and implement dust control measures and cleaning activities as an integral part of all construction activities. Review all measures with the Departmental Representative before undertaking work, especially for major dust generating activities.
  - .3 Do not allow demolition debris and construction waste to accumulate on site and contribute to the propagation of dust.
  - .4 As work progresses, maintain construction areas in a tidy condition at all times.
- .6 The Ferry service sails twice daily at 8:00AM and 2:30 PM between the dates of June 19<sup>th</sup> to October 12<sup>th</sup> and December 1<sup>st</sup> to December 31<sup>st</sup>. Between the dates of May 15<sup>th</sup> and June 18<sup>th</sup>, the ferry service sails twice daily at 12:00 noon and 10:00PM. All remaining dates, the ferry service sails once daily at either 8:00 AM or 9:00AM. The above noted schedule is subject to change without notice during the duration of this contract. Any changes to the above schedule will be accommodated by the contractor at no additional cost to the contract. If the ferry service sails more than twice daily, an extra for down time will be considered. On days when the ferry has two trips, the ferry will be in port for approximately 1 hour between trips.
- .7 The Ferry is moored at the Saint John ferry terminal overnight after the final crossing of the day. The final crossing of the day is

expected to arrive in Saint John between 7:00PM and 8:30PM dependent on the time of year.

- .8 The contractor must cease work and vacate the work area 15 minutes prior to the Ferry service arriving in port. While the ship is moored, the contractor can complete work on the south side of the steel sheet pile wall only. The contractor must vacate the work area 15 minutes prior to the Ferry service leaving port. After the ferry service has left port, the contractor regains access to the entire work site.
- .9 Upon approval by a Departmental Representative, the contractor may complete work while the ferry is in port. This would only be considered in situations when the engines of the ferry are shutdown (For example: Overnight or between crossings).

#### 1.5 PROJECT MEETINGS

- .1 Schedule and administer project meetings, held on a minimum monthly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work or particular situation.
- .2 Prepare agenda for meetings.
- .3 Notify participants in writing 4 days in advance of meeting date.
  - .1 Ensure attendances of all subcontractors.
  - .2 Departmental Representatives will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Departmental Representative.
- .5 Preside at meetings and record minutes.
  - .1 Indicate significant proceedings and decisions. Identify action items by parties.
  - .2 Distribute to participants by mail or by

facsimile within 2 calendar days after each meeting.

.3 Make revisions as directed by Departmental Representative.

.4 Departmental Representative will advise whether submission of minutes by Email is acceptable. Decision will be based on compatibility of software among participants.

1.6 WORK  
COORDINATION

.1 The General Contractor is responsible for coordinating the work of the various trades and predetermining where the work of such trades interfaces with each other.

.1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.

.2 No extra costs to the Contract will be considered by the Departmental Representative as 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.

1.1 RELATED <u>SECTIONS</u>	.1	Section 01 78 00 - Closeout Submittals.
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| 1.2 SUBMITTAL<br><u>GENERAL REQUIREMENTS</u> | .1 | Submit to Departmental Representative for review requested submittals specified in various sections of the specifications including shop drawings, samples, permits, compliance certificates, test reports, work management plans and other data required as part of the work.   |
|  | .2 | Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.  |
|  | .3 | Do not proceed with work until relevant submissions have been reviewed.  |
|  | .4 | Present shop drawings, product data, samples and mock-ups in SI Metric units.  |
|  | .5 | Where items or information is not produced in SI Metric units, provide soft converted values.  |
|  | .6 | Review submittals prior to submission. Ensure that necessary requirements have been determined and verified and that each submittal has been checked and coordinated with requirements of Work and Contract Documents.<br>.1 Submittals not stamped, signed, dated and identified as to a specific project will be returned unexamined by Departmental Representative and considered rejected. |
|  | .7 | Verify field measurements and affected adjacent Work are coordinated.  |

- .8 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .9 Contractor's responsibility for errors, omissions or deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .10 Submittal format: paper originals, or alternatively clear and fully legible photocopies of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental Representative. Poorly printed non-legible photocopies or facsimiles will not be accepted and be returned for resubmission.
- .11 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, identify in writing of any revisions other than those requested.
- .12 Keep one reviewed copy of each submittal document on site for duration of Work.

### 1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means fabrication drawings, erection drawings, diagrams, illustrations, schedules, performance charts, technical product data, brochures, specifications, test reports installation instructions and other data which are to be provided by Contractor to illustrate compliance with specified materials and details of a portion of work.
- .2 Shop Drawing Quantities: submit sufficient copies required by the General Contractor and sub-contractors plus 3 copies which will be

retained by Departmental Representative.

- .3 Shop Drawings Format:
  - .1 Opaque white prints or photocopies of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
  - .2 Product Data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
  - .3 Non or poorly legible drawings, photocopies or facsimiles will not be accepted and returned not reviewed.
- .4 Shop Drawings Content:
  - .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work have been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.
  - .2 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
  - .3 Delete information not applicable to project on all submittals.
- .5 Allow 14 calendar days for Departmental Representative's review of each submission.
- .6 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise



Departmental Representative in writing prior to proceeding with Work.

- .7 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected shop drawings, through same submission procedures indicated above.
- .8 Be advised that costs and expenses incurred by Departmental Representative to conduct more than one review of incorrectly prepared shop drawing submittal for a particular material, equipment or component of work may be assessed against the Contractor in the form of a financial holdback to the Contract.
- .9 Accompany each submissions with transmittal letter, in duplicate, containing:
  - .1 Date.
  - .2 Project title and project number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .10 Submissions shall include:
  - .1 Date and revision dates.
  - .2 Project title and project number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized Representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Cross references to particular details of contract drawings and specifications section number for which shop drawing

submission addresses.

.6 Details of appropriate portions of Work as applicable:

- .1 Fabrication.
- .2 Layout, showing dimensions, including identified field dimensions, and clearances.
- .3 Setting or erection details.
- .4 Capacities.
- .5 Performance characteristics.
- .6 Standards.
- .7 Operating weight.
- .8 Wiring diagrams.
- .9 Single line and schematic diagrams.
- .10 Relationship to adjacent work.

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

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

#### 1.4 SAMPLES

- .1 Submit for review samples as specified in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples to Departmental

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

- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments will result in a cost increase to the Contract notify Departmental Representative in writing prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

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| <u>1.1 SECTION INCLUDES</u>         | .1 | Fire Safety Requirements  |
|                                     | .2 | Hot Work Permit   |
|                                     | .3 | Existing Fire Protection and Alarm Systems  |
| <u>1.2 RELATED WORK</u>             | .1 | Section 01 35 29 Health and Safety Requirements   |
| <u>1.3 REFERENCES</u>               | .1 | Fire Protection Standards issued by Fire Protection Services, Labour Program Division of Service Canada:<br>.1 FCC No. 301-June 1982 Standard for Construction Operations.<br>.2 FCC No. 302-June 1982 Standard for Welding and Cutting.  |
|                                     | .2 | FCC standards may be viewed at:<br>.1 <a href="http://www.hrsdc.gc.ca/en/lp/lo/fp/standards/commissioner.shtml">http://www.hrsdc.gc.ca/en/lp/lo/fp/standards/commissioner.shtml</a><br>.2 Fire Protection Services - Atlantic Region office, Halifax, N.S, Tel. (902) 426-6053. |
| <u>1.4 DEFINITIONS</u>              | .1 | Hot Work defined as:<br>.1 Cutting of materials by use of torch or other open flame devices<br>.2 Grinding with equipment which produces sparks.  |
| <u>1.5 SUBMITTALS</u>               | .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.   |
| <u>1.6 FIRE SAFETY REQUIREMENTS</u> | .1 | Implement and follow fire safety measures during Work. Comply with following:<br>.1 National Fire Code.<br>.2 Fire Protection Standards FCC 301 and   |

FCC 302.

.3 Federal and Provincial Occupational Health and Safety Acts and Regulations.

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

#### 1.7 HOT WORK AUTHORIZATION

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

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

- .3 Upon review and confirmation that effective fire safety measures will be implemented and followed during performance of hot work, Departmental Representative will give authorization to proceed as follows:
- .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
  - .2 Subdivide the work into pre-determined, individual activities, each activity requiring a separately written authorization to proceed.

- .4 Requirement for individual authorization will be based on:
- .1 Nature or phasing of work;
  - .2 Risk to Facility operations;
  - .3 Quantity of various trades needing to perform hot work on project or;
  - .4 Other situation deemed necessary by

Departmental Representative to ensure fire safety on premises.

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

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

#### 1.8 HOT WORK PROCEDURES

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

.2 Hot Work Procedures to include:

- .1 Requirement to perform hazard assessment of site and immediate work area beforehand for each hot work event in accordance with Safety Plan specified in section 01 35 29.
- .2 Use of a Hot Work Permit system with individually written permit issued by Contractor's Superintendent to specific worker or subcontractor granting permission to proceed with Hot Work.
- .3 Permit required for each Hot Work event.
- .4 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 30 minutes immediately following the completion of the Hot Work.
- .5 Compliance with fire safety codes, standards and occupational health and safety regulations specified.
- .6 Site specific rules and procedures in force at the site as provided by the Facility Manager.

.3 Generic procedures, if used, must be edited

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

- .4 Procedures shall clearly establish responsibilities of:
  - .1 Worker performing hot work,
  - .2 Person issuing the Hot Work Permit,
  - .3 Fire Safety Watcher,
  - .4 Subcontractor(s) and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.
- .6 Failure to comply with fire safety procedures may result in the issue of a Non-Compliance notification as specified in Section 01 35 29.

#### 1.9 HOT WORK PERMIT

- .1 Hot Work Permit to include the following:
  - .1 Project name and project number;
  - .2 Structure name and specific location 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 10 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 Watcher'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 FIRE PROTECTION AND ALARM SYSTEMS
  - .1 Fire protection and alarm systems shall not be:
    - .1 Obstructed.
    - .2 Shut-off, unless approved by Departmental Representative.
    - .3 Left inactive at the end of a working day or shift.
  - .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.
  - .3 Costs incurred, from the fire department, Facility owner and tenants, resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.
- 1.11 DOCUMENTS ON SITE
  - .1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.
  - .2 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.



- 1.1 RELATED WORK
- .1 Submit to Departmental Representative copies of the following documents, including updates:
    - .1 Site Specific Health and Safety Plan.
    - .2 Building Permit, compliance certificates and other permits obtained.
    - .3 Reports or directions issued by Federal, Provincial or other authority having jurisdiction.
    - .4 Accident or Incident Reports.
    - .5 MSDS data sheets.
    - .6 Name of Contractor's Representative designated to perform full time health and safety supervision on site.
  - .2 Upon request by Departmental Representative, submit reports and other documentation as stipulated to be produced and maintained by Federal and Provincial Occupational Health and Safety Regulations and as specified herein.
  - .3 Submit above documents in accordance with the submittal procedures specified in Section 01 33 00.
  - .4 Section 01 35 24: Special Procedures on Fire Safety Requirements.
- 1.2 DEFINITIONS/ COMPLIANCE REQUIREMENTS
- .1 Comply with Work Safe NB's Occupational Health and Safety Act for the Province of New Brunswick, and the Occupational Health and Safety Act Regulations made pursuant to the Act.
  - .2 COSH: Comply with Canada Labour Code Part II, and the Canada Occupational Safety and Health Regulations made under Part II of the Canada Labour Code.
  - .3 Observe and enforce construction safety measures required by:

- .1 National Building Code of Canada;
- .2 Provincial Worker's Compensation Board;
- .3 Municipal statutes and ordinances.
- .4 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
- .5 A copy of the Canada Labour Code Part II may be obtained by contacting:

Canadian Government Publishing  
Public Works & Government Services Canada  
Ottawa, Ontario, K1A 0S9  
Tel: (819) 956-4800 (1-800-635-7943)  
Publication No. L31-85/2000 E or F)
- .6 Maintain Workers Compensation Coverage for duration of Contract. Submit Letter of Good Standing to Departmental Representative upon request.
- .7 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 the occupational health and safety statutes and regulations that apply to the work and;
  - .3 Knowledgeable about potential or actual danger to health and safety associated with the work.
- .8 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.
- .9 PPE: personal protective equipment

.10 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.
- .3 Review section 1.12 Health and Safety Plan.

### 1.4 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, of property and for protection of persons and public circulating adjacent to work operations to extent that they may be affected by conduct of the Work.
- .2 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 statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

### 1.5 SITE CONTROL AND ACCESS

- .1 Control work site and entry points to construction areas.
  - .1 Delineate and isolate construction areas from other areas of site by use of appropriate means.
  - .2 Post notices and signage at entry points and at other strategic locations identifying entrance onto site to be restricted to authorized persons only.
  - .3 Signage must be professionally made, bilingual in both official languages or display internationally understood graphic symbols.

- .2 Approve and grant access to site only to workers and authorized persons.
  - .1 Immediately stop non-authorized persons from circulating in construction areas and remove from site.
  - .2 Provide site safety orientation to all persons before granting access. Advise of site conditions, hazards and mandatory safety rules to be observed on site.
- .3 Secure site at night time to extent required to protect against unauthorized entry. Provide security guard where protection cannot be achieved by other means.
- .4 Ensure persons granted access to site wear appropriate personal protective equipment (PPE) suitable to work and site conditions.
  - .1 Provide such PPE to authorized persons who require access to perform inspections or other approved purposes.

#### 1.6 PROTECTION

- .1 Carry out work placing emphasis on health and safety of the Public, Facility personnel, construction workers and protection of the environment.
- .2 Erect safety barricades, lights and signage on site to effectively delineate work areas, protect pedestrian and vehicular traffic around and adjacent to work and to create a safe working environment.
  - .1 Erect fences, hoarding protective barrier and temporary lighting as required. See Section 01 50 00 for minimum acceptable barricades.
- .3 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

#### 1.7 FILING OF

- .1 File Notice of Project and other notices with

NOTICE

Provincial authorities prior to commencement of Work.

.1 Departmental Representative will assist in locating address for Filing Notice of Project if needed.

1.8 PERMITS

.1 Post on site permits, licenses, compliance certificates specified in section 01 10 10.

.2 Where particular permit or compliance certificate cannot be obtained at the required stage of work, notify Departmental Representative in writing and obtain his/her approval to proceed before carrying out that portion of work.

1.9 HAZARD ASSESSMENTS

.1 Conduct site specific health and safety hazard assessment before commencing project and during course of the work. Identify risks and hazards resulting from site conditions, weather conditions and work operations.

.1 Perform on-going assessments addressing new risks and hazards as work progresses including when new sub trade or subcontractor arrives on site.

.2 Also, conduct assessment when the scope of work has been changed by Change Order and when potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety Representative.

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

- .1 overhead wiring
- .2 vehicle traffic
- .3 uneven road conditions
- .4 working over water
- .5 unstable ground conditions
- .6 load limits on wharf structures
- .7 Ferry, boat and pleasure craft traffic

.3 Above lists shall not be constructed as being complete and inclusive of safety and health hazards encountered as a result of Contractor's operations during the course of

work. Include above items into the hazard assessment program specified herein.

- .4 Record results in writing and address in Health and Safety Plan.
- .5 Keep copies of all assessments on site.

#### 1.10 PROJECT/SITE CONDITIONS

- .1 Obtain from Departmental Representative, copies of all MSDS Data sheets for existing hazardous products stored on site or used by Facility personnel.
- .2 Obtain from supplier all MSDS Data sheets for construction products and provide a copy easily accessible to all people access the site.

#### 1.11 HEALTH AND SAFETY MEETINGS

- .1 Attend pre-construction health and safety Meeting conducted by Departmental Representative. Have following persons in attendance:
  - .1 Site Superintendent.
  - .2 Contractor's designated Health and Safety Site Supervisor.
  - .3 Departmental Representative will advise of date, time and location.
- .2 Conduct health and safety meetings and tool box briefings on site. Hold on a regular and pre-scheduled basis during entire work in accordance with requirements and frequency as stipulated in provincial occupational health and safety regulations.
  - .1 Keep workers informed of potential hazards and provide safe work practices and procedures to be followed.
  - .2 Take written minutes and post on site.

#### 1.12 HEALTH AND SAFETY PLAN

- .1 Develop written site-specific Project Health and Safety Plan, based on hazard assessments, prior to commencement of work.
  - .1 Submit copy to Departmental Representative within 7 calendar days of

acceptance of bid.

.2 Submit updates as work progresses.

- .2 Health and Safety Plan shall contain three (3) parts with following information:
  - .1 Part 1 - Hazards: List of individual health risks and safety hazards identified by hazard assessment process.
  - .2 Part 2 - Safety Measures: engineering controls, personal protective equipment and safe work practices used to mitigate hazards and risks listed in Part 1 of Plan.
  - .3 Parts 3a: Emergency Response: standard operating procedures, evacuation measures and emergency response in the occurrence of an accident, incident or emergency.
    - .1 Include responses to all hazards listed in Part 1 of Plan.
    - .2 Evacuation measures to complement the Facility's existing Emergency Response and Evacuation Plan. Obtain pertinent information from Departmental Representative.
    - .3 List names and telephone numbers of officials to contact including:
      - .1 General Contractor and all Subcontractors.
      - .2 Federal and Provincial Departments as stipulated by laws and regulations and local emergency resource organizations, as needed based on nature of emergency or accident.
      - .3 Officials from PWGSC and site Facility management. Departmental Representative will provide list.
- .4 Part 3b - Site Communications:
  - .1 Procedures used on site to share work related safety issues between workers, subcontractors, and General Contractor.
  - .2 List of critical tasks and work activities, to be communicated with the Facility Manager, which has risk of affecting tenant operations, or

endangering health and safety of Facility personnel and the general public. Develop list in consultation with the Departmental Representative.

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

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

- .4 Develop Plan in collaboration with subcontractors. Address work activities of all trades. Revise and update Plan as Sub-contractors arrive on site.
- .5 Implement and enforce compliance with requirements of Plan for full duration of work to final completion and demobilization from site.
- .6 As work progresses, review and update Plan. Address additional health risks and safety hazards identified by on-going hazard assessments.
- .7 Post copy of Plan, and updates, on site.
- .8 Submission of the Health and Safety Plan, and updates, to the Departmental Representative is for review and information purposes only. Departmental Representative's receipt, review and any comments made of the Plan shall not be construed to imply approval in part or in whole of such Plan by Departmental Representative and shall not be interpreted as a warranty of being complete and accurate or as a confirmation that all health and safety requirements of the Work have been



addressed and that it is legislative compliant. Furthermore, Departmental Representative's review of the Plan shall not relieve the Contractor of any of his legal obligations for Occupational Health and Safety provisions specified as part of the Work and those required by provincial legislation.

#### 1.13 SAFETY SUPERVISION AND INSPECTIONS

- .1 Designate one person to be present on site at all times, responsible for supervising health and safety of the Work.
  - .1 Person to be competent in Occupational Health and Construction Safety as defined in the Provincial Occupational Health and Safety Act.
- .2 Assign responsibility, obligation and authority to such designated person to stop work as deemed necessary for reasons of health and safety.
- .3 Conduct regularly scheduled informal safety inspections of work site on a minimum bi-weekly basis.
  - .1 Note deficiencies and remedial action taken in a log book or diary.
- .4 Keep inspection reports on site.

#### 1.14 TRAINING

- .1 Ensure that all workers and other persons granted access to site are competently trained and knowledgeable on:
  - .1 Safe use of tools and equipment.
  - .2 How to wear and use personal protective equipment (PPE).
  - .3 Safe work practices and procedures to be followed in carrying out work.
  - .4 Site conditions and minimum safety rules to be observed on site, as given at site orientation session.

#### 1.15 MINIMUM SITE SAFETY RULES

- .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, the following safety rules shall be considered minimum requirements to be

obeyed by all persons granted site access:

- .1 Wear personnel protective equipment (PPE) appropriate to function and task on site; the minimum requirements being hard hat, safety footwear and eye protection.
  - .2 Immediately report unsafe activity or condition at site, near-miss accident, injury and damage.
  - .3 Maintain site in tidy condition.
  - .4 Obey warning signs and safety tags.
- .2 Brief workers on site safety rules and on disciplinary measures to be taken by Departmental Representative for violation or non-compliance of such rules. Post rules on site.
- .3 The following actions or conduct by Contractor, workers and subcontractors will be considered as non-conformance with the health and safety requirements of the contract for which a Non-Compliance Notification will be issued to the General Contractor by the Departmental Representative:
- .1 Failure to follow the minimum site safety rules specified above.
  - .2 Negligence resulting in serious injury or major property damage.
  - .3 Deliberate non-compliance with Federal and Provincial Acts and Regulations.
  - .4 Falsification of information in Workers Compensation Reports, safety reports and other health and safety related documents submitted to Departmental Representative or to Authority having jurisdiction.
  - .5 Possession of firearms on site.
  - .6 Possession of non-prescriptive illegal drugs or alcohol.
  - .7 Action, or lack thereof, resulting in the issuance of Warnings, Fines or Stop Work Orders from a Provincial Authority having jurisdiction.
  - .8 Violation of other specified health and safety rules and requirements as determined by Departmental Representative.

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

#### 1.16 INCIDENT REPORTING

- .1 Investigate and report the following incidents:
  - .1 Those as required by Provincial Occupational Safety and Health Act and Regulations.
  - .2 Injury requiring medical aid as defined in the Canadian Dictionary of Safety Terms-1987, published by the Canadian Society of Safety Engineers (C.S.S.E) as follows:
    - .1 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.
    - .3 Property damage in excess of \$5000.00,
    - .4 Interruption to Facility operations.
    - .5 Those which require notification to Workers Compensation Board or other regulatory agencies as stipulated by applicable law or regulations.
- .2 Send written report to Departmental Representative for all above cases.

#### 1.17 TOOLS AND EQUIPMENT SAFETY

- .1 Routinely check and maintain tools, equipment and machinery for safe operation.
- .2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.
- .3 Tag and immediately remove from site items found faulty or defective.

#### 1.18 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System

(WHMIS) .

- .2 Keep MSDS data sheets for all products delivered to site. Post on site. Submit copy to Departmental Representative upon receipt.

1.19 POWDER ACTUATED DEVICES

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

1.20 CONFINED SPACES

- .1 Carry out work in confined spaces in compliance with:
  - .1 Provincial Occupational Safety and Health Regulations and;
  - .2 Canada Occupational Safety and Health Regulations (COSH) made under the Canada Labour Code - Part II.
- .2 Conduct hazard assessment and address in Safety Plan before entering confined space.
- .3 Provide and maintain equipment and PPE as required for the safety and emergency evacuation of persons entering confined spaces.
- .4 Provide training to persons who will be entering and to those persons who will be assisting in the confined space entry process. Training to be specialized instructions beyond (basic confined space entry information) as required to suit type and conditions of confined space.
- .5 Safety for Inspectors:
  - .1 Upon request, provide PPE and training to Departmental Representative and to other authorized persons, for the purpose of entering confined space to conduct inspections.
  - .2 Be responsible for the efficacy of the equipment and safety of such persons during their entry and occupancy in the confined

space.

- |  |    |  |
|--|----|--|
| <u>1.21 POSTING OF DOCUMENTS</u>                     | .1 | Post on site safety documentation as stipulated by Authorities having jurisdiction and as specified herein. Place in a common visible location.                                  |
| <u>1.22 SITE RECORDS</u>                             | .1 | Maintain on site a copy of all health and safety documentation and reports specified to be produced as part of the work and received from authorities having jurisdiction.       |
|  | .2 | Upon request, make available to Departmental Representative and to other authorized safety representative for review. Provide copy when directed by Departmental Representative. |
| <u>1.23 NON COMPLIANCE AND DISCIPLINARY MEASURES</u> | .1 | Immediately address and correct health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.                           |
|  | .2 | Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.  |
|  | .3 | Departmental Representative will stop work if non-compliance of health and safety regulations are not corrected in a timely manner.  |

### 1.1 RELATED WORK

- .1 Waste Management and Disposal: Section 01 74 21.

### 1.2 REFERENCES

- .1 WHMS: Workplace Hazardous Materials Information System, Health Canada.
- .2 Transportation of Dangerous Goods Act. Transport Canada, amended 2011-11-09.
- .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 AWWPA: American Wood Preserver Association
- .8 Species at Risk Act, 2002.

### 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.
- .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 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.

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) over pack 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.
- .8 Whenever possible, machinery and equipment should be operated on land above the high water mark, or from a floating barge.
- .9 Machinery, equipment and contaminants are to be stored in an area well above the high water mark.

#### 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 WATER QUALITY

- .1 Where work may affect the water quality adjacent to water intake lines used by Lobster Holding Facilities, Fish Processing Facilities and other harbour users, schedule

work in cooperation with the Harbour Authority as directed by Departmental Representative to minimize interference and impact to harbour users.

#### 1.9 SOCIOECONOMIC RESTRICTIONS

- .1 Must 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.

#### 1.10 BIRD AND BIRD HABITAT

- .1 Become knowledgeable with and 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 Must 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 neighboring vegetation until nesting is completed.

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

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

.7 Emergency events involving species at risk should be promptly reported to the Sackville, NB Canadian Wildlife Service by calling 506-364-5044. Additionally, the contractor is advised to contact Transport Canada's Environmental Affairs and Aboriginal Consultation Unit should species at risk or species of special concern be observed within, or adjacent to, the project area for further guidance on the proceedings.

.8 Food scraps and garbage should not be left at the work site.

.9 Birds and wildlife must never be fed by any personnel associated with the project.

#### 1.11 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.
- .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 Checks 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 wash down within a 30 meter 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 wash down 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 wash down 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 and the Department of Fisheries and Oceans - Habitat Protection and Sustainable Development Branch in cleaning and wash down of equipment.

#### 1.12 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.

#### 1.13 FIRES

.1 Fires and burning of rubbish on site is not permitted.

1.1 SITE ACCESS  
AND PARKING

- .1 The Departmental Representative will designate Contractor's access to project site as well as parking facilities for equipment and workers.
- .2 The Contractor is advised that while parking facilities for his workers and subcontractors will be on property, such parking facilities may be remote from the actual site of the work. In any case, follow all instructions from the Departmental Representative in regards to parking facilities.
- .3 Parking facilities at site is limited and cannot be used by Contractor. Make arrangements elsewhere for Contractor's vehicles including those of subcontractors and workers.
- .4 Build and maintain temporary access roads and provide snow removal and dust control during period of work.
- .5 Maintain existing roads and parking areas at site, where used by Contractor, 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.
  - .3 Make good and repair damage resulting from Contractor's use of existing roads, asphalted areas and lawns on site.

1.2 CONTRACTOR'S  
SITE OFFICE

- .1 Be responsible for and provide own site office, if required. 110V power and a fresh water supply will be provided on site. Locate site office as directed by Departmental Representative.

- 1.3 MATERIAL STORAGE .1 Material storage space on site is limited. Coordinate delivery to minimize storage period on site before being needed for incorporation into work.
- 1.4 SITE ENCLOSURES .1 Provide temporary fence to enclose various construction areas of work site.
- .2 Erect plastic mesh fence constructed as follows:
- .1 1200 mm height, constructed of high density polyethylene mesh fence fabric, orange in color.
- .2 Supported by steel T-bar posts or other similar framing, of sufficient quantity, adequate spacing and set firmly in ground to secure fence against sags.
- .3 Inspect fence regularly, repairing sags and damaged sections.
- .4 Incorporate within fence one operable truck gate and one pedestrian gate.
- .3 Make all gates lockable and provide keyed padlocks.
- .4 Obtain Departmental Representative's approval beforehand of location and layout of all temporary fence enclosures.
- .5 Provide battery powered lanterns around the perimeter of the site enclosure to clearly mark its location at night.
- .6 Provide warning signs affixed to all fenced areas, identifying those enclosed areas as "Construction Zones" with access restricted to only those persons so authorized by General Contractor.
- .7 Do not construe fencing as an acceptable replacement for pedestrian walkway specified below.

- |   |    |   |
|---|----|---|
| <u>1.5 PEDESTRIAN<br/>WALKWAYS AND<br/>HOARDING</u> | .1 | Ensure maximum safety and security to facility users during the course of work.   |
|   | .2 | Maintain access and egress to facility entrances and fire exits to remain in use.   |
|   | .3 | Erect such protective devices during Facility's non-operational off hour periods.   |
|   | .4 | Obtain Departmental Representative's concurrence prior to removal of hoarding and walkways.                                   |
| <u>1.6 SANITARY<br/>FACILITIES</u>                  | .1 | Provide sanitary facilities for work force in accordance with governing regulations and ordinances.                           |
|   | .2 | Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition. |
| <u>1.7 ENCLOSURE OF<br/>STRUCTURE</u>               | .1 | Design enclosures to withstand wind pressure and snow loading, as required.   |
| <u>1.8 POWER</u>                                    | .1 | Power supply (110V) is available and will be provided for construction usage.   |
|   | .2 | Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 54 lux in all locations.  |
| <u>1.9 WATER SUPPLY</u>                             | .1 | Water supply is available on site and will be provided for construction.  |
| <u>1.10 CONSTRUCTION<br/>SIGN AND NOTICES</u>       | .1 | Upon request by Departmental Representative, erect a self-supporting project sign in location indicated.                      |
|   | .2 | Departmental Representative will provide a vinyl sign facing for installation by  |



Contractor on sign framework. Sign frame to be plywood face of approximately 1200 x 2400 mm in size complete with required wood framing at 400 mm o.c and support posts.

- .3 Install sign plumb and level in neat wood framework and securely anchor in ground by posts to withstand wind pressure of 160 km/h.
- .4 Contractor or subcontractor advertisement signboards are not permitted on site.
- .5 Safety and Instruction Signs and Notices:
  - .1 Signs and notices for safety and instruction shall be in both official languages and commonly understood graphic symbols conforming to CAN3-Z321-96(R2006).
- .6 Maintenance and Disposal of Site Signs:
  - .1 Maintain approved signs and notices in good condition for duration of project and dispose of offsite upon completion of project or earlier if directed by Departmental Representative.

1.11 REMOVAL OF  
TEMPORARY  
FACILITIES

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

## 1.1 GENERAL

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

## 1.2 PRODUCT QUALITY

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

the Contract.

1.3 ACCEPTABLE  
MATERIALS AND  
ALTERNATIVES

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

1.4 MANUFACTURERS  
INSTRUCTIONS

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

1.5 AVAILABILITY

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

- 1.6 WORKMANSHIP .1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Remove unsuitable or incompetent workers from site as stipulated in the General Conditions of the Contract.
- .3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.
- .4 Coordinate work between trades and subcontractors. See section 01 14 10 in this regard.
- 
- 1.7 STORAGE, HANDLING AND PROTECTION .1 Deliver, handle and store materials in manner to prevent deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled materials in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Immediately remove damaged or rejected materials from site.
- 
- 1.8 CONSTRUCTION EQUIPMENT AND PLANT .1 On request, prove to the satisfaction of Departmental Representative that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.

- .2 Maintain construction equipment and plant in good operating order.

- |   |    |   |
|---|----|---|
| <u>1.1 GENERAL</u>                      | .1 | Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.   |
|   | .2 | Store volatile waste in covered metal containers, and remove from premises at end of each working day.  |
|   | .3 | Provide adequate ventilation during use of volatile or noxious substances.  |
|   |    |   |
| <u>1.2 MATERIALS</u>                    | .1 | Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.   |
|   |    |   |
| <u>1.3 CLEANING DURING CONSTRUCTION</u> | .1 | Maintain work site in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.   |
|   | .2 | Provide on-site containers for collection of waste materials and debris.  |
|   | .3 | Use separate collection bins, clearly marked as to purpose, for source separation and recycling of waste and debris in accordance with waste management requirements specified. |
|   | .4 | Remove waste materials, and debris from site on a minimum weekly basis.   |
|   | .5 | Schedule cleaning operations so that resulting dust, debris and other contaminants will not contaminate facility systems.   |
|   |    |   |
| <u>1.4 FINAL CLEANING</u>               | .1 | In preparation for acceptance of the completed work, perform final cleaning.  |

- .2 Inspect finishes, fitments and equipment.  
Ensure specified workmanship and operation.
- .3 Remove debris and surplus materials from  
site.

## 1.1 DEFINITIONS

- .1 Hazardous Material: Product, substance, or organism that is used for its original purpose, and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

## 1.2 WASTE MANAGEMENT

- .1 Incorporate environmental and sustainable practices in managing waste resulting from work.
- .2 Divert as much waste as possible from landfill.
- .3 Coordinate work of sub trades and subcontractors to ensure all possible waste reduction and recycling opportunities are taken. Follow waste management requirements specified in trade sections of the Specifications.
- .4 Reduce waste during installation of new materials. Undertake practices which will optimize full use of materials and minimize waste.
- .5 Develop innovative procedures to reduce quantity of waste generated by construction such as by delivering materials to site with minimal packaging etc...
- .6 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable and recyclable materials.
- .7 During demolition and removal work separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:
  - .1 Reinstallation into the work where indicated.



.2 Salvaging reusable items not needed in project which Contractor may sell to other parties.

.3 Sending as many items as possible to locally available recycling facility.

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

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

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

.10 Establish methods whereby hazardous and toxic materials, and their containers used on site are properly handled, stored and disposed in accordance with applicable federal, provincial and municipal laws and regulations.

### 1.3 DISPOSAL REQUIREMENTS

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

.2 Disposal of volatile materials, mineral spirits, oil, paint, and other hazardous materials into waterways, storm, or sanitary sewers is prohibited.

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

.4 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from

disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.

- .5 Transport and dispose of waste intended for waste processing plant or landfill facility in separated condition and to Operator's rules and recommendations in support of their effort to recycle, reduce and divert certain waste stream from general landfill.
- .6 Collect, bundle and transport salvaged materials to be recycled in separated categories and condition as directed by recycling facility. Ship materials only to approved recycling facilities.
- .7 Sale of salvaged items by Contractor to other parties not permitted on site.

1.1 SECTION  
INCLUDES

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

1.2 RELATED  
SECTIONS

- .1 Section 01 78 00 - Closeout Submittals.

1.3 INSPECTION AND  
DECLARATION

- .1 Contractor's Inspection: Coordinate and perform, in concert with subcontractors, an inspection and check of all Work. Identify and correct deficiencies, defects, repairs and perform outstanding items as required to complete work in conformance with Contract Documents.
  - .1 Notify Departmental Representative in writing when deficiencies from Contractor's inspection have been rectified and that work is deemed to be complete and ready for Departmental Representative's inspection of the completed work.
- .2 Departmental Representative's Inspection: Accompany Departmental Representative during all substantial and final inspections of the work.
  - .1 Address defects, faults and outstanding items of work identified by such inspections.
  - .2 Advise Departmental Representatives when all deficiencies identified have been rectified.
- .3 Note that Departmental Representative will not issue a Certificate of Substantial Performance of the work until such time that Contractor performs following work and turns over the specified documents:
  - .1 Project record as-built documents;
  - .2 Reports resulting from designated tests;
- .4 Correct all discrepancies before Departmental Representative will issue the Certificate of Completion.

1.1 SECTION  
INCLUDES

- .1 Project Record Documents.

1.2 PROJECT RECORD  
DOCUMENTS

- .1 Departmental Representative will provide 2 white print sets of contract drawings and 2 copies of Specifications Manual specifically for "as-built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative 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 following information:  
.1 Horizontal and vertical location of various elements in relation to chart datum;  
.2 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;  
.3 Field changes of dimension and detail;  
.4 Location of all capped or

terminated services and utilities.

.5 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings;

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

.1 Changes made by Addenda and Change Orders.

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

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

1.3 REVIEWED  
SHOP DRAWINGS

.1 Provide a complete set of all shop drawings reviewed for project to incorporate into each copy of the Operations & Maintenance manuals.

.2 Submit full sets at same time and as part of the contents of the Operation and Maintenance manuals specified.

PART 1 - GENERAL

<u>1. Description of Work</u>	This Section includes but is not limited to the following:
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- .1 All sitework, demolition and removals as required to complete the work. All items to be verified by a site visit prior to submission of a tender. In general for the steel pipe piles, the work includes, but is not limited to: Removing the existing Denso wrap system, disposal of the Denso wrap system, cleaning the pipe piles as required of marine growth and sharp or loose corroded steel from the underside of pile cap down to the underside of the new wrap/jacket (Elevation +3.0m). The pipe piles need to be locally cleaned to bare steel at the anode installation location to ensure the anode and pile are electrically continuous. The cleaned section shall be the width of the anode and mounting bracket plus 150mm above and below the anode in its installed position. In general for the steel sheet piles, the work includes, but is not limited to: High pressure water jet to remove marine growth and loose coating (Elevation +1.0m up to the top of SSP wall). Minimum water jet pressure to be 5000 psi or approved equivalent by a Departmental Representative based on the new coating manufacturer's preparation specification. If the coating suppliers preparation specification requires less than 5000 psi water jet pressure, a Departmental Representative can call for the contractor to use 5000 psi pressure.

<u>1.2 Related Work</u>	.1 Refer to other specification sections for related information.
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- .2 Refer to Section 01 33 00 for Shop Drawing/Submission requirements.

<u>1.3 Submissions</u>	.1 Methodology:
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.1 When requested, provide methodology for carrying out the work.

.2 Provide submissions in accordance with Section 01 33 00.

#### 1.4 Protection

.1 Prevent debris from going adrift and becoming a menace to navigation.

.2 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 2 - PRODUCTS

Not applicable.

#### PART 3 - EXECUTION

##### 3.1 Preparation

.1 Inspect site and verify with the departmental representative piles designated for upgrades and piles to remain as is.

.2 Do not disturb adjacent structures.

##### 3.2 Removal

.1 Clean items indicated.

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

.3 Excavate locally to extents and dimensions on the contract drawings as required to perform the work.

##### 3.3 Disposal of Material

.1 Disposal of any materials will be the contractor's responsibility, and must be disposed of off-site.

.2 The material to be disposed is to be transported and disposed of in an

environmentally acceptable manner to the satisfaction of the departmental representative, and in accordance with any local, Municipal, Provincial and Federal restrictions and regulations.

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|------------------------|----|---|
| <u>3.4 Restoration</u> | .1 | Upon completion of work, remove debris, and leave work site clean.  |
|                        | .2 | Reinstate areas to conditions that existed prior to commencement of work. Match condition of adjacent, undisturbed areas. |



PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 26 42 00 - Cathodic Protection
- 1.2 DESCRIPTION OF WORK .1 The work of this Section comprises the furnishing of all labour, materials and equipment necessary for the supply and installation of items of work specifically listed under Part 2 - PRODUCTS of this Section, as specified in this Section and shown on the Drawings.

PART 2 - PRODUCTS

- 2.1 MISCELLANEOUS METAL .1 Steel plate: Miscellaneous steel plate to be CAN/CSA G40.21-300W (Minimum), except where specified otherwise.
- .2 Welding materials: Welding shall be done in accordance with AWS D3.6M:2010 for Class B welds or CAN/CSA standard W59 as applicable. Capacity of all welds shall be to W59.

PART 3 - EXECUTION

- 3.1 MISCELLANEOUS METALS .1 Do steel work in accordance with CAN/CSA S16.1.
- .2 Underwater welding shall be done in accordance with AWS D3.6M:2010 for Class B welds. All other welding shall be done in accordance with CAN/CSA standard W59. Capacity of welds shall be to W59.
- .3 The contractor shall provide a weld sample for sectioning to demonstrate the quality of welding and weld procedures for all underwater welds prior to starting the installation of

the repair plates.

- .4 Specimens shall be in accordance with Fillet Weld Break and Macrotech Test Specimens identified in Figure 5.8 (A) of AWS D3.6M:2010.
- .5 Two specimens shall be provided from each welder performing the work (i.e. each welder has to produce two (2) test specimens). The welding procedures should match those for the project.

### 3.2 FABRICATION GENERAL

- .1 Fabricate steel, as indicated, in accordance with CAN/CSA-S16.1 and in accordance with reviewed shop drawings.
- .2 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .3 File or grind exposed welds smooth and flush.
- .4 All holes shall be punched or drilled. Burning holes in any steel member is NOT permitted.

### 3.3 CONNECTION TO EXISTING WORK

- .1 Verify dimensions, alignment, elevations and condition of existing work before commencing fabrication and report any discrepancies and potential problem areas to the consultant and await instructions.

PART 1 - GENERAL

- |  |    |   |
|--|----|---|
| <u>1.1 Related Sections</u>              | .1 | Section 05 50 00 - Metal Fabrications.  |
| <u>1.2 References</u>                    | .1 | Canadian Standards Association (CSA)<br>.1 CSA C22.3 No.4-1974 (R1999) Control of Electrochemical Corrosion of Underground Metallic Structures.                             |
|  | .2 | National Association of Corrosion Engineers (NACE).   |
| <u>1.3 Shop Drawings</u>                 | .1 | Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.  |
|  | .2 | Indicate location of anodes, installation procedures, hardware and accessories.   |
| <u>1.4 Waste Management and Disposal</u> | .1 | Remove from site and dispose of all packaging materials at appropriate recycling facilities.  |
|  | .2 | Collect and separate for disposal, paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with provincial standards.           |
| <u>1.5 Warranty</u>                      | .1 | The contractor hereby warrants that all products used for the cathodic protection installation will be effective in accordance with the General Conditions, for five years. |

PART 2 - PRODUCTS

- |                               |    |  |
|-------------------------------|----|--|
| <u>2.1 Sacrificial Anodes</u> | .1 | Provide complete cathodic protection system (including all connection hardware) as indicated on the drawings, comprising of: Aluminum Indium alloy sacrificial anodes complete with mounting plate/brackets. All |
|-------------------------------|----|--|

anodes must have the following properties: A total mass as per the contract drawings. The anodes shall have a negative potential of -1.150 V (to a Copper-copper sulfate reference electrode at 25 degree Celsius), a current capacity of 2600 A-hrs/kg and a consumption rate of 3.3 kg/A-yr. The Aluminum Indium alloy shall have the following composition: Zn(3.0%), Si(0.1%), Hg(0.0%), In(0.015%), Al(Remainder) or approved alternate. The alloy shall be designed for use in a seawater environment. The steel sheet pile wall bar anodes shall have a trapezoid shape and have the following tentative dimensions: Length=1.55m, width=0.135m, height=0.152m. All anode dimensions to be approved by a Departmental Representative.

2.2 Heavy Duty Pipe  
Pile Wrap/Jacket

- .1 The heavy duty pipe pile wrap/jacket is required to provide a corrosion free environment below the wrap/jacket. The product must also meet the following performance criteria: The product must be designed for a harsh marine environment with a minimum 25 design life, a minimum warranty of 5 years, UV resistant, moisture and air resistant, can be applied to battered and plumb steel pipe piles, be resistant to abrasion in harsh marine conditions near the shoreline caused by sand and silt being washed up against the wrap due to large wave action.
- .2 The approved product shall be a minimum three layer GFRP wrap installed with a submergible resin design for a seawater application. Alternate products including other wrap and jacket systems shall be considered. Contractor to submit proposed products for review and approval by a Departmental Representative.

2.3 Pipe Pile  
Wrap/Jacket

- .1 The pipe pile wrap/jacket is required to provide a corrosion free environment below the wrap/jacket. The product must also meet the following performance criteria: The

product must be designed for a harsh marine environment with a minimum 25 design life, a minimum warranty of 5 years, UV resistant, moisture and air resistant, can be applied to battered and plumb steel pipe piles, be resistant to abrasion in harsh marine conditions caused by large wave action and propeller wash.

- .2 The approved product shall be a minimum two layer GFRP wrap installed with a submergible resin designed for a seawater application. Alternate products including other wrap and jacket systems shall be consider. Contractor to submit proposed products for review and approval by a Departmental Representative.

2.4 Steel Sheet Pile  
Wall Coating System

- .1 The steel sheet pile wall coating shall consist of two or more marine paint coatings (epoxy, polyurethane or vinyl based) with a total nominal DFT minimum of 350 µm. The coating system shall have a warranty for 5 years. The coating system shall meet the following standards or approved equivalent: No corrosion or blistering after 5000 hours based on the ASTM D870 immersion test in ocean water. In addition, the coating system shall have no blistering after 5000 hours based on the ASTM B117 salt fog test.

3.1 Installation

- .1 Install all products of the cathodic protection system as per the contract drawings and to the manufacturer's specification. If there is a discrepancy between the contract drawings and the manufacturer's specification, consult a Departmental Representative.
- .2 Surface preparation of the steel sheet pile wall shall include high pressure water jet to remove all loose rust, paint and marine growth to SA 2.5 in accordance with ISO 8501.1. Alternate surface preparation guidelines

shall be considered if the coating supplier/manufacturer can provide test data showing acceptable performance with less surface preparation requirements.

- .3 Surface preparation of the steel pipe piles for the installation of the wrap/jacket and anodes shall include high pressure water blasting as required to remove all loose rust, paint and marine growth to SA 1.0 in accordance with ISO 8501.1 supplemented with SSPC-SP-2/SP-3 hand and power tool cleaning on required areas. Alternate surface preparation guidelines shall be considered if the supplier/manufacturer can provide test data showing acceptable performance with less surface preparation requirements.
- .4 All wrap/jacket fasteners/straps shall be stainless steel (if applicable), or approved alternate.

**DAMAGED STEEL PIPE PILE PHOTOGRAPHS**



Figure 1-Coupon cut out of Pile Bent #2-Pile C10.



Figure 2-Pile dislodged from pile cap at BD3-K4.





Figure 3-Large concrete spall from pile cap at BD1-I4



Figure 4-Buckled pile due to impact damage at BD2-J9.





Figure 5-Hole in pile at Elev. +3.5m at pile WD1-L21.

#### EXISTING PIPE PILE ANODES



Figure 6-Photograph at Tower Dolphin Pile

**EXISTING STEEL SHEET PILE WALL**



Figure 7-Looking south at north side of SSP wall

**EXISTING STEEL LADDER**



Figure 8-Existing ladder to be removed at Intermediate Dolphin #2