

**SPECIFICATIONS FOR
HARBOUR IMPROVEMENTS**

HAY RIVER, NT

F2470-140034/A



Department of Fisheries & Oceans
Small Craft Harbours Branch
Winnipeg, Manitoba

November, 2014

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
01 11 05 – General Instructions	3
01 35 29 – Health and Safety Requirements	8
01 35 43 – Environmental Procedures	11
01 45 00 – Quality Control	14
01 77 00 – Closeout Procedures.....	16
02 41 13 – Selective Site Demolition.....	18
05 50 00 – Metal Fabrications	20
06 05 73 – Wood Treatment	23
26 05 01 - Common Work Results Electrical	25
26 05 02 - General Electrical Work	29
35 59 14 – Timber Fenders	32

01 11 05 – GENERAL INSTRUCTIONS

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 No measurement will be made under this Section.

1.2 DESCRIPTION OF WORK

- .1 The work site described in this specification as located at Hay River, NT. The work under this contract covers:
 - .1 Demolition and removal of existing horizontal and vertical timber fenders and attachment hardware where indicated on plans.
 - .2 Supply and installation of new horizontal and vertical fenders, including supply of required hardware, clip angles and fasteners.
 - .3 Supply and installation of four stainless steel floodlights.
- .2 The work to be done by the Contractor under this Contract shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, insurance, and all things necessary for and incidental to the satisfactory performance and completion of all work as specified herein. All work to be done in accordance with details shown on the accompanying plans as specified herein.

1.3 DEFINITIONS

- .1 The word "provide" means "supply and install".
- .2 For purposes of this contract, "Departmental Representative", "Architect/Engineer" and "Engineer" shall have the same meaning.

1.4 WORK SCHEDULE

- .1 Provide within 10 working days after Contract award, schedule showing anticipated progress stages and final completion of work within time period required by contract documents.
- .2 Provide sufficient details in schedule to clearly illustrate entire instrumentation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .3 As a minimum, work schedule to be prepared and submitted indicating work activities, tasks and other projects elements, their anticipated durations and planned dates for achieving key activities and major project milestones. It shall include sufficient details and supported by narratives to demonstrate a reasonable plan for completion of project within designated time.
- .4 Submit schedule updates on a minimum monthly basis and more often, when requested by Engineer. Provide a narrative explanation of necessary changes and schedule revisions at each update. Take all necessary measures to complete work within approved time.
- .5 Work under this contract is to be performed Completion in a timely manner. Commence planning and preparatory work immediately upon receipt of official notification of

acceptance of Contract and schedule the work so that the project will be complete by the following dates:

.1 The work in the contract shall be completed by **March 20th, 2015**.

.6 Work sequence:

.1 Before work is undertaken, ensure that all materials and trades required are available to finish work in as short a period as possible.

.2 No area to be renovated shall be placed out of service until it is confirmed that there shall be no need to stop the work waiting for receipt of materials, equipment or labour.

1.5 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

1.6 FEES, PERMITS AND CERTIFICATES

.1 Provide authorities having jurisdiction with information requested.

.2 Pay fees and obtain certificates and work permits required.

.3 Furnish certificates and permits when requested.

1.7 MEASUREMENT FOR PAYMENT

.1 Notify Engineer sufficiently in advance of operations to permit required measurements for payment.

.2 Submit to Engineer, at least 14 days before Information for first application for payment, cost breakdown, Progress Payment in detail as directed by Engineer, for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment. After approval by Engineer, cost breakdown will be used as basis for progress payments.

1.8 INTERPRETATION OF DOCUMENTS

.1 In the event of discrepancies or conflicts in interpreting the Plans (drawings) and Specifications, Specifications take precedence over drawings bound with specifications.

.2 Drawings and specifications are complementary. When work is shown or mentioned on the drawings but is not indicated in the specifications, or when work is indicated in the specifications but is not shown or mentioned on the drawings, it shall nevertheless be included in the Contract.

.3 The sub-division of the Specification into sections, identified by title and number, is for convenience only and does not modify the singularity of the document, nor does it operate to make or imply that the Engineer is an arbiter to establish the limits or extent of contract between Contractor and Subcontractors or to determine the limits or extents of work that may be decided by trade unions or contractors' organizations. Extras to the contract will not be considered on the grounds of differences in interpretation of the Specification and/or Drawings as to which trade performs the work.

.4 Do not scale off drawings.

1.9 CONTRACTOR'S USE OF SITE

- .1 Co-ordinate use of premises under direction of the Engineer.
- .2 Do not unreasonably encumber the site with materials and equipment.
- .3 Assume full responsibility for protection and safekeeping of products under this Contract.
- .4 Move stored products or equipment which interfere with operations of Engineer or other harbour users.
- .5 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .6 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .7 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Engineer.
- .8 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.10 EXISTING SERVICES

- .1 Notify Engineer and utility companies of intended interruption of services and obtain required permission.
- .2 Where work involves breaking into or connecting to existing services, give Engineer 72 hours' notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions.
- .3 Establish location and extent of service lines in area of work before starting Work. Notify Engineer of findings.
- .4 Submit schedule to and obtain approval from Engineer for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .5 Where unknown services are encountered, immediately advise Engineer and confirm findings in writing.
- .6 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .7 Record locations of maintained, re-routed and abandoned service lines.

1.11 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 Change Orders.
 - .6 Other Modifications to Contract.
 - .7 Copy of Approved Work Schedule.
 - .8 Health and Safety Plan and Other Safety Related Documents.

.9 Other documents as specified.

1.12 CONTRACT METHOD

- .1 Construct Work under a combined price contract. All costs for work not specifically identified as a unit price item shall be included in the lump sum arrangement.

1.13 CODES AND STANDARDS

- .1 Perform work in accordance with latest editions of National Building Code of Canada (NBC) and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 Work to meet or exceed requirements of contract documents, specified standards, codes and referenced documents.

1.14 PROJECT MEETINGS

- .1 Engineer will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.15 SETTING OUT OF WORK

- .1 Engineer will provide only those survey control points and set such stakes as necessary to define general location, alignment and elevations of work. Give engineer reasonable notice of requirements for such control points and stakes.
- .2 Set grades and lay out work in detail from control points and grades established by Engineer.
- .3 Provide devices needed to lay out and construct work.
- .4 Supply such devices needed to lay out and construct work.
- .5 Supply such devices as straight edges and templates required to facilitate Engineer's inspection of work.
- .6 Supply stakes and other survey markers required for laying out work.

1.16 ADDITIONAL DRAWINGS

- .1 Engineer may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.
- .2 When additional drawings and instructions are required by the Contractor, provide reasonable notice in writing to the Engineer in advance of the date they are required.

1.17 EXAMINATION

- .1 Before submitting tender, examine existing conditions and determine conditions affecting work.
- .2 Obtain all information which may be necessary for proper execution of Contract.

1.18 SITE INSPECTION

- .1 The submission of a tender is deemed to be a confirmation of the fact that the Tenderer has inspected the site and is fully conversant with all the conditions under which the work is to be carried out.

1.19 MATERIAL AND EQUIPMENT

- .1 Use new products unless otherwise specified.
- .2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.
- .3 When material or equipment specified by standard performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.

1.20 SECURING WORK AREA

- .1 Secure the work areas in each stage in an approved manner. This includes fencing or barricades to prevent public access to any areas where construction activities occur and construction materials are stored.

1.21 VEHICLE AND PEDESTRIAN PROTECTION

- .1 Provide snow fencing, wooden barriers, or other approved barriers to prevent vehicles and pedestrians from accessing the site during construction.
- .2 Contractor shall provide appropriate signage for vehicle and pedestrian protection.
- .3 All barriers shall include delineation and reflectors to stand out at nightfall.

1.22 DRAWINGS

- .1 The following drawings are to be read in conjunction with this specification:
 - .1 H-1 Harbour Improvements
 - .2 H-2 Harbour Improvements

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

01 35 29 – HEALTH AND SAFETY REQUIREMENTS

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 No measurement will be made under this Section.

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province or Territory having jurisdiction:
 - .1 The Workers Compensation Act (latest edition).

1.3 SUBMITTALS

- .1 Submit site-specific Health and Safety Plan: Within 10 days after date of Notice to Proceed and prior to commencement of Work.
- .2 Submit copies of incident and accident reports to Engineer.
- .3 Submit WHMIS MSDS – Material Safety Data Sheets to Engineer.
- .4 Engineer will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor after receipt of plan. Revise plan as appropriate and resubmit plan to Engineer within 5 days after receipt of comments from Engineer.
- .5 Engineer's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .6 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.5 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.6 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Observe and enforce construction safety measures required by Canadian Construction Safety Code, Provincial Government, Worker's Compensation Board and municipal statutes and authorities.
- .3 In the event of a conflict between any provisions of above authorities having the most stringent provision will apply.

1.7 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.8 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of the Province or Territory having jurisdiction and advise Engineer verbally and in writing.

1.9 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with dock reconstruction at an active harbour site.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work.

1.10 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province or Territory having jurisdiction, and in consultation with Departmental Representative verbally and in writing.

1.11 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or 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 may stop Work if non-compliance of health and safety regulations is not corrected.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

01 35 43 – ENVIRONMENTAL PROCEDURES

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 No separate measurement will be for work of this section. Work is incidental to the project cost.

1.2 FIRES

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

1.3 DRAINAGE

- .1 Not Used

1.4 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment will enter and leave the river at such a location and in such a manner that disturbance to the river shore is minimized.
- .2 No construction debris from work activities will be allowed to enter the river. The work site must be cleaned daily. Every effort will be made to minimize the introduction of sediment to the river during work activities.
- .3 Do not use waterway beds for borrow material.
- .4 Waterways to be free of excavated fill, waste material and debris.
- .5 Design and construct temporary crossings to minimize erosion to waterways.
- .6 Do not skid logs or construction materials across waterways.
- .7 Avoid damage to shoreline.
- .8 Supply, install, and maintain approved erosion control blankets to unprotected slopes until revegetation is established.
- .9 Any impacts below ordinary high water mark that are not shown on the site plan are not permitted without written approval from the Engineer. Up to 30 days may be required for approval.
- .10 Reclaim and restore disturbed areas to previous or better condition.
- .11 Areas used for stockpiling construction materials, including fill or other equipment storage will be well back from the edge of the water body and, if possible, in areas which have already been disturbed or are devoid of vegetation.
- .12 All required machinery should be supplied with appropriate spill containment kits as a precaution in the event of accidental fuel spills or hydraulic leaks. Additional kits should be available on site with the capacity to contain any spills of deleterious substances that may be reasonably expected to occur. Contractors should ensure that all personnel are familiar with the spill kits.
- .13 The Contractor shall report spills of fuels or other contaminants to the Engineer.

- .14 The Contractor shall not remove, destroy or disturb species pursuant to Provincial Threatened Endangered and Extirpated Species regulation, or species listed in the federal Species at Risk Act.
- .15 The Contractor shall not disturb migratory bird nests.

1.5 POLLUTION CONTROL

- .1 Control emissions from equipment and plant to local authorities' emission requirements.
- .2 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .4 Locate temporary fuel storage 100 metres from shore and comply with Provincial Environmental Legislation.
- .5 Refueling, servicing, or cleaning of equipment on ice or within 100 metres of shore is prohibited. Contractor to ensure all equipment operating on project is free of external fluid leaks, grease, oil, and mud.
- .6 Contractor to contain all oil leaks from equipment working adjacent to waterways.
- .7 No maintenance of vehicles or equipment in construction areas.
- .8 Use drip pans to catch leaking oil from compressors, pumps, etc.
- .9 Keep an emergency spill kit for in-water use on site during construction.

1.6 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways. Hazardous wastes including fuels, oils and lubricants to be disposed of by a licensed hazardous waste carrier/handler in accordance with Provincial Environment Legislation.
- .3 Collect all rubbish and waste material and dispose of in accordance with applicable governing authorities.
- .4 Do not allow debris of any type to enter waterway.

1.7 PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties.
- .2 Avoid disturbance of topsoil and vegetation unless otherwise specified. Contractor is responsible to restore all impacted areas to original state.
- .3 The Contractor shall revegetate soil in areas exposed by construction with vegetation species native to the area. These areas shall be revegetated as quickly as possible following construction to prevent soil erosion and establishment of noxious weeds.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

01 45 00 – QUALITY CONTROL

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 No measurement will be made under this Section.

1.2 INSPECTION

- .1 Allow Engineer access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Engineer.
- .3 Engineer will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies may be engaged by Engineer for purpose of inspecting and/or testing portions of Work.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Engineer at no cost to. Pay costs for retesting and reinspection.

1.4 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

- .1 Notify Engineer in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Engineer as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Engineer it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Engineer.

1.7 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.

1.8 MILL TESTS

- .1 Submit mill test certificates as requested.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

01 77 00 – CLOSEOUT PROCEDURES

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 No measurement will be made under this Section.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor to conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .2 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Engineer.
 - .2 When Work incomplete according to Engineer, complete outstanding items and request re-inspection.
 - .3 Final Payment:
 - .1 When Engineer considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .4 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

1.4 RECORD DRAWINGS

- .1 Maintain project “as-built” record drawings and record accurately significant deviations from Contract documents caused by site conditions and changes ordered by Engineer.
- .2 Mark “as-built” changes in red coloured ink.
- .3 Record the following information:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by Change Order or Field Order.
- .4 At completion of project and prior to final inspection, neatly transfer “as-built” notations to second set and submit both sets to Engineer.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

02 41 13 – SELECTIVE SITE DEMOLITION

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 Mobilization, demobilization, all materials and work required for the demolition, removal and disposal of the existing fenders, clip angles and any other materials that form part of the above mentioned components shall be included in the lump sum amount for the project.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Storage and Protection.
 - .1 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Engineer and at no cost to Engineer.
 - .2 Remove and store materials to be salvaged, in manner to prevent damage.
 - .3 Store and protect in accordance with requirements for maximum preservation of material.
 - .4 Handle salvaged materials as new materials.

1.3 SITE CONDITIONS

- .1 Site Environmental Requirements:
 - .1 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
 - .2 Ensure proper disposal procedures are maintained throughout the project.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 PREPARATION

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

3.2 REMOVAL OPERATIONS

- .1 Remove items as indicated.

- .2 Do not disturb items designated to remain in place.

3.3 REMOVAL FROM SITE

- .1 Dispose of materials not designated for salvage or re-use in work, off-site at location acceptable to Engineer.

3.4 RESTORATION

- .1 Remove debris, trim surfaces and leave work site clean, upon completion of Work.
- .2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

END OF SECTION

05 50 00 – METAL FABRICATIONS

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 Replacement of damaged steel clip angles will be paid for per unit and shall include the demolition of damaged clip angles, supply and install of new steel clip angles to match existing, welding of new steel clip angles to the steel sheet pile wharf, and any fasteners or hardware required to complete the work.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A307[07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 CSA International
 - .1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-09, Design of Steel Structures.
 - .4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .5 CSA W59-M03(R2008), Welded Steel Construction (Metal Arc Welding) Metric.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Shop Drawings:
 - .1 Submit drawings indicating materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Storage and Handling Requirements:
 - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A307, galvanized where exposed to weather.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to CAN/CSA-G164.

2.4 SHOP PAINTING

- .1 Primer: VOC limit 250 g/L maximum to GS-11 CCD-047a CCD-048.
- .2 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .3 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
- .4 Clean surfaces to be field welded; do not paint.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.

3.2 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Engineer such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to be hot dipped galvanized and /or shall be compatible with material through which they pass.
- .5 Make field connections with bolts to CSA S16.

- .6 Touch-up field welds, bolts and burnt or scratched surfaces with primer;
 - .1 Primer: maximum VOC limit 250 g/L to GS-11.
- .7 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
 - .1 Primer: maximum VOC limit 250 g/L to GS-11.

3.3 CLEANING

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste off site at regular intervals for disposal.
- .3 Do not burn waste materials on site. Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 When Work is substantially completed, remove surplus products, tools, and equipment not required to complete remaining work.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

06 05 73 – WOOD TREATMENT

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 No measurement will be made under this Section.

1.2 REFERENCES

- .1 American Wood-Preservers' Association (AWPA)
 - .1 AWWA M2-01, Standard for Inspection of Treated Wood Products.
 - .2 AWWA M4-06, Standard for the Care of Preservative-Treated Wood Products.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA O80 Series-97(R2002) - O80S2-05, Wood Preservation.
 - .2 CSA O80.20-1.1-M97(R2002), This Standard applies to the fire-retardant treatment of lumber by pressure processes..
 - .3 CSA O80.27-1.1-M97(R2002), This Standard covers the fire-retardant treatment of Douglas Fir, hardwood, softwood, and Poplar plywood by pressure processes.
 - .4 CSA O80.201-M89, This Standard covers hydrocarbon solvents for preparing solutions of preservatives.
 - .5 CSA O322-02, Procedure for Certification of Pressure-Treated Wood Materials for Use in Preserved Wood Foundations.

Part 2 Products

2.1 MATERIALS

- .1 Preservative treatment by a pressure process to CSA O80 Series.

Part 3 Execution

3.1 APPLICATION: PRESERVATIVE

- .1 Treat timber to CSA O80 Series preservative to obtain minimum net retention of 6.4 kg/m³ of wood.

3.2 CARE OF PRESSURE-TREATED WOOD PRODUCTS

- .1 Apply the recommended and accepted practices followed in the care and handling of all wood products to pressure-treated wood products.
- .2 Avoid damage of field fabrication causing alteration of the original pressure-treated surface.
- .3 Thoroughly saturate all cuts or injuries occurring subsequent to pressure treatment by liberal brushing, spraying, dipping, soaking or coating with preservative solution.

- .4 Fill holes necessarily bored after pressure treatment with preservative solution to allow ample soaking time for penetration of solution.
- .5 Use in any of the above the same preservative solution as that used in the original pressure treatment or a field treating solution of colour to match original treatment.

END OF SECTION

26 05 01 - COMMON WORK RESULTS ELECTRICAL

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 Marine grade 400W stainless steel flood lights will be paid for per unit supplied and installed and shall include any fasteners, support brackets, wiring, connections or hardware required.
- .2 Costs to apply for and obtain an inspection and work permit from the local authority having jurisdiction are the Contractor's responsibility and shall be considered incidental to item 1.1.1 above.

1.2 RELATED SECTIONS

- .1 Painting and finishing for electrical work: as specified.

1.3 AS-BUILT DRAWINGS

- .1 Submit "as built" drawings in accordance with the specifications.
- .2 Colour code changes using red for additions, and green for deletions.

1.4 REGULATORY REQUIREMENTS

- .1 Materials and workmanship shall be in accordance with requirements and recommendations of applicable rules, regulations, standards and codes as specified hereunder. All products shall bear certification label of CSA, ULC, The Electrical Safety Authority, as applicable.
- .2 The Electrical Safety Code (OESC)-publication containing Canadian Electrical Code and The Electrical Safety Authority Supplements.
- .3 Underwriter's Laboratories of Canada (ULC)
- .4 National Building Code (NBC)
- .5 National Fire Code (NFC)
- .6 Permits, Fees and Certificates: Except as provided in Section 01 11 05 – General Instructions, give notices, obtain permits, pay fees required for work of Division 26. Before final certificate of payment is issued by Owner, furnish certificates as evidence that work installed conforms with laws and regulations of all governing authorities. Determine detailed requirements of local authorities having jurisdiction and conform to those requirements.

1.5 QUALIFICATIONS

- .1 Work shall be executed by Electrical Contractor or his designated sub-contractor, holding a valid Contractors' license.
- .2 Work shall be performed by qualified Electricians holding valid certificates of qualifications.
- .3 Work on signal, communication, related control and other similar systems shall be performed by relevant competent tradesmen.

1.6 PROJECT/SITE CONDITIONS

- .1 Existing Conditions
 - .1 Examine Site and Contract Documents.
 - .2 Electrical installations in areas classified as hazardous locations, corrosive environments, and other special area application, shall be governed by relevant Industry Standards and Regulatory Requirements.

Part 2 Products

2.1 MATERIALS

- .1 **Inserts:** Supply and deliver inserts, anchors, bolts, sleeves, ferrules and other items to be built into work, with necessary templates, adequate instructions and assistance for locating and installing.

Part 3 Execution

3.1 EXAMINATION

- .1 Where any parts of systems and/or pieces of equipment are located by dimensions on Drawings, check and verify such dimensions at Site.
- .2 Notify Engineer before proceeding further if any discrepancy or interference with other equipment is found which will necessitate revision in or deviation from Work as indicated or specified.
- .3 Location of conduit, raceways, wiring and other equipment shall be altered without charge to Owner if so directed by Engineer provided change is ordered before installation, and does not necessitate additional labour and material.

3.2 INSTALLATION

- .1 Electrical products and methods of installation shall be in accordance with relevant Sections of Division 26, and applicable requirements of other Divisions.
- .2 Correct installed work as directed by authorized inspector of such authorities.

3.3 COATINGS FOR STRUCTURAL SUPPORTS SUPPLIED UNDER DIVISION 26

- .1 Coatings used for new electrical equipment bases are to be of high durability (above 15 years) design for environments classified by ISO 12944-2 as C5-M very high corrosivity (marine).
- .2 Paint to be of an organic zinc/epoxy/polyurethane system or approved equal.
- .3 Coating system to be submitted to Engineer for review and approval.

3.4 MOUNTING HEIGHTS

- .1 Heights are subject to change to suit Site conditions, and therefore as work progresses, and before installing equipment, obtain instructions or directions from Engineer for alternative heights or relocation.

3.5 MOUNTING OF EQUIPMENT

- .1 The method of mounting existing equipment to be submitted to Engineer for review and approval.

3.6 GROUNDING

- .1 Ground electrical equipment in accordance with requirements of The Electrical Safety Authority Electrical Safety Code.
- .2 Arrange grounds so that under normal operating conditions, no injurious amount of current will flow in any grounding conductor. Connect single phase loads so that there is least possible unbalance of supply.

3.7 FIELD QUALITY CONTROL

- .1 Trial Usage
 - .1 Trial usage by Engineer of any electrical device, machinery, apparatus, equipment and other work supplied under this Division before final completion and written acceptance by Owner's Designee is not to be construed as evidence of acceptance by Owner.
 - .2 Owner shall have privilege of such trial usage as soon as Contractor claims that said work is completed, in accordance with Drawings and specifications for such reasonable length of time as Engineer deems sufficient for making a complete test.
 - .3 No claim for damage shall be made for injury to or breaking of any parts of such tested work, whether caused by weakness or inaccuracy of structural parts or by defective materials or workmanship of any kind whatsoever.
- .2 Tests
 - .1 At completion of installation, conduct grounding resistance test, voltage test, and empty conduit test in presence of Engineer and make corrections where necessary and as directed.
 - .2 Voltage provided to equipment in installation shall not exceed minimum and maximum permissible limits for equipment.
 - .3 Perform insulation tests for installed wiring and equipment with appropriate "Megger" testing equipment. Megger lighting and power circuit feeders and if resistance to ground is less than recommendations on any lighting or power circuit, consider such circuit defective and replace it.
 - .4 Test performance of equipment for mechanical and electrical defects. Make adjustments necessary for such equipment. When equipment has been placed in permanent operation give to operating personnel all necessary tuition and instructions for its operation and maintenance.
 - .5 Test conduits which are required to be installed but left empty for clear bore, using ball mandrel, brushes and snake. Use lignum vitae ball of diameter equal to approximately 85% of conduit inside diameter. Clear any conduit which rejects ball mandrel in an approved manner and without damage thereto.
 - .6 Furnish labour, materials, instruments and bear other costs in connection with all tests, obtain required certificates of approval, acceptance, and compliance with regulations of agencies having jurisdiction and as specified. Work shall not be deemed complete and final certificate of acceptance will not be issued, until such certificates have been delivered to Engineer.

3.8 CLEANING

- .1 Ensure no foreign objects, tools, and materials are left inside switchgears, cabinets, panel boards, control panels and similar enclosures before such equipment is energized.
- .2 Refer to specifications for other applicable final clean-up requirements.

END OF SECTION

26 05 02 - GENERAL ELECTRICAL WORK

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 No measurement will be made under this Section. Include costs for electrical work in section 26 05 01 – Common Work Results - Electrical.

1.2 GENERAL REQUIREMENTS

- .1 Conform to Sections of Division 01 as applicable.
- .2 Conform to Section 26 05 01 – Common Work Results - Electrical as applicable.

1.3 REFERENCES

- .1 CAN/CSA C22.2 No. 18-98 - Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware
- .2 CSA C22.2 No. 131 - Teck 90 Cables
- .3 CSA C22.2 No. 211.2 - Rigid PVC Conduit and Fittings
- .4 CSA C22.2 No. 211.0
- .5 CSA C22.2 No.45 - Rigid Galvanized Steel Conduit and Fittings

1.4 SUBMITTALS

- .1 Submit shop drawings for following equipment;
 - .1 Clamp support for cables
 - .2 Equipment support bases
 - .3 Wires and Cables
 - .4 Junction boxes
 - .5 Conduits

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

- .1 Clamp and Accessories
 - .1 Cable clamp to be one-piece heavy-duty construction complete. Field verify existing cable diameter sizes to determine sizes of clamps required.

2.2 WIRES AND CABLES, AND ACCESSORIES

- .1 Not Used

2.3 RACEWAY AND BOXES

- .1 Rigid PVC Conduit and Fittings: Rigid PVC Conduit to CSA C22.2 No. 211.2, CSA C22.2 No. 211.0, UL651, NEMA TC2. Fittings and boxes to CSA C22.2 No. 85, UL514B- UL514C.
- .2 Steel Conduits and Fittings: Rigid galvanized heavy wall, corrosion resistant, CSA C22.2 No.45. Use where exposed installation is subject to mechanical injury, as required by Code and specified herein, or indicated on Drawings.
- .3 Rigid PVC Junction Box: Flush mount rigid PVC Junction Box, Type p1-7 as per OPSD 2300.010 or approved equal.
- .4 Cable pulling accessories: Fish cord, polypropylene.
- .5 Fastening and accessories: in accordance with specifications.

Part 3 Execution

3.1 INSTALLATION

- .1 Clamp and Accessories
 - .1 All hardware required for installation of cables to be stainless steel.
 - .2 Install cables in a manner to minimize sag between clamp support points.
 - .3 All hardware required for the installation to be stainless steel.

3.2 EQUIPMENT SUPPORT BASES

- .1 Design equipment support bases for the relocated electrical equipment based on equipment dimensions and weight. Proposed location of the equipment to be verified by Engineer prior to manufacture of support bases.

3.3 WIRES AND CABLES AND ACCESSORIES

- .1 Install wires and cables in accordance with Canadian Electrical Code requirements and other regulatory bodies having jurisdiction.
- .2 Terminate conductors using approved wire terminating materials and accessories.

3.4 RACEWAY AND BOXES

- .1 Install raceway, boxes, and necessary fittings, including supports, fasteners, and accessories, in compliance with current practices and standards by regulatory bodies having jurisdiction.
- .2 Route exposed cables neatly, parallel to and perpendicular to adjoining surfaces, and equally-spaced when in groups with other cables.
- .3 Use junction boxes to suit type of raceway and installation for general wiring in accordance with standards and practices by regulatory bodies and authorities having jurisdiction.
- .4 Thoroughly clean raceway and boxes, clear of obstructions, prior to wire and cable pulling.

3.5 TESTING AND INSPECTION

- .1 Conduct visual inspection at times for signs of physical damages or defects prior to and after installation.
- .2 Test installed equipment and wiring for grounds and short-circuit upon completion of work. See also Section 26 05 01 – Common Work Results - Electrical for additional instructions.

END OF SECTION

35 59 14 – TIMBER FENDERS

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 Timber fenders will be measured by linear metre supplied and installed and shall include all required hardware, fasteners, labour, materials and equipment to fabricate and install.
- .2 Painting of new and existing clip angles for timber fenders is considered incidental to item 1.1.1 above and will not be measure separately for payment.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM):
 - .1 ASTM A123/A123M-12, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A307-12 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

1.3 SUBMITTALS

- .1 Product Data for each individual product:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet.
 - .2 Submit two copies of WHMIS MSDS – Material Safety Data Sheets. Indicate VOC's content and composition for paint.

1.4 SHOP DRAWINGS

- .1 Submit drawings shall be submitted as requested.
- .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials.
- .2 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Hollow structural sections to CSA-G40.20/G40.21, Grade 350W, Class H.
- .2 Plates, shapes, and bars: to CSA-G40.20/G40.21, Grade 350W.
- .3 Timber fender hardware:
 - .1 Galvanized anchor bolts, anchor coil bolts, nuts and washers to ASTM A307.
 - .2 Clip angles to CSA-G40.20/G40.21, Grade 350W.
- .4 Galvanizing: hot dipped galvanizing with minimum zinc coating of 610 g/m² to ASTM A123/A123M.

- .5 Timber: to National Lumber Grades Authority Standard Rules for Canadian Lumber effective December 1, 2010, species and grade category as follows:
 - .1 Species: S-P-F.
 - .2 Grade: No.2 or better.
 - .3 Materials to be new. 100% of lumber to be grade specified.
 - .4 Preservative treatment: to be in accordance with Section 06 05 73.
 - .5 Weld materials: to Section 05 50 00.

Part 3 Execution

3.1 FABRICATION

- .1 Do welding to Section 05 50 00.
- .2 Complete fabrication to details indicated.
- .3 Finish: Neatly finish portions of work. Finish members true to line, free from twists, bends, open joints, and sharp corners and edges. Grind all sharp edges smooth.

3.2 GALVANIZING

- .1 Galvanized the following timber fender components to ASTM A123/A123M:
 - .1 Anchor bolts, nuts and washer.

3.3 TIMBER FENDERS

- .1 Fabricate and install fender bracket attachments as detailed on drawings.
- .2 Construct and install timber fenders in locations and in manner shown.
- .3 Paint clip angles as per section 05 50 00.