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SPECIFICATION

Wharf Rehabilitation
Riverton, Manitoba

Solicitation No. F2470-170002/A

www.pwgsc-tpsgc.gc.ca

SPECIFICATIONS FOR

WHARF REHABILITATION

RIVERTON, MB

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

February 2017

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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 is located at the Riverton Public Wharf on the west shore of the Icelandic River in the town of Riverton. Riverton is located on PTH 8 approximately 40 km. north of Gimli, Manitoba.

.2 The work under this contract covers the following:

- .1 Supply and installation of a new reinforced concrete deck and asphalt apron including supply and installation of new granular base and geotextile.
- .2 Supply and installation of new ladders, mooring cleats and traffic bollards.
- .3 Supply and installation of new granite field stone rip-rap including supply, installation, maintenance, and removal of silt curtain.
- .4 Supply and installation of new service pole, electrical pedestal, plugs, flood lights, light poles, electrical panel, meter and conduit. 200A overhead electrical to contractor supplied and installed service pole be provided by Manitoba Hydro and paid for by Small Craft Harbours.
- .5 Supply and installation of new float wharves and anchor piles.

.3 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 Interim reviews of work progress based on work schedule will be conducted as decided by Engineer and schedule updated by Contractor in conjunction with and to approval of Engineer.

.5 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.

.6 Work under this contract is to be performed 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 completed by **September 8, 2017.**

.1 On site work will only be permitted during period of July 10 to September 8, 2017. Obtain Engineer's approval prior to scheduling any weekend work.

.7 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 R-1, R-2, R-3, R-4, R-5 Wharf Rehabilitation

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 of Manitoba

.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 Province of Manitoba 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 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 Provide temporary drainage and pumping required to keep excavations and site free from water.

.2 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 WORK ADJACENT TO WATERWAYS

.1 No in-water work or shoreline work is permitted between April 15 and June 30.

.2 Construction equipment shall not enter the lake.

.3 No construction debris from work activities will be allowed to enter the lake. The work site must be cleaned daily. Every effort will be made to minimize the introduction of sediment to the lake during work activities.

.4 Do not use waterway beds for borrow material.

.5 Waterways to be free of excavated fill, waste material and debris.

.6 Design and construct temporary crossings to minimize erosion to waterways.

.7 Do not skid logs or construction materials across waterways.

.8 Avoid damage to shoreline.

.9 Supply, install, and maintain approved erosion control blankets to unprotected slopes until revegetation is established.

.10 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.

.11 Reclaim and restore disturbed areas to previous or better condition.

.12 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.

.13 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.

.14 The Contractor shall report spills of fuels or other contaminants to the Engineer.

.15 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.

.16 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.

.10 Disposal of wastes

.11 Do not bury rubbish and waste materials on site unless approved by Engineer.

.12 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.

.13 Collect all rubbish and waste material and dispose of in accordance with applicable governing authorities.

.14 Do not allow debris of any type to enter waterway.

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.

1.8 VERTICAL SILT CURTAIN

.1 Contractor to isolate the work area from the lake with an approved silt curtain to prevent the drift of sediment form the work area into the lake as required. The silt curtain must extend from the top of the ice/water to within 300mm of the lake bottom. The silt curtain must be left in place until all suspended sediments are settled out. On completion of the project carefully remove silt curtain to ensure settled sediment is not disturbed. An acceptable product is “Tough Guy” Type 1E Turbidity Barrier or approved equivalent. Costs for supply, installation, maintenance, and removal to be included in lump sum costs for the project.

.2 Construction shall be monitored to ensure that the mitigation measures are effective at containing the sediment to the launch ramp construction area. Adjustments may have to be made to get the containment to function properly.

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 re-inspection.

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

01 82 01 – WEIGH SCALES

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Weigh all granular base and rip-rap placed in the Work and measured in tonnes at the quarry or project site on a scale approved and certified as correct. Prior to use, have weigh scale certified as meeting requirements of Statutes of Canada, Chapter 36, Weights and Measures Act 1971 and subsequent amendments. Provide the Departmental Representative with a copy of the certificate and display certificate in prominent location. Costs for maintenance and operation of scale shall be considered incidental to the work.

.2 Provide the Departmental Representative with weigh tickets at time of delivery to site.

Part 2 Products

2.1 EQUIPMENT

.1 Provide weigh scales of sufficient capacity to weigh loaded vehicles in a single operation.

.2 Provide scale house to enclose mass indicator and in which Contractor's representative can perform work and maintain records.

.3 Scale house to be waterproof and have one sliding window facing scale platform. Entrance door not face scale platform.

Part 3 Execution

3.1 INSTALLATION

.1 Provide, install and maintain scale at quarry or project site at location approved by Engineer.

.2 Remove scale and scale house when no longer required and level approach ramps.

3.2 OPERATION

.1 Contractor's representative will be responsible for weighing materials.

3.3 MAINTENANCE

.1 Maintain scale platform and scale mechanism clean and free from gravel, snow, ice and debris.

.2 Maintain approach roads in good condition free from sags and ruts.

.3 Have scales retested and recertified if requested by Engineer.

END OF SECTION

02 41 13 – SELECTIVE SITE DEMOLITION

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Mobilization and Demobilization

.1 Payment for mobilization and demobilization shall be included in the lump sum amount for the project and shall include all works required to:

.1 Mobilize equipment, materials, tools, supplies, labour and supervisors.

.2 Insurance(s) required for the duration of construction.

.3 Fees, certificates and work permits.

.4 Temporary construction facilities.

.5 Signage.

.6 Securing work and storage areas.

.7 Vehicle and pedestrian protection.

.8 Daily site cleaning, and

.9 Demobilization of aforementioned items upon completion of construction.

.2 Removal of all materials including removal of identified steel pipe curb sections, granular to facilitate installation of new concrete deck and asphalt apron shall be included in lump sum costs for the project.

.3 Relocation and reinstallation of aluminum ramp, collection box, signage, spill kits and garbage cans shall be included in the lump sum cost 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

03 10 00 – CONCRETE FORMING AND ACCESSORIES

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 No measurement will be made under this Section.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-O86S1-05, Supplement No. 1 to CAN/CSA-O86-01, Engineering Design in Wood.

.3 CSA O121-M1978(R2003), Douglas Fir Plywood.

.4 CSA O151-04, Canadian Softwood Plywood.

.5 CSA O153-M1980(R2003), Poplar Plywood.

.6 CAN/CSA-O325.0-92(R2003), Construction Sheathing.

.7 CSA O437 Series-93(R2006), Standards for OSB and Waferboard.

.8 CSA S269.1[1975(R2003), Falsework for Construction Purposes.

.9 CAN/CSA-S269.3-M92(R2003), Concrete Formwork, National Standard of Canada

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit shop drawings for formwork and falsework.

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.

.2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, and locations of temporary embedded parts.

.3 Indicate sequence of erection and removal of formwork/falsework as directed by Engineer.

Part 2 Products

2.1 MATERIALS

.1 Formwork materials:

.1 For concrete without special architectural features, use wood and wood product formwork materials to CAN/CSA-O86.

.2 Form release agent: non-toxic.

.3 Form stripping agent: colourless mineral oil, non-toxic, free of kerosene, with viscosity between 15 to 24 mm^2/s at 40 degrees C, flashpoint minimum 150 degrees C, open cup.

.4 Falsework materials: to CSA-S269.1.

Part 3 Execution

3.1 FABRICATION AND ERECTION

.1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Fabricate and erect falsework in accordance with CSA S269.1.

.3 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.

.4 Align form joints and make watertight.

.1 Keep form joints to minimum.

.5 Use 25 mm chamfer strips on external corners unless specified otherwise.

.6 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.7 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.

.1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.8 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

.9 Relative alignment between adjacent formed concrete surfaces shall be less than or equal to 5 mm.

.10 Plumbness of slab edges shall be within 1:400 measured at any one surface.

3.2 REMOVAL AND RESHORING

.1 Leave formwork in place for following minimum periods of time after placing concrete.

.1 7 days for slabs.

.2 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

03 20 00 – CONCRETE REINFORCING

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 No measurement will be made under this Section.

.2 Include reinforcement costs in items of concrete work in Section 32 13 13 Concrete Paving.

1.2 REFERENCES

.1 American Concrete Institute (ACI)

.1 SP-66-04, ACI Detailing Manual 2004.

.2 CSA International

.1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA-A23.3-04(R2010), Design of Concrete Structures.

.3 CSA-G30.18-09, Carbon Steel Bars for Concrete Reinforcement.

.4 CSA-G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.5 CSA W186-M1990(R2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.

.3 Reinforcing Steel Institute of Canada (RSIC)

.1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice SP-66.

.2 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba.

.1 Indicate placing of reinforcement and:

.1 Bar bending details.

.2 Lists.

.3 Quantities of reinforcement.

.4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Engineer, with identifying code marks to permit correct placement without reference to structural drawings.

.2 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.

.1 Provide Type B unless otherwise indicated.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in 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 Substitute different size bars only if permitted in writing by Engineer.

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

.3 Cold-drawn annealed steel wire ties: to ASTM A82/A82M.

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

.5 Mechanical splices: subject to approval of Engineer.

.6 Plain round bars: to CSA-G40.20/G40.21.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.

.2 Obtain Engineer’s written approval for locations of reinforcement splices other than those shown on placing drawings.

.3 Upon approval of Engineer’s, weld reinforcement in accordance with CSA W186.

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

Part 3 Execution

3.1 FIELD BENDING

.1 Do not field bend or field weld reinforcement except where indicated or authorized by Engineer.

.2 When field bending is authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars, which develop cracks or splits.

3.2 PLACING REINFORCEMENT

.1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.

.2 Prior to placing concrete, obtain Engineer's approval of reinforcing material and placement.

.3 Ensure cover to reinforcement is maintained during concrete pour.

3.3 CLEANING

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

05 14 12 – ALUMINUM PEDESTAL FABRICATION

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Electrical pedestals shall be included in the lump sum cost for the project and shall include any fasteners, support brackets, wiring, outlets, connections or miscellaneous hardware required.

1.2 REFERENCES

.1 Aluminum Association (AA)

.1 AA DAF 45-03(R2009), Designation System for Aluminum Finishes.

.2 ASTM International

.1 ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 ASTM A325-09, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

.3 ASTM A325M-09, Standard Specification for Structural Bolts, Steel, Heat Treated, 830 MPa Minimum Tensile Strength.

.4 ASTM A490-09, Standard Specification for Structural Bolts Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.

.5 ASTM A490M-09a, Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3 for Structural Steel Joints.

.6 ASTM B209M-07, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.7 ASTM B210M-05, Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.

.8 ASTM B211M-03, Standard Specification for Aluminum and Aluminum Alloy Bar, Rod and Wire.

.9 ASTM F593-02(2008), Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

.3 CSA International

.1 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.2 CAN/CSA-S157/S157.1-05, Strength Design in Aluminum/Commentary on CAN/CSA-S157, Strength Design in Aluminum.

.3 CSA W47.2-M1987(R2008), Certification of Companies for Fusion Welding of Aluminum.

.4 CSA W59.2-M1991(R2008), Welded Aluminum Construction.

.4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.5 Material Safety Data Sheets (MSDS).

.6 Master Painters Institute (MPI)

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for structural aluminum and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 QUALITY ASSURANCE

.1 Submit 1 copy of mill test reports showing chemical and physical properties and other details of aluminum to be incorporated into work, at least 4 weeks prior to fabrication of structural aluminum. Mill test reports to be certified by metallurgists qualified to practice in Province of Manitoba, Canada.

.2 Fabricator of structural aluminum to provide an affidavit stating that materials and products used in fabrication conform to applicable material and products standards called for by design drawings and specifications.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Storage and Handling Requirements:

.1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect structural aluminum from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

.1 Aluminum bar, rod, wire: to ASTM B211M.

.2 Aluminum and Aluminum-Alloy Extruded Bar, Rods, Wire, Shapes, and Tubes: to ASTM B221M.

.3 Aluminum sheet or plate: to ASTM B209M.

.4 Aluminum drawn tubes: to ASTM B210M.

.5 Aluminum bolts and rivets: to ASTM B316M.

.6 Aluminum welding wire: to AWS - A5.10/A5.10M.

.7 Stainless steel bolts: to ASTM F593.

.8 Steel bolts: to ASTM A307.

.9 Bituminous paint: MPI - EXT 5.5D, without thinner.

.10 Galvanizing: hot dip galvanize steel bolts to CAN/CSA-G164, minimum zinc coating of 600 g/m2.

2.2 FABRICATION

.1 Fabricate to CAN/CSA-S157 and in accordance with approved shop drawings.

2.3 FINISHES

.1 Finish: plain mill as indicated on drawings.

Part 3 Execution

3.1 INSTALLATION

.1 Do structural aluminum work: to CAN/CSA-S157.

.2 Do welding: to CSA W59.2.

3.2 CONNECTION TO EXISTING WORK

.1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Departmental Representative for direction before starting fabrication.

3.3 ERECTION

.1 Erect structural aluminum as indicated and to CAN/CSA-S157 and approved erection drawings.

.2 No field cutting or altering structural members.

3.4 JOINT SEALING AND PAINTING

.1 Surface preparation of aluminum in contact with or embedded in dissimilar materials: to CAN/CSA-S157. Treat locations as if there is moisture present.

.2 Paint to CAN/CSA-S157.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

END OF SECTION

05 50 00 – METAL FABRICATIONS

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Steel Seat Angle:

.1 Payment for steel seat angle shall be lineal metre and shall include all labour equipment and material required to:

.1 Supply steel seat angle for the wharf.

.2 Fasten steel seat angle to the existing steel sheet piling as per drawings.

.3 Supply and installation of steel dowels.

.2 Steel Pipe Curb Replacement

.1 Payment for replacement of steel pipe curb shall be lineal metre and shall include all labour equipment and material required to:

.1 Remove damaged section of steel pipe curb.

.2 Supply prime painted steel pipe curb.

.3 Fasten steel pipe curb to the existing steel sheet piling as per drawings.

.3 Mooring Cleats

.1 Payment for the mooring cleats shall be by each and shall include all labour, equipment and material required to:

.1 Supply, fabricate, prime coat, and install new pre-manufactured mooring cleats. Costs for supply and installation of shall include the required fasteners.

.4 Traffic Bollards

.1 Payment for traffic bollards shall be by each and shall include all labour, equipment and material required to:

.1 Supply, fabricate, prime coat, and install new traffic bollards. Costs for supply and installation of shall include the required fasteners.

.5 Ladders

.1 Payment for ladders shall be by each and shall include all labour, equipment and material required to:

.1 Supply, fabricate, prime coat, and install new ladders. Costs for supply and installation of shall include the required fasteners and chain/cable ladder.

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 stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.

.2 Indicate 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.

2.5 NEW STEEL SEAT ANGLE

.1 Steel: prime painted, sizes indicated.

.2 Finish: shop painted.

.1 Primer: VOC limit 250 g/L maximum to GS-11 when applied on site.

2.6 NEW STEEL PIPE CURB

.1 Steel channels: prime painted, sizes indicated.

.2 Finish: shop painted.

.1 Primer: VOC limit 250 g/L maximum to GS-11 when applied on site.

2.7 NEW LADDER

.1 Steel: prime painted, sizes indicated.

.2 Finish: shop painted.

.1 Primer: VOC limit 250 g/L maximum to GS-11 when applied on site.

2.8 NEW MOORING CLEATS

.1 Pacific Marine and Industrial “Mooring Cleat CL24-5”. 5 ton pull capacity or approved equal.

.2 Paint for the mooring cleats shall be a two coat high-quality marine paint with total dry film thickness of no less than 16 mils. Colour shall be yellow.

2.9 NEW TRAFFIC BOLLARDS

.1 Paint for the traffic bollards shall be a two coat high-quality marine paint with total dry film thickness of no less than 16 mils. Colour shall be yellow.

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 NEW MOORING CLEATS

Install cleats in locations as indicated.

3.4 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.

3.5 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

26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Supply and installation of new service pole, electrical pedestal, plugs, weather proof electrical panels, conduit, trenching, meters and backboards shall be included in the lump sum cost for the project and is to include any fasteners, support brackets, wiring, connections or hardware provided. 200 Amp overhead electrical service to contractor supplied and installed service pole to be provided by Manitoba Hydro and paid for by Small Craft Harbours.

.2 Supply and install of TECK cable shall be included in the lump sum cost for the project and shall include any strut channels and hardware required.

.3 Supply and installation of 50 mm dia. conduit in the concrete deck shall be included in the lump sum cost for the project.

.4 Costs for electrical hook up and application to obtain inspection and work permit from the local authority having jurisdiction are the Contractor's responsibility and shall be included in the lump sum cost for the project.

1.2 RELATED SECTIONS

.1 26 05 02 General Electrical Work

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.2 CSA C22.1-12, Canadian Electrical Code, Part 1 (22nd Edition), Safety Standard for Electrical Installations.

.3 CAN3-C235-83(R2000), Preferred Voltage Levels for AC Systems, 0 to 50,000 V.

.4 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)

.1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.4 DEFINITIONS

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.5 DESIGN REQUIREMENTS

.1 Operating voltages: to CAN3-C235.

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

.3 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.

.1 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.

.2 Submit as required number of copies of drawings and product data to inspection authorities.

.3 If changes are required, notify Project Technician of these changes before they are made.

.2 Quality Control: in accordance with Section 01 45 00 – Quality Control.

.1 Provide CSA certified equipment and material.

.2 Submit test results of installed electrical systems and instrumentation.

.3 Permits and fees: in accordance with General Conditions of contract.

.4 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Project Technician.

1.7 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 45 00 – Quality Control.

.2 Qualifications: electrical Work to be carried out by qualified, licensed electricians who hold valid Master Electrical Contractor license or apprentices in accordance with authorities having jurisdiction as per the conditions of Provincial Act respecting manpower vocational training and qualification.

.1 Employees registered in provincial apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.

.2 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.

.3 Site Meetings: schedule site visits, to review Work, at stages listed.

.1 After delivery and storage of products, and when preparatory work is complete but before installation begins.

.2 Upon completion of Work, after cleaning is carried out.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Material Delivery Schedule: provide Project Technician with schedule within 2 weeks after award of Contract.

1.9 SYSTEM STARTUP

.1 Instruct Project Technician and Harbour Authority Representative in operation, care and maintenance of systems, system equipment and components.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

.1 Provide material and equipment in accordance with Section 01 11 05 - General Instructions.

.2 Material and equipment to be CSA certified.

2.2 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of authority having jurisdiction.

.2 Decal signs, minimum size 175 x 250 mm.

2.3 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.4 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates as follows:

.1 Nameplates: lamicoid 3 mm thick plastic engraving sheet, white face, black core, lettering accurately aligned and engraved into core mechanically attached with self-tapping screws.

.2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.2 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics

.3 Disconnects, starters and contactors: indicate equipment being controlled and voltage.

.4 Terminal cabinets and pull boxes: indicate system and voltage.

2.5 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding throughout.

.3 Colour coding: to CSA C22.1.

2.6 FINISHES

.1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.

Part 3 Execution

3.1 INSTALLATION

.1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

3.2 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.3 CONDUIT AND CABLE INSTALLATION

.1 Install cables, conduits in trenches and on wharf as indicated.

3.4 LOCATION OF OUTLETS

.1 Locate outlets as indicated on drawings.

.2 Change location of outlets at no extra cost or credit, providing distance does not exceed 3000 mm, and information is given before installation.

3.5 MOUNTING HEIGHTS

.1 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

3.6 CO-ORDINATION OF PROTECTIVE DEVICES

.1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.7 FIELD QUALITY CONTROL

.1 Conduct following tests:

- .1 Power distribution system including phasing, voltage, grounding and load balancing.
- .2 Circuits originating from branch distribution panels.
- .3 Lighting and its control.
- .4 Insulation resistance testing:
  - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
  - .2 Check resistance to ground before energizing.

.2 Carry out tests in presence of Project Technician.

.3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

3.8 CLEANING

.1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

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.

1.2 GENERAL REQUIREMENTS

.1 Conform to Section 26 05 00 – Common Work Results for 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 00 – Common Work Results For Electrical for additional instructions.

END OF SECTION

26 56 19 – ROADWAY LIGHTING

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Light poles and floodlights will be paid for per unit supplied and installed including concrete base as per manufacturer specification, fasteners support brackets, wiring, connections or hardware required.

1.2 RELATED REQUIREMENTS

.1 Section 26 05 00 Common Work Results For Electrical

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.2No.206-M1987, Lighting Poles.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit product data in accordance with Section 01 11 05 GENERAL INSTRUCTIONS.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate facilities.

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

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

.4 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Provincial Authority.

.5 Dispose of unused wood preservative material at official hazardous material collections site approved by Provincial Authority.

.6 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in any other location where they will pose health or environmental hazard.

Part 2 Products

2.1 ALUMINUM LIGHT POLE

.1 Aluminum poles: to CSA standard C22.2 NO. 206-13

.2 Mounting as per manufacturer specifications on concrete deck.

.3 Style: Area tapered round aluminum

.4 Straight for one luminaire mounting bracket

.5 Access hand hole 450mm above pole base for wiring connections

.6 Size: 6.096m

.7 Anchor bolts: To manufacturers specifications

.8 Grounding lug

.9 Number of Anchor Bolts: 4 bolt base

.10 Minimum wall thickness of 3.5mm

2.2 LUMINAIRE MOUNTING BRACKETS

.1 Mounting brackets aluminum for specified luminaires:

- .1 Single brackets as indicated.
- .2 Post top Mounted

2.3 LUMINAIRES

.1 Luminaire with cast aluminum weatherproof housing and:

- .1 Lamp type: LED, wattage: 200
- .2 Optical assembly:
  - .1 For LED lamps:
    - .1 Housing: Die-cast aluminum
    - .2 Refractor: Tempered glass
    - .3 Gasket: Neoprene seal between refractor and housing.
    - .4 Suitable for -35 degrees Celsius.
- .3 Factory wired
- .4 Must include vandal shield.
- .5 An acceptable product is Hubbell Outdoor Lighting FXL 56 LED Floodlight including ARF-SPC polycarbonate vandal shield or approved equivalent.

Part 3 Execution

3.1 INSTALLATION

.1 Install poles true and plumb, complete with brackets in accordance with manufacturer's instructions.

.2 Install luminaires on pole and install lamps.

.3 Check luminaire orientation, level and tilt.

.4 Connect luminaire to lighting circuit. Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

END OF SECTION

31 23 33 – EXCAVATING, TRENCHING AND BACKFILLING

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Excavated materials will be by lump sum and shall include all labour, equipment and materials required to excavate to the limits indicated and dispose excavated materials off site.

.2 Supply and installation of new granular base material for the concrete deck will be paid for by the tonne supplied, installed and remaining in work. Provide the Departmental Representative with weigh tickets at time of delivery to site.

.3 Provide the Departmental Representative with weigh tickets at time of delivery to site.

.4 Regrading and compaction of existing suitable granular material to be included in lump sum costs for project.

.5 Contractor to make own arrangements with Provincial authorities, municipalities and owners of private properties, for the quarrying and transportation of rock materials and machinery for work over their property, roads or streets.

1.2 SUBMITTALS

.1 Submit to Engineer for approval, two weeks before excavation, the proposed location of spoil area for excavated material.

.2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field, clearance record from utility authority, and location plan of relocated and abandoned services, as required.

1.3 SOURCE SAMPLING

.1 Inform Engineer of proposed source of materials and provide access for sampling at least 2 weeks prior to commencing work

1.4 DEFINITIONS

.1 Class A material: solid rock requiring drilling and blasting to loosen, which cannot be removed by means of heavy duty mechanical excavating equipment, and boulders or rock fragments of individual volumes 1.5 m; or more.

.2 Class B material: loose or shale rock, layered limestone rock, silt, sand, quick sand, mud, shingle, gravel, clay, sand, gumbo, boulders, hardpan and debris of individual volumes less than 1.5 m.

1.5 EXISTING CONDITIONS

.1 Buried services:

.1 Before commencing work verify location of buried services on and adjacent to site.

.2 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.

.3 Where utility lines or structures exist in area of excavation, obtain direction of Engineer before removing or re-routing.

.4 Record location of maintained, re-routed and abandoned underground lines.

.2 Existing buildings and surface features:

.1 Conduct, with Engineer, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, pavement, survey bench marks and monuments which may be affected by Work.

.2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Engineer.

Part 2 Products

2.1 MATERIALS

.1 Granular base: material in accordance with the following requirements:

.1 Type ‘A’ limestone.

.2 Gradations to be within limits specified when tested to ASTM C136 ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

.1 Gradation Method #1 to:

% Passing	
Sieve Designation	Type ‘A’
19 mm	100
4.75 mm	35-70
0.425 mm	10-30
0.075 mm	8-17

Part 3 Execution

3.1 PREPARATION/PROTECTION

.1 Keep excavations clean, free of standing water, and loose soil.

.2 Protect buried services that are required to remain undisturbed.

3.2 DEWATERING

.1 Keep excavations free of water while Work is in progress.

.2 Provide for Engineer approval details of proposed dewatering methods, including dikes, well points, and sheet pile cut-offs.

.3 Protect open excavations against flooding and damage due to surface run-off.

.4 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to public and private property, or portion of Work completed or under construction.

3.3 EXCAVATION

.1 Excavate to lines, grades, elevations and dimensions shown on drawings.

.2 Excavation must not damage or interfere with adjacent foundations.

.3 Keep excavated and stockpiled materials safe distance away from edge of excavation.

.4 Dispose of surplus and unsuitable excavated material off site.

.5 Do not obstruct flow of surface drainage or natural watercourses.

.6 Notify Engineer when bottom of excavation is reached.

.7 Obtain Engineer approval of completed excavation.

3.4 PLACEMENT AND INSTALLATION

.1 Proof roll subgrade and compact to 95% SPD.

.2 Place granular base after sub-grade surface is inspected and approved in writing by Engineer.

.3 Placing:

- .1 Construct granular base to depth and grade in areas indicated.
- .2 Ensure no frozen material is placed.
- .3 Place material only on clean unfrozen surface, free from snow and ice.
- .4 Begin spreading base material on crown line.
- .5 Place material using methods which do not lead to segregation or degradation of aggregate.
- .6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
- .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .8 Remove and replace that portion of layer in which material becomes segregated during spreading.

.4 Compacting:

- .1 Ensure compaction equipment is capable of obtaining required material densities.
- .2 Compact to density not less than 100% corrected maximum dry density.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted base.

.4 Apply water as necessary during compacting to obtain specified density.

.5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Engineer.

.6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

.7 For underwater compaction provide adequate compaction by means of backhoe bucket or other approved method.

3.5 PROOF ROLLING

.1 For proof rolling use standard roller of 45400 kg gross mass with four pneumatic tires each carrying 11350 kg and inflated to 620 kPa. Four tires arranged abreast with centre to centre spacing of 730 mm maximum.

.2 Obtain written approval from Engineer to use non-standard proof rolling equipment.

.3 Proof roll subgrade as indicated.

.4 Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.

.5 Where proof rolling reveals areas of defective subgrade:

.1 Remove sub-base material and compact to depth and extent as directed by Departmental representative.

.2 Replace sub-base material and compact.

.6 Where proof rolling reveals areas of defective sub-base, remove and replace in accordance with this section at no extra cost.

3.6 SITE TOLERANCES

.1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.7 CLEANING

.1 Progress Cleaning.

.2 Leave Work area clean at end of each day.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.8 PROTECTION

.1 Maintain finished granular surface in condition conforming to this section until granular surfacing is accepted by Engineer.

END OF SECTION

31 32 19 – GEOTEXTILES

Part 1 General

1.1 MEASUREMENT AND PAYMENT

.1 Measure geotextiles in square metres of surface covered by material. No allowance will be made for seams and overlaps.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-4.2 No. 11.2-[2004], Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).

.2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.

.1 No.2-M85 Methods of Testing Geosynthetics - Mass per Unit Area.

.2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.

.3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.

.4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.

.5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

.2 Ontario Provincial Standard Specifications (OPSS)

.1 OPSS 1860-November 2010, Material Specification for Geotextiles.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for geotextiles and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Test and Evaluation Reports:

.1 If requested, submit copies of mill test data and certificate at least 4 weeks prior to start of Work.

1.4 SAMPLES

.1 Submit to the Engineer the following samples at least 1 week prior to commencing work:

.1 Minimum of 1 m of roll width of geotextile

1.5 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 Store and protect geotextiles from direct sunlight and UV rays.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIAL

.1 Non-woven geotextiles shall be Class II and consist of a manufactured sheet, web, or batt of directionally or randomly oriented fibres, filaments, or other elements produced by bonding or interlocking the elements by mechanical, thermal, or chemical means.

.2 Tensile strength, Marv, minimum 660 N to CAN/CGSB 148.1, Method No. 7.3.

.3 Elongation at break, typical, >50% to CAN/CGSB 148.1, Method No. 7.3.

.4 Tear strength, MARV, minimum, 250 N to CAN/CGSB 4.2, Method No. 12.2.

.5 Puncture strength, MARV minimum, 1375 N to ASTM D 6241.

.6 Permittivity, minimum, to 0.05 CAN/CGSB 148.1, Method No. 4 s^{-1}.

.7 Ultraviolet stability, minimum, 50% retained tensile strength at 500 hours to ASTM D 4355.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geotextile material installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Engineer.

.2 Inform Engineer of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

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

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

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

.4 Pin successive strips of geotextile with securing pins at 2000 mm interval at midpoint of lap as indicated.

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

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

.7 Replace damaged or deteriorated geotextile to approval of Engineer.

.8 Place and compact soil layers in accordance with Section 32 11 23 – Aggregate Base Courses.

3.3 CLEANING

.1 Progress Cleaning:

.2 Leave Work area clean at end of each day.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

.1 Vehicular traffic not permitted directly on geotextile.

END OF SECTION

31 61 13 – PILE FOUNDATIONS

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Supply of 219.1 mm diameter, schedule 40 steel pipe pile will be measured in lineal metres delivered to site. Length of steel piles to be as shown on plan.

.2 Installation of 219.1 mm diameter, schedule 40 steel pipe pile to be measured in lineal metres of pile installed and incorporated into the work. This item includes installing top plates, bottom plates and bottom tips for piles as well as the sand fill. Cost to prepare ice if required to support pile driving equipment shall be included in this item.

1.2 DELIVERY, STORAGE AND HANDLING

.1 Protect piles from damage due to excessive bending stresses, impact, abrasion or other causes during delivery, storage and handling.

.2 Replace damaged piles as directed by Engineer.

1.3 EXISTING CONDITIONS

.1 Notify Engineer in writing if subsurface conditions at site differ from those indicated and await further instructions from Engineer.

1.4 SCHEDULING

.1 Drive piles in what is considered to be the most economical sequence.

.2 Provide schedule of planned sequence of driving to Engineer for review, not less than two weeks prior to commencement of pile driving.

1.5 PROTECTION

.1 Protect public and construction personnel, adjacent structures and work of other sections from hazards attributable to pile driving operations.

Part 2 Products

2.1 MATERIALS

.1 Supply full length pile as indicated and provide equipment to handle full length piles without cutting and splicing.

.2 Pile lengths indicated on plans are based on lengths estimated to remain in completed structure.

.3 Do not splice pile without written permission of Engineer.

2.2 **EQUIPMENT**

.1 Equipment information: prior to commencement of pile installation operation, submit to Engineer for approval, details of equipment for installation of piles. For impact hammers give manufacturer's name, type, rated energy per blow at normal working rate, mass of striking pars of hammer, and mass of driving cap. For non-impact methods of installation such as auguring, jacking, vibratory hammers or other means, give full details of characteristics necessary to evaluate performance.

.2 Hammer:

.1 Hammers to be selected on basis of driveability analysis using wave equation theory, performed to show that piles can be driven to levels indicated.

.2 Driveability analysis to include, but not be limited to, following: hammer, cushion, and cap block details; static soil parameters; quake and damping factors, total soil resistance, blow count, pile stresses and energy throughput at representative penetrations.

.3 When required criteria can not be achieved with the proposed hammer, use larger hammer and take other measures as required.

Part 3 Execution

3.1 **PREPARATION**

.1 Protection:

.1 Piles to be driven from ice surface, existing structures may not be used as a platform and contractor to prepare ice to support pile driving equipment.

.2 Protect adjacent structures, services and work of other sections from hazards due to pile driving operations.

.3 Arrange sequencing of pile driving operations and methods to avoid damages to adjacent existing structures.

.4 When damages occur, remedy damaged items to restore to original or better condition at own expense.

.2 Ensure that ground conditions at pile locations are adequate to support pile driving operation and load testing operation.

.1 Make provision for access and support of piling equipment during performance of Work.

3.2 **INSTALLATION**

.1 Leads: construct pile driver leads to provide free movement of hammer.

.1 Hold leads in position at top and bottom, with guys, stiff braces, or other means reviewed by Engineer to ensure support to pile while being driven.

.2 Length: except for piles driven through water, provide sufficient length of leads to ensure that use of follower is unnecessary.

.2 Followers:

.1 Provide followers of such size, shape, length and mass to permit driving pile in desired location to required depth and resistance.

3.3 APPLICATION / DRIVING

.1 Hold pile securely and accurately in position while driving.

.2 Deliver hammer blows along axis of pile.

.3 Cut-off pile neatly and squarely at elevations indicated. Provide sufficient length above cut-off elevation so that part damaged during driving is cut-off.

.4 Remove cut-off length from site on completion of work.

3.4 OBSTRUCTIONS

.1 Where obstruction is encountered that causes sudden unexpected change in penetration resistance or deviation from specified tolerances, proceed as directed by Engineer.

3.5 REPAIR AND RESTORATION

.1 Remove rejected pile and replace with new, and if necessary, longer pile.

.2 No extra compensation will be made for removing and replacing or other work made necessary through rejection of defective piles.

.3 Engineer will reject any pile that is driving out of position, is driven below cut-off elevation, or is damaged during driving or handling.

END OF SECTION

32 12 16.01 – ASPHALT PAVING – SHORT FORM

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Payment for asphalt paving shall be by square metres and shall include all labour, equipment, and materials required to:

.1 Place and compact two-50 mm lifts of asphalt at areas indicated.

.2 Overlap top lift with existing base lift after scraping at limits of construction as indicated.

1.2 REFERENCES

.1 American Association of State Highway and Transportation Officials (AASHTO)

.1 AASHTO M320-10, Standard Specification for Performance Graded Asphalt Binder.

.2 Asphalt Institute (AI)

.1 AI MS-2-1994 Sixth Edition, Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.

.3 ASTM International

.1 ASTM C88-05, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.

.2 ASTM C127-07, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.

.3 ASTM C128-07a, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.

.4 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.5 ASTM C136-06, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

.6 ASTM D995-95b (2002), Standard Specification for Mixing Plants for Hot-Mixed, Hot Laid Bituminous Paving Mixtures.

.7 ASTM D3203-94 (2005), Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for asphalt mixes and aggregate and include product characteristics, performance criteria, physical size, finish and limitations.

Part 2 Products

2.1 MATERIALS

.1 Asphalt concrete: Hot Laid HL4 - maximum aggregate size 19 mm, BIT Type B or approved equivalent.

Part 3 Execution

3.1 PREPARATION

.1 Inspect site with Engineer 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 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Remove debris, trim surfaces and leave work site clean, upon completion of work.

.3 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.4 PAVEMENT THICKNESS

.1 Pavements:

.1 Base course: 50 mm.

.2 Wear course: 50 mm.

3.5 PAVEMENT CONSTRUCTION

.1 Obtain Engineer approval of base prior to placing asphalt.

.2 Place asphalt concrete to thicknesses, grades and lines as indicated.

.3 Placing conditions:

.1 Place asphalt mixtures only when air temperature is 5 degrees C minimum.

.2 Do not place hot-mix asphalt when pools of standing water exist on surface to be paved, during rain, or when surface is damp.

.4 Where possible do tapering and levelling where required in lower lifts. Overlap joints by not less than 300 mm.

.5 Compact by rolling asphalt continuously using established rolling pattern.

.6 Operate roller slowly initially to avoid displacement of material.

.7 Where rolling causes displacement of material, loosen affected areas at once with lutes or shovels and restore to original grade of loose material before re-rolling.

.8 Finished asphalt surface to be within 5 mm of design elevation but not uniformly high or low.

END OF SECTION

32 13 13 – CONCRETE PAVING

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Payment for the reinforced concrete deck shall be by cubic metres of concrete poured in place, based upon the design finished grade and checked by tickets.

.2 Provide the Departmental Representative with concrete tickets at time of delivery to site.

.3 Payment for formwork and falsework, and reinforcing steel are incidental and are deemed to be included with the reinforced concrete deck item.

.4 Sawcutting of concrete deck and installation of control joints to be paid for by the lineal meter.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA-A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-A23.3-04, Design of Concrete Structures.

.3 CSA-A23.4-05, Precast Concrete - Materials and Construction.

.4 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.1 CSA-A3001-03, Cementitious Materials for Use in Concrete.

.5 CAN/CSA-G30.18-(R2002), Billet-Steel Bars for Concrete Reinforcement.

.6 CSA-W59-03, Welded Steel Construction (Metal Arc Welding) (Metric version).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Concrete hauling time: provide for review by Engineer deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

.1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.

.1 Do not modify maximum time limit without receipt of prior written agreement from Engineer and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by the Engineer.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

Part 2 Products

2.1 MATERIALS

.1 Use Type 10 cement.

.2 Air content when tested in accordance with CAN/CSA-A23.2, (4C), immediately after discharge: in accordance with CSA A23.1 Table 10.

.3 Use of chemical admixture will be approved only when specified mix requirements or workability cannot be achieved by proportioning of aggregates, water, cement and air entraining admixture.

.4 Water: to CSA A23.1/A23.2.

.5 Reinforcing bars: to CAN/CSA-G30.18, Grade 400.

.6 Aggregates: to CSA 23.1.

.7 Hardware and miscellaneous materials: to CSA-A23.1/A23.2.

.8 Anchors and supports: to CAN/CSA-G40.21 Type 300 W.

.9 Welding materials: to CSA W48.

.10 Curing compound: to ASTM C309, type 1-D or 2.

2.2 MIXES

.1 Concrete:

.1 Alternative 1 - Performance Method for specifying concrete: to meet Engineer performance criteria in accordance with CAN/CSA-A23.1/A23.2.

.1 Provide concrete mix to meet following hard state requirements:

.1 Durability and class of exposure: C-1.

.2 Minimum compressive strength at 28 days: 30 MPa.

.3 Surface texture: light broom finish in the transverse direction.

.4 Course aggregate, ASTM D4791, Table 3, Group 1, 20 mm size.

.5 Entrained air 6 +- 1 percent.

.6 Slump at point of discharge 80 +- 20 mm.

.7 Cementing materials content: 290 to 335 kg/cubic meter of concrete mix.

.8 Cement: Type 10.

.2 Provide quality management plan to ensure verification of concrete quality to specified performance.

.3 Concrete supplier's certification.

2.3 SOURCE QUALITY CONTROL

.1 Upon request, provide Engineer with certified copies of quality control tests related to this project as specified in CSA-A23.4.

.2 Upon request, provide Engineer with certified copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.

.3 Concrete hauling time: deliver to site of work and discharged within 120 minutes maximum after batching.

Part 3 Execution

3.1 FORMWORK

.1 Provide forms of sufficient strength to support and keep alignment under weight of spreading and finishing machines.

.2 Set forms true to line and grade, join neatly and tightly and secure to resist concrete pressure and impact from tampers without springing.

.3 Clean and oil forms before each use.

.4 Obtain Engineers approval of forms before placing concrete.

3.2 SUBGRADE AND SUBBASE PREPARATION

.1 Subbase to consist of specified material and have a compacted thickness of not less than specified.

.2 Subbase shall be compacted to specified density.

.3 Prepared subbase shall be checked for conformity with the cross-section and grade tolerances. Finished surface of subbase shall not deviate more than 0 mm above and 20 mm below specified grade and cross-section, and surface shall not deviate more than 10 mm at any place on a 3 mm template.

.4 Repair damage to subbase resulting from hauling or equipment operations.

.5 Prior to placing concrete, subbase shall be thoroughly wetted. Wetting shall be carried out, such that standing water is not present on grade.

.6 Surface condition of base to be approved by Engineer before placing concrete.

3.3 REINFORCING

.1 Place steel as indicated to Section 03 20 00 Concrete Reinforcing.

.2 Remove oil, grease, dirt and deleterious material from reinforcing bars before placing concrete.

.3 Steel placement to be approved by Engineer before placing concrete.

3.4 PLACING

.1 Provide Engineer 48 hours notice before each concrete pour.

.2 Place concrete to latest edition of CSA A231.1.

.3 Place concrete to lines, grades and depths as indicated.

.4 No concrete shall be placed during rain.

.5 When rain appears imminent pouring operation should cease. Protect freshly laid concrete from rain damage and adverse weather condition and in accordance with CAN/CSA A23.1. Extend protective coverings over edges of concrete and arrange so as not to bear on unprotected edges.

.6 Protect granular base so that it is entirely free of water when concrete is placed.

.7 Remove and replace at own expense concrete damage by freezing or which is unsatisfactory due to placement at too high a temperature.

.8 Discharge concrete into forms as soon as practical after mixing.

.9 Use hand placing where machine spreading is not feasible.

.10 Spread uniformly with approved equipment to thickness sufficient to allow for proper consolidation and finishing.

.11 When completing concrete placement for day, carry placement through to scheduled control joint location.

.12 Where concrete placement is stopped for more than 30 minutes due to breakdowns, weather or other reasons, construct extra bulkhead and construction joint as directed by Engineer.

.13 Do not place concrete on frozen surface.

.14 Concrete placed when the ambient temperature is at or above 27 degrees C to be cured by continuous water curing from soaker hoses providing complete coverage of the pavement to minimize the temperature rise of the concrete.

.15 When concrete has been placed in cold weather and the sire temperature is expected to drop below 5 degrees C, insulating curing blankets or other suitable material shall be placed on the concrete pavement and weighted to prevent movement. Curing to continue until the cumulative number of days, or fraction thereof, during which the temperature of the concrete is 10 degrees C, has totalled a minimum of 7 days.

.16 Tolerances

.1 The average thickness of the deck shall be no more than 10 mm less thickness than the specified thickness and no individual thickness measurement shall be more than 20 mm less than the specified thickness.

.2 Finished elevation of deck shall be within ± 5 mm from design elevations.

.3 The average slope of the finished floor shall not exceed 1:400 from the design centerline profile and deck-fall.

3.5 CONTROL JOINTS

.1 Cut control joints in deck at locations indicated, to CSA A23.1/A23.2 and install specified cement grout and acrylic bonding agent.

3.6 CONSOLIDATION

.1 Use hand operated vibrator on slabs. Do not set vibrator in one location longer than 20 minutes.

.2 Ensure concrete adjacent to edge forms or previously constructed slabs is thoroughly vibrated.

3.7 FINISHING

.1 After consolidation by vibration, finish with approved equipment.

.2 Finish concrete surface with an approved float at proper time as directed by Engineer. Operate from edge to edge with a wiping motion meanwhile advancing several feet with each succeeding pass overlapping previous one. A light, smooth fluting at least one metre long may be used if approved.

.3 Finish edges of slabs with edging tool to form a smooth squared surface.

3.8 SURFACE TEXTURING

.1 Commence texturing immediately after float finishing.

.2 Provide surface texture by light broom finish.

.3 Texturing to be straight and not damaging to pavement edges during operation.

3.9 TOLERANCES

.1 Finished pavement surface to be within 6 mm of design elevation but not uniformly high or low.

.2 Vertical deviation not to exceed 6 mm from a 3 metre straight edge when placed in any direction and location on pavement surface.

3.10 CONTROL JOINTS

.1 Cut control joints in deck at locations indicated, to CSA A23.1/A23.2 and install specified joint filler.

3.11 PROTECTION

.1 Do not open concrete pavement to traffic or construction equipment until concrete reaches 70% of specified strength or until approved by Engineer.

.2 When placing concrete in lanes adjacent to existing concrete, operated placing equipment on rubber wheels or pads to prevent damage to existing surface.

3.12 CURING

.1 As soon as possible after completing finishing operations, cover concrete to retard evaporation. If covering cannot be done soon enough to prevent undue evaporation, keep concrete surface damp by spraying with water until surface is protected.

.2 Placed concrete to be maintained at temperature of minimum 10°C for not less than 72 hours after placing and then above 5°C for minimum 4 additional days.

.3 Cure for minimum 4 days by using this method:

.1 With curing compound:

.1 Apply two pressure sprays with approved equipment. Mechanically agitate compound before and during use.

.2 Apply first spray as soon as excess water has evaporated from surface and indented by moderate finger pressure.

.3 Apply second spray within 24 hours of first.

.4 Each spray to be at a rate equal to application rate recommended by manufacturer.

.5 Spray slab edges within one hour of removal of forms.

.2 With paper:

.6 Cover slab with waterproof paper as soon as concrete has set sufficiently to bear weight without marking.

.7 On leading slabs place paper cover at least 36 inches wider than slab and after removal of side form fold down edges of paper and bank with soil, sand or gravel to prevent air circulation.

.8 Batten down paper surface to prevent free access of air.

.9 Keep paper in place during curing period and promptly repair any deterioration to surface.

.3 Do not open concrete pavement to traffic or construction equipment until concrete reaches 70% of specified strength or until approved by Engineer.

3.13 DEFECTIVE WORK

.1 Concrete is defective when:

.1 Containing excessive honeycombing or embedded debris.

.2 28 day strength in a defined area is less than 95% of specified minimum average strength.

.3 Surface irregularities exceed specified amount including edge slumping.

.2 Repair of defective concrete work:

.1 Repair defective areas while concrete is still plastic, otherwise wait until curing is completed. Do not fill depressions with fines.

.2 Grind off high surface variations where directed.

.3 Remove and replace defective concrete slab where directed.

END OF SECTION

35 31 22 – RIP-RAP

Part 1 General

1.1 MEASUREMENT PROCEDURES

.1 Supply and installation of rip-rap to be measured in tonnes of material supplied and installed and checked by tickets supplied from quarry of material incorporated into Work and accepted in writing by Engineer.

.2 Provide the Departmental Representative with concrete tickets at time of delivery to site.

.3 Maintenance of haul roads to be incidental to this work.

.4 Contractor to make own arrangements with Provincial authorities, municipalities and owners of private properties, for the quarrying and transportation of rock materials and machinery for work over their property, roads or streets.

Part 2 Products

2.1 MATERIALS

.1 Rock materials:

.1 Hard, dense, durable field stone, free from seams, cracks or other structural defects which may impair durability. The Los Angeles abrasion loss determined using ASTM procedures shall not exceed 35%.

.2 Slate and shale not acceptable.

.3 Greatest dimension of each stone not to exceed two times least dimension.

.4 Clean stone sizes to be in range of 200 mm to 400 mm.

.5 Material to be free of roots and other deleterious material.

.2 Inform Engineer of proposed source of materials and provide access for sampling at least 2 weeks prior to commencing work.

Part 3 Execution

3.1 RIP-RAP

.1 Place rip-rap to lines, grades and dimensions as indicated.

.2 Place rip-rap to thickness as indicated on drawings.

.3 Place rip-rap at fined grade area to uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.

.4 Place stones in manner approved by Engineer to secure surface and create a stable mass. Place larger stones at bottom of slopes.

.5 Finish surface evenly, free of large openings and neat in appearance.

3.2 TOLERANCES

.1 Completed component layers to be within following tolerances of lines and grades as indicated:

.1 Rip-rap: plus or minus 100 mm.

3.3 HAUL ROADS

.1 Be solely responsible for construction and maintenance of haul roads. Remove haul roads from site upon completion of project. No separate payment to be made for construction, maintenance and removal of haul roads.

.2 Contractor to be responsible for obtaining approval from applicable agencies for using access roads to site. Contractor is not to use existing launch ramp as a haul road.

.3 Contractor to repair any damage caused to roads or property as a result of hauling operations.

END OF SECTION

35 59 11 – FLOAT WHARVES

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Supply and installation of new timber float wharves including any required fasteners, hardware and bollards specified will be paid for by the unit supplied and installed.

.2 The cost for fabrication and installation float to pile attachments, hinges, steel plates, relocation of existing hinges and any related hardware or fasteners required for the installation of the float wharf system as indicated on the construction drawings shall be included in lump sum costs for the project.

.3 The relocation of and modification to install existing float wharves shall be included in the lump sum costs for the project.

Part 2 Products

2.1 MATERIALS

.1 Lumber and timber: except as otherwise specified, use lumber and timber graded and stamped in accordance with applicable grading rules and standards of associations or agencies approved to grade lumber by Canadian Lumber Standards Administration Board of CSA.

- .1 Species: Douglas Fir Group 1b.
- .2 Grade: structural or better
- .3 Grading authority: BCLMA
- .4 All timber to be S4S.
- .5 Galvanized bolts and nuts: to ASTM A307-07b. Countersunk head bolts to CSA B34-67(R1972).
- .6 Washers: pressed steel.
- .7 Galvanized spikes and nails: spiral type to CSA B111-1974(R2003).
- .8 Hot-dip galvanized, stainless steel, silicone, bronze or copper wood screws and fasteners: to ASTM Standards: ASTM-A153 (for hot-dip fastener products), and ASTM-A653 (coating designation G-185 for hot-dip connector and sheet products) and Type 305 and 316 for stainless steel.
- .9 Plastic bushings: ultra high molecular weight polyethylene (UHMWPE), density 0.94, black.
- .10 Shapes, plates: fabricated from steel confirming to CAN/CSA-G40.20-04 and CAN/CSA-G40.20-04, Grade 300W.
- .11 Preservative:
  - .1 Pressure Treatment: all specified treated timber and planks to be pressure treated with CCA or ASA preservative salts to 0.64 g/cu. cm. (0.40 lbs/cu. ft.) retention.

.12 Machine bolts used are to be of sufficient length to accept two washers and one fully threaded hexagonal headed nut.

.13 Mooring Cleats: galvanized grey iron ship or dock cleat (two hole type) indicated on drawings.

.14 Floatation units:

.1 Dimensions/Capacity:

.1 Floatation units for principal float wharves and finger float wharves shall be of size 600 mm x 1200 mm x 300 mm deep with a minimum buoyancy of 196 kg each.

.2 Alternate size floatation units shall be used only with written approval of engineer.

.2 Materials:

.1 One piece, seamless rotational moulded outer shell.

.2 Manufactured from linear polyethylene resin with UV inhibitors and carbon black pigment.

.3 Nominal shell thickness minimum 3.8 mm.

.4 Heavy duty, reinforced moulded in mounting slots.

.5 Built in vent.

.6 Foam filled to 1.0-1.5 lbs/ft^3

.3 Warranty:

.1 Manufacturer to warrant floats for a period of ten (10) years from date of purchase against cracking, peeling, sloughing and ultraviolet deterioration. Floatation units shall retain their resiliency against being frozen in or other abrasions from normal usage.

.2 Contractor will submit to engineer manufacturer’s documentation indicating date of purchase.

.3 Alternate flotation units meeting or exceeding the above specification may be used only upon written approval of the engineer.

Part 3 Execution

3.1 CONSTRUCTION

.1 Construct timber floats as indicated.

.2 Build work square, true, straight and accurate to the required size, with all joints closely fitted and properly secured.

.3 Except where specified, use of shims, wedges, or short pieces of timber not permitted.

.4 Drill holes for bolts the same size as bolt diameter.

.5 Lay deck planks, stringers and headers in one piece.

.6 Project all bolts at least 6 mm beyond nut.

.7 Place a washer under the head of each bolt and under nuts in contact with wood.

.8 Connect floatation units with lag bolts c/w rubber and stainless steel washer as indicated on drawings.

.9 Install stringers as designated.

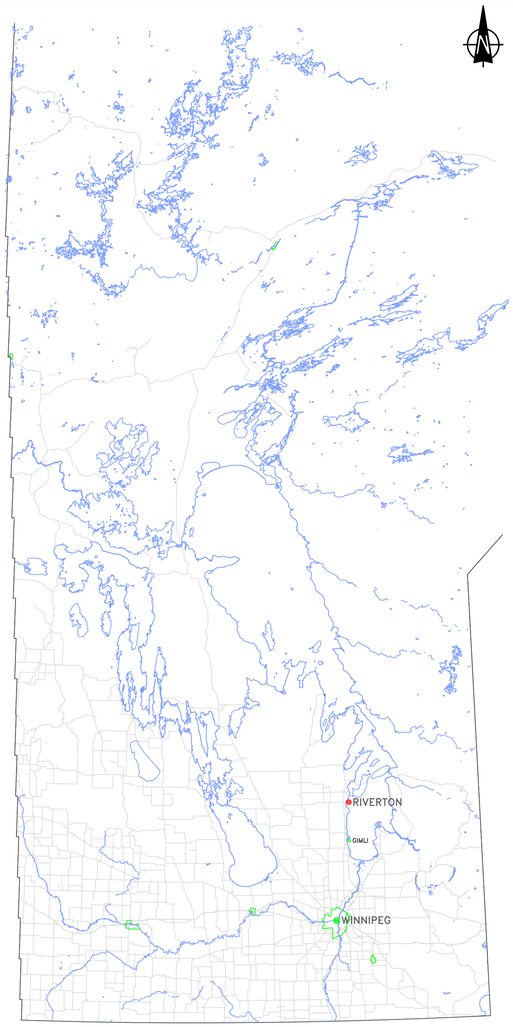
.10 Decking: Screw planks to each stringer contact with two (2) wood screws to a minimum penetration of 50 mm to 64 mm . Drill all screws 3 mm below deck surface. Space planks 10 mm apart.

.11 Curbing: If specified on drawings, nail timber curb along edges of deck with spiral nails at 600 mm centers. Chamfer exposed sides of curb 12 mm along upper edges. Curbing in minimum lengths of 4 m. Nail riser blocks to deck with 2 spiral spikes.

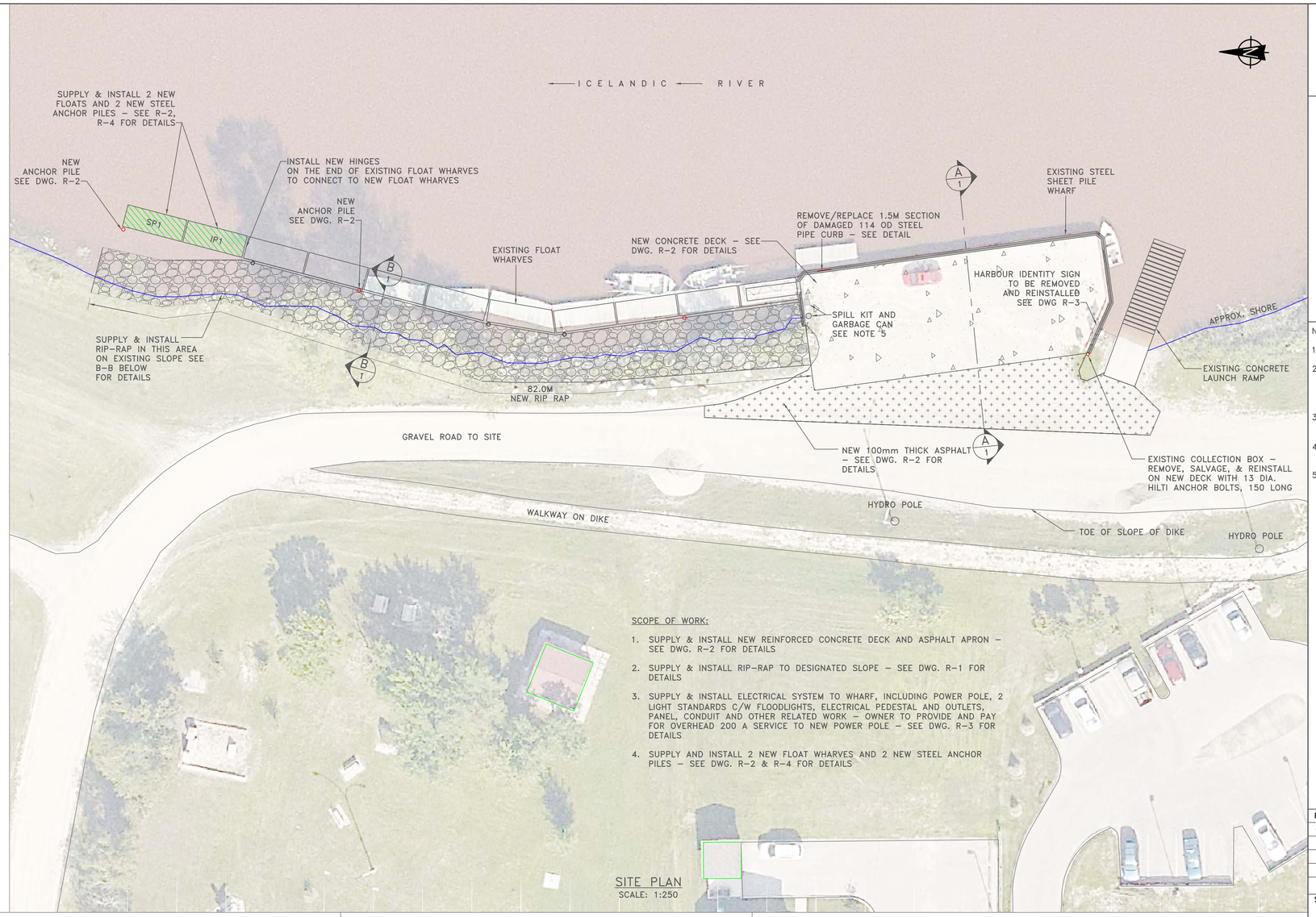
.12 Fabricate and install all connection hardware as indicated.

.13 Paint all float connectors, shapes and plates with one coat of primer.

END OF SECTION



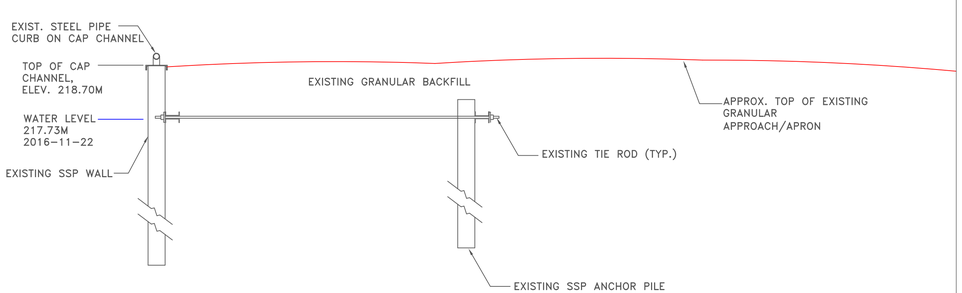
LOCATION PLAN
N.T.S.



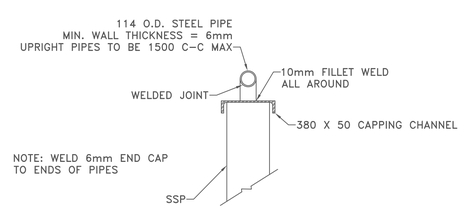
SCOPE OF WORK:

1. SUPPLY & INSTALL NEW REINFORCED CONCRETE DECK AND ASPHALT APRON – SEE DWG. R-2 FOR DETAILS
2. SUPPLY & INSTALL RIP-RAP TO DESIGNATED SLOPE – SEE DWG. R-1 FOR DETAILS
3. SUPPLY & INSTALL ELECTRICAL SYSTEM TO WHARF, INCLUDING POWER POLE, 2 LIGHT STANDARDS C/W FLOODLIGHTS, ELECTRICAL PEDESTAL AND OUTLETS, PANEL, CONDUIT AND OTHER RELATED WORK – OWNER TO PROVIDE AND PAY FOR OVERHEAD 200 A SERVICE TO NEW POWER POLE – SEE DWG. R-3 FOR DETAILS
4. SUPPLY AND INSTALL 2 NEW FLOAT WHARVES AND 2 NEW STEEL ANCHOR PILES – SEE DWG. R-2 & R-4 FOR DETAILS

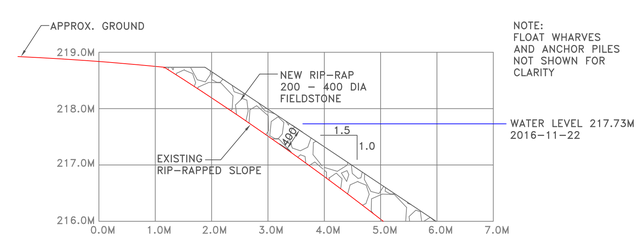
SITE PLAN
SCALE: 1:250



SECTION A–A
EXISTING WHARF
SCALE: 1:50



DAMAGED STEEL PIPE CURB
REPLACEMENT DETAIL
SCALE: 1:20



SECTION B–B
NEW RIP-RAP
SCALE: 1:50

GOVERNMENT OF CANADA / GOUVERNEMENT DU CANADA
FISHERIES AND OCEANS / PÊCHES ET OCÉANS

SMALL CRAFT HARBOURS
CENTRAL AND ARCTIC REGION

NOTES:

1. ALL SOUNDINGS & ELEVATIONS IN METRES
2. COORDINATES FOR HORIZONTAL CONTROL ARE GIVEN ON THE U.T.M. MAPPING PLANE, ZONE 14, USING THE NORTH AMERICAN DATUM OF 1983 (NAD83)
3. ELEVATIONS ARE GIVEN USING THE CANADIAN GEODETIC DATUM OF 1927 (CGVD28)
4. DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED
5. GARBAGE CANS AND SPILL KITS TO BE REMOVED AND REINSTALLED AS PER DWG R-3 CONTRACTOR TO REMOVE EXISTING STEEL UPRIGHTS

REVISIONS:		DATE:
0	ISSUED FOR TENDER	FEB. 17, 2017

SCALE: AS SHOWN
CLASS:

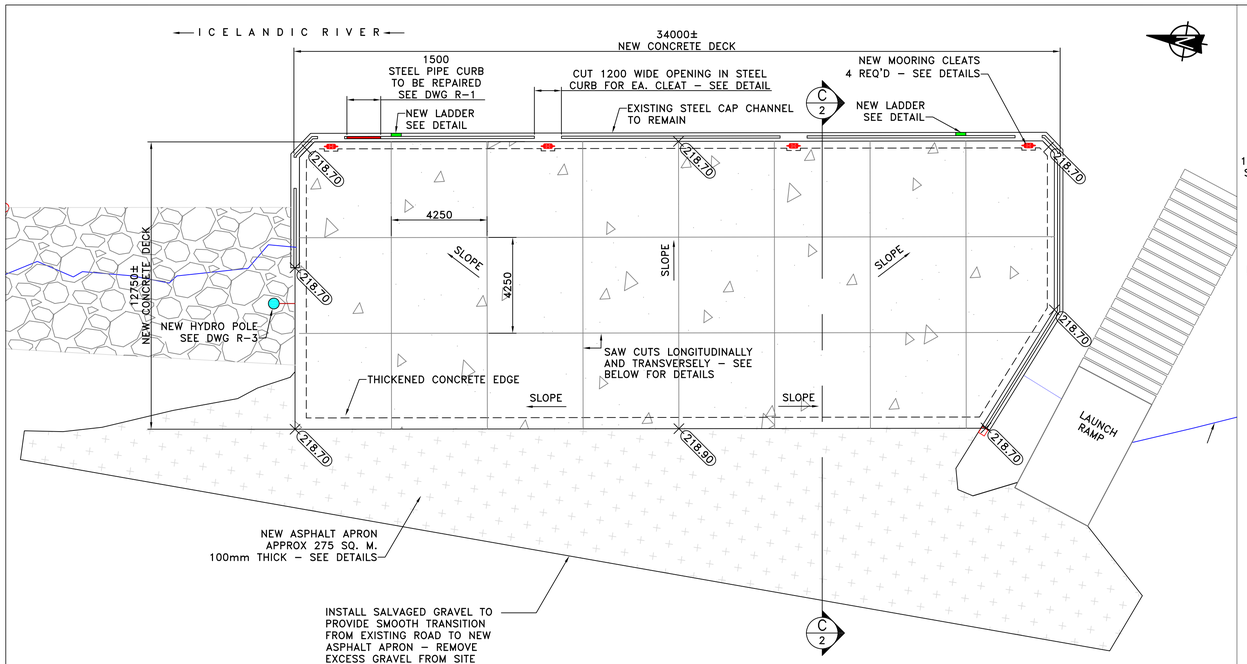
PROJECT: WHARF REHABILITATION

DESCRIPTION: SITE PLAN AND TYPICAL SECTIONS

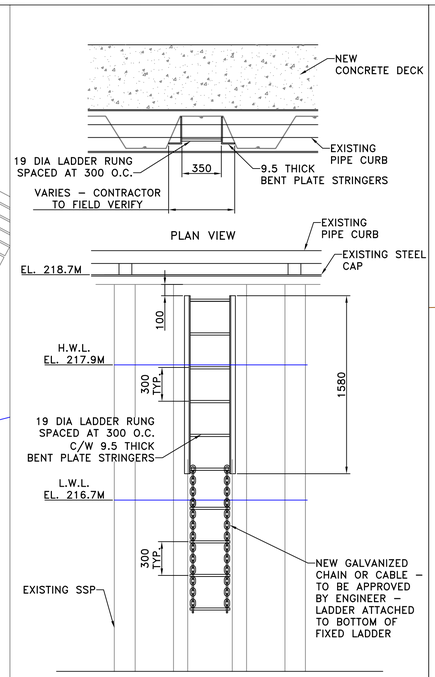
DRAWN: R.Z.
APPROVED: E.M.
DATE: FEB. 2017
DATE: FEB. 2017

LOCATION: RIVERTON MANITOBA

DRAWING NO.: R-1 of 5
LOCATOR CODE: 5540

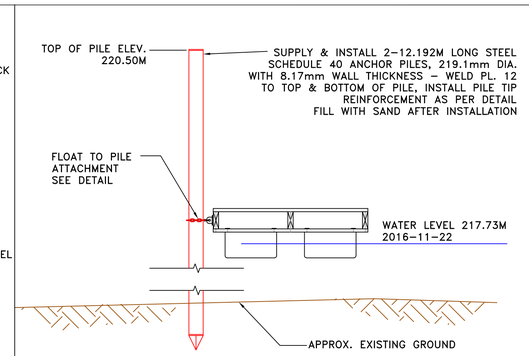


PLAN
CONCRETE DECK &
ASPHALT APRON
SCALE: 1:125

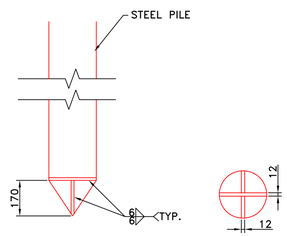


ELEVATION VIEW

LADDER DETAIL
SCALE: 1:25



PILE INSTALLATION DETAIL
N.T.S.



ELEVATION VIEW BOTTOM VIEW

PILE TIP DETAIL
N.T.S.

GOVERNMENT OF CANADA / GOUVERNEMENT DU CANADA
FISHERIES AND OCEANS / PÊCHES ET OCÉANS

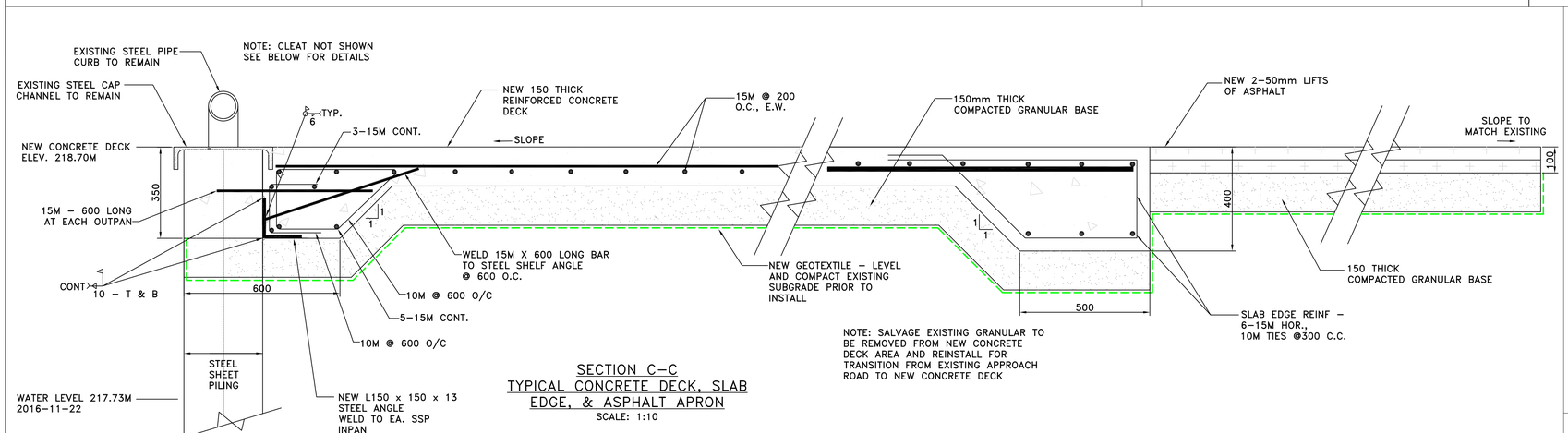
SMALL CRAFT HARBOURS
CENTRAL AND ARCTIC REGION

NOTES:

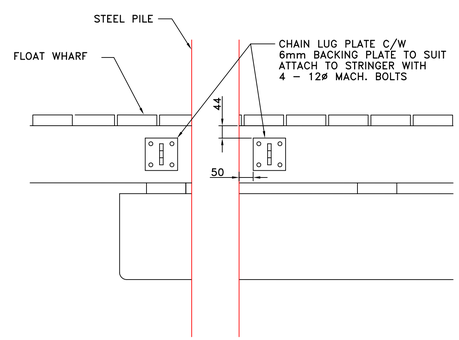
1. ALL SOUNDINGS & ELEVATIONS IN METRES
2. COORDINATES FOR HORIZONTAL CONTROL ARE GIVEN ON THE U.T.M. MAPPING PLANE, ZONE 14, USING THE NORTH AMERICAN DATUM OF 1983 (NAD83)
3. ELEVATIONS ARE GIVEN USING THE CANADIAN GEODETIC DATUM OF 1927 (CGVD28)
4. DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED

LEGEND

(218.78) TOP OF NEW CONCRETE ELEVATION



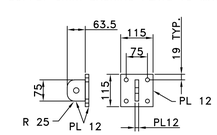
SECTION C–C
TYPICAL CONCRETE DECK, SLAB
EDGE, & ASPHALT APRON
SCALE: 1:10



FLOAT TO PILE ATTACHMENT DETAIL
SCALE: 1:10

NOTES:

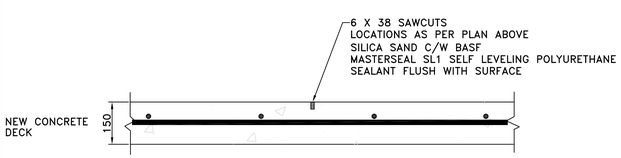
1. CONTRACTOR TO SUPPLY ALL HARDWARE
2. ALL HARDWARE TO BE COATED WITH 2 COATS RED SHOP PRIMER
3. SUPPLY 6mm BACKING PLATE TO MATCH



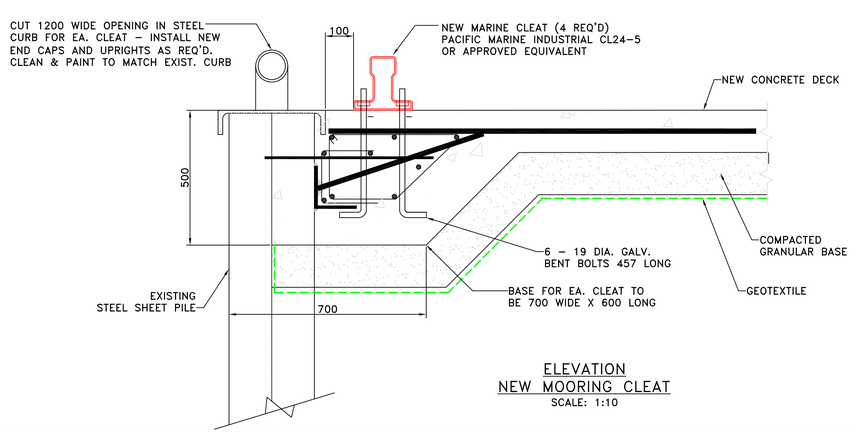
25ø HOLE FOR CROSBY BOLT TYPE ANCHOR SHACKLE LOOP 19.5 GALV. CHAIN TO EA. SHACKLE – LENGTH OF CHAIN TO ALLOW FOR FREE MOVEMENT BETWEEN DOCK AND PIPE SLIDER

4 – 14 DIA. HOLES FOR 12ø MACH BOLTS C/W NUT & 2 WASHERS

FLOAT TO PILE ATTACHMENT
(4 REQ'D)
SCALE: 1:5



SECTION
SAW CUT DETAIL
SCALE: 1:10



ELEVATION
NEW MOORING CLEAT
SCALE: 1:10

REVISIONS:		DATE:
0	ISSUED FOR TENDER	FEB. 17, 2017

SCALE: AS SHOWN
CLASS:

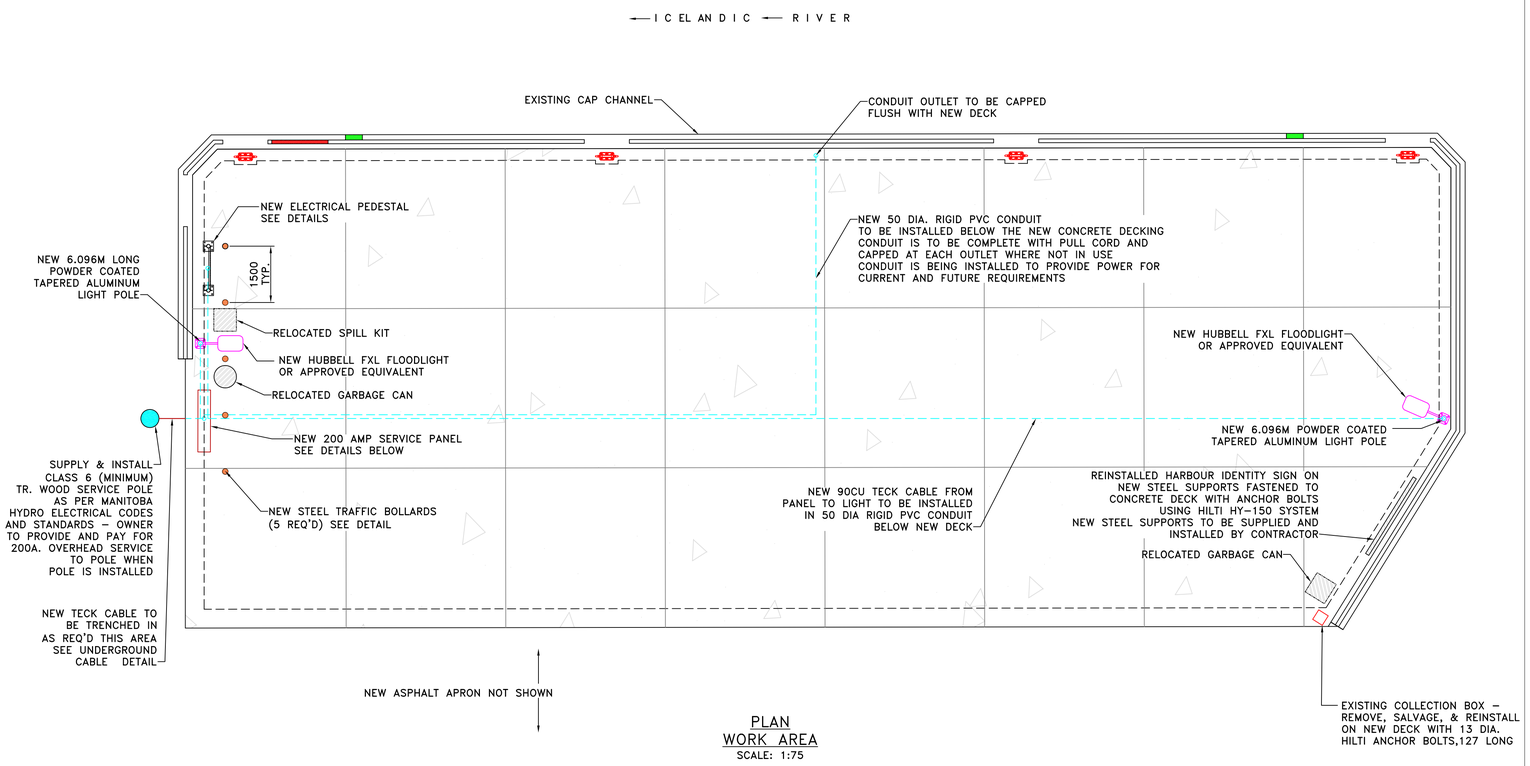
PROJECT: WHARF REHABILITATION

DESCRIPTION: CONSTRUCTION DETAILS

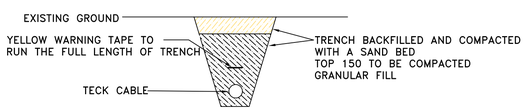
DRAWN: R.Z.
APPROVED: E.M.
DATE: FEB. 2017
DATE: FEB. 2017

LOCATION: RIVERTON MANITOBA

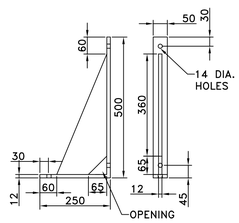
DRAWING NO.: R–2 OF 5
LOCATOR CODE: 5540



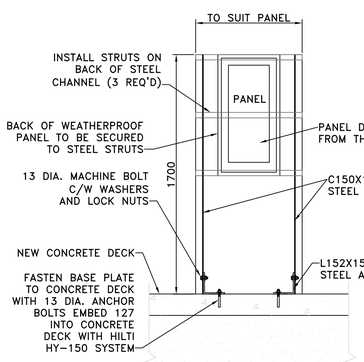
PLAN
WORK AREA
SCALE: 1:75



UNDERGROUND CABLE DETAIL
SCALE: N.T.S.

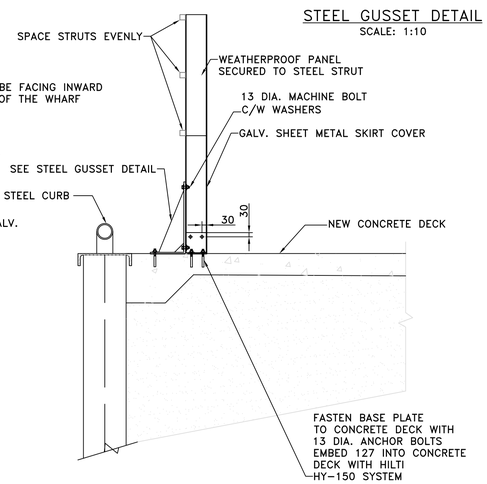


STEEL GUSSET DETAIL
SCALE: 1:10



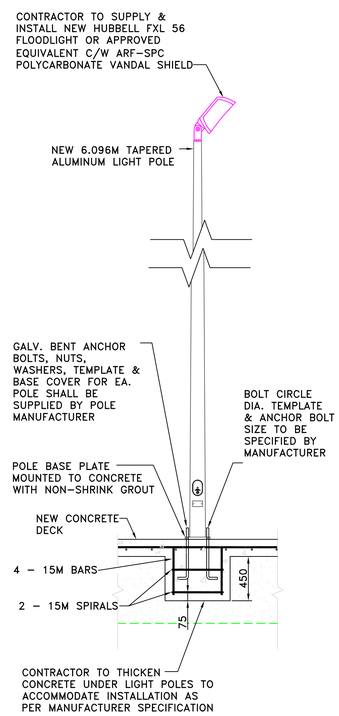
ELEVATION

NOTE: WELDS TO 6 mm CONTINUOUS FILLET WELDS



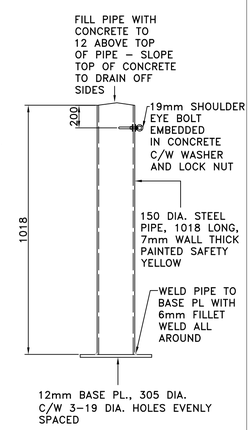
SECTION

ELECTRICAL SERVICE PANEL MOUNT
SCALE: 1:20



ELEVATION – LIGHT POLE
SCALE: N.T.S.

NOTE: FASTEN BASE PL. TO CONCRETE DECK WITH 3 – 19 DIA. ANCHOR BOLTS – EMBED 127 INTO NEW CONCRETE DECK WITH HILTI HY-150 SYSTEM



TRAFFIC BOLLARD DETAIL
N.T.S.

GENERAL NOTES:

1. GENERAL

1.1. UNDERTAKE ALL WORK IN ACCORDANCE WITH APPLICABLE STATUTORY REGULATIONS AND ENVIRONMENTAL REQUIREMENTS

1.2. MATERIALS AND TESTING HAVE BEEN SPECIFIED TO CONFORM TO THE CURRENT EDITIONS OF RELEVANT STANDARDS PUBLISHED BY THE FOLLOWING ORGANIZATIONS:

1.2.1. CANADIAN STANDARDS ASSOCIATION (CSA)

1.2.2. AMERICAN STANDARDS FOR TESTING (ASTM)

1.3. LOCATIONS AND ELEVATIONS OF EXISTING ELEMENTS AS SHOWN ARE APPROXIMATE VALUES ONLY AND ARE SUBJECT TO CONSTRUCTION VARIATIONS. THE CONTRACTOR SHALL VISIT THE SITE OF THE WORK, TAKE OWN MEASUREMENTS OF ALL STRUCTURES, GROUND AND OTHER WORK. ALL DIMENSIONS AND DETAILS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION AND CONSTRUCTION – DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER

1.4. ALL DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE NOTED

2. METAL FABRICATIONS

2.1. STRUCTURAL STEEL TO THE FOLLOWING GRADES:

2.1.1. PLATES: CAN/CSA – G40.21 300W

2.1.2. ANCHOR RODS: ASTM A325 TYPE 1, HOT DIPPED GALVANIZED

2.1.3. NUTS: ASTM A563, HOT DIPPED GALVANIZED

2.1.4. WASHERS: ASTM F436, HOT DIPPED GALVANIZED

2.2. ALL METAL FABRICATIONS SHALL BE HOT DIPPED GALVANIZED TO ASTM A123/A123M GRADE 100

3. ELECTRICAL

3.1. SUPPLY AND INSTALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND REGULATIONS:

3.1.1. STANDARDS COUNCIL OF CANADA (SCC)

3.1.1. CSA C22.1 CANADIAN ELECTRICAL CODE, PART 1, SAFETY STANDARDS FOR ELECTRICAL INSTALLATIONS

3.1.2. CSA C22.1 CANADIAN ELECTRICAL CODE, PART II

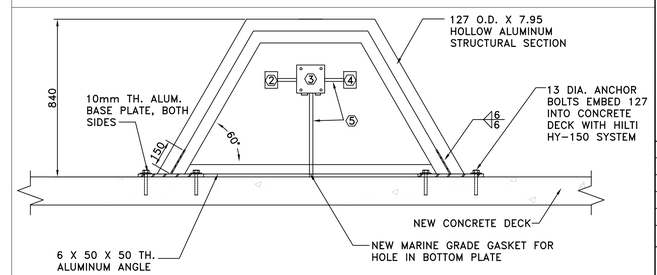
3.1.3. ELECTRICAL AND ELECTRONIC MANUFACTURERS OF CANADA (EEMAC)

3.1.4. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

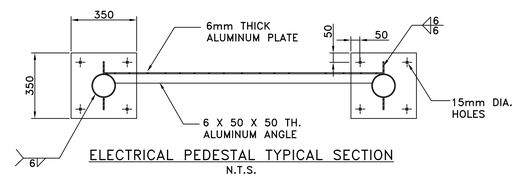
3.2. BEFORE COMMENCING WORK, APPLY FOR AND OBTAIN AN INSPECTION AND WORK PERMITS FROM THE LOCAL AUTHORITIES HAVING JURISDICTION

3.3. VERIFY EXISTING UNDERGROUND ELECTRICAL CABLE/CONDUIT ROUTING BEFORE COMMENCING WORK

3.4. ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BEAR A FACTORY INSTALLED CSA LABEL OR A MARK OR LABEL OF A CERTIFICATION AGENCY ACCREDITED BY SCC



ELECTRICAL PEDESTAL ELEVATION
N.T.S.



ELECTRICAL PEDESTAL TYPICAL SECTION
N.T.S.

PEDESTAL NOTES

① LAMICOID LABEL (MECHANICALLY ATTACHED) FOR EACH RECEPTACLE CONSULT OWNER FOR WORDING

② 30A, 125V MARINE GRADE GROUND FAULT RECEPTACLE HUBBELL CAT# HBL26CM10 C/W YELLOW FIBERGLASS TYPE FD BOX HUBBLE CAT# HBL60CM83 AND WEATHER PROOF WHILE IN USE COVER CAT# RW57350, C/W 30A CIRCUIT BREAKER OR APPROVED EQUIVALENTS

③ 150mm x 150mm x 101mm RIGID PVC JUNCTION BOX C/W COVER PLATE, NEOPRENE GASKET AND MOUNTING STRAPS – THREADED NUTS FOR CONDUITS – PROVIDE SEPARATE WEATHERPROOF FITTINGS – RUN A NEUTRAL WIRE SIZED TO MATCH LINE WIRE TO EACH RECURRENCE – CENTER BOX TO PEDESTAL OPENING

④ 15A 120V MARINE GRADE DUPLEX GROUND FAULT RECEPTACLE HUBBELL GFR5252MA C/W YELLOW FIBERGLASS TYPED FD BOX HUBBELL HPL60CM83 AND WEATHER PROOF WHILE IN USE COVER RW57350

⑤ FLEXIBLE WATERTIGHT PIPE 21mmø C/W BOX CONNECTOR FITTING – PROVIDE 2–HOLE STRAPS HUBBELL CAT# CWP26CR, 2–#12 AWG + 1 #12 GROUND

⑥ RECEPTACLES TO BE ON SEPARATE CIRCUITS

⑦ ELECTRICAL INSTALLATION TO BE AS PER CONTRACT SPECIFICATIONS

⑧ INSTALL NEW PEDESTAL ON NORTH SIDE OF WHARF IN LOCATION DESIGNATED BY ENGINEER

⑨ NEW 90CU TECK CABLE FROM PANEL TO PEDESTAL TO BE INSTALLED IN 50 DIA RIGID PVC CONDUIT BELOW NEW DECK

GOVERNMENT OF CANADA / GOUVERNEMENT DU CANADA
FISHERIES AND OCEANS / PÊCHES ET OCÉANS

SMALL CRAFT HARBOURS
CENTRAL AND ARCTIC REGION

NOTES:

1. DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED
2. CONTRACTOR TO COORDINATE WITH MANITOBA HYDRO AND OWNER FOR INSTALLATION OF OVERHEAD SERVICE

REVISIONS:		DATE:
0	ISSUED FOR TENDER	FEB. 17, 2017

SCALE: AS SHOWN
CLASS:

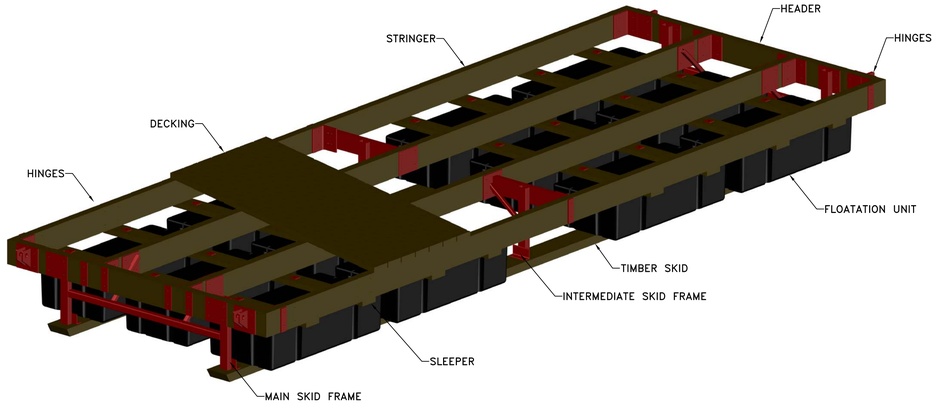
PROJECT: WHARF REHABILITATION

DESCRIPTION: CONSTRUCTION DETAILS

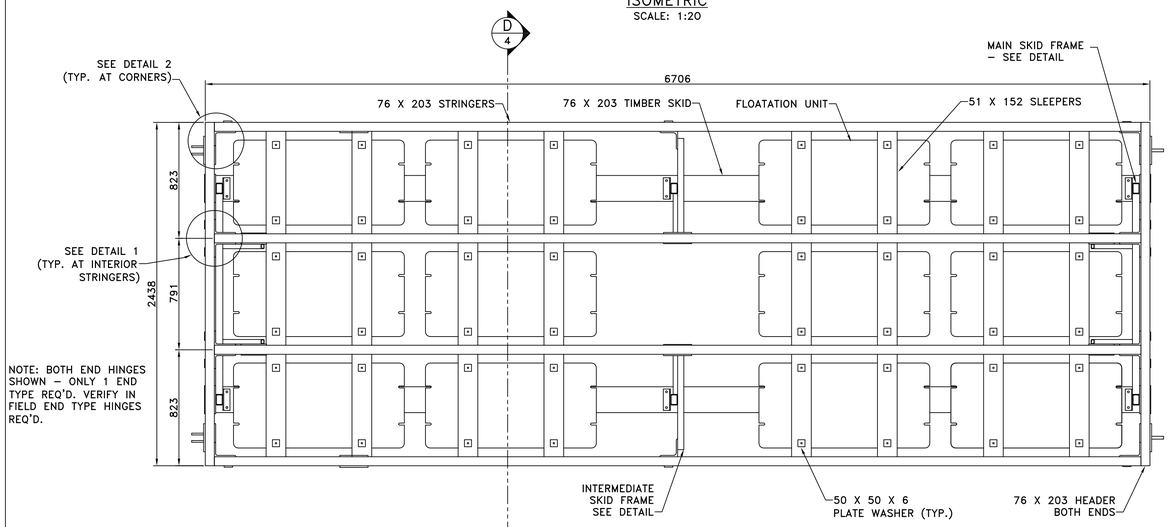
DRAWN: R.Z.
APPROVED: E.M.
DATE: FEB. 2017
DATE: FEB. 2017

LOCATION: RIVERTON, MB

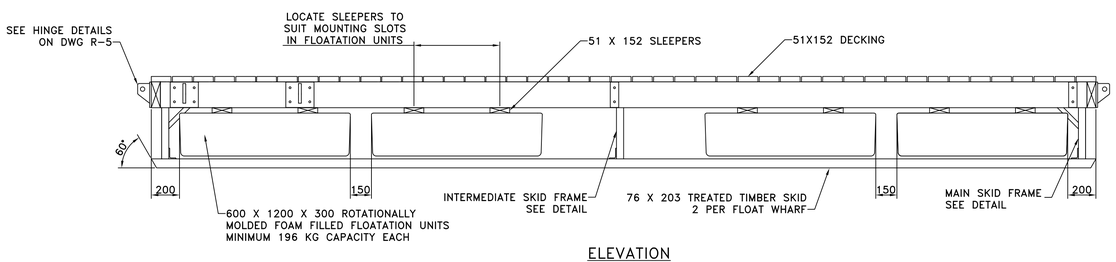
DRAWING NO.: R–3 OF 5
LOCATOR CODE: 5540



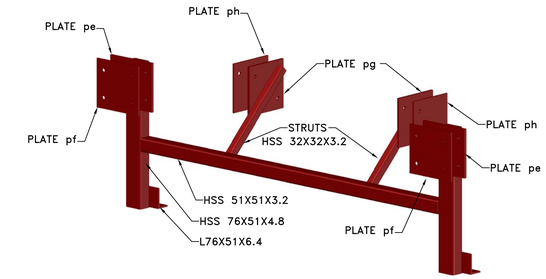
ISOMETRIC
SCALE: 1:20



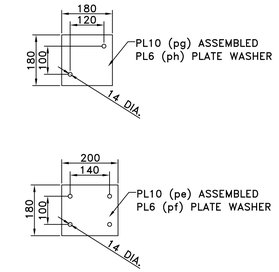
PLAN
SCALE: 1:20
DECKING NOT SHOWN FOR CLARITY



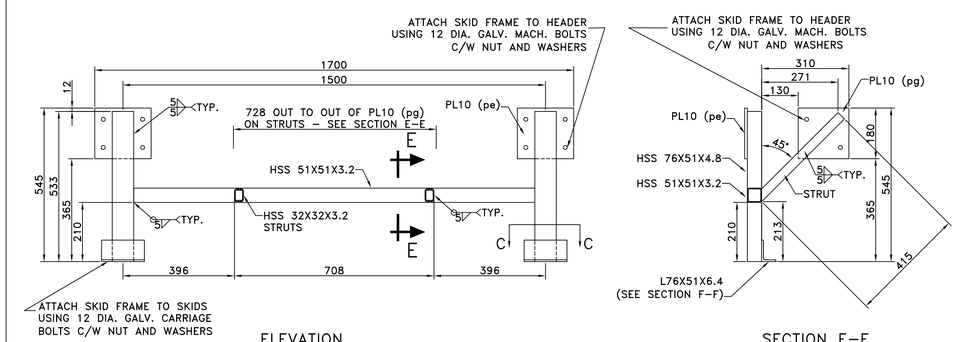
ELEVATION
SCALE: 1:20



ISOMETRIC – ASSEMBLY



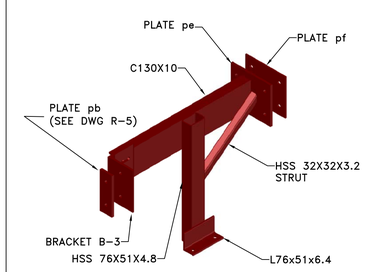
pe, pf, pg, ph
SCALE: 1:10



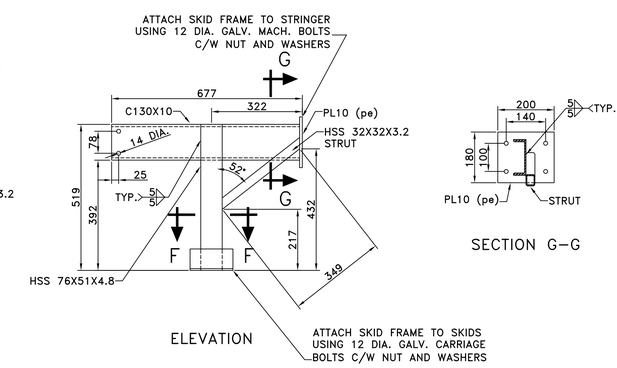
ELEVATION

SECTION E–E

MAIN SKID FRAME
SCALE: 1:10



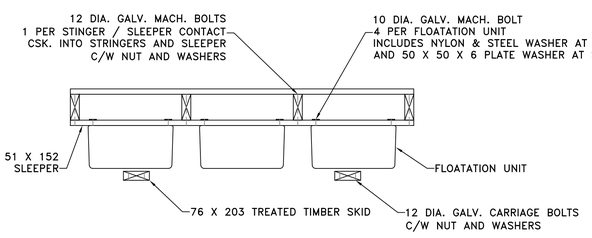
ISOMETRIC – ASSEMBLY



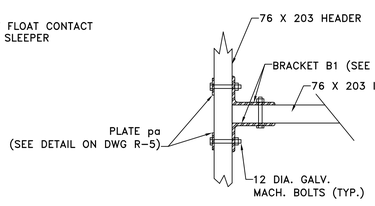
ELEVATION

SECTION G–G

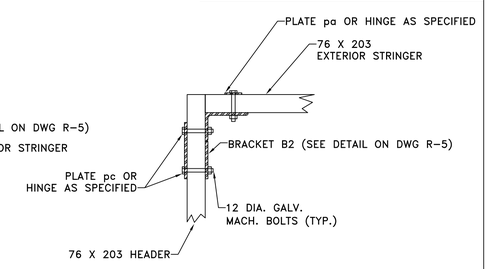
INTERMEDIATE SKID FRAME
SCALE: 1:10



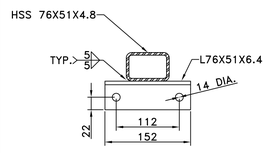
SECTION D–D
SCALE: 1:20



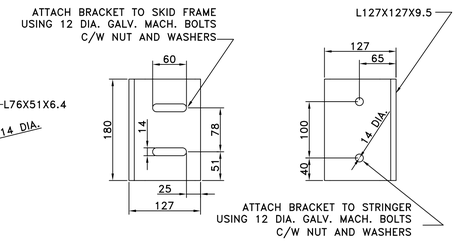
DETAIL 1
SCALE: 1:10



DETAIL 2
SCALE: 1:10



SECTION F–F
SCALE: 1:5



BRACKET B–3
SCALE: 1:5

GOVERNMENT OF CANADA | GOUVERNEMENT DU CANADA
FISHERIES AND OCEANS | PÊCHES ET OCÉANS

SMALL CRAFT HARBOURS
CENTRAL AND ARCTIC REGION

NOTES:

1. DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED
2. CONTRACTOR TO SHOP PAINT ALL STEEL HARDWARE WITH 2 COATS OF RED RUST INHIBITOR PAINT

REVISIONS:		DATE:
0	ISSUED FOR TENDER	FEB. 17, 2017

SCALE: AS SHOWN	CLASS:

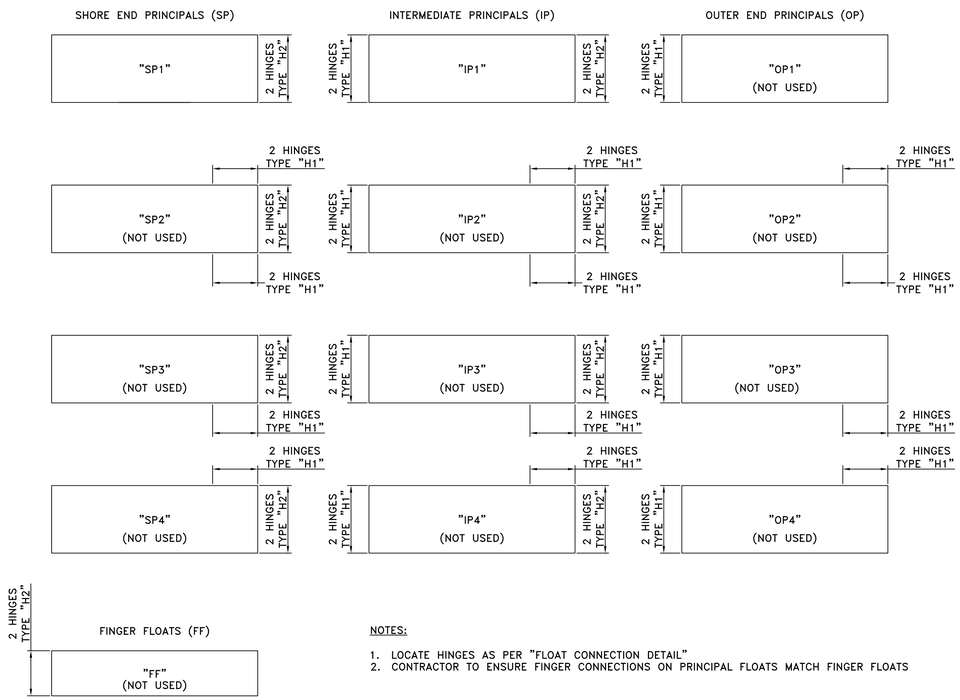
PROJECT:
WHARF REHABILITATION

DESCRIPTION:
2.4m x 6.7m
FLOAT WHARF
WITH SKIDS

DRAWN: R.Z.	APPROVED: E.M.
DATE: FEB. 2017	DATE: FEB. 2017

LOCATION:
RIVERTON
MANITOBA

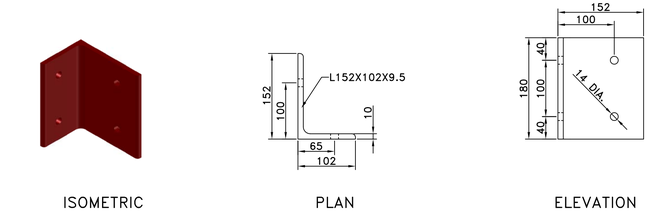
DRAWING NO.: R-4 OF 5	LOCATOR CODE: 5540



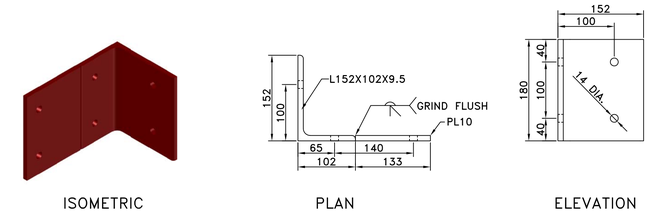
NOTES:

1. LOCATE HINGES AS PER "FLOAT CONNECTION DETAIL"
2. CONTRACTOR TO ENSURE FINGER CONNECTIONS ON PRINCIPAL FLOATS MATCH FINGER FLOATS

TYPICAL HINGE CONFIGURATIONS
SCALE: N.T.S.



BRACKET B1
SCALE: 1:5



BRACKET B2
SCALE: 1:5

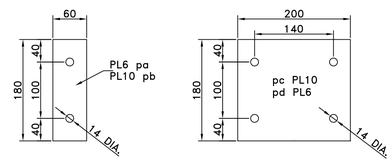
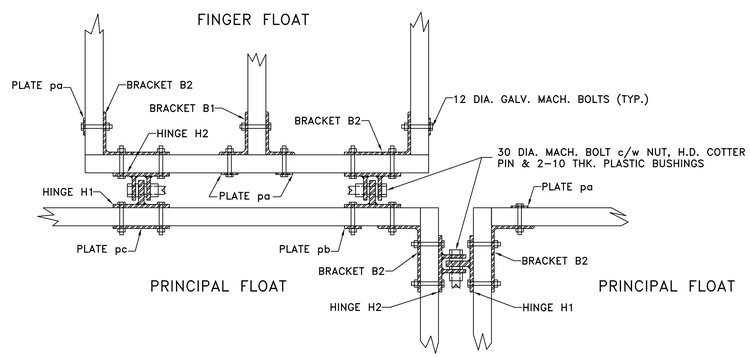
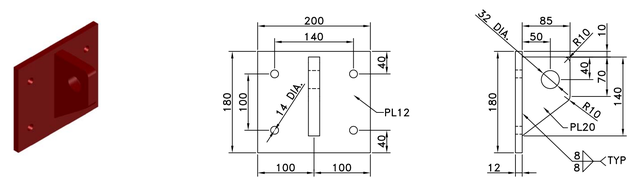


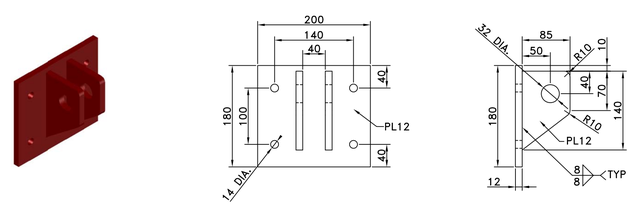
PLATE WASHERS
SCALE: 1:5



FLOAT CONNECTION DETAIL
SCALE: 1:10



HINGE H1
SCALE: 1:5



HINGE H2
SCALE: 1:5

NOTE:
HINGE H2 c/w 30 DIA. MACH. BOLT, NUT H.D. COTTER PIN AND 2 – 10 THK. PLASTIC BUSHINGS

GOVERNMENT OF CANADA / GOUVERNEMENT DU CANADA
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SMALL CRAFT HARBOURS
CENTRAL AND ARCTIC REGION

NOTES:

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2. CONTRACTOR TO SHOP PAINT ALL STEEL HARDWARE WITH 2 COATS OF RED RUST INHIBITOR PAINT

REVISIONS:		DATE:
0	ISSUED FOR TENDER	FEB. 17, 2017

SCALE: AS SHOWN
CLASS:

PROJECT: WHARF REHABILITATION

DESCRIPTION: FLOAT WHARF CONNECTION DETAILS

DRAWN: R.Z.
APPROVED: E.M.
DATE: FEB. 2017
DATE: FEB. 2017

LOCATION:

DRAWING NO.: R-5 OF 5
LOCATOR CODE: 5540