Department of Fisheries and Oceans – Real Property, Safety and Security

Floating Dock Construction - Burgeo Lifeboat Station Burgeo, NL F6879-219215

Issued for Tender Specifications

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Department of Fisheries and Oceans – Real Property, Safety and Security

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Burgeo, NL
F6879-219215

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CBCL

PROVINCE OF NEWFOUNDLAND AND LABRADOR
pegnl ENGINEERING PERMIT
D0178
CBCL Limited
M.I.R.C JACK CAINES #03559
Signature or Member Number
(Member-in-Responsible Charge)

REGISTERED PROFESSIONAL ENGINEER
JACK CAINES
SIGNATURE
OCT 20 2021
DATE
NEWFOUNDLAND & LABRADOR

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TECHNICAL SPECIFICATIONS

PART 1 - GENERAL

1.1 SCOPE

.1 The scope for this project is the provision of construction activities to construct a new floating dock and relocate an existing floating dock to better accommodate operations, as is more specifically described in the Description of Work and in the drawings and specifications.

.2 The work covered under this contract consists of the furnishing of all plant, labour, equipment and material for these improvements at Burgeo, Newfoundland and Labrador, in strict accordance with specifications and accompanying drawings and subject to all terms and condition of contract.

.3 Bidders are advised that opportunities and requirements may arise that may warrant changes to the work that are in keeping with this general scope of work. Such changes will be made through the Change Order processes as outlined in the contract documents.

1.2 DESCRIPTION OF WORK

.1 In general, work under this contract consists of but will not necessarily be limited to the following:

.1 Removal and reinstatement of existing armour stone, granulars, and asphalt to accommodate construction.

.2 Construction of new 32.9m (108 foot) long floating dock complete with guide system and gangway.

.1 Design for gangway to be provided in accordance with 05 51 00 - Aluminum Gangway.

.3 Removal and relocation of existing floating dock and gangway, complete with new concrete anchor blocks, chains and associated hardware.

.4 Construction of a new 6.1m x 6.1m treated timber crib complete with 250mm thick reinforced concrete deck, ladders, wheelguard and other items as detailed.

.5 Removal and repair of existing asphalt areas.

.6 Miscellaneous repair work including fencing, asphalt, fenders, wheelguard, ladders, etc., as indicated on the drawings.

.7 Placement of blasted rock material as detailed on drawings.

.8 Maintaining granulars on removed asphalt areas until asphalt is placed.

1.2 DESCRIPTION OF WORK (Cont'd)

.1 (Cont'd)

.9 Installation of a new breaker and disconnect in Pedestal #1, including all associated fittings, wires, and accessories.

.10 New conduit and grounding for new antenna supplied by Departmental Representative.

.11 Removal and disposal of existing antenna.

.12 Field and lab quality control testing of materials including, but not limited to, granulars, concrete and asphalt.

.13 Submission of a site specific safety plan, environmental protection plan, staging and work plan.

.14 Verification of work by surveys and video inspections.

.15 Other work as specified or detailed in the contract documents.

1.3 SITE ACCESS

.1 Work will be carried out at an active and secure Search and Rescue facility. Access to site to be coordinated with the Departmental Representative.

1.4 SITE OF WORK

.1 Work will be carried out at Burgeo, Newfoundland and Labrador in the location as shown on the accompanying drawings.

1.5 DATUM

.1 Datum used for this project is Lowest Normal Tides (LNT) and is assumed to be BM1-1979 +3.405m, above chart datum CHS benchmark.

.2 Bidders are advised to consult the Tide Tables issued by Fisheries and Oceans in order to make sure of the tidal conditions affecting work.

1.6 PAYMENT MEASURES

.1 Those sections not having measurement for payment clauses shall be considered as incidental to other sections of the work or be included in the lump sum portion of the work.

1.7 FAMILIARIZATION WITH SITE

.1 Before submitting a bid, it is recommended that bidders visit the site and its surroundings to review and verify the form, nature and extent of the work, materials needed for the completion of the work, the means of access to the site, severity, exposure and uncertainty of weather, soil conditions, any accommodations they may require, and in general shall obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.

.2 Contractors, bidders or those they invite to site are to review specification Section 01 35 28 - Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid.

.3 Obtain prior permission from the Departmental Representative before carrying out such site inspection.

1.8 CODES AND STANDARDS

.1 Perform work in accordance with the National Building Code of Canada (NBC), National Fire Code of Canada (NFC), National Plumbing Code of Canada (NPC) and/or any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements will govern.

.2 Reference has been made to certain Domestic, National and International Standard Specifications throughout the various sections of the Specifications contained herein. These Standard Specifications shall be considered an integral part hereof and shall be read in conjunction with the Drawings and Specifications as if they were reproduced herein. The Contractor shall, therefore, be completely familiar with their contents and requirements.

.3 The latest editions of these Standard Specifications at the time of tendering shall always govern.

.4 Include all code amendments up to tender closing date.

1.8 CODES AND STANDARDS (Cont'd)

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

1.9 TERM ENGINEER

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

1.10 SETTING OUT WORK

.1 Set grades and layout work in detail from control points and grades established by Departmental Representative.

.2 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated or as directed by Departmental Representative.

.3 Provide devices needed to layout and construct work.

.4 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.

.5 Supply stakes and other survey markers required for laying out work.

1.11 COST BREAKDOWN

.1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Departmental Representative will provide the required forms for application of progress payment.

.2 Provide cost breakdown in same format as the numerical and subject title system used in this specification project manual and thereafter sub-divided into major work components as directed by Departmental Representative.

.3 Upon approval by Departmental Representative, cost breakdown will be used as basis for progress payment.

1.11 COST BREAKDOWN (Cont'd)

.4 All work items not designated in the unit price table as a measurement for payment, are to be included in the lump sum arrangement, as noted on the Bid and Acceptance Form.

1.12 WORK SCHEDULE

.1 Submit within 7 work days of notification of acceptance of bid, a construction schedule showing commencement and completion of all work within the time stated on the Bid and Acceptance Form and the date stated in the bid acceptance letter.

.2 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.

.3 As a minimum, work schedule to be prepared and submitted in the form of Bar (GANTT) Charts, indicating work activities, tasks and other project elements, their anticipated durations and planned dates for achieving key activities and major project milestones provided in sufficient details and supported by narratives to demonstrate a reasonable plan for completion of project within designated time. Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.

.4 Submit schedule updates on a minimum monthly basis and more often, when requested by Departmental Representative, due to frequent changing project conditions. Provide a narrative explanation of necessary changes and schedule revisions at each update.

.5 The schedule, including all updates, shall be to Departmental Representative's approval. Take necessary measures to complete work within approved time. Do not change schedule without Departmental Representative's approval.

.6 All work on the project will be completed within the time indicated on the Bid and Acceptance Form.

1.13 ABBREVIATIONS

.1 Following abbreviations of standard specifications have been used in this specification and on the drawings:

1.13 ABBREVIATIONS (Cont'd)

CGSB - Canadian Government Specifications Board
CSA - Canadian Standards Association
NLGA - National Lumber Grades Authority
ASTM - American Society for Testing and Materials

.2 Where these abbreviations and standards are used in this project, latest edition in effect on date of bid call will be considered applicable.

1.14 QUARRY AND EXPLOSIVES

.1 Make own arrangements with Provincial authorities and owners of private properties, for the quarrying and transportation of rock and all materials and machinery necessary for work over their property, roads or streets as case may be.

1.15 SITE OPERATIONS

.1 The work is being completed at an active and secure Coast Guard Search and Rescue facility. At no time during the execution of the work shall labour, equipment, and materials for the work impede on or affect the ability of the Search and Rescue operations of the site, including those times when not on site.

.2 Arrange for sufficient space adjacent to project site for conduct of operations, storage of materials and so on. Exercise care so as not to obstruct or damage public or private property in area. Do not interfere with normal day-to-day operations in progress at site. All arrangements for space and access will be made by Contractor.

.3 Remove snow and ice as required to maintain safe access in a manner that does not damage existing structures or interfere with the operations of others.

.4 Any damage to existing surfaces not noted for construction will be repaired at no cost to the contract to the satisfaction of the Departmental Representative.

1.15 SITE OPERATIONS (Cont'd)

.5 The work will be completed in an active fishing harbour and shall not be impacted by the construction activity of this project. Should there be an instance in which there is a requirement to impact the activity of the harbour, the Contractor shall coordinate this impact with the Departmental Representative.

1.16 PROJECT MEETINGS

.1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.

.2 Project meetings will take place on site of work unless so directed by the Departmental Representative.

.3 Departmental Representative will assume responsibility for recording minutes of meetings and forwarding copies to all parties present at the meetings.

.4 Have a responsible member of firm present at all project meetings.

1.17 PROTECTION

.1 Store all materials and equipment to be incorporated into work to prevent damage by any means.

.2 Repair or replace all materials or equipment damaged in transit or storage to the satisfaction of Departmental Representative and at no cost to Canada.

.3 Protection to existing asphalt shall be provided for all equipment working on the site. Prior to mobilization, advise Departmental Representative of proposed protection measures for review and approval.

1.18 EXISTING SERVICES

.1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to site operations, pedestrian, vehicular traffic, and tenant operations.

.2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.

1.18 EXISTING SERVICES (Cont'd)

.3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection of electrical power and communication services to tenant's operational areas. Adhere to approved schedule and provide notice to affected parties.

.4 Provide temporary services when directed by Departmental Representative to maintain critical facility systems.

.5 Provide adequate bridging over trenches which cross walkways or roads to permit normal traffic.

.6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.7 Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed and abandoned service lines.

1.19 DOCUMENTS REQUIRED

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

1.20 PERMITS

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

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

1.20 PERMITS (Cont'd)

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

.4 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.

.5 Submit to Departmental Representative, copy of quarry permit, if applicable, prior to start of quarry operations.

.6 Comply with all requirements, recommendations and advise by all regulatory authorities unless otherwise agreed in writing by Departmental Representative. Make requests for such deviations to these requirements sufficiently in advance of related work.

1.21 CUTTING, FITTING AND PATCHING

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

.2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work. This includes patching of openings in existing work resulting from removal of existing services and grading to maintain operations of the site.

.3 Do not cut, bore, or sleeve load-bearing members.

.4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

1.22 EXISTING SUB-SURFACE CONDITIONS

.1 Contractors are cautioned that any previous investigations that may be available for review, were intended to provide general site information only. Any interpolation and/or assumptions made relative to any previous investigations is the Contractor's responsibility.

1.23 LOCATION OF EQUIPMENT

.1 Location of equipment and features shown or specified shall be considered as approximate. Actual location shall be as required to suit conditions at time of installation and as is reasonable. Obtain approval of Departmental Representative.

1.23 LOCATION OF EQUIPMENT (Cont'd)

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Departmental Representative when impending installation conflicts with other new or existing components. Follow directives for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.24 FISH HABITAT

.1 This work is being conducted in an area where fish habitat may be affected. Perform work to conform with rules and regulations governing fish habitat and in accordance with authorization for work or undertakings affecting fish habitat.

.2 Contact the local Department of Fisheries and Oceans (DFO) detachment at least 48 hours in advance of starting any work on site. Submit confirmation to the Departmental Representative that DFO has been contacted.

1.25 NOTICE TO SHIPPING/MARINERS

.1 Notify the Marine Communications and Traffic Services' Centre, of Fisheries and Oceans Canada, at 1-800-782-3058, ten (10) days prior to commencement and upon completion of the work, in order to allow for the issuance of Notices to Shipping/Mariners.

.2 During construction any vessels or barges utilized must be marked in accordance with the provisions of the Canada Shipping Act Collision Regulations.

1.26 ACCEPTANCE

.1 Prior to the issuance of the Certificate of Substantial Performance, in company with Departmental Representative, make a check of all work. Correct all discrepancies before final inspection and acceptance.

1.27 WORKS COORDINATION

.1 Responsible for coordinating the work of the various trades, where the work of such trades interfaces with each other.

1.27 WORKS COORDINATION (Cont'd)

.2 Convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required. Provide each trade with the plans and specifications of the interfacing trade, as required, to assist them in planning and carrying out their respective work.

.3 Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor and shall be resolved at no extra cost to Canada.

1.28 CONTRACTOR'S USE OF SITE

.1 Construction operations, including storage of materials for this contract, not to interfere with the search and rescue operations at this facility or other activities in adjacent areas, including, but not limited to, fishing.

.2 Contractor is responsible for arranging the storage of materials on or off site, and any materials stored at the site which interfere with any of the day to day activities at or near the site will be moved promptly at the Contractor's expense, upon request by Departmental Representative.

.3 Contractor will take adequate precautions to protect existing concrete decks and asphalt when operating tracked equipment.

.4 Exercise care so as not to obstruct or damage public or private property in the area.

.5 At completion of work, restore area to its original condition. Damage to ground and property will be repaired by Contractor. Remove all construction materials, residue, excess, etc., and leave site in a condition acceptable to Departmental Representative.

.6 Any damaged caused by the Contractor to the site, adjacent properties or properties of others and injuries of persons resulting from the Contractor's operation under the Contract shall be repaired or replaced or otherwise addressed to the satisfaction of the Departmental Representative at no cost to Canada

1.29 WORK COMMENCEMENT

.1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan, unless otherwise agreed by Departmental Representative.

.2 Project work on site is to commence as soon as possible, with a continuous reasonable work force, unless otherwise agreed by Departmental Representative.

.3 Weather conditions, short construction season, delivery challenges and the location of the work site may require the use of longer working days and additional work force to complete the project within the specified completion time.

.4 Make every effort to ensure that sufficient material and equipment is delivered to site at the earliest possible date after acceptance of bid and replenished as required.

1.30 FACILITY SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

1.31 INTERPRETATION OF DOCUMENTS

.1 Supplementary to the Order of Precedence article of the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

1.32 ASBESTOS DISCOVERY

.1 Demolition of spray or trowel-applied asbestos can be hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of work, stop work and notify Departmental Representative immediately. Do not proceed with relevant work until written instructions have been received from Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 USE OF SITE AND FACILITIES

.1 The work is being carried out at an active and secure Coast Guard Search and Rescue facility. At no time shall the labour, materials, or equipment required to execute the work impede or interfere with the operations of the facility, including those times when not on site.

.2 Execute Work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as indicated. Departmental Representative shall be advised a minimum of 72 hours in advance of any expected interferences.

.3 Maintain unrestricted access to buildings, walkways, roadways, wharves, parking lots, etc.

1.2 PHASING OF THE WORK

.1 To maintain operations at the facility, the work shall be phased as follows:
.1 Construct new cribwork and construct new floating dock.
.2 At completion of cribwork installation and construction of new floating dock, remove existing floating dock and install on new cribwork.
.3 Complete removals on existing wharf to accommodate installation of new floating dock components.
.4 Install new floating dock.

.2 Contractor shall coordinate the switchover of the existing antenna to the new antenna with the Departmental Representative.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS

.1 Execute Work with least possible interference or disturbance to occupants, public, and normal use of premises. Arrange with Departmental Representative to facilitate execution of the Work.

1.4 EXISTING SERVICES

.1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.

1.4 EXISTING SERVICES (Cont'd)

.2 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 MEASUREMENT FOR PAYMENT

.1 No separate measurement for payment shall be made for items under this section.

1.6 SPECIAL REQUIREMENTS

.1 Carry out noise generating work in accordance with the by-laws of the authority having jurisdiction.

.2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.3 Keep within limits of Work and avenues of ingress and egress.

1.7 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions. Smoking is not permitted.

1.8 SITE ACCESS

.1 All construction access to the site shall be coordinated with the Departmental Representative.

1.9 ON-SITE BUILDINGS

.1 Access to existing buildings is restricted.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 Canada will supply certain material and equipment in the Contract for installation and incorporation into the Work by the Contractor.

1.2 MATERIAL SUPPLIED

.1 Canada will supply the following materials to the Contract:
.1 Comrod AT82m Series Antenna.
.2 Antenna will be available on site.

1.3 DELIVERY REQUIREMENTS

.1 Materials supplied by Canada will be turned over to the Contractor.

.2 Contractor shall arrange, load, transport and unload all materials supplied by Canada specified in 1.2 Materials Supplied of this Section.

.3 Within 3 calendar days after notification of Canada-supplied material, the Contractor must:
.1 Conduct a complete and full verification audit of all materials received, including loose parts and individual components associated with a particular item supplied;
.2 Acknowledge, in writing, receipt of such items and;
.3 Provide copy of any delivery or transportation slips submitted by manufacturer and shipping company.

.4 Unless shortages of material or damaged items are identified in writing to the Departmental Representative within the above specified verification period, the Contractor will become responsible to supply all missing materials and repair or replace damaged items and missing parts discovered thereafter at own expense.

.5 Failure of the Contractor to make a complete check of the Canada-supplied material and to acknowledge receipt of same within the specified verification period shall not relieve Contractor of their contractual responsibility to replace or repair any item subsequently found to be missing or damaged.

1.3 DELIVERY REQUIREMENTS (Cont'd)

.6 Departmental Representative will make final determination as to whether an item can be repaired or must be replaced.

.7 In the event of failure on the part of the Contractor to submit written proof within the specified verification period, Departmental Representative reserves the right to:
.1 Proceed with the supply or repair of missing items through independent sources and;
.2 Charge costs of such items, including related shipping charges, to Contractor by conducting a financial holdback assessment against the Contract.

1.4 CONTRACTOR'S DUTIES

.1 Pick-up Canada-supplied material, at location(s) indicated.

.2 Drop off Canada owned material, at location indicated.

.3 Promptly inspect delivered material. Report missing, damaged or defective items in writing to Departmental Representative in accordance with delivery requirements specified above.

.4 Obtain and pay for services to load and transport to work area.

.5 Unload and handle at site, including lifting, uncrating etc.

.6 Store material on site at a location approved by Departmental Representative. Provide protection against inclement weather and site damage by use of appropriate covers.

.7 Make all arrangements and pay associated costs to provide temporary storage from date of receipt and until final incorporation into project.
.1 Departmental Representative cannot give any assistance in this regard.
.2 Type and location of storage to meet with Departmental Representative's approval.

.8 Be responsible for the protection of such material against damage, loss, theft and fire from date of receipt, during transportation, loading, unloading, temporary storage and until final installation of work is accepted by the Departmental Representative.

1.4 CONTRACTOR'S DUTIES (Cont'd)

.9 Any damage or loss of such material shall result in the Contractor being responsible for replacement or repair of equipment at no cost to Canada.

.10 The decision as to whether damaged items may be repaired or must be replaced with new equipment shall be the Departmental Representative's decision.

.11 Install such material and equipment and incorporate into the work. Perform assembly and make all connections as required to make item functional.

.12 Dispose of containers, crating and protective covering off site.

1.5 MEASUREMENT FOR PAYMENT

.1 All costs associated with this specification will be considered included in the lump sum arrangement and will not be measured for payment.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Inspecting and testing by inspecting firms or testing laboratories designated by Contractor and approved by Departmental Representative.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Contractor are specified under various sections.

1.3 APPOINTMENT AND PAYMENT

.1 Contractor will appoint and pay for services of testing laboratory, including the following:
.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
.2 Inspection and testing performed exclusively for Contractor's convenience.
.3 Mill tests and certificates of compliance.
.4 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
.5 Tests requested by Departmental Representative to confirm material specifications when the applicable manufacturer's documentation or test results are unavailable.
.6 Additional tests as specified.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.4 CONTRACTOR'S RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:
.1 Provide access to Work to be inspected and tested.
.2 Facilitate inspections and tests.
.3 Make good Work disturbed by inspection and test.
.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

1.4 CONTRACTOR'S RESPONSIBILITIES (Cont'd)

.2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Shop drawings and product data.

.2 Samples.

.3 Certificates.

1.2 SUBMITTAL GENERAL REQUIREMENTS

.1 Submit to Departmental Representative for review submittals listed, including shop drawings, samples,certificates and other data, as specified in other sections of the Specifications.

.2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.

.3 Do not proceed with work until relevant submissions are reviewed by Departmental Representative.

.4 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.5 Where items or information is not produced in SI Metric units, provide soft converted values.

.6 Review submittals prior to submission to Departmental Representative. Ensure during review that necessary requirements have been determined and verified, required field measurements or data have been taken, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.
.1 Submittals not stamped, signed, dated and identified as to specific project will be returned unexamined by Departmental Representative and considered rejected.

.7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.8 Verify field measurements and affected adjacent work and coordinate.

1.2 SUBMITTAL GENERAL REQUIREMENTS (Cont'd)

.9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.

.11 Submittal format: paper originals, or alternatively clear and fully legible photocopies or electronic files in PDF format of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental Representative. Poorly printed non-legible photocopies or facsimiles will not be accepted and be returned for resubmission.

.12 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.

.13 Keep one reviewed copy of each submittal document on site for duration of Work.

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, product data, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Number of Shop Drawings: submit sufficient copies of shop drawings which are required by the General Contractor and sub-contractors plus 2 copies which will be retained by Departmental Representative. Ensure sufficient numbers are submitted to enable one complete set to be included in each of the maintenance manuals specified, if applicable.

.3 Shop Drawings Content and Format:
.1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work have been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.

1.3 SHOP DRAWINGS AND PRODUCT DATA (Cont'd)

.3 (Cont'd)
.2 Shop Drawings Format:
.1 Opaque white prints or photocopies of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
.2 Product Data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
.3 Non or poorly legible drawings, photocopies or facsimiles will not be accepted and returned not reviewed.
.3 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
.4 Delete information not applicable to project on all submittals.

.4 Allow 10 calendar days for Departmental Representative's review of each submission.

.5 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.

.6 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected shop drawings, through same submission procedures indicated above.

.7 Accompany each submission with transmittal letter, containing:
.1 Date.
.2 Project title and project number.
.3 Contractor's name and address.
.4 Identification and quantity of each shop drawing, product data and sample.
.5 Other pertinent data.

.8 Submissions shall include:
.1 Date and revision dates.

1.3 SHOP DRAWINGS AND PRODUCT DATA (Cont'd)

.8 (Cont'd)
.2 Project title and project number.
.3 Name and address of:
.1 Subcontractor.
.2 Supplier.
.3 Manufacturer.
.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents. Where specified,ensure shop drawings are stamped and signed by a Professional Engineer registered in NL.
.5 Cross references to particular details of contract drawings and specifications section number for which shop drawing submission addresses.
.6 Details of appropriate portions of Work as applicable:
.1 Fabrication.
.2 Layout, showing dimensions, including identified field dimensions, and clearances.
.3 Setting or erection details.
.4 Capacities.
.5 Performance characteristics.
.6 Standards.
.7 Operating weight.
.8 Wiring diagrams.
.9 Single line and schematic diagrams.
.10 Relationship to adjacent work.

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

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

1.4 SCHEDULES, PERMITS AND CERTIFICATES

.1 Upon acceptance of bid, submit to Departmental Representative copy of Work Schedule and various other schedules, permits, certification documents and project management plans as specified in other sections of the Specifications.

.2 Submit copy of permits, notices, compliance Certificates received by Regulatory Agencies having jurisdiction and as applicable to the Work.

.3 Submission of above documents to be in accordance with Submittal General Requirements procedures specified in this section.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Fire Safety Requirements.

.2 Hot Work Permit.

1.2 RELATED WORK

.1 Section 01 35 28 - Health and Safety Requirements.

1.3 REFERENCES

.1 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
.1 NFPA 301 Code for Safety to Life from Fire on Merchant Vessels.
.2 NFPA 51B: Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.

1.4 DEFINITIONS

.1 Hot Work defined as:
.1 Welding work.
.2 Cutting of materials by use of torch or other open flame devices.
.3 Grinding with equipment which produces sparks.

1.5 SUBMITTALS

.1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days after notification of acceptance of bid.

.2 Submit in accordance with the Submittal General Requirements specified in Section 01 33 00 - Submittal Procedures.

1.6 FIRE SAFETY REQUIREMENTS

.1 Implement and follow fire safety measures during Work. Comply with following:
.1 National Fire Code.
.2 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 28 - Health and Safety Requirements.

1.6 FIRE SAFETY REQUIREMENTS (Cont'd)

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

1.7 HOT WORK AUTHORIZATION

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

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

.3 Upon review and confirmation that effective fire safety measures will be implemented during performance of hot work, Departmental Representative will provide authorization to proceed as follows:
.1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
.2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Departmental Representative. Follow Departmental Representative's directives in this regard.

.4 Requirement for individual authorization based on:
.1 Nature or phasing of work;
.2 Risk to Facility operations;
.3 Quantity of various trades needing to perform hot work on project or;
.4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.

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

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

1.8 HOT WORK PROCEDURES

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

.2 Procedures to include:
.1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of Section 01 35 28 - Health and Safety Requirements.
.2 Use of a Hot Work Permit system for each hot work event.
.3 The step by step process of how to prepare and issue permit.
.4 Permit shall be issued by Contractor's site Superintendent, or other authorized person designated by Contractor, granting permission to worker or subcontractor to proceed with hot work.
.5 Provision of a designated person to carryout a Fire Safety Watch for a minimum of 30 minutes immediately upon completion of the hot work.
.6 Compliance with fire safety codes and standards specified herein and occupational health and safety regulations specified in Section 01 35 28 - Health and Safety Requirements.

.3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.

.4 Hot Work Procedures shall clearly establish worker instructions and allocate responsibilities of:
.1 Worker(s),
.2 Authorized person issuing the Hot Work Permit,
.3 Fire Safety Watcher,
.4 Subcontractors and Contractor.

.5 Brief all workers and subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.
.1 Failure to comply with the established procedures may result in the issuance of a Non-Compliance Notification at Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 28 - Health and Safety Requirements.

1.9 HOT WORK PERMIT

.1 Hot Work Permit to include, as a minimum, the following data:

1.9 HOT WORK PERMIT (Cont'd)

.1 (Cont'd)
.1 Project name and project number.
.2 Building name, address and specific room or area where hot work will be performed.
.3 Date when permit issued.
.4 Description of hot work type to be performed.
.5 Special precautions required, including type of fire extinguisher needed.
.6 Name and signature of person authorized to issue the permit.
.7 Name of worker (clearly printed) to which the permit is being issued.
.8 Time Duration that permit is valid (not to exceed 8 hours). Indicate start time and date, and completion time and date.
.9 Worker signature with date and time upon hot work termination.
.10 Specified time period requiring safety watch.
.11 Name and signature of designated Fire Safety Watcher, complete with time and date when safety watch terminated, certifying that surrounding area was under continual surveillance and inspection during the full watch time period specified in Permit and commenced immediately upon completion of Hot Work.

.2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.

.3 Each Hot Work Permit to be completed in full and signed as follows:
.1 Authorized person issuing Permit before hot work commences.
.2 Worker upon completion of Hot Work.
.3 Fire Safety Watcher upon termination of safety watch.
.4 Returned to Contractor's Site Superintendent for safe keeping.

1.10 DOCUMENTS ON SITE

.1 Keep Hot Work Permits and Hazard Assessment Documentation on site for duration of work.

.2 Upon request, make available to Departmental Representative or to authorized safety representative for inspection.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 Section 01 35 24 - Special Procedures on Fire Safety Requirements.

1.2 SUBMITTALS

.1 Submit to Departmental Representative copies of the following documents, including updates:
.1 Site Specific Health and Safety Plan.
.2 Building Permit, compliance certificates and other permits obtained.
.3 Reports or directions issued by Federal and Provincial Inspectors and other Authorities having jurisdiction.
.4 Accident or Incident Reports.
.5 MSDS data sheets.
.6 Name of Contractor's representative designated to perform full time health and safety supervision on site.
.7 Letter of Good Standing/Certificate of Clearance form the provincial Workers Compensation Board.

.2 Upon request by Departmental Representative, submit reports and other documentation as stipulated to be produced and maintained by Federal and Provincial Occupational Health and Safety Regulations and as specified herein.

.3 Submit above documents in accordance with the submittal procedures specified in Section 01 33 00 - Submittal Procedures.

1.3 COVID-19

.1 Perform work in strict adherence to the most current Covid-19 protocols and requirements as stated by Provincial public health, Health Canada or any other authority having jurisdiction. Ensure that all safe work practices related to the COVID-19 pandemic are in place for the safety of all Contractor employees, all Coast Guard, and Departmental Representative personnel, and all members of the public that may interact with Contractor employees at work and during non-work hours for employees who are not residents of the local area.

.2 Reference Appendix A for CCA COVID-19 Standardized protocols for All Canadian Construction Sites.

1.4 COMPLIANCE REQUIREMENTS

.1 Comply with the Occupational Health and Safety Act for the Province of Newfoundland and Labrador, and the Occupational Health and Safety Regulations made pursuant to the Act.

.2 A copy of the Canada Labour Code Part II may be obtained at https://laws-lois.justice.gc.ca/eng/acts/L-2/

.3 Maintain Workers Compensation Coverage for duration of Contract. Submit Letter of Good Standing to Departmental Representative at time of submitting the Project Health and Safety Plan and with each Request for Progress Payment.

1.5 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, of property and for protection of persons and public circulating adjacent to work operations to extent that they may be affected by conduct of the Work.

.2 Enforce compliance by all workers, sub-contractors and other persons granted access to work site with safety requirements of Contract Documents, applicable Federal, Provincial, and local statutes, regulations, and ordinances, and with site specific Health and Safety Plan.

1.6 SITE CONTROL AND ACCESS

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

.2 Approve and grant access to site only to workers and authorized persons.
.1 Immediately stop non-authorized persons from circulating in construction areas and remove from site.
.2 Provide site safety orientation to all persons before granting access. Advise of site conditions, hazards and mandatory safety rules to be observed on site.

1.6 SITE CONTROL AND ACCESS (Cont'd)

.3 Secure site at night time to extent required to protect against unauthorized entry. Provide security guard where protection cannot be achieved by other means.

.4 Ensure persons granted access to site wear appropriate personal protective equipment (PPE) suitable to work and site conditions.
.1 Provide such PPE to authorized persons who require access to perform inspections or other approved purposes.

1.7 PROTECTION

.1 Carry out work placing emphasis on health and safety of the Public, Facility personnel, construction workers and protection of the environment.

.2 Erect safety barricades, lights and signage on site to effectively delineate work areas, protect pedestrian and vehicular traffic around and adjacent to work, and to create a safe working environment.
.1 Erect protective barriers and temporary lighting as required. See Section 01 56 00 - Temporary Barriers and Enclosures for minimum acceptable barricades.

.3 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

1.8 PERMITS

.1 Obtain building permit, licenses, compliance certificates and other permits as specified in Section 01 10 10 - General Instruction before and during progress of work. Post on site.

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

1.9 HAZARD ASSESSMENTS

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

1.9 HAZARD ASSESSMENTS (Cont'd)

.1 (Cont'd)
.1 Perform on-going assessments addressing new risks and hazards as work progresses including when new subtrade or sub-contractor arrives on site.
.2 Also, conduct assessment when the scope of work has been changed by Change Order and when potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety representative.

.2 Record results in writing and address in Health and Safety Plan.

.3 Keep copy of all assessments on site.

1.10 PROJECT/SITE CONDITIONS

.1 Safety hazards due to existing site conditions and conduct of work adjacent inside operational Facility are:
.1 conflicts with operating equipment and personnel using the facility.

.2 The following are known or potential project related safety hazards at site:
.1 Working in close proximity of water.
.2 Use of water crafts and floating platforms.
.3 Wet and slippery conditions.
.4 Inclement weather.
.5 Heavy equipment activity in the area.
.6 Heavy lifting.
.7 Working at heights.
.8 Cutting tools and other construction power tools.
.9 Overhead power/utility lines.
.10 Working around excavations.
.11 Underground power lines.

.3 Above list shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work. Include above items into hazard assessment process.

.4 Obtain from Departmental Representative, copy of MSDS Data sheets for existing hazardous products stored on site or used by Facility personnel.

1.11 HEALTH AND SAFETY MEETINGS

.1 Attend pre-construction health and safety meeting conducted by Departmental Representative. Have following persons in attendance:

1.11 HEALTH AND SAFETY MEETINGS (Cont'd)

.1 (Cont'd)
.1 Site Superintendent.
.2 Contractor's designated Health and Safety Site Supervisor.
.3 Departmental Representative will advise of date, time and location.

.2 Conduct health and safety meetings and tool box briefings on site. Hold on a regular and pre-scheduled basis during entire work in accordance with requirements and frequency as stipulated in provincial Occupational Health and Safety Regulations.
.1 Keep workers informed of potential hazards and provide safe work practices and procedures to be followed.
.2 Take written minutes and post on site.

1.12 HEALTH AND SAFETY PLAN

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

.2 Health and Safety Plan shall contain three (3) parts with the following information:
.1 Part 1 - Hazards: List of individual health risks and safety hazards identified by hazard assessment process.
.2 Part 2 - Safety Measures: Engineering controls, personal protective equipment and safe work practices used to mitigate hazards and risks listed in Part 1 of Plan.
.3 Part 3a: Emergency Response: standard operating procedures, evacuation measures and emergency response in the occurrence of an accident, incident or emergency.
.1 Include response to all hazards listed in Part 1 of Plan.
.2 Evacuation measures to complement the Facility's existing Emergency Response and Evacuation Plan. Obtain pertinent information from Departmental Representative.
.3 List names and telephone numbers of officials to contact including:
.1 General Contractor and all Subcontractors.

1.12 HEALTH AND SAFETY PLAN (Cont'd)

.2 (Cont'd)

.3 (Cont'd)

.2 Federal and Provincial Departments as stipulated by laws and regulations of authorities having jurisdiction and local emergency resource organizations, as needed base on nature of emergency.

.3 Officials from PWGSC and site Facility Management. Departmental Representative will provide list.

.4 Part 3b - Site Communications:

.1 Procedures used on site to share work related safety issues between workers, subcontractors, and General Contractor.

.2 List of critical tasks and work activities, to be communicated with the Facility Manager, which has risk of affecting tenant operations, or endangering health and safety of Facility personnel and the general public. Develop list in consultation with the Departmental Representative.

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

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

.4 Develop Plan in collaboration with subcontractors. Address work activities of all trades. Revise and update Plan as subcontractors arrive on site.

.5 Implement and enforce compliance with requirements of Plan for full duration of work to final completion and demobilization from site.

.6 As work progresses, review and update Plan. Address additional health risks and safety hazards identified by on-going hazard assessments.

.7 Post copy of Plan and updates, on site.

1.12 HEALTH AND SAFETY PLAN (Cont'd)

.8 Submission of the Health and Safety Plan and updates, to the Departmental Representative, is for review and information purposes only. Departmental Representative's receipt, review and any comments made of the Plan shall not be construed to imply approval in part, or in hold, of such Plan by Departmental Representative, and shall not be interpreted as a warranty of being complete and accurate, or as a confirmation that all health and safety requirements of the Work, have been addressed, and that it is legislative compliant. Furthermore, Departmental Representative's review of the Plan shall not relieve the Contractor of any of his legal obligations for Occupational Health and Safety provisions specified as part of the Work and those required by provincial legislation or those which would otherwise be applicable to the site of the Work.

1.13 SAFETY SUPERVISION AND INSPECTIONS

.1 Designate one person to be present on site at all times, responsible for supervising health and safety of the Work.
.1 Person to be competent in Occupational Health and Construction Safety as defined in the Provincial Occupational Health and Safety Act.

.2 Assign responsibility, obligation and authority to such designated person to stop work as deemed necessary for reasons of health and safety.

.3 Conduct regularly scheduled informal safety inspections of work site on a minimum bi-weekly basis.
.1 Note deficiencies and remedial action taken in a log book or diary.

.4 Cooperate with Facility's Health and Safety Site Coordinator responsible for the entire site, should one be designated by Departmental Representative.

.5 Keep inspection reports on site.

1.14 TRAINING

.1 Ensure that all workers and other persons granted access to site are competently trained and knowledgeable on:
.1 Safe use of tools and equipment.
.2 How to wear and use personal protective equipment (PPE).

1.14 TRAINING (Cont'd)

.1 (Cont'd)

.3 Safe work practices and procedures to be followed in carrying out work.

.4 Site conditions and minimum safety rules to be observed on site, as given at site orientation session.

.2 Maintain evidence and records of worker training.

1.15 MINIMUM SITE SAFETY RULES

.1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, the following safety rules shall be considered minimum requirements to be obeyed by all persons granted site access:

.1 Wear personnel protective equipment (PPE) appropriate to function and task on site; the minimum requirements being hard hat, safety footwear and eye protection.

.2 Immediately report unsafe activity or condition at site, near-miss accident, injury and damage.

.3 Maintain site in tidy condition.

.4 Obey warning signs and safety tags.

.2 Brief workers on site safety rules and on disciplinary measures to be taken by Departmental Representative for violation or non-compliance of such rules. Post rules on site.

.3 The following actions or conduct by Contractor, workers and sub-contractors will be considered as non conformance with the health and safety requirements of the contract for which a Non-compliance Notification will be issued to the General Contractor by the Departmental Representative:

.1 Failure to follow the minimum site safety rules specified above.

.2 Negligence resulting in serious injury or major property damage.

.3 Deliberate non-compliance with Federal and Provincial Acts and Regulations.

.4 Falsification of information in Workers Compensation Reports, safety reports and other health and safety related documents submitted to Departmental Representative or to Authority having jurisdiction.

.5 Possession of firearms on site.

.6 Possession of non-prescriptive illegal drugs or alcohol.

1.15 MINIMUM SITE SAFETY RULES (Cont'd)

.3 (Cont'd)
.7 Action, or lack thereof, resulting in the issuance of Warnings, Fines or Stop Work Orders from a Provincial Authority having jurisdiction.
.8 Violation of other specified health and safety rules and requirements as determined by Departmental Representative.

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

1.16 ACCIDENT REPORTING

.1 Investigate and report the following incidents and accidents:
.1 Those as required by Provincial Occupational Safety and Health Act and Regulations.
.2 Injury requiring medical aid as defined in the Canadian Dictionary of Safety Terms-1987, published by the Canadian Society of Safety Engineers (C.S.S.E)as follows:
.1 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
.3 Property damage in excess of $5000.00.
.4 Interruption to Facility operations with potential loss in excess of $5,000.00 to a Federal Department.
.5 Those which require notification to Workers Compensation Board or other regulatory agencies as stipulated by applicable law or regulations.

.2 Send written report to Departmental Representative for all above cases.

1.17 TOOLS AND EQUIPMENT SAFETY

.1 Routinely check and maintain tools, equipment and machinery for safe operation.

.2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.

.3 Tag and immediately remove from site items found faulty or defective.

1.18 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).

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

1.19 POSTING OF DOCUMENTS

.1 Post on site safety documentation as stipulated by Authorities having jurisdiction and as specified herein. Place in a common visible location.

1.20 SITE RECORDS

.1 Maintain on site a copy of all health and safety documentation and reports specified to be produced as part of the work and received from authorities having jurisdiction.

.2 Upon request, make available to Departmental Representative, or authorized safety representative, for review. Provide copy when directed by Departmental Representative.

1.21 NON-COMPLIANCE AND DISCIPLINARY MEASURES

.1 Immediately address and correct health and safety violations and non-compliance issues.

.2 Negligence or failure to follow occupational health and safety provisions specified in the Contract Documents and of those of applicable laws and regulations could result in disciplinary measures taken by the Departmental Representative against the General Contractor.

.3 PWGSC uses a system of Non-Compliance Notifications and Disciplinary Measures on projects as follows:
.1 A non-compliance notification is issued to the General Contractor, by the Departmental Representative, whenever there is a violation or non-compliance of the project's health and safety requirements and of those of Provincial and Federal regulations by any worker, subcontractor or other person to whom the Contractor has granted access to the work site.
.2 Non-compliance notifications are progressive in nature resulting in disciplinary measures imposed depending on the frequency, nature and severity of the infraction.
.3 Disciplinary measures could include:

1.21 NON-COMPLIANCE AND DISCIPLINARY MEASURES (Cont'd)

.3 (Cont'd)
.3 (Cont'd)
.1 Removal of the offending person or party from site;
.2 Financial penalties in the form of progress payment reduction or holdback assessments made against the Contract and;
.3 Taking the Work Out of Contractor's Hands in accordance with the General Conditions.

.4 Departmental Representative will make final decision as to what constitutes a violation and when to issue a Non-compliance Notification.

.5 Non-compliance Notifications issued by Departmental Representative shall not be construed as to overrule or disregard warnings, orders and fines levied against Contractor by a regulatory agency having jurisdiction.

.6 Each non-compliance notification issued is given a numerical rating based on a three level numbering system. Each level is progressive in nature to reflect:
.1 The seriousness of the infraction as viewed by the Departmental Representative.
.2 The degree of disciplinary action which will be taken by the Departmental Representative.

.7 Numerical ratings are as follows:
.1 Non-compliance Notification-Level No.1 Rating:
.1 Situation: occurrence of a first time infraction by a person or party on site.
.2 Action: verbal warning to General Contractor, documented in Departmental files and copy sent to the General Contractor.
.2 Non-compliance Notification-Level No.2 Rating:
.1 Situation:
.1 The second occurrence of a previous infraction by the same person or party on site or;
.2 Accumulation of several level-1 notifications for different infractions by the same person or party on site or;
.3 Non-action on the part of the Contractor or subcontractor to rectify non-compliance infractions previously identified in one or several level-1 notifications or;
.4 Violation or non observance of a Federal or Provincial safety Law or Regulation by subcontractor or Contractor or;

1.21 NON-COMPLIANCE AND DISCIPLINARY MEASURES (Cont'd)

.7 (Cont'd)

.2 (Cont'd)

.5 Negligence by a person or party resulting in injury or major property damage.

.2 Action: written notice to General Contractor complete with an order for immediate remedial action to be taken. Depending on the severity of the offence, the order may include request for the immediate removal of the offending person or party from site.

.3 Non-compliance Notification-Level No.3 Rating:

.1 Situation:

.1 Continued and repeated non-compliance with health and safety requirements by the General Contractor or by subcontractor(s) or;

.2 The occurrence of a serious accident on site resulting in serious bodily injury or death.

.2 Action:

.1 Formal letter issued to General Contractor with an order to "Immediately Stop Work" until so notified to proceed.

.2 Review of all non-compliance and/or accident occurrences in the project with possible investigation by the Department of PWGSC.

.3 Based on outcome of the review/investigation, Work could be suspended or taken out of the Contractor's hands in accordance with the General Conditions.

.3 The term "serious accident" used herein shall have the same meaning as defined in the Canadian Dictionary of Safety Terms - 1987 issue from the Canadian Society of Safety Engineers (C.S.S.E).

.8 Decision on which rating level to be placed on any given Non-Compliance Notification will be determined solely by Departmental Representative.

.9 Further details on the disciplinary system will be provided at the pre-construction Health and Safety meeting after acceptance of bid.

.10 Be responsible to fully brief workers and subcontractors on the operation and importance of this system.

1.22 DIVING OPERATIONS

.1 All diving work to comply fully with the requirements of CSA Z275.2-15, "Occupational Safety Code for Diving Operations", CSA Z275.4-02, "Competency Standards for Diving Operations" and CSA Z180.1-13, "Compressed Breathing Air and Systems."

.2 Dive personnel must meet the minimum competency requirements of the CSA Z275.4-12 (R2017) and all divers must possess a valid Category 1 Diving Certificate or an Unrestricted Surface-supplied Certificate.

.3 Diving in free-swim mode is not permitted at the work site.

.4 Divers must have a current (less then one year) validated medical examination certificate(s) from a licensed Diving Physician in Newfoundland and Labrador who is knowledgeable and competent in diving and hyperbaric medicine, for all dives.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.2 DEFINITIONS

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

1.3 FIRES

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

1.4 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS

.1 Do not bury rubbish and waste materials on site. Dispose at approved landfill sites as specified in Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.

.3 Store, handle and dispose of hazardous materials and hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.

.4 Dispose of construction waste materials and demolition debris, resulting from work, at approved landfill sites only. Carryout such disposal in strict accordance with provincial and municipal rules and regulations. Separate out and prevent improper disposal of items banned from landfills.

1.4 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS (Cont'd)

.5 Establish methods and undertake construction practices which will minimize waste and optimize use of construction materials. Separate at source all construction waste materials, demolition debris and product packaging and delivery containers into various waste categories in order to maximize recycling abilities of various materials and avoid disposal of debris at landfill site(s) in a "mixed state". Where recycling firms, specializing in recycling of specific materials exist, transport such materials to the recycling facility and avoid disposal at landfill sites.

.6 Communicate with landfill operator prior to commencement of work, to determine what specific construction, demolition and renovation waste materials have been banned from disposal at the landfill and at transfer stations.

1.5 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing regulations and requirements.

.4 Pumped water must meet applicable federal, provincial, and municipal standards before it can be discharged to a surface water body. If regulatory guidelines exceedences are noted, the Departmental Representative has the right to issue stop pumping instructions to the Contractor. Contractor will not be compensated for any delays associated with retrofitting equipment to meet guidelines.

.5 Provide control devices such as filter fabrics, sediment traps and settling ponds to control drainage and prevent erosion of adjacent lands. Maintain in good order for duration of work.

1.6 PERMITS

.1 All guidelines and instructions stated on permits must be strictly adhered to.

1.7 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial and federal environmental regulations.

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

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not blast under water or within 100 m of spawning beds.

.8 Do not refuel any type of equipment within 100 m of a water body. Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.

1.8 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this contract.

.2 Control emissions from equipment and plant to local authorities emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and around entire construction site.

.5 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.

.6 Have emergency spill response equipment and rapid clean-up kit, appropriate to work, at site. Locate adjacent to work and where hazardous materials are stored. Provide personal protective equipment as required for clean-up.

1.8 POLLUTION CONTROL (Cont'd)

.7 Report, to Federal and Provincial Department of the Environment, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment. Also notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

.8 Provide a floating debris containment boom whenever any of the Contractors methods of work allow for the potential of floating debris.

1.9 WILDLIFE PROTECTION

.1 Should nests of migratory birds in wetlands be encountered during work, immediately notify Departmental Representative for directives to be followed.
.1 Do not disturb nest site and neighbouring vegetation until nesting is completed.
.2 Minimize work immediately adjacent to such areas until nesting is completed.
.3 Protect these areas by following recommendations of Canadian Wildlife Service.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Inspection and testing, administrative and enforcement requirements.

.2 Tests and mix designs.

.3 Mock-ups.

.4 Mill tests.

.5 Equipment and system adjust and balance.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 78 00 - Closeout Submittals.

1.3 RESPONSIBILITY

.1 All materials testing (concrete, granulars, asphalt, etc.) required for the project shall be incidental to the contract price provided for the work.

1.4 INSPECTION

.1 Facilitate Departmental Representative's access to Work. If part of Work is being fabricated at locations other than construction site, make preparations to allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.

.3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed. Pay costs to uncover and make good such Work.

.4 In accordance with the General Conditions, Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.

1.5 INDEPENDENT INSPECTION AGENCIES

.1 Departmental Representative may engage and pay for service of Independent Inspection and Testing Agencies for purpose of inspecting and testing portions of Work except for the following which remain part of Contractor's responsibilities:
.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
.2 Inspection and testing performed exclusively for Contractor's convenience.
.3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
.4 Mill tests and certificates of compliance.
.5 Tests as specified within various sections designated to be carried out by Contractor under the supervision of Departmental Representative.
.6 Additional tests specified in Clause 1.4.2.

.2 Where tests or inspections by designated Testing Agency reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of corrected work.

.3 Employment of inspection and testing agencies by Departmental Representative does not relax responsibility to perform Work in accordance with Contract Documents.

1.6 ACCESS TO WORK

.1 Furnish labour and facility to provide access to the work being inspected and tested.

.2 Co-operate to facilitate such inspections and tests.

.3 Make good work disturbed by inspections and tests.

1.7 PROCEDURES

.1 As directed by the Departmental Representative, provide results from testing for review and acceptance prior to incorporating materials into the work.

.2 Submit representative samples of materials specified to be tested. Deliver in required quantities to Testing Agency. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

1.7 PROCEDURES (Cont'd)

.3 Provide labour and facilities to obtain and handle samples on site. Provide sufficient space on site for Testing Agency's exclusive use to store equipment and cure test samples.

1.8 REJECTED WORK

.1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.

.2 Make good damages to existing or new work, including work of other Contracts, resulting from removal or replacement of defective work.

1.9 TESTING BY CONTRACTOR

.1 Provide all necessary instruments, equipment and qualified personnel to perform tests designated as Contractor's responsibilities herein or elsewhere in the Contract Documents.

.2 At completion of tests, turn over 2 copies of fully documented test reports to Departmental Representative. Additionally, obtain other copies in sufficient quantities to enable one complete set of test reports to be placed in each of the maintenance manuals specified in Section 01 78 00 - Closeout Submittals.

.3 Submit mill test certificates and other certificates as specified in various sections.

.4 Furnish test results and mix designs as specified in various sections.

1.10 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in various trade sections. Include in each mock-up all related work components representative of final assembly.

.2 Construct in locations acceptable to Departmental Representative.

.3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

1.10 MOCK-UPS (Cont'd)

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.

.6 Remove mock-up at conclusion of Work or when directed by Departmental Representative unless approval is given to remain as part of Work.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 ACCESS

.1 Provide and maintain adequate access to project site.

.2 Maintain access roads for duration of contract and make good damage resulting from Contractors' use of roads.

1.2 CONTRACTOR'S SITE OFFICE

.1 Be responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Departmental Representative.

1.3 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.4 POWER

.1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.

.2 Supply and install all temporary facilities for power such as pole lines and underground cables to approval of local power supply authority.

1.5 WATER SUPPLY

.1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.

1.6 SCAFFOLDING

.1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2-2016.

.2 Erect scaffolding independent of walls. Remove when no longer required.

1.7 CONSTRUCTION SIGN AND NOTICES

.1 Contractor or subcontractor advertisement signboards are not permitted on site.

.2 Only notices of safety or instructions are permitted on site.

.3 Safety and Instruction Signs and Notices:
.1 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321-96 (R2006).

.4 Maintenance and Disposal of Site Signs:
.1 Maintain approved signs and notices in good condition for duration of project and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.8 REMOVAL OF TEMPORARY FACILITIES

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

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Barriers.

.2 Traffic Controls.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 FENCING

.1 Delineate all work sites with 2.44m high wire fencing. Maintain at all times throughout construction.

1.4 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around open excavations.

.2 Provide barricades along wharf structure when wheelguard is removed.

.3 Provide as required by governing authorities.

1.5 ACCESS TO SITE

.1 Provide and maintain access to adjacent harbour facilities.

1.6 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect the public.

1.7 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of work.

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY (Cont'd)

.2 Be responsible for damage incurred.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies requirements for board, lodgings and related services to be provided by the Contractor for the Site Monitor.

.2 Due to the location of this site, it is a requirement of this contract that the Contractor provide and pay for all board and lodgings for the Site Monitor's sole use, within five (5) kilometers of the site, for the duration of the project. Provide for and maintain acceptable living accommodations on site for the Site Monitor's sole use. The minimum requirement would be a self-contained unit with private sleeping accommodation and shower or bath or other arrangement approved by the Departmental Representative.

1.2 BOARD AND LODGINGS

.1 For the purpose of this contract board and lodgings shall include but not necessarily be limited to: sleeping accommodation, meals and dining facilities, washroom facilities, laundry facilities, electrical and heating service, linens and bedding, etc. and any reasonable service as directed by the Departmental Representative.

.2 Board and lodgings must be approved by the Departmental Representative and Contractor will cooperate in providing all services required to maintain an acceptable standard of living during construction period.

.3 The Contractor shall include all calendar days, including weekends and statutory holidays in determining the cost.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

.1 Comply with any or all applicable Agencies regulation of the Province of Newfoundland and Labrador, relating to the set up, servicing and maintenance of accommodations for the Site Monitor.

.2 Obtain and pay for any permits which may be required and comply to regulations of same.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 Use new material and equipment unless otherwise specified.

.2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
.1 name and address of manufacturer;
.2 trade name, model and catalogue number;
.3 performance, descriptive and test data;
.4 manufacturer's installation or application instructions;
.5 evidence of arrangements to procure.
.6 evidence of manufacturer delivery problems or unforseen delays.

.3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.

.4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 PRODUCT QUALITY AND REFERENCED STANDARDS

.1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.

.2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions.

1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES

.1 Acceptable Materials: When materials specified include trade names or trade marks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.

1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES (Cont'd)

.2 Alternative Materials: Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.

.3 Substitutions: After acceptance of bid, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.4 MANUFACTURERS INSTRUCTIONS

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturers instructions, so that Departmental Representative will designate which document is to be followed.

1.5 AVAILABILITY

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

1.6 WORKMANSHIP

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

.2 Remove unsuitable or incompetent workers from site as stipulated in General Conditions.

.3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.

.4 Coordinate work between trades and subcontractors.

.5 Coordinate placement of openings, sleeves and accessories.

1.7 FASTENINGS - GENERAL

.1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.

.2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.

.3 Keep exposed fastenings to minimum, space evenly and lay out neatly.

.4 Fastenings which cause spalling or cracking of material to which anchorage is made, are not acceptable.

.5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See Section 01 35 28 - Health and Safety Requirements on Health and Safety in this regard.

1.8 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and, use resilient washers with stainless steel.

1.9 STORAGE, HANDLING AND PROTECTION

.1 Deliver, handle and store materials in manner to prevent deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled materials in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work. Provide additional cover where manufacturer's packaging is insufficient to provide adequate protection.

1.9 STORAGE, HANDLING AND PROTECTION (Cont'd)

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Immediately remove damaged or rejected materials from site.

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

.2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.3 Prevent accumulation of wastes which create hazardous conditions.

.4 Provide adequate ventilation during use of volatile or noxious substances.

1.2 MATERIALS

.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 CLEANING DURING CONSTRUCTION

.1 Maintain project grounds and public properties in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.

.2 Provide on-site garbage containers for collection of waste materials and debris.

.3 Remove waste materials and debris from site on a daily basis.

1.4 FINAL CLEANING

.1 In preparation for acceptance of the Work perform final cleaning.

.2 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.

.3 Broom clean exterior paved and concrete surfaces; rake clean other surfaces of grounds.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Environmental Procedures.

.2 Section 06 05 73 - Wood Treatment.

.3 Section 31 53 13 - Timber Cribwork.

.4 Section 31 53 16 - Structural Timber.

1.2 WASTE MANAGEMENT PLAN

.1 Prior to commencement of work, prepare waste Management Workplan.

.2 Workplan to include:
- .1 Waste audit.
- .2 Waste reduction practices.
- .3 Material source separation process.
- .4 Procedures for sending recyclables to recycling facilities.
- .5 Procedures for sending non-salvageable items and waste to approved waste processing facility or landfill site.
- .6 Training and supervising workforce on waste management at site.
- .7 Approval letter(s) from Waste Disposal Site(s) Authority stating the disposal of waste associated with this project are acceptable to be disposed of at the facility.

.3 Workplan to incorporate waste management requirements specified herein and in other sections of the Specifications.

.4 Develop Workplan in collaboration with all subcontractors to ensure all waste management issues and opportunities are addressed.

.5 Implement and manage all aspects of Waste Management Workplan for duration of work.

.6 Revise Plan as work progresses addressing new opportunities for diversion of waste from landfill.

1.3 DISPOSAL REQUIREMENTS

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

1.3 DISPOSAL REQUIREMENTS (Cont'd)

.2 Disposal of waste, volatile materials, mineral spirits, oil, paint, paint thinner or unused preservative material into waterways, storm, or sanitary sewers is prohibited.

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

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

.5 Dispose of treated wood, end pieces, wood scraps and sawdust at a Provincially approved sanitary landfill.

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

.7 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.

.8 Transport waste intended for landfill in separated condition, following rules and recommendations of Landfill Operator in support of their effort to divert, recycle and reduce amount of solid waste placed in landfill.

.9 Sale of salvaged items by Contractor to other parties not permitted on site.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Project Record Documents as follows:
- .1 As-built drawings.
- .2 As-built specifications.
- .3 Reviewed shop drawings.

1.2 PROJECT RECORD DOCUMENTS

.1 Departmental Representative will provide two white print sets of contract drawings and two copies of Specifications Manual specifically for "as-built" purposes.

.2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.

.3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative at any time during construction.

.4 As-Built Drawings:

.1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set (also by use of red ink). Submit both sets to Departmental Representative. All drawings of both sets shall be stamped "As-Built Drawings" and be signed and dated by Contractor.

.2 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.

.3 Record following information:

- .1 Horizontal and vertical location of various elements in relation to CHS Chart Datum.
- .2 Field changes of dimension and detail.
- .3 All design elevations, sections, and details dimensioned and marked-up to consistently report finished installation conditions.
- .4 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings must also be marked-up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document.

1.2 PROJECT RECORD DOCUMENTS (Cont'd)

.4 (Cont'd)

.3 (Cont'd)

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

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

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.

.2 Changes made by Addenda and Change Orders.

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

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

1.3 DIVE INSPECTION

.1 Provide detailed dive inspection video of all below water work performed.

.2 Video shall be of high quality and contain audio and reference drawings and report of as-built conditions. Submit video to Departmental Representative for review prior to demobilizing from site.

.3 No separate payment will be made for inspection and reinspections if required to verify deficiencies have been corrected or if video submitted is of poor quality and/or does not provide adequate information in order for the Departmental Representative to determine if the work was completed in accordance with the contract documents.

1.4 SURVEY

.1 Provide georeferenced topographic and sounding survey of work.

1.4 SURVEY (Cont'd)

.2 Survey to be referenced to UTM coordinate system and hydrographic datum.

.3 Survey shall contain locations and elevations of all features installed in the work.

.4 Survey shall be submitted to Departmental Representative in a format compatible with AutoCAD software.

.5 No separate payment will be made for survey or subsequent surveys required to collect information missing from the initial submission.

1.5 REVIEWED SHOP DRAWINGS

.1 Compile 2 full sets of all reviewed shop drawings.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 03 20 00 - Concrete Reinforcing.

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

.3 Section 07 92 10 - Joint Sealing.

1.2 REFERENCES

.1 Canadian Standards Association (CSA).
.1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
.2 CAN/CSA-O86, Engineering Design in Wood (Limit States Design).
.3 CSA O121-08, Douglas Fir Plywood.
.4 CSA O151-09 Canadian Softwood Plywood.
.5 CSA O153, Poplar Plywood.
.6 CAN3-O188.0-M78, Standard Test Methods for Mat-Formed Wood Particleboards and Waferboard.
.7 CSA O437 Series-93, Standards for OSB and Waferboard.
.8 CSA S269.1, Falsework and Formwork.
.9 CAN/CSA-S269.3, Concrete Formwork.

1.3 SHOP DRAWINGS

.1 Submit shop drawings for formwork and falsework in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings. Comply with CAN/CSA-S269.3 for formwork drawings.

.3 Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.

.4 Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.

1.3 SHOP DRAWINGS (Cont'd)

.5 Each shop drawing submission shall bear stamp and signature of qualified Professional Engineer registered or licensed in Province of Newfoundland and Labrador, Canada.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

.4 Use sealers, form release and stripping agents that are non-toxic, biodegradable and have zero or low VOC's.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Formwork materials:
.1 Use formwork materials to CAN/CSA-A23.1.

.2 Form ties:
.1 Removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.3 Form release agent: non-toxic, chemically active release agents containing compounds that react with free lime present in concrete to provide water insoluble soaps, preventing set of film of concrete in contact with form.

.4 Falsework materials: to CSA-S269.1.
.1 Materials required to bear grade marks, or be accompanied with certificates, test reports or other proof of conformity.

.5 Premoulded joint fillers:
.1 Bituminous impregnated fibreboard to ASTM D1751 2018.

.6 Bond Breaker:

2.1 MATERIALS (Cont'd)

.6 (Cont'd)

.1 Impermeable tube formed of polyvinylchloride, rubber or similar material to the approval of the Departmental Representative. Internal diameter equal to dowels.

.7 Sealant: to Section 07 92 10 - Joint Sealing.

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 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

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

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

.6 Align form joints and make watertight. Keep form joints to minimum.

.7 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

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

.9 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.10 Clean formwork in accordance with CAN/CSA-A23.1, before placing concrete.

3.2 REMOVAL AND RESHORING

.1 Leave formwork in place for following minimum periods of time after placing concrete.
.1 5 days for beam soffits, slabs, decks and other structural members, or 3 days when replaced immediately with adequate shoring to standard specified for falsework.

.2 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

.3 Provide all necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.

.4 Space reshoring in each principal direction at not more than 3000 mm apart.

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

3.3 JOINT FILLERS

.1 Locate and form expansion joints as indicated. Install joint filler in all joints.

.2 Use 13 mm thick joint filler to separate slab-on-grade and extend joint filler from bottom of slab to within 25 mm of finished slab surface unless indicated otherwise.

3.4 JOINT SEALANT

.1 Fill expansion and control joints with sealer as per manufacturer instructions.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 03 10 00 - Concrete Forming and Accessories.

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

1.2 REFERENCES

.1 American Concrete Institute (ACI).
.1 ACI 315-99, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.

.2 American National Standards Institute/American Concrete Institute (ANSI/ACI).
.1 ANSI/ACI 315-80, Details and Detailing of Concrete Reinforcement.

.3 Canadian Standards Association (CSA).
.1 CAN/CSA-A23.1-14, Concrete Materials and Methods of Concrete Construction.
.2 CSA-A23.3-14, Design of Concrete Structures for Buildings.
.3 CSA G30.3-M1983, Cold Drawn Steel Wire for Concrete Reinforcement.
.4 CSA G30.5-M1983, Welded Steel Wire Fabric for Concrete Reinforcement.
.5 CSA G30.14-M1983, Deformed Steel Wire for Concrete Reinforcement.
.6 CSA G30.15-M1983, Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
.7 CAN/CSA-G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
.8 CAN/CSA-G40.21 Structural Quality Steels.
.9 CAN/CSA-G164-92 , Hot Dip Galvanizing of Irregularly Shaped Articles.
.10 CSA W186-M1990, Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.3 SHOP DRAWINGS

.1 Submit shop drawings including placing of reinforcement in accordance with Section 01 33 00 - Submittal Procedures.

1.3 SHOP DRAWINGS (Cont'd)

.2 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacings and locations of chairs, spacers and hangers. Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada. ANSI/ACI 315 and ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

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

.3 Reinforcing steel: weldable low alloy steel deformed bars to CAN/CSA-30.18.

.4 Cold-drawn annealed steel wire ties: to CSA G30.3.

.5 Welded steel wire fabric: to CSA G30.5. Provide in flat sheets only.

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

.7 Mechanical splices: subject to approval of Departmental Representative.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada. ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures unless indicated otherwise.

2.2 FABRICATION (Cont'd)

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

.3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

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

2.3 SOURCE QUALITY CONTROL

.1 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 2 weeks prior to commencing reinforcing work.

.2 Upon request inform Departmental Representative of proposed source of material to be supplied.

PART 3 - EXECUTION

3.1 FIELD BENDING

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

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

.3 Replace bars which develop cracks or splits.

3.2 PLACING REINFORCEMENT

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

.2 Use approved type chairs to locate the reinforcing steel at the proper grade.

.3 Tie reinforcement where spacing in each direction is:
.1 Less than 300 mm: tie at alternate intersections.
.2 300 mm or more: tie at each intersection.

.4 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.

3.2 PLACING REINFORCEMENT (Cont'd)

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

3.3 CLEANING

.1 Clean reinforcing before placing concrete to CAN/CSA-A23.1.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies requirements for supply, placing, finishing, protecting and curing cast-in-place concrete for mooring cleat blocks, and wharf decks.

1.2 RELATED SECTIONS

.1 Section 03 10 00 - Concrete Forming and Accessories.

.2 Section 03 20 00 - Concrete Reinforcing.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM).
.1 ASTM C109/C109M-16, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens).
.2 ASTM C260-10, Specification for Air-Entraining Admixtures for Concrete.
.3 ASTM C494/C494M, Specification for Chemical Admixtures for Concrete.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-51.34-M86a, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.3 Canadian Standards Association (CSA International).
.1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
.2 CAN/CSA-A23.2, Methods of Test for Concrete.
.3 CSA A283-06, Qualification Code for Concrete Testing Laboratories.
.4 CAN/CSA-A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005.
.1 CSA-A3001-13, Cementitious Materials for Use in Concrete.

1.4 CERTIFICATES

.1 Submit certificates in accordance with Section 01 33 00 - Submittal Procedures.

.2 Minimum 2 weeks prior to starting concrete work submit to Departmental Representative manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:

1.4 CERTIFICATES (Cont'd)

.2 (Cont'd)
- .1 Portland cement.
- .2 Blended hydraulic cement.
- .3 Supplementary cementing materials.
- .4 Grout.
- .5 Admixtures.
- .6 Aggregates.
- .7 Water.
- .8 Joint filler.
- .9 Joint Sealant.

.3 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA-A23.1.

.4 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1.

1.5 STORAGE OF MATERIALS

.1 Store materials to prevent contamination or deterioration.

.2 Provide adequate storage facilities for materials to ensure a continuous supply of these materials during batching operations.

.3 Store cement in weather-tight facility.

1.6 QUALITY ASSURANCE

.1 Minimum 2 weeks prior to starting concrete work, submit proposed quality control procedures to Departmental Representative for the following items:
- .1 Cold weather concrete.
- .2 Curing.
- .3 Finishes.
- .4 Formwork removal.
- .5 Joints.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Use trigger operated spray nozzles for water hoses.

.2 Designate a cleaning area for tools to limit water use and runoff.

.3 Carefully coordinate the specified concrete work with weather conditions.

1.7 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

.4 Ensure emptied containers are sealed and stored safely for disposal away from children.

.5 Prevent plasticizers, water-reducing agents and air-entraining agents from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with an inert, noncombustible material and remove for disposal. Dispose of all waste in accordance with applicable local, provincial and national regulations.

.6 Choose least harmful, appropriate cleaning method which will perform adequately.

1.8 MEASUREMENT FOR PAYMENT

.1 250mm Reinforced Concrete Deck: Supply and installation of reinforced concrete deck to be measured in square metres (m^2) calculated from actual field measurements, excluding area occupied by coping. Contractor to provide all plant, equipment, material and labour including concrete, reinforcing steel, steel edge angle, expansion and control joints. Include incidental to the unit price all costs for quality control testing, and demolition and removal required to perform the work.

.2 No separate payment will be made for any other ingredient or feature of concrete work, and all factors, including cold weather placement, formwork, reinforcing steel, anchor bolts, joint filler for control joints, cement, plant and labour will be considered as being included in the unit price for item.

.3 Mobilization to, accommodations at, and demobilization from the individual identified project locations to be incidental to the above pay items.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Cement to CAN/CSA-A3001.

.2 Supplementary cementing materials: to CAN/CSA-A3001.

.3 Cementitious hydraulic slag: to CAN/CSA-A3001.

.4 Water: to CAN/CSA-A23.1.

2.1 MATERIALS (Cont'd)

.5 Aggregates: to CAN/CSA-A23.1. Coarse aggregates to be normal density.

.6 Air entraining admixture: to ASTM C260.

.7 Chemical admixtures: to ASTM C494/C494M. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.

.8 Concrete retarders: to ASTM C494/C494M. Do not allow moisture of any kind to come in contact with the retarder film.

.9 Curing compound: curing compounds are not to be used.

.10 Premoulded joint fillers:
.1 Sponge rubber: to ASTM D1752, Type I, flexible grade.

.11 Gravel: Evenly graded pit run or crushed stone, maximum size, 50mm, with not more than 8% passing the 0.075 mm sieve.

2.2 MIXES

.1 Proportion concrete in accordance with CAN/CSA-A23.1, Clause 4.3.

.2 Proportion concrete to comply with Alternate 1, Table 2 in CAN/CSA-A23.1 and following requirements:
.1 Cement:
.1 Type as per CSA A23.1.
.2 Minimum compressive strength: 35 MPa at 28 days.
.3 Class of exposure: C1.
.4 20 mm nominal size coarse aggregate.
.5 Air content 5% to 8%.
.6 Density of air-dry concrete in range of 2240 kg/m^3 to 2400 kg/m^3.
.7 Slump at time and point of discharge 50 mm to 100 mm.

.3 When the Contractor wishes to purchase concrete from a ready mix concrete supplier, submit a letter from the supplier certifying the following:
.1 That plant and equipment is certified and all materials to be used in the concrete comply with the requirements of CAN/CSA-A23.1.

2.2 MIXES (Cont'd)

.3 (Cont'd)
.2 That the mix proportions selected will produce concrete of the specified quality and yield. Indicate mix proportions and sources of all materials.
.3 That the strengths will comply with the strengths specified herein.

.4 When the Contractor wishes to mix concrete on site, identify the source of aggregates and submit samples of fine and coarse aggregates to a testing laboratory for testing and trial mixes in order to determine a suitable mix design. The testing laboratory, at Contractor's cost, will test the trial mix for slump, air content, density and strength. The results of these tests will be submitted to the Departmental Representative to be reviewed for compliance with the specification. This review must be completed before permission to place concrete is given.
.1 The sand, gravel, water and air entraining agent should be mixed prior to the addition of cement and water reducer.

.5 Weigh aggregates, cement, water and admixture when batching. No alternative methods of measuring will be permitted.

.6 Do not use calcium chloride.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Obtain Departmental Representative's approval before placing concrete. Provide 24 hours notice prior to placing of concrete.

.2 Pumping of concrete is permitted only after approval of equipment and mix.

.3 Ensure reinforcement and inserts are not disturbed during concrete placement.

.4 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather.

.5 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

3.1 PREPARATION (Cont'd)

.6 Do not place load upon new concrete until authorized by Departmental Representative.

.7 Place gravel in accordance with Section 31 53 13 - Timber Cribwork.

3.2 CONSTRUCTION

.1 Comply with additional requirements of CAN/CSA-A23.1, Clause 4.1.1.5, for concrete exposed to seawater environments.

.2 Minimum concrete cover over reinforcing steel bars to be 75 mm.

.3 Place concrete in hot weather to CAN/CSA-A23.1.

.4 Place concrete in cold weather to CAN/CSA-A23.1.

.5 Keep concrete surfaces moist continually during protection stage.

.6 Place, consolidate, finish, cure and protect concrete to CAN/CSA-A23.1.

.7 Do not commence placing concrete until Departmental Representative has inspected and approved forms, foundations, reinforcing steel, joints, conveying, spreading, consolidation and finishing equipment and curing and protective methods.

3.3 FORMWORK

.1 Install and strip formwork to CAN/CSA-A23.1 and Section 03 10 00 - Concrete Forming and Accessories..

3.4 INSERTS

.1 Position and secure anchor bolts in formwork to maintain line and grades.

3.5 CONTROL JOINTS

.1 Construct control joints in locations shown on drawings or directed by Departmental Representative.

.2 All joints will be centred over a support. Joints will be made in a perfectly straight line.

.3 Cut control joint when concrete has hardened.

.4 Fill saw cut with joint sealer as specified.

3.6 PLACING CONCRETE

.1 Place and consolidate concrete to CAN/CSA-A23.1.

.2 Do not place concrete on or against frozen material.

.3 Place concrete continuously from joint to joint.

.4 Place concrete in a uniform heading, normal to the centreline. Limit rate of placing to that which can be finished before beginning of initial set.

3.7 STRIKE OFF AND CONSOLIDATION

.1 High speed internal poker vibrators shall be used to consolidate the concrete during placing. Final compaction of the surfaces shall be done by beam-type vibratory air screed as approved by Departmental Representative. A surcharge of approximately 65 mm of concrete will be maintained at the screed face during consolidation.

.2 Strikeoff and consolidation must be completed before excess water bleeds to the surface.

.3 Ensure that the concrete deck conforms to the elevations and slopes as shown on the drawings so that satisfactory drainage will result.

3.8 FINISHING

.1 Only ACI certified or other pre-approved concrete finishers are to be utilized in finishing all concrete works. All work is to be finished to CAN/CSA-A23.1, and as specified below.

.2 The surface will be brought to the specified level by means of darbying or bull floating which will be carried out immediately following screeding and must be completed before any bleed water is present on the surface. Surface tolerance to be 8 mm under a 3 metre straight edge.

.3 Provide slope as shown on the drawings to permit proper drainage of the concrete deck.

.4 Finish slabs to elevations indicated on drawings.

.5 Strike off the surface with a straight edge.

.6 Hand tamp low slump concrete with jitterbug.

.7 Darby or bull float the surface to smooth and level the concrete.

3.8 FINISHING (Cont'd)

.8 Allow bleed water or sheen to disappear.

.9 Float the surface by means of power and/or hand float where the concrete has hardened enough for a man to leave only slight footprints on the surface.

.10 Do not bring water and fines to the surface by over floating. Where extra floating is required the floating operation shall be repeated after the time interval necessary for any sheen to disappear and for concrete to set further.

.11 Steel trowel the concrete surfaces by means of power and/or hand trowel. Do not leave any hard, smooth, polished or burnished surface area.

.12 Do not bring water and fines to the surface by overtrowelling.

.13 After slight interval necessary for concrete to further harden, repeat the trowelling operation.

.14 Lightly broom surface with a soft bristle broom obtaining a fine and even textured finish with a non-slip finish. All brush strokes to be parallel across paving.

.15 The surface shall be true and accurate to a maximum tolerance of 1 mm in 500 mm.

3.9 PROTECTION AND CURING

.1 Cure to CAN/CSA-A23.1.

.2 Cure concrete by protecting it against loss of moisture, rapid temperature change and mechanical injury for at least 7 days after placement. After finishing operations have been completed, the entire surface of the newly placed concrete shall be covered by whatever curing medium is applicable to local conditions and approved by the Departmental Representative. The edges of concrete slabs exposed by removal of forms shall be protected with continuous curing treatment equal to the method selected for curing the slab and curb surfaces. Cure to CAN/CSA-A23.1. Have the equipment needed for adequate curing at hand and ready to install before actual concrete placement begins.

3.9 PROTECTION AND CURING (Cont'd)

.3 When air temperature is at or below 5°C or when there is a probability of its falling to that limit within 24 hours of placing (as forecast by the nearest official meteorological office) cold weather protection as per CAN/CSA-A23.1 will be provided and the following:

.1 Housing - Protect concrete by a windproof shelter of canvas or other material to allow free circulation of inside air around fresh touch formwork and provide sufficient space for removal of formwork for finishing. Supply approved heating equipment capable of keeping inside air at a constant temperature sufficiently high to maintain concrete at following curing temperatures.

.1 For initial 3 days at a temperature of not less than 15°C nor more than 27°C at surface.

.2 Maintain concrete at 10°C for an extra 4 days plus the initial 3 days.

.3 In addition to the protective housing, the concrete must be cured as outlined in Clause 3.9.2 above.

3.10 TESTING

.1 Contractor will appoint a concrete testing company to test all work under this section of specification as per CAN/CSA-A23.1.

.2 Cost of compressive strength tests shall be paid for by the Contractor.

.3 Testing company shall issue reports to Departmental Representative on quality of test cylinders.

.4 Notify Departmental Representative at least 7 days prior to start of placing concrete. Provide for testing purposes an adequate quantity of approved test cylinders.

.5 At least one (1) set of five (5) cylinders each shall be taken from 25 m^3 or fraction thereof of each day's pour, whichever is less. One (1) cylinder shall be tested at seven (7) days, two (2) shall be tested at twenty-eight (28) days, and the fourth and fifth cylinders will be kept in the event 28 day strength is not achieved and will be used to determine compressive strength at 56 days.

.6 Crate cylinders and deliver to the testing laboratory within 48 hours after casting in accordance with CAN/CSA-A23.1. Contractor will pay for crating and delivery of cylinders to the laboratory.

3.10 TESTING (Cont'd)

.7 If strength tests of test cylinder for any portion of the work falls below the specified compressive strength at 28 days, the Departmental Representative reserves the right to determine the acceptability of the concrete by performing additional field testing as outlined in CAN/CSA-A23.1.

.8 If concrete does not conform to drawings or specifications, take measures as directed to correct the deficiency. All costs of correctional measures will be at the expense of the Contractor.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for underwater placed concrete by tremie, or pumped concrete method for mass placed concrete in timber cribwork.

1.2 RELATED SECTIONS

.1 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 Section 03 10 00 - Concrete Forming and Accessories.

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

1.3 MEASUREMENT FOR PAYMENT

.1 Underwater Placed Concrete: Supply and installation of underwater placed concrete to be measured in cubic metres (m^3) calculated from actual volumes supplied in the field. Contractor to provide all plant, equipment, material and labour including concrete, formwork, divers, dive inspection video, pumper trucks and concrete additives.

.2 No separate payment will be made for any other feature of concrete work, and all factors, including cold weather placement, cement, plant and labour will be considered as being included in the unit price for item.

1.4 REFERENCES

.1 Canadian Standards Association (CSA International)
.1 CAN/CSA-A23.1/A23.2-00(August 2001), Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

1.5 DEFINITIONS

.1 Tremie concrete is placed underwater through tube called tremie pipe.
.1 Tremie pipe has a hopper at upper end and may be open ended or may have foot valve, plug or travelling plug to control flow of concrete.
.2 Concrete is placed in hopper and sufficient head of concrete is maintained in tremie pipe to provide desired rate of flow.

1.5 DEFINITIONS (Cont'd)

.2 Pumped concrete method of placing concrete underwater uses concrete pump with discharge line used in similar manner to a tremie pipe.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Concrete materials: to Section 03 30 00 - Cast-in-Place Concrete.

2.2 MIXES

.1 Use type 50 cement.

.2 Minimum compressive strength at 28 days: 20 MPa.

.3 Maximum water cement ratio by mass: 0.45.

.4 Nominal size of coarse aggregate: 40 mm.

.5 Fine aggregate content: 42 to 45 % of total aggregate mass.

.6 Slump at point and time of submergence discharge: 100 to 170 mm.

.7 Use an approved anti-washout agent.

.8 Admixtures: to approval of Departmental Representative. Use admixtures to correct deficiencies in mix or to improve placement of concrete.

.1 Departmental Representative may withdraw prior approval of admixture if conditions encountered during course of work indicate unsatisfactory results.

.2 Use anti-washout admixture for all underwater concrete. Submit product data sheet to Departmental Representative as per Section 01 33 00 - Submittal Procedures.

.3 Do not use calcium chloride or materials containing calcium chloride.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete and to CAN/CSA-A23.1/A23.2. Testing for concrete to CAN/CSA-A23.1/A23.2, except where specified otherwise.

.2 Place concrete in one continuous operation to full depth required. Construction joints are permissible at Elev. +0.4 m.
.1 Supply complete equipment for every phase of operation.
.2 Provide sufficient supply of concrete to complete pour without interruption.

.3 Tremie method.
.1 Provide water-tight tremie pipe sized to allow free flow of concrete. Diameter of tremie pipe to be minimum 200 mm and minimum eight times maximum size of coarse aggregate.
.2 Provide hopper at top of tremie pipe and means to raise and lower tremie pipe.
.3 Provide plug or foot valve at bottom of tremie pipe to permit filling pipe with concrete initially.
.4 Provide minimum of one tremie pipe for every 30 m^2 of plan area and to maximum spacing of 6 m centre to centre. Do not move tremie pipes laterally through concrete.
.5 Start placement with tremie pipe full of concrete. Keep bottom of pipe buried minimum 300 mm in freshly placed concrete. Control rate of flow by varying depth of pipe bottom in concrete.
.6 If seal is lost, allowing water to enter pipe, withdraw pipe immediately. Refill pipe, and continue placing as specified.
.7 If tremie operation is interrupted so that horizontal construction joint has to be made, cut surface laitance by jetting, within 24 to 36 hours and remove loose material by pumping or air lifting before placing next lift.
.8 Do not place concrete in flowing water having current exceeding 3 m/min. Do not vibrate, disturb or puddle concrete after placement.

.4 Pumped concrete method.
.1 Follow procedures as for tremie method in placing concrete using discharge line from concrete pump as tremie pipe.
.2 Pump discharge line to have minimum diameter of 125 mm.

3.1 INSTALLATION (Cont'd)

.5 Placement of Bag Concrete is not permissible.

.6 Contractor shall provide to Departmental Representative for review and approval dive inspection video to verify extent and quality of void repairs within 5 calendar days after completion of work. Video shall contain video and audio clearly identifying repair locations. Upon review by the Departmental Representative if repairs are considered to be incomplete or unsatisfactory the Contractor will make good deficiencies at no additional cost to the Contract.

3.2 TESTING

.1 Contractor will appoint a concrete testing company to test all work under this section of specification as per CAN/CSA-A23.1.

.2 Cost of compressive strength tests shall be paid for by the Contractor.

.3 Testing company shall issue reports to Departmental Representative on quality of test cylinders.

.4 Notify Departmental Representative at least 7 days prior to start of placing concrete. Provide for testing purposes an adequate quantity of approved test cylinders.

.5 At least one (1) set of five (5) cylinders each shall be taken from 25 m^3 or fraction thereof of each day's pour, whichever is less. One (1) cylinder shall be tested at seven (7) days, two (2) shall be tested at twenty-eight (28) days, and the fourth and fifth cylinders will be kept in the event 28 day strength is not achieved and will be used to determine compressive strength at 56 days.

.6 Crate cylinders and deliver to the testing laboratory within 48 hours after casting in accordance with CAN/CSA-A23.1. Contractor will pay for crating and delivery of cylinders to the laboratory.

.7 If strength tests of test cylinder for any portion of the work falls below the specified compressive strength at 28 days, the Departmental Representative reserves the right to determine the acceptability of the concrete by performing additional field testing as outlined in CAN/CSA-A23.1.

3.2 TESTING (Cont'd)

.8 If concrete does not conform to drawings or specifications, take measures as directed to correct the deficiency. All costs of correctional measures will be at the expense of the Contractor.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
- .1 ASTM A53/A53M-12, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
- .2 ASTM A269-15, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .3 ASTM A307-14, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .4 ASTM A123/A123M-15-Zinc (hot dip galvanized) Coatings on Iron and Steel Procedures.
- .5 ASTM F3125-Latest Edition, Specification for Steel 120,000 PSI Tensile Strength.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
- .2 CAN/CGSB-1.181-99 Ready-Mixed, Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA International).
- .1 CAN/CSA-G40.20/G40.21-13 , General Requirements for Rolled or Welded Structural Quality Steel.
- .2 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.
- .3 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
- .4 CSA W59-13,Welded Steel Construction (Metal Arc Welding).

.4 The Environmental Choice Program.
- .1 CCD-047a-98, Paints, Surface Coatings.
- .2 CCD-048-98, Surface Coatings - Recycled Water-borne.

1.3 SUBMITTALS

.1 Product Data:

1.3 SUBMITTALS (Cont'd)

.1 (Cont'd)
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
.1 For finishes, coatings, primers and paints.

.2 Shop Drawings
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 QUALITY ASSURANCE

.1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:
.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Protection:
.1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.
.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

1.6 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

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

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

1.7 MEASUREMENT FOR PAYMENT

.1 No measurement for payment shall be made under this section. Include all costs of items required under this section in unit costs for which items are required.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.

.2 Steel pipe: to ASTM A53/A53M double extra strong, black galvanized finish.

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts and anchor bolts: to ASTM A307.

.6 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

2.2 FABRICATION (Cont'd)

.4 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/m^2 to ASTM A123/A123M-90. All steel used shall be hot dipped galvanized.

.2 Shop coat primer: to CAN/CGSB-1.40.

.3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

2.4 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

.2 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.

.3 Clean surfaces to be field welded; do not paint.

.4 Prepare and coat outdoor fabrications as follows:
.1 Surface Preparation: Abrasive blast to SSPC-SP-10 near white metal to achieve an anchor profile of 2.0 mils.
.2 Primer: One coat of Amercoat 68A zinc epoxy primer to 3 mils dry film thickness, or approved equal.
.3 Intermediate Coat: One coat of Amerlock #2 surface tolerant epoxy to 6 mils dry film thickness, or approved equal.
.4 Top Coat: One coat of Amershield abrasion resistant urethane to 4 mils dry film thickness, or approved equal. color to be safety yellow for bollards, black for other applications unless noted.

2.5 STEEL H-PILE GUIDES

.1 Steel H-Pile Guides and floating Dock Attachment to H-Pile Guide: Sizes and shapes as indicated.

.2 Galvanize all steel in H-Pile guide and floating dock attachment to H-Pile guide after fabrication.

.3 All hardware shall be galvanized.

2.6 DOCK-TO-DOCK FLIP PLATE

.1 Dock-to-Dock Flip Plate: Sizes and shapes as indicated.

.2 All connection plates shall be galvanized.

.3 All hardware shall be galvanized.

2.7 GALVANIZED FLOATING DOCK ATTACHMENTS

.1 Galvanized Floating Dock Attachments: Sizes and shapes as indicated, including dock-to-dock connections and chain connection of docks to marginal wharf.

.2 Galvanize after fabrication.

.3 All hardware to be galvanized.

2.8 GALVANIZED CONCRETE DECK EDGE ANGLE

.1 Galvanized Concrete Deck Edge Angle: Sizes and shapes as indicated.

PART 3 - EXECUTION

3.1 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 Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Provide components for building by other sections in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CAN/CSA-S16.1, or weld.

.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

3.1 ERECTION (Cont'd)

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 STEEL H-PILE GUIDES

.1 Install new galvanized steel H-Pile guide and attachment of floating dock to H-Pile guide as indicated.

3.3 DOCK-TO-DOCK FLIP PLATE

.1 Install new galvanized flip plate between floating docks as indicated.

3.4 GALVANIZED FLOATING DOCK ATTACHMENTS

.1 Install new galvanized floating dock attachments in locations as indicated.

3.5 GALVANIZED CONCRETE DECK EDGE ANGLE

.1 Install new galvanized concrete deck edge angle as indicated.

3.6 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 31 53 16 - Structural Timber.

1.2 REFERENCES

.1 Latest edition of CAN3-S157 Strength Design in Aluminum.

.2 Latest edition of AWS D1.2 Structural Welding Code - Aluminum.

.3 Canadian Standards Association (CSA (International).
.1 Latest edition of CAN/CSA-S6 Canadian Highway Bridge Design Code.
.2 Latest edition of CSA W47.2 Certification of Companies for Fusion Welding of Aluminum.
.3 Latest edition of CSA W59.2 Welded Aluminum Construction.

.4 Latest edition of The Aluminum Association - Aluminum Design Manual.

.5 Latest edition of AASHTO - LRFD Guide Specifications for the Design of Pedestrian Bridges.

1.3 SUBMITTALS

.1 Shop Drawings
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. All shop drawings shall be stamped by a Professional Engineer licensed to practice in the province of Newfoundland and Labrador.
.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, gangway reactions, reinforcement, details, and accessories.

.2 Company and Welder Certifications and Welding Procedures
.1 Submit proof of company W47.2 certification at with shop drawings.
.2 Submit welder performance qualification within a minimum of two weeks prior to starting welding.

1.3 SUBMITTALS (Cont'd)

.3 Before preparation and submission of detailed shop drawings as described in 1.3.1, submit for approval concept drawings illustrating the proposed upper connection of the gangway to the timber crib and the proposed lower connection of the gangway to the floating dock. The concept drawings shall be in the form of isometric drawings, photographs of similar connections previously supplied, two dimensional drawings, or any other method that illustrates the concept of the proposed connection.

1.4 QUALIFIED SUPPLIERS

.1 Suppliers for the aluminum gangway must demonstrate at least three years of experience fabricating these types of structures. Submit evidence of required experience to the Departmental Representative.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:
.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
.2 Protect gangway from damage until completion of the work. Any damage to the gangway shall be repaired by the Contractor.

1.6 WARRANTY

.1 The gangway manufacturer shall warrant their structure to be free of corrosion, design, material and workmanship defects for a period of three years from the date of project completion.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Gangway shall be constructed of aluminum structural shapes, tubing, plates and bars of CSA aluminum alloy number GS11N (Alcan alloy 6061-T6) or have an equivalent yield strength of 240 MPa in the pre-welded condition and 110 MPa in the heat affected zone. Gangway design shall compensate for all effects on mechanical properties produced by the welding process. The minimum thickness of all structural members shall be 3.0 mm.

2.1 MATERIALS (Cont'd)

.2 Aluminum decking shall be serrated bar grating type or 38 mm by 200 mm triple I beam slip resistant self mating extruded aluminum planks with no gaps. Minimum walking surface coefficient of friction shall be 0.93.

2.2 DESIGN REQUIREMENTS

.1 Gangway span shall be 6.0 m (straight line dimension parallel to floating dock) and shall be measured from the edge of the crib wharf to the centre of bearing of the gangway on the floating dock.

.2 Gangway shall have a clear width of 1.2 m between structural elements.

.3 The gangway structural system shall consist of two edge HSS members at each side of the gangway. The aluminum decking shall span between the edge members or between floor beam structural members running between the edge members. Alternatively, the gangway structural system shall consist of a truss composed of HSS members. The deck shall be supported on floor beams that span between panels points along the bottom chord of the truss. If the truss is intended to act as a safety barrier the top of the top chord of the truss shall be not less than 1.37 m above the high point of the deck surface. A truss system intended to act as a safety barrier shall be designed to withstand the simultaneously applied lateral and vertical loads as indicated by CSA- S6. These barrier loads shall be applied simultaneously with all other loads on the truss including dead loads, live loads, and environmental loads.

.4 Safety Barrier:
.1 If a truss system is not used and designed to act as a safety barrier, a separate safety barrier along each side of gangway shall be shop installed to meet CSA-S6 requirements for pedestrian barriers. The barrier shall be located on both sides of the gangway up to a height of 1.37 m.
.2 The barrier shall consist of HSS aluminum members.
.3 The barrier shall be designed to withstand the simultaneously applied lateral and vertical loads as indicated by CSA-S6.
.4 The barrier system shall include a 38 mm diameter round HSS handrail on each side of the gangway.
.5 Toe Plate:

2.2 DESIGN REQUIREMENTS (Cont'd)

.4 (Cont'd)

.5 (Cont'd)

.1 The gangway shall be installed complete with aluminum toe plates measuring 6.4 mm x 102 mm which shall run the full length of the gangway.

.5 **Elevation Difference:**

.1 **The upper support shall be at the wharf deck elevation of +3.5 m. The top surface of the gangway deck at the upper end shall be flush with the top surface of concrete deck and timber coping.**

.2 **The lower support will vary with the tides from 0.00 low normal tide to extreme high tide elevation of +2.20 m.**

.6 Design shall be done by a qualified Professional Engineer licensed to practice in Newfoundland and Labrador. Design shall be done in accordance with CAN/CSA-S6 and CSA S157.

.7 Design Loads:

.1 All design loads, factors, load combinations and limit states required by the Canadian Highway Design Bridge Code shall be considered and evaluated. Design shall also be in accordance with the pertinent sections of CAN3-S157 where applicable, with the code having more stringent requirements taking precedence.

.2 Dead Loads: The gangway structure shall be designed considering its own dead loads.

.3 Environmental Loads: wind and other environmental loads shall be in accordance with the values provided in the Canadian Highway Bridge Design Code for the location nearest the project site as indicated on the drawings. If there are several locations provided in the Canadian Highway Bridge Design Code near the project site than the most critical loads shall be used. The design environmental loads shall be indicated on the drawings.

.4 A uniformly distributed pedestrian live load of 4.8 kPa shall be applied to the gangway deck area.

.5 The gangway shall be designed for torsional stresses resulting from wave action causing the floating dock to roll, therefore losing contact with one of the two supports at the lower end of the gangway. The design shall consider strength and fatigue regarding these torsional stresses.

.8 Upper Connection:

2.2 DESIGN REQUIREMENTS (Cont'd)

.8 (Cont'd)

.1 The upper support connection shall be a hinge type connection allowing the gangway to rotate about the connection. The contractor shall design, supply and install the means of connecting the gangway into the timber coping, concrete deck, and timber crib. The upper connection shall be designed so that the upper surface of the gangway deck shall be flush with the upper surface of the concrete deck and timber coping.

.2 The upper connection shall include a hinged plate covering the gap between the gangway and the wharf. The plate shall be aluminum with a checkered diamond pattern. The plate shall be hinged at the centre of the connection. The portion of plate assembly on the side of the wharf shall be anchored into the wharf. The means of this connection shall be designed by the gangway supplier. The portion of the plate assembly on the side of the gangway shall be left free to slide over the gangway deck with rotation of the gangway caused by the rise and fall of the tide.

.3 Submit detailed shop drawings for the upper connection stamped by an engineer licensed to practice in Newfoundland and Labrador, including a current Permit to Practice from PEGNL. The shop drawings shall include the means of anchorage into the marginal wharf.

.9 Lower Connection:

.1 The lower support connection shall be designed to allow free movement of the lower end of the gangway along the horizontal surface of the floating dock. This connection shall be either a wheel that rolls along the floating dock or a smooth curved bearing surface that is intended to slide along a corresponding smooth surface provided on the floating dock.

.2 This connection shall include guide rails attached to the floating dock designed to ensure that the lower connection of the gangway remains centred on the floating dock. These guides shall consist of aluminum angles, steel angles with UHMW fender pads on the sides of the angles to ensure no contact between aluminum and steel, or some other method approved in writing by the Departmental Representative. The supplier shall design the attachment of the guides to the floating dock.

2.2 DESIGN REQUIREMENTS (Cont'd)

.9 (Cont'd)
.3 The lower connection, including the guide rails, shall be designed to accommodate to full range of movement in the connection that will occur with rise and fall of the tide, plus an additional 300 mm of horizontal movement at each end of the connection as a safety factor.
.4 Submit detailed shop drawings for the lower connection stamped by an engineer licensed to practice in Newfoundland and Labrador. The shop drawings shall include the means of anchorage into the floating dock.

.10 Lifting Lugs:
.1 Provide four lifting lugs for lifting of the gangway, two at each end of the gangway. The lugs shall be accessible by a crane. The lugs and the attachment of the lugs to the structural system of the gangway shall be designed to safely transfer the full weight of the gangway to a crane connected at the four lug locations.

2.3 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Do aluminum welding work in accordance with the latest edition of CSA W59.2 or AWS D1.2.

.3 Companies and individuals doing welding shall be certified under the latest edition of CSA W47.2.

.4 Welds exposed to view shall be continuous and meet the visual acceptance criteria of CSA W59.2.

.5 Welding electrodes shall be in conformance with ANSI/AWS Standard A5.10, alloy type 5356 and shall be certified by the Canadian Welding Bureau (CWB).

PART 3 - EXECUTION

3.1 ERECTION

.1 Erect gangway and upper and lower connections to timber crib and floating dock in accordance with approved shop drawings

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 American Wood-Preservers' Association (AWPA).
.1 AWPA M2-16, Standard Inspection of Treated Wood Products.
.2 AWPA M4-15, Standard for the Care of Preservative-Treated Wood Products.

.2 Canadian Standards Association (CSA).
.1 CSA O80 Series-15, Wood Preservation.
.2 CSA O80.201-97, Standard for Hydrocarbon Solvents for Preservatives. This Standard covers hydrocarbon solvents for preparing solutions of preservatives. This is not stand alone specification
.3 CSA O322-15, Procedure for Certification of Pressure-Treated Wood Materials for Use in Preserved Wood Foundations.

1.2 QUALITY ASSURANCE

.1 Testing of products treated with preservative by pressure impregnation will be carried out by the manufacturer's testing laboratory to AWPA M2, and revisions specified in CSA O80 Series, Supplementary Requirements to AWPA M2.

.2 Inspection and testing of timber materials will be carried out by the manufacturer.

1.3 CERTIFICATES AND ASSAY RETENTION RESULTS

.1 Submit certificates and assay retention results in accordance with Section 01 33 00 - Submittal Procedures.

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

1.4 WASTE MANAGEMENT AND DISPOSAL

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

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

.3 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Departmental Representative.

.4 Dispose of unused wood preservative material at official hazardous material collections site approved by Departmental Representative.

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

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Preservative: to CSA-O80 Series.

.2 Solvent: to CSA-O80.201.

2.2 PRESERVATIVE TREATMENTS

.1 Treat to CSA 080, commodity standard 080.18, Table 1 and its referenced standards, with the following minimum assay retentions:

Species	CCA kg/m3	ACA kg/m3
Dimension Timber		
-Coast Douglas Fir	24	24
-Western/Eastern Hemlock	24	24
-Hemlock, Douglas Fir (Wheelguard, Wheelguard Blocking)	10	10
-Birch or Maple	Treat to Refusal	

Note: Birch or maple must be air dried for six (6) months in weather protected environment or kiln dried.

PART 3 - EXECUTION

3.1 FIELD TREATMENT

.1 Handle pressure treated material in a manner that will avoid damage which may expose untreated material. Rejection of any damaged material may result and replacement will be at the Contractor's expense.

.2 Fill all bored bolt holes with preservative immediately after boring. Use a pressurized container with hose to apply preservative, or some alternate method acceptable to the Departmental Representative.

.3 Fill all unused bored holes and spike holes with tight fitting treated wooden plugs.

3.2 CUTTING

.1 Field cuts, if authorized, are to receive three (3) liberal coats of the applicable preservative applied to dry wood on each application.

3.3 FIELD QUALITY

.1 Timber which contain rot, splits exposing untreated wood, excessive wane, or timbers which cannot be fastened in the work so as to be structurally sound are unacceptable.

.2 The Departmental Representative reserves the right to carry out field testing of treated timber for penetration and retention of preservative. Timber not meeting the requirements of the specification may be rejected for use under the contract.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.3 Section 01 45 00 - Quality Control.

.4 Section 01 61 00 - Common Product Requirements.

.5 Section 07 92 10 - Joint Sealing.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM C 919-19, Standard Practice for Use of Sealants in Acoustical Applications.

.2 Canadian General Standards Board (CGSB).
.1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
.2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
.3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
.4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
.5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus).
.1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 General Services Administration (GSA) - Federal Specifications (FS).
.1 FS-SS-S-200-E(2), Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

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

1.3 REFERENCES (Cont'd)

.5 (Cont'd)
.1 Material Safety Data Sheets (MSDS).

.6 Transport Canada (TC).
.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.4 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's product to describe.
.1 Caulking compound.
.2 Primers.
.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.4 Submit duplicate samples of each type of material and colour.

.5 Cured samples of exposed sealants for each color where required to match adjacent material.

.6 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.
.1 Instructions to include installation instructions for each product used.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 PROJECT CONDITIONS

.1 Environmental Limitations:
.1 Do not proceed with installation of joint sealants under following conditions:
.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.

1.6 PROJECT CONDITIONS (Cont'd)

.1 (Cont'd)
.1 (Cont'd)
.2 When joint substrates are wet.

.2 Joint-Width Conditions:
.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:
.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.

.3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Urethanes One Part.
.1 Non-Sag to CAN/CGSB-19.13, Type 2.

.2 Acoustical Sealant.

2.2 SEALANT MATERIAL DESIGNATIONS (Cont'd)

.2 (Cont'd)
.1 To ASTM C 919.

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

2.3 SEALANT SELECTION

.1 Perimeters of exterior openings where frames meet exterior facade of building: Sealant type: CAN/CGSB-19.13-M87.

.2 Expansion and control joints in exterior surfaces of poured-in-place concrete walls: Sealant type: CAN/CGSB-19.13-M87.

.3 Seal interior perimeters of exterior openings as detailed on drawings: Sealant type: CAN/CGSB-19.13-M87.

.4 Interior control and expansion joints in floor surfaces: Sealant type: CAN/CGSB-19.13-M87.

.5 Perimeters of interior frames, as detailed and itemized: Sealant type: CAN/CGSB-19.13-M87.

.6 Exposed interior control joints in drywall: Sealant type: CAN/CGSB-19.13-M87.

2.4 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

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

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

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

3.6 APPLICATION

.1 Sealant.

3.6 APPLICATION (Cont'd)

.1 (Cont'd)

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup.

.1 Clean adjacent surfaces immediately and leave Work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 45 00 - Testing and Quality Control.

.3 Section 01 61 00 - Common Product Requirements.

.4 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.5 Section 03 10 00 - Concrete Forming and Accessories.

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

.7 Section 07 92 10 - Joint Sealants.

1.3 REFERENCES

.1 Canadian General Standards Board (CGSB).

.2 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus)
.1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
.1 Material Safety Data Sheets (MSDS).

.5 Transport Canada (TC).
.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.4 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's product to describe.
.1 Caulking compound.
.2 Primers.

1.4 SUBMITTALS (Cont'd)

.2 (Cont'd)
.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.
.1 Instructions to include installation instructions for each product used.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

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

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material, in appropriate on-site bins, for recycling in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Departmental Representative.

1.6 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

.8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.9 Fold up metal banding, flatten, and place in designated area for recycling.

1.7 PROJECT CONDITIONS

.1 Environmental Limitations:
.1 Do not proceed with installation of joint sealants under following Conditions:
.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
.2 When joint substrates are wet.

.2 Joint-Width Conditions:
.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:
.1 Do not proceed with installation of joint sealants until contaminants capable of interferring with adhesion are removed from joint substrates.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

.1 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Polysulfide Two Part.
.1 Self-Leveling to CAN/CGSB-19.24, Type 1, Class B, colour to match concrete.

.2 Polysulfide Two Part.
.1 Non-Sag to CAN/CGSB-19.24, Type 2, Class B, colour to match concrete.

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

2.3 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

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

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

3.2 SURFACE PREPARATION (Cont'd)

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

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

3.6 APPLICATION

.1 Sealant.

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

3.6 APPLICATION (Cont'd)

.2 Curing.
.1 Cure sealants in accordance with sealant manufacturer's instructions.
.2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup.
.1 Clean adjacent surfaces immediately and leave Work neat and clean.
.2 Remove excess and droppings, using recommended cleaners as work progresses.
.3 Remove masking tape after initial set of sealant.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 This Section covers items common to Sections of Division 26. This section supplements requirements of other Divisions.

.2 Work Included: This contract includes all work related to the supply and installation of equipment. Work included is described as follows:
.1 Maintain existing electrical throughout construction.
.2 Install new receptacles and pedestals.
.3 Additional related work as indicated on drawings and specification.
.4 Coordinate with utility as required.

1.2 CODES AND STANDARDS

.1 Do complete installation in accordance with Canadian Electrical Code CSA C22.1.

.2 Do underground systems in accordance with CAN/CSA C22.3 No.7-15 except where specified otherwise.

.3 All electrical work to be carried out by qualified licensed electricians or apprentices as per the conditions of the Provincial Act respecting manpower, vocational training and qualifications. Employees registered in a provincial apprentice's program shall be permitted under the direct supervision of a qualified licensed electrician to perform specific tasks. The activities permitted shall be determined based on the level of training attained. The work of this division shall be carried out by a contractor who holds a valid Electrical Contractor's License as issued by the Province in which the work is being constructed.

1.3 CARE, OPERATION AND START-UP

.1 Instruct operating personnel in the operation, care and maintenance of equipment.

.2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components.

1.3 CARE, OPERATION AND START-UP (Cont'd)

.3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.4 VOLTAGE RATINGS

.1 Operating voltages: to CAN3-C235-83.

.2 Distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.5 PERMITS, FEES AND INSPECTION

.1 Submit to Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.

.2 Pay associated fees.

.3 Notify Departmental Representative of changes required by Electrical Inspection Department prior to making changes.

.4 Furnish Certificates of Acceptance from Electrical Inspection Department on completion of work.

1.6 MATERIALS AND EQUIPMENT

.1 Provide materials and equipment in accordance with Division 01.

.2 Equipment and material to be CSA or ULC certified. Where there is no alternative to supplying equipment which is not CSA or ULC certified, obtain special approval from Electrical Inspection Department.

.3 Use new equipment and materials unless otherwise specified.

.4 Materials and equipment used outdoors shall be rated noncorrosive for a marine environment.

1.7 FINISHES

.1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
.1 Paint indoor switchgear and distribution enclosures light grey to EEMAC 2Y-1-1958.
.2 Apply at least one coat of corrosion resistant paint to ferrous supports and site fabricated work.

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

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

.4 Restore to new condition finishes that have been damaged too extremely to be primed and touched up.

1.8 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates and labels as follows:

.2 Nameplates:
.1 Lamicoid 3 mm thick plastic engraving sheet, black face, white core, mechanically attached with self tapping screws.

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

.3 Labels:
.1 Embossed plastic labels with 6 mm high letters unless specified otherwise.

.4 Wording on nameplates and labels to be approved by Departmental Representative prior to manufacture.

1.8 EQUIPMENT IDENTIFICATION (Cont'd)

.5 Allow for average of twenty-five (25) letters per nameplate and label.

.6 Identification to be the English language.

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

.8 Disconnects and contactors: indicate equipment being controlled and voltage.

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

1.9 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, either numbered or 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 code: to Canadian Electrical Code CSA C22.1 (2018).

.4 Use colour coded wires in communication cables, matched throughout system.

1.10 CONDUIT AND CABLE IDENTIFICATION

.1 Colour code conduits, boxes and metallic sheathed cables.

.2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.

.3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	Prime	Auxiliary
Up to 250 V	Yellow	
Up to 600 V	Yellow	Green

1.11 WIRING TERMINATIONS

.1 Lugs, terminals, screws used for termination of wiring to be suitable for either copper or aluminum conductors.

1.12 MANUFACTURERS AND CSA LABELS

.1 Visible and legible, after equipment is installed.

.2 Ensure that manufacturer's registration plates are properly affixed to all apparatus showing the size, name of equipment, serial number and all information usually provided, including voltage, cycle, phase and the name and address of the manufacturer.

.3 Do not paint over registration plates or approval labels. Leave openings through insulation for viewing the plates. Contractors or sub-contractors nameplate not acceptable.

1.13 WARNING SIGNS

.1 As specified and to meet requirements of Electrical Inspection Department and Departmental Representative.

.2 Use decal signs, minimum size 175 x 250 mm.

1.14 LOCATION OF OUTLETS

.1 Locate outlets in accordance with Division 01 and drawings.

1.15 MOUNTING HEIGHTS

.1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.

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

.3 Install electrical equipment at following heights unless indicated otherwise.
.1 Local switches: 1200 mm.
.2 Wall receptacles 400 mm.
.3 Panelboards: as required by Code or as indicated.

1.16 LOAD BALANCE

.1 Measure phase current to panelboards with normal loads operating at time of acceptance. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes.

1.16 LOAD BALANCE (Cont'd)

.2 Submit, at completion of work, report listing phase and neutral currents on panelboards operating under normal load. State hour and date on which each load was measured, and voltage at time of test.

1.17 CONDUIT AND CABLE INSTALLATION

.1 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.

.2 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.

.3 Where conduit routes are shown on drawings, the contractor must follow as closely as possible the routing shown. Before running conduits in locations other than as shown, coordinate with Departmental Representative and other trades on site.

1.18 FIELD QUALITY CONTROL

.1 Conduct and pay for following tests:
.1 Power distribution system including phasing, voltage, grounding and load balancing.
.2 Circuits originating from branch distribution panels.

.2 Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturer's instructions.

.3 Insulation resistance testing.
.1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
.2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.
.3 Check resistance to ground before energizing.
.4 Megger test all cables before and after pouring of concrete. Replace damaged cables with new.

.4 Carry out tests in presence of Departmental Representative.

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

.6 Submit test results for Departmental Representative's review.

1.19 CO-ORDINATION OF PROTECTIVE DEVICES

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

.2 Fault current ratings noted on panel schedules on drawings are for fully rated equipment. Integrated rating equipment is not acceptable.

1.20 FIREPROOFING

.1 Where cables or conduits pass through fire rated walls or ceilings, sleeve and steel conduit and install fire and smoke seal to the requirements of the National Building Code of Canada - 2015.

.2 Acceptable Product: 3M firestop sealant.

.3 Fire/Smoke seal system shall be installed in accordance with manufacturers recommended practice by a licensed installation technician.

1.21 HOUSEKEEPING PADS AND ANCHOR BOLTS

.1 Equipment supports supplied by equipment manufacturer are specified elsewhere in Division 26.

.2 Fabricate equipment supports not supplied by equipment manufacturer from structural grade steel.

.3 Supply anchor bolts and templates for installation by other divisions.

.4 Exterior supports shall be rated for use in a corrosive marine environment.

1.22 DEMONSTRATION AND OPERATING AND MAINTENANCE INSTRUCTIONS

.1 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.

.2 Where specified elsewhere in Division 26, manufacturers to provide demonstrations and instructions.

.3 Use operation and maintenance manual, as-built drawings, audio visual aids, etc., as part of the instruction materials.

1.23 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Division 01.

.2 "Shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data which are to be provided by the Contractor to illustrate details of a portion of the work.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes, and other information necessary for completion of the work.

.4 Advise Departmental Representative if adjustments made on shop drawings will change Contract Price.

.5 Make changes in shop drawings as Departmental Representative may require.

1.24 OPERATION AND MAINTENANCE MANUAL

.1 Provide operation and maintenance data for incorporation into manual specified in Division 01.

.2 Operation and maintenance manual to be approved by, and final copies deposited with Departmental Representative before final inspection.

.3 Operation data to include:
.1 Description and operation of each system.
.2 Operating instructions for each system.
.3 Names and addresses of local suppliers for all items included in maintenance manuals.

.4 Maintenance data shall include:
.1 Servicing, maintenance, operation and trouble shooting instructions for each system and item of equipment.
.2 Data to include schedule of tasks frequency and tools required.

.5 Material shall be in English.

1.25 AS-BUILT DRAWINGS

.1 Refer to Division 01.

1.26 EXISTING CONDITIONS

.1 Contractor are encouraged to visit site before bidding to determine details of existing conditions. No extra will be allowed for items that a proper field visit would have shown as necessary.

.2 Make connections to existing conditions at times approved by Departmental Representative. Request written approval of time when connections can be made.

.3 Be responsible for damage to existing systems and equipment.

1.27 CLEANING

.1 Clean interior and exterior of all electrical equipment including switchgear and panelboards.

.2 In preparation for final acceptance, clean and refurbish all equipment and leave in operating condition including replacement materials.

1.28 COMMISSIONING

.1 Contractor shall provide sufficient personnel (1 person minimum) for 1 day of commissioning. These representatives shall be familiar with and understand the electrical systems and controls. The commissioning shall take place after all systems and equipment have been demonstrated and are operational in accordance with this contract. The manpower requirement for commissioning is outlined in the appropriate specification sections, and includes for aiming of all lighting fixtures to Departmental Representative's satisfaction during evening conditions and training of Harbour Authority staff in operation of the electrical system.

1.29 DISCREPANCIES AND ERRORS

.1 The contractor shall check all drawings furnished him/her immediately upon their receipt and shall promptly notify the Departmental Representatives of any discrepancies or errors. The contractor shall compare all drawings and verify the figures before laying out the work and shall be responsible for any errors which might have been avoided thereby.

1.29 DISCREPANCIES AND ERRORS (Cont'd)

.2 The contractor shall, before fabricating or installing any materials or equipment, carefully check all drawings to ensure that such materials or equipment can be installed without conflicting with the structural elements of the building, or with the work of other trades. Where, in his opinion, the work cannot be installed as shown on the Departmental Representative's drawings, the contractor shall not proceed with the work affected thereby until the necessary revisions have been made or specific instructions issued by the Departmental Representative. Canada shall not be responsible for any extra costs incurred by the contractor as a result of his/her failure to comply with this requirement of the specifications.

.3 Should the contractor, at any time, discover any discrepancies or errors in the drawings or specifications, or any lack of dimensions or other information, he/she shall report the same at once to the Departmental Representative for correction or instructions, and shall not proceed with the work affected hereby until such correction has been made or the necessary instructions issued by the Departmental Representatives.

1.30 ELECTRICAL DRAWINGS

.1 The design drawings are partly diagrammatic and intended to convey the scope of work and indicate the general arrangement of systems and components. They should not be constructed as, or otherwise understood to be, fabrication drawings.

.2 The drawings are not intended to show Structural details or Architectural features.

.3 Do not determine locations of equipment and materials by measurement from drawings.

1.31 MAINTENANCE MATERIALS AND SPECIAL TOOLS

.1 Furnish spare parts in accordance with Division 01 and as outlined in the appropriate specification section.

.2 Provide special tools to service equipment as recommended by manufacturer and as outlined in appropriate specification section.

1.32 CUTTING AND PATCHING

.1 See Division 01.

.2 Install work in such a manner and at such time as will require a minimum of cutting and patching.

.3 Holes in exposed locations, in or through existing floors, shall be drilled and smoothed by sanding. Use of jackhammer will not be permitted. Holes shall only be cored in locations specifically approved by the Departmental Representative.

.4 Holes through masonry walls to accommodate sleeves shall be made with an iron pipe masonry core saw.

.5 Do not core or cut concrete floors without special permission from Departmental Representative.

1.33 TRIAL USAGE

.1 Canada may use equipment and systems for test purposes prior to acceptance. Supply labour and material and instruments required for testing.

1.34 TESTS

.1 Give 24 hour written notice of date for tests. Conceal work only after testing and approved by Departmental Representative. Bear costs of retesting.

.2 Equipment: refer to relevant sections.

.3 Prior to tests, isolate all equipment as required.

1.35 APPROVAL OF ALTERNATES

.1 "Acceptable Manufacturers" means that products of the manufacturer given are the only products to be used.

.2 "Standard of Acceptance" means that the product named meets with the specifications in all regards and that the products of other acceptable manufacturers must have the same features and capacities.

.3 Where reference is made to a materials standard and no acceptable material or manufacturer is listed, products are acceptable provided they are certified as meeting the reference standards.

1.35 APPROVAL OF ALTERNATES (Cont'd)

.4 Manufacturers, their agents or contractors supplying alternative products to be considered for acceptance shall submit written applications to the Departmental Representative.

.5 Acceptance of alternates does not absolve Division 26 contractor from making all necessary adjustments to the work of other trades incurred by selection of alternative equipment or materials. Such adjustments are to be made at no additional cost to Canada.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work.

1.2 REFERENCE STANDARDS

.1 Wire Connectors to C22.2 No.65-13.

.2 Clamps and connectors to CAN/CSA C22.2 No. 18-98.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Pressure type wire connectors: with current carrying parts of copper alloy sized to fit copper conductors as required.

.2 Clamps or connectors for armoured cable, flexible conduit, non-metallic sheathed cable, mineral insulated cable as required.

.3 Fixture type splicing connectors with current carrying parts of copper alloy sized to fit copper conductors 10 AWG or less.

2.2 ACCEPTABLE MATERIALS

.1 3M Scotchlock - 2.

.2 Ideal Wire Nut #451, 452, 453.

.3 Marrette Type II, #733, 735, 739

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Use wire connectors when connecting individual wire size 8 awg and smaller. For larger sizes, use terminal blocks as per drawings.

.2 Remove insulation carefully from ends of conductors and install connectors in accordance with manufacturer's instructions.

3.1 INSTALLATION (Cont'd)

.3 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2, No. 65-03(R2006).

.4 Install fixture type connectors and tighten. Replace insulating cap.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work. The referenced sections below are for guidance only and are not necessarily a complete list of related sections.

.2 Section 26 05 20 - Wire and Box Connectors (0-1000V).

1.2 REFERENCES

.1 CSA C22.2 No. 0.3-01 - Test Methods for Electrical Wires and Cables.

.2 CAN/CSA - C22.2 No. 131 - M89 - Type TECK 90 Cable.

1.3 PRODUCT DATA

.1 Submit product data in accordance with Division 01.

PART 2 - PRODUCTS

2.1 WIRES

.1 Conductors: stranded for #8 AWG and larger. Minimum size: # 12 AWG.

.2 Copper conductors: size as indicated, with 600V insulation of chemically cross-linked thermosetting polyethylene material rated RW90.

.3 Copper conductors: size as indicated, with thermoplastic insulation type TW rated at 300 V for use as grounding or bonding conductor only.

2.2 COLOR CODING

.1 Insulated neutral and grounding conductors smaller than #2 awg shall be continuously identified in accordance with the requirements of Section 4 of the Canadian Electrical Code C22.1 (2018).

.2 Phase conductors shall be color coded in accordance with section 4 of the Canadian Electrical Code C22.1 (2018).

2.2 COLOR CODING (Cont'd)

.3 Branch wiring shall have coloured insulation to indicate colour coding. Do not use tape markers.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRES

.1 Install wiring as follows:

.1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Boxes and Fittings.

.2 In underground ducts in accordance with Section 26 05 44 - Installation of Cables in Trenches and In Ducts.

.3 Use RW90 copper for all wiring. Type TW may be used only for bonding wires.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data for cabinets in accordance with Division 01.

1.3 REFERENCE STANDARDS

.1 Pull boxes: To CSA C22.2 No. 40-M1989.

PART 2 - PRODUCTS

2.1 JUNCTION AND PULL BOXES

.1 Interior junction and pull boxes:
.1 Welded steel construction with screw-on flat covers for surface mounting. covers for surface mounting.
.2 Covers with 25 mm minimum extension all around, for flush-mounted pull and junction boxes.
.3 Size junction and pull boxes as per Canadian Electrical Code requirements.
.4 Acceptable materials: Bel type D.

.2 Exterior junction and pull boxes:
.1 Weatherproof NEMA 4X junction and pull boxes as indicated and sized on drawings to be used for exterior electrical connections or poles for lighting circuits and wharf receptacles.
.2 Other types of junction and pull boxes where indicated on drawings.

2.2 CABINETS

.1 Enclosures rated NEMA 4X and threaded hubs. Corrosion resistant to salt environment.

2.3 ACCEPTABLE MATERIALS

.1 Acceptable Materials:
.1 Bel
.2 Hammond
.3 Eurobec
.4 Hoffman

PART 3 - EXECUTION

3.1 JUNCTION, PULL BOXES AND CABINETS INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

.2 Mount cabinets with top not higher than 2 m above finished floor or grade.

.3 Only main junction and pull boxes are indicated. Install pull boxes so as not to exceed 30 m of conduit run between pull boxes.

3.2 IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Install size 2 identification labels indicating system name,voltage and phase.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work.

1.2 REFERENCE STANDARDS

.1 Outlet boxes, conduit boxes and fitting to CSA C22.2 No. 18-98.

.2 Canadian Electrical Code, CSA C22.1 (2018).

PART 2 - PRODUCTS

2.1 OUTLET AND CONDUIT BOXES GENERAL

.1 Size boxes in accordance with CSA C22.1 (Latest edition).

.2 102 mm square or larger outlet boxes as required for special devices.

.3 Gang boxes where wiring devices are grouped.

.4 Blank cover plates for boxes without wiring devices.

.5 Provide combination boxes with barriers where outlets for more than one system are grouped.

.6 Rough in boxes for special equipment or devices shall be in accordance with the manufacturer's approved shop drawings.

.7 Acceptable Material:
.1 Iberville GSB series with GBC covers for 120/208 V and communication applications.

2.2 SHEET STEEL OUTLET AND CONDUIT BOXES

.1 Electro-galvanized steel single and multi gang flush device boxes. Minimum size 76 x 50 mm x 38 mm or as indicated. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.

.2 Type FS boxes for outlets connected to surface-mounted EMT conduit on drywall surfaces, minimum size 102 x 54 x 48 mm.

2.2 SHEET STEEL OUTLET AND CONDUIT BOXES (Cont'd)

.3 102 mm square or octagonal outlet boxes for lighting fixture outlets.

.4 102 mm square outlet boxes with extension and plaster rings for flush mounting devices in finished gypsum board walls.

2.3 WEATHERPROOF BOXES

.1 Fiberglass, PVC and 316 stainless steel boxes as indicated on drawings.

2.4 CONDUIT BOXES

.1 Cast FS or FD boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacles on on pole and power pedestal surfaces. Utility boxes are unacceptable.

2.5 FITTINGS - GENERAL

.1 Bushing and connectors shall have nylon insulated throats.

.2 Provide knock-out fillers to prevent entry of foreign materials.

.3 Provide conduit outlet bodies for conduit up to 32 mm and pull boxes for larger conduits.

.4 Provide double locknuts and insulated bushings on sheet metal boxes.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Support boxes independently of connecting conduits.

.1 Boxes placed on/or between steel studs shall be supported by Caddy TSGB supports or other acceptable product. Where only one box requires support, it may be directly attached to the metal stud only if this places the box in the correct position. Boxes shall be located to suit stud locations. The governing rules for box location shall be room function and room to room sound transmission.

.2 Boxes in exterior walls shall be installed with due consideration given to the special wall construction. Provide extension rings or boxes with suitable depths.

3.1 INSTALLATION (Cont'd)

.2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of construction material.

.3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.

.4 Provide correct size of openings in boxes for conduit and armoured cable connections. Reducing washers not allowed.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the tender price includes all related work.

1.2 LOCATION OF CONDUIT

.1 Drawings do not show all conduits. Those shown are in diagrammatic form only.

1.3 REFERENCES

.1 Canadian Standards Association (CSA).
.1 CAN/CSA C22.2 No. 18-98, Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware.
.2 CSA C22.2 No. 45-M1981, Rigid Metal Conduit.
.3 CSA C22.2 No. 56-2017, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
.4 CSA C22.2 No. 83-M1985, Electrical Metallic Tubing.
.5 CSA C22.2 No. 211.2-06, Rigid PVC (Unplasticized) Conduit.

PART 2 - PRODUCTS

2.1 CONDUITS

.1 The following conduits may be used on thiS project:
.1 Rigid PVC Conduit (Below Grade) to CSA C22.2 No. 211.2.

2.2 CONDUIT FITTINGS

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.

.2 Factory "ells" where 90° bends are required for 25 mm and larger conduits.

2.3 FISH CORD

.1 Polypropylene.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Wiring method:
.1 Use rigid PVC conduit in interior and exterior locations.

.3 Use rigid PVC conduit underground and in corrosive areas.

.4 Use liquid tight flexible metal conduit for final connection.

.5 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.6 Mechanically bend steel conduit over 21 mm dia. Conduits 35 mm and larger to be bent using a hydraulic bender or use factory bends. Conduits found to be bent using methods other than indicated above will be removed.

.7 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.

.8 Install fish cord in empty conduits.

.9 Where conduits become blocked,remove and replace blocked section. Do not use liquids to clean out conduits.

.10 Dry conduits out before installing wire.

.11 All circuits indicated on these drawings shall be run in new conduit.

.12 Minimum size conduit to be used on this project is 21 mm. 16 mm conduit is unacceptable.

.13 Coordinate all conduit routings with the civil trades. Do not run conduits or zone conduits at elevations which may interfere with other trades.

3.2 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Group conduits wherever possible on surface channels.

.3 Do not pass conduits through structural members except as indicated.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work. The referenced sections below are for guidance only and are not necessarily a complete list of related sections.

.2 Section 31 23 10 - Excavation and Backfilling.

.3 Section 26 05 01 - Common Work Results - Electrical.

PART 2 - PRODUCTS

2.1 MARKERS

.1 Provide 150 mm wide, 4 mil, polyethylene marker tape in all trenches. Use red colored tape. Install at depth as per drawings.

PART 3 - EXECUTION

3.1 CABLE INSTALLATION IN DUCT BANK

.1 Install cables as indicated in conduit.

.2 Do not pull spliced cables inside conduit. Provide junction box and pull box for spliced cables as indicated on drawing.

.3 Install multiple cables in conduit simultaneously.

.4 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.

.5 To facilitate matching of colour coded multiconductor control cables, reel off in same direction during installation.

.6 Before pulling cable into ducts and until cables are properly terminated, seal ends of lead covered cables with wiping solder; seal ends of non-leaded cables with moisture seal tape.

.7 After installation of cables, seal duct ends with duct sealing compound.

3.2 MARKERS

.1 Install cable markers in trenches as indicated on drawings.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 01-Common Work Results - Electrical

.2 Perform tests using qualified personnel. Provide necessary instruments and equipment.

.3 Check phase rotation and identify each phase conductor of each feeder. Ensure phase rotation is correct for circuits relocated to new panelboard.

.4 Check each feeder for continuity, short circuits and grounds. Ensure resistance to ground of circuits is not less than 50 megohms.

.5 Pre-acceptance tests.
.1 After installing cable but before splicing and terminating, perform insulation resistance test with 1000 V megger on each phase conductor.
.2 Check insulation resistance after each splice and/or termination to ensure that cable system is ready for acceptance testing.

.6 Provide Departmental Representative with list of test results showing location at which each test was made, circuit tested and result of each test.

.7 Remove and replace entire length of cable if cable fails to meet any of test criteria.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work.

1.2 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Division 01.

.2 Drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension and solid state transient protection where indicated.

1.3 REFERENCE STANDARDS

.1 CSA C22.2 No. 29-M1989.

1.4 PLANT ASSEMBLY

.1 Install circuit breakers in panelboards before shipment.

.2 In addition to CSA requirements, manufacturer's nameplate must show fault current that panel, including breakers, has been built to withstand.

PART 2 - PRODUCTS

2.1 PANELBOARDS

.1 Panelboards: product of one manufacturer.

.2 250 V panelboards: bus and breakers rated for interrupting capacity as indicated.

.3 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.

.4 Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated.

.5 Two keys for each panelboard and key panelboards alike.

2.1 PANELBOARDS (Cont'd)

.6 Copper bus with neutral of same ampere rating as mains.

.7 Mains: suitable for bolt-on breakers.

.8 Trim and door finish: baked grey enamel.

.9 All panelboards shall be commercial grade. Residential grade is unacceptable.

.10 Panelboards and main breaker to be service-entrance- rated where indicated.

2.2 BREAKERS

.1 Breakers: to Section 26 28 21 - Moulded Case Circuit Breakers.

.2 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.

.3 Lock-on devices for 10% of 15 to 30A breakers installed. Turn over unused lock-on devices to Departmental Representative.

.4 Breakers for wharf receptacles to be switching duty rated for daily operation.

2.3 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Nameplate for each panelboard size 7 engraved with the following information:
.1 Panelboard Name Tag
.2 Voltage/Phase/Wire

.3 Nameplate for each circuit in distribution panelboards size 2 engraved as indicated.

.4 Complete circuit directory with typewritten legend showing location and load of each circuit, including identifying all existing loads to be reconnected to new panel.

2.4 ACCEPTABLE MATERIALS

.1 Siemens.

.2 Cutler Hammer.

2.4 ACCEPTABLE MATERIALS (Cont'd)

.3 Square D.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.

.2 Install surface mounted panelboards on plywood backboards. Where practical, group panelboards on common backboard.

.3 Mount panelboards to height specified in Section 26 05 01 - Common Work Results - Electrical or as indicated.

.4 Connect loads to circuits.

.5 Connect neutral conductors to common neutral bus.

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Division 01.

PART 2 - PRODUCTS

2.1 RECEPTACLES

.1 Acceptable materials: as indicated.

.2 Other special weather-proof receptacles with ampacity and voltage as indicated on drawings.

.3 Receptacles of one manufacturer throughout project.

2.2 ACCEPTABLE MATERIALS

.1 Hubbell.

.2 Leviton.

.3 Appleton.

2.3 COVER PLATES DRY LOCATIONS

.1 Provide stainless steel cover plates for all wiring devices.

.2 Cover plates from one manufacturer throughout project.

2.4 COVER PLATES WET LOCATIONS

.1 Provide weatherproof spring-loaded cover plates, complete with gaskets for receptacles as specified.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Receptacles:

.1 Mount receptacles at height specified in Section 26 05 01 - Common Work Results - Electrical or as indicated.

.2 Cover plates:

.1 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 The contractor is to ensure that all related work is co-ordinated among all specification sections and that the bid price includes all related work.

1.2 PRODUCT DATA

.1 Submit product data in accordance with Division 01.

PART 2 - PRODUCTS

2.1 BREAKERS GENERAL

.1 Bolt-on moulded case circuit breaker: quick- make, quick-break type, for manual and automatic operation with temperature compensation for 40°C ambient.

.2 Common-trip breakers: with single handle for multi-pole applications.

.3 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.

.4 Breakers for wharf receptacles to be switching duty rated for daily operation.

2.2 THERMAL MAGNETIC BREAKERS

.1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

2.3 ACCESSORIES

.1 Lock-on device where indicated.

.2 Ground fault type where indicated.

2.4 ACCEPTABLE MATERIALS

.1 Cutler Hammer.

.2 Square D.

2.4 ACCEPTABLE MATERIALS (Cont'd)

.3 Siemens.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install circuit breakers as indicated.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for fused and non-fused disconnect switches.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International).
- .1 CAN/CSA-C22.2 No. 4-2016, Enclosed Switches.
- .2 CSA C22.2No.39-2013, Fuseholder Assemblies.
- .3 CSA Z462-2018 Workplace Electrical Safety.

1.3 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

1.4 HEALTH AND SAFETY

.1 Do construction occupational health and safety in accordance with Section 01 35 28 - Health and Safety Requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

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

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Separate for reuse and recycling and place in designated containers Metal waste in accordance with Waste Management Plan.

.5 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 DISCONNECT SWITCHES

.1 Fusible or non-fusible disconnect switch in CSA Enclosure 1, size as indicated on drawings. Where weatherproof switches are specified, use NEMA 4x, 316 grade, stainless steel switches. EEMAC 1 where installed indoors.

.2 Provision for padlocking in off switch position by three locks.

.3 Mechanically interlocked door to prevent opening when handle in ON position.

.4 Quick-make, quick-break action.

.5 ON-OFF switch position indication on switch enclosure cover.

.6 Industrial grade switches required.

2.2 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Indicate name of load controlled on size 4 nameplate.

2.3 ACCEPTABLE MATERIALS

.1 Seimens.

.2 Cutler Hammer.

.3 Square D.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install disconnect switches complete with fuses if applicable.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

.1 This Section defines correction to maximum dry density to take into account aggregate particles larger than 19 mm.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
.1 ASTM C 127-15, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
.2 ASTM D 698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).
.3 ASTM D 1557-12, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).
.4 ASTM D 4253-16, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.3 DEFINITIONS

.1 Corrected maximum dry density is defined as:
.1 D = (D1xD2) / ((F1 x D2) + (F2 x D1)).
.2 D = (F1 x D1) + (0.9 x D2 x F2).
.3 Where: D = corrected maximum dry density kg/m^3.
.1 F1 = fraction (decimal) of total field sample passing 19 mm sieve.
.2 F2 = fraction (decimal) of total field sample retained on 19 mm sieve (equal to 1.00 - F1).
.3 D1 = maximum dry density, kg/m^3 of material passing 19 mm sieve determined in accordance with Method A of ASTM D 698.
.4 D2 = bulk density, kg/m^3, of material retained on 19 mm sieve, equal to 1000G where G is bulk specific gravity (dry basis) of material when tested to ASTM C 127.
.4 For free draining aggregates, determine D1 (maximum dry density) to ASTM D 4253 dry method when directed by Departmental representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 31 23 25 - Rock and Gravel Fills.

.4 Section 32 11 23 - Aggregate Base Courses.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
.1 ASTM D4791-10 Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide continual sampling by testing agency during production.

.3 Provide testing agency with access to source and processed material for sampling.

.4 Install sampling facilities at discharge end of production conveyor, to allow testing agency to obtain representative samples of items being produced. Stop conveyor belt when requested by Departmental Representative to permit full cross section sampling.

.5 Pay additional cost of sampling and testing of aggregates which fail to meet specified requirements.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Divert unused granular materials from landfill to local quarry facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.

.2 Flat and elongated particles of coarse aggregate: to ASTM D4791.
.1 Greatest dimension to exceed five times least dimension.

.3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
.1 Natural sand.
.2 Manufactured sand.
.3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.

.4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
.1 Crushed rock.
.2 Gravel and crushed gravel composed of naturally formed particles of stone.
.3 Light weight aggregate, including slag and expanded shale.

.5 Type '1' and Type '2' Granular Fill: to Section 32 11 23 - Aggregate Base Courses.

.6 Rock and Gravel Fill: To Section 31 23 25 - Rock and Gravel Fill

2.2 SOURCE QUALITY CONTROL

.1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling at least 2 weeks prior to commencing production.

.2 If, in opinion of Departmental Representative, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.

.3 Advise Departmental Representative 2 weeks in advance of proposed change of material source.

2.2 SOURCE QUALITY CONTROL (Cont'd)

.4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Aggregate source preparation

.1 Prior to excavating materials for aggregate production, clear and grub area to be worked, and strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as directed by Departmental Representative.

.2 Where clearing is required, leave screen of trees between cleared area and roadways as directed.

.3 Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.

.4 When excavation is completed dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.

.5 Trim off and dress slopes of waste material piles and leave site in neat condition.

.2 Processing

.1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.

.2 Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, or particle shapes, as specified. Use methods and equipment approved by Departmental Representative.

.3 Wash aggregates, if required to meet specifications. Use only equipment approved by Departmental Representative.

.4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.

.3 Handling

.1 Handle and transport aggregates to avoid segregation, contamination and degradation.

.4 Stockpiling

.1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Departmental Representative. Do not stockpile on completed pavement surfaces.

3.1 PREPARATION (Cont'd)

.4 (Cont'd)

.2 Stockpile aggregates in sufficient quantities to meet Project schedules.

.3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

.4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.

.5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.

.6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.

.7 Stockpile materials in uniform layers of thickness as follows:

.1 Max 1.5 m for coarse aggregate and base course materials.

.2 Max 1.5 m for fine aggregate and sub-base materials.

.3 Max 1.5 m for other materials.

.8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.

.9 Do not cone piles or spill material over edges of piles.

.10 Do not use conveying stackers.

.11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.2 CLEANING

.1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.

.2 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.

.3 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Environmental Procedures.

.2 Section 32 11 23 - Aggregate Base Courses.

.3 Section 31 23 25 - Rock and Gravel Fill.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM C117-17, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- .2 ASTM C136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .3 ASTM D422-63, Standard Test Method for Particle-Size Analysis of Soils.
- .4 ASTM D698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbs/ft^3) (600 kN-m/m^3).
- .5 ASTM D4318-17, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
- .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.3 Canadian Standards Association (CSA).
- .1 CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction.

1.3 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
- .1 Rock : any solid material in excess of 0.25 m^3 and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m^3 bucket. Frozen material not classified as rock.
- .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

.2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

1.3 DEFINITIONS (Cont'd)

.3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

.4 Unsuitable materials:
.1 Weak and compressible materials under excavated areas.
.2 Frost susceptible materials under excavated areas.
.3 Frost susceptible materials:
.1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1.

Sieve Designation	% Passing
2.0 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45

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

.5 Unshrinkable fill: very weak mixture of Portland cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Type 3 fill: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.

.2 Table

Sieve Designation	% Passing Type 3
101.6 mm	100
50 mm	75-100
4.75 mm	25-55
1.2 mm	10-35
0.3 mm	5-20
0.075 mm	0-12

PART 3 - EXECUTION

3.1 SITE PREPARATION

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

3.2 EXCAVATION

.1 Excavate to lines, grades, elevations and dimensions as indicated.

.2 Protect all utilities designated to remain and make repairs to any damage at contractor's own expense.

.3 Excavation must not interfere with bearing capacity of adjacent foundations.

.4 Dispose of surplus and unsuitable excavated material in approved location off site.

.5 Do not obstruct flow of surface drainage.

.6 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.7 Notify Departmental Representative when bottom of excavation is reached.

.8 Obtain Departmental Representative's approval of completed excavation.

3.3 FILL TYPES AND COMPACTION

.1 Use fill of types as indicated.

3.4 BACKFILLING

.1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

3.4 BACKFILLING (Cont'd)

.5 Backfilling around installations.

.1 Place bedding and surround material as specified elsewhere.

.2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.

.3 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 1.0 m.

3.5 RESTORATION

.1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.

.2 Clean and reinstate areas affected by Work as directed by Departmental Representative.

.3 Restore site to its normal state after excavation and backfilling work has been completed.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies supply, placement and compaction of rock and gravel fill as required or as directed by Departmental Representative.

1.2 RELATED SECTIONS

.1 Section 31 23 10 - Excavating, Trenching, and Backfilling.

1.3 MEASUREMENT FOR PAYMENT

.1 Blasted Rock Fill: Supply, placement and compaction of rock fill will be measured by cubic meter (CMPM). This volume of material will be determined in place from measurements taken prior to and at completion of the work. Include the cost of all quality control testing, plant, labour, equipment and materials required to complete the work as specified to the limits shown on the drawings. Include incidental to this cost the supply and installation of geotextile as detailed on the drawings.

.2 Scour Protection: Supply and placement of scour protection, including the cost of all quality control testing, plant, labour, equipment and materials required to complete the work as specified, will be measured by the cubic meter place meter (CMPM). The volume of material will be determined in place from measurements taken prior to and at completion of the work.

PART 2 - PRODUCTS

2.1 ROCK FILL

.1 Rock fill will be of hard, durable, evenly graded blasted stone having a maximum diameter of 200 mm in major portion of fill and a maximum diameter of 100 mm in upper 600 mm of rock fill. Fill material will contain not more than 6 percent by weight passing the 25 mm sieve. Rock fill to be evenly graded within the limits specified.

.2 Use of shale rock or slate will not be permitted.

2.2 SCOUR PROTECTION

.1 Rock Scour Protection:
.1 Quarried rock: uniformly graded.
.2 Quarried rock: to be free from splits, seams or defects likely to impair its soundness during handling or by action of water and to approval of Departmental Representative.
.3 Relative density (formally specific gravity): to ASTM C127, not less than 2.65.
.4 Absorption, 1.5 to 2.0% maximum as determined by ASTM C127 test procedure.
.5 Durability, less than 35% abrasion wear, ASTM C535 test procedure.
.6 Sulphate Soundness Determination maximum 12% by ASTM C88.
.7 Rock, cubical and angular in shape with ratio of maximum to minimum dimensions of less than 2.
.8 Stone sizes for scour protection will be in the range of 250 to 500mmØ.

PART 3 - EXECUTION

3.1 PLACING ROCK FILL

.1 Only rock fill material approved by Departmental Representative will be placed. Material will be placed uniformly across full cross-section in layers not exceeding 300 mm loose depth.

.2 Use suitable earth moving and surface grading equipment to place and spread rock fill in continuous and uniform horizontal layers.

.3 Compact rock fill after each 300 mm lift.

.4 Place rock fill to 300 mm below bottom of finished grade.

.5 All side slopes to be one (1) vertical to one and one half (1.5) horizontal.

3.2 SCOUR PROTECTION

.1 Place scour protection for complete length of new cribwork and to details as indicated on the drawings as soon as practicable after placement of cribs.

3.3 ROCK MATERIAL WASHED OUT OF WORK

.1 Should during the progress of the work, any rock material be washed out of the work, or through neglect of carelessness of the Contractor or workmen or from any other cause, be dumped into the water near the work or anywhere within the harbour or channel, so as to interfere, in the opinion of the Departmental Representative, with actual depths of water and/or impede navigation, it will be removed by the Contractor when ordered to do so by the Departmental Representative. Any material washed out of the work or displaced beyond the contract limits will be replaced by the Contractor at no cost to Canada.

3.4 TOLERANCES

.1 Scour protection: +/-100 mm. This tolerance is not to be considered pay limits but is specified to ensure the Contractor keeps with acceptable lines and grades.

3.5 TESTING

.1 Submit rock materials samples for testing to testing laboratory approved by the Departmental Representative prior to commencement of quarry production. Allow sufficient lead time to perform and report tests before start of production.

.2 Contractor will be responsible for procurement of samples for testing and arrange and pay for shipment of samples to testing laboratory.

.3 Contractor will pay for costs associated with laboratory testing. The cost of retesting due to samples failing to meet the requirements of the contract will be born by the Contractor.

.4 Only materials satisfactorily tested and approved by the Departmental Representative will be quarried and placed in the work.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation of polymeric geotextiles used in breakwaters, retaining wall structures, filtration, drainage structures and roadbeds, purpose of which is to:
.1 Separate and prevent mixing of granular materials of different grading.
.2 Act as hydraulic filters permitting passage of water while retaining soil strength of granular structure.

1.2 RELATED WORK

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 31 23 10 - Excavating, Trenching and Backfilling.

.4 Section 31 23 25 - Rock and Gravel Fill.

.5 Section 31 53 13 - Timber Cribwork.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM).
.1 ASTM D4491, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
.2 ASTM D4595, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
.3 ASTM D4716-14, Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
.4 ASTM D4751-16, Standard Test Method for Determining Apparent Opening Size of a Geotextile.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-4.2-M88, Textile Test Methods.
.2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Geomembranes.
.1 No.2-M85, Mass per Unit Area.
.2 No.3-M85, Thickness of Geotextiles.
.3 No.7.3-92, Grab Tensile Test for Geotextiles.
.4 No.6.1-93, Bursting Strength of Geotextiles Under No Compressive Load.

1.3 REFERENCES (Cont'd)

.2 (Cont'd)
.2 (Cont'd)
.3 Canadian Standards Association (CSA).
.1 CAN/CSA-G40.20-13/G40.21-13 General Requirements for Rolled or Welded Structural Quality Steel.
.2 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.

1.4 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit to Departmental Representative the following samples at least 2 weeks prior to commencing work.
.1 Minimum length of 1 m of roll width of geotextile.

1.5 MILL CERTIFICATES

.1 Submit to Departmental Representative a copy of mill test data and certificate at least 2 weeks prior to start of work.

1.6 DELIVERY AND STORAGE

.1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and packaging material, in appropriate on-site bins, for recycling in accordance with Waste Management Plan.

.4 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 MATERIAL

.1 Geotextile: woven or non-woven synthetic fibre fabric, supplied in rolls.
- .1 Width: 3.5 m minimum.
- .2 Length: 50 m minimum.
- .3 Composed of: minimum 85% by mass of polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.

.2 Physical properties:
- .1 Thickness: to CAN/CGSB-148.1, No.3, minimum 2.5 mm.
- .2 Mass per unit area: to CAN/CGSB-148.1, No. 2, minimum 400 g/m^2.
- .3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
  - .1 Tensile strength: minimum 1200 N, wet condition.
  - .2 Elongation at break: 50 to 100 percent.
  - .3 Seam strength: equal to or greater than tensile strength of fabric.
- .4 Mullen burst strength: to CAN/CGSB-4.2, method 11.1, minimum 3100 kPa.

.3 Hydraulic properties:
- .1 Apparent opening size (AOS): to ASTM D4751, 50 to 150 micrometres.
- .2 Permittivity: to ASTM D4491, 0.25 cm per second.

.4 Securing pins and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m^2 to CAN/CSA G164.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Place geotextile material for cribwork as indicated on drawings.

.2 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with securing pins and washers.

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

3.1 INSTALLATION (Cont'd)

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

.5 Join successive strips of geotextile by sewing.

.6 Pin successive strips of geotextile with securing pins at 300 mm interval at mid point of lap as indicated.

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

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

.9 Replace damaged or deteriorated geotextile to approval of Departmental Representative.

.10 Place and compact soil layers in accordance with Section 31 23 10 - Excavating Trenching and Backfilling.

3.2 CLEANING

.1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner.

3.3 PROTECTION

.1 Vehicular traffic not permitted directly on geotextile.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies requirements for supply and installation of treated timber and necessary fastenings for fabrication, placing, and ballasting of timber cribwork.

1.2 RELATED SECTIONS

.1 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Section 06 05 73 - Wood Treatment.

1.3 MEASUREMENT FOR PAYMENT

.1 Treated Timber Cribwork - (Supply and Install): to be measured in cubic metres (m^3) of completed work which includes excavation, ballast stone, gravel, treated timber, geotextiles, fastenings and all plant, labour, materials and equipment to perform work. Include incidental to this unit price the costs for excavation of cribseats, including removal of bedrock if encountered, removal of existing armour stone, to accommodate construction.

.2 Measure timber cribwork in cubic metres determined by product. Use following dimensions measured in place:
.1 Height: average of measurements taken at each vertical from bottom of lowest timber to top side of uppermost course of timber.
.2 Width: average of measurements between outside faces of exterior longitudinal timbers, each width measured on top ties of each row of cross ties.
.3 Length: measured horizontally along centre-line of crib between outside faces of exterior cross ties.

.3 Cribwork below step will be determined by product of following dimensions measured in place:
.1 Height: average of measurements taken at each vertical from bottom of lowest timber to top side of uppermost course of timber.
.2 Width: average of measurements between outside faces of exterior longitudinal timbers, measured at each crosstie at low water elevations.
.3 Length: measured horizontally along centre-line of crib and parallel to level water surface between outside faces of exterior cross ties.

1.3 MEASUREMENT FOR PAYMENT (Cont'd)

.4 Cribwork above step will be determined by product of following dimensions measured in place:
.1 Height: average of measurements taken at each vertical from top of step crib to top of top course of timber.
.2 Width: average of measurements between outside faces of exterior longitudinal timbers, each width measured on top tier of each row of crossties.
.3 Length: measured horizontally along centre-line of crib and parallel to level water surface between outside faces of exterior cross ties.

.5 Measurements of the vertical lengths, widths and lengths of cribwork, will be taken in the presence of both the Contractor and the Departmental Representative and will be verified and signed by both parties on the site to avoid any disputes.

1.4 SAFETY REQUIREMENTS

.1 Worker protection:
.1 Workers must wear gloves, respirators, dust masks, long sleeved clothing, eye protection, protective clothing when handling, drilling, sawing, cutting or sanding preservative treated wood and applying preservative materials.
.2 Workers must not eat, drink or smoke while applying preservative material.
.3 Clean up spills of preservative materials immediately with absorbent material. Safely discard of absorbent material to sanitary landfill.

1.5 REFERENCES

.1 American Society for Testing and Materials (ASTM International)
.1 ASTM A307-14, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
.2 ASTM C136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.2 American Wood-Preserver's Association (AWPA)
.1 AWPA M4-15, Standard for the Care of Preservation - Treated Wood Products.

.3 Canadian Standards Association (CSA International)
.1 CSA B111-1974, Wire Nails, Spikes and Staples.
.2 CAN/CSA-G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Steel.
.3 CAN/CSA G164-M92 Hot Dip Galvanizing of Irregular Shaped Articles.
.4 CAN/CSA-O80, Wood Preservation.

1.5 REFERENCES (Cont'd)

.4 Canadian Wood Council
.1 Wood Design Manual.

.5 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian Lumber.

1.6 SUBMITTALS

.1 Ballast:
.1 Submit proposed placing method to Departmental Representative for approval, prior to placing of ballast.

1.7 WASTE MANAGEMENT

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

.2 Dispose of all corrugated cardboard and polystyrene plastic packaging material in appropriate on-site bin for recycling.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Ensure emptied containers are sealed and stored safely.

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

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

.7 Dispose of treated wood, end pieces, wood scraps and sawdust at a sanitary landfill.

.8 Dispose of unused preservative material at an official hazardous material collections site. Do not dispose of unused preservative material into sewer system, streams, lakes, on ground or in any other location where they will pose a health or environmental hazard.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Timber: Use timber graded and stamped in accordance with applicable grading rules and standards of associations or agencies approved to grade lumber by Canadian Lumber Standards Accreditation Board of CSA.

.2 Species: Douglas Fir, Pacific Coast Hemlock and Eastern Hemlock.

.3 Grade: No. 1 Structural.

.4 Grading authority: NLGA.

.5 Preservative treatment: To CSA O80 for coastal waters and Section 06 05 73 - Wood Treatment. Supply timbers in lengths required. Cut and field treat timbers only as may be necessary to suit site conditions. Contractor will have on site sufficient lengths and thickness of treated timber to permit levelling of cribs after ballasting operations.

.6 Miscellaneous steel: Medium structural steel conforming to CSA Specification G40.21 "Structural Quality Steels".
.1 Hot dip galvanized: to ASTM A123/A123M-15. Minimum weight of zinc coating as stated in Table 1 of this Standard.
.2 Wire nails, spikes, staples: to CSA-B111.
.3 Bolts, nuts, washers: to ASTM A307.
.4 Drift Bolts: to G40.21 from round stock, button head and diamond or wedge point.
.5 Washers:
.1 Round Plate Washers: for 19 mm diameter machine bolts, 79 mm diameter by 7.9 mm thick, with hole diameter of 21 mm. Washers to G40.21.
.2 Square washers not permitted to be used.
.6 All hardware galvanized.
.7 Sizes and lengths as detailed on the drawings.

.7 Ballast for filling cribs to following requirements:
.1 Stone, consisting of hard durable particles free from clay lumps, organic material and other deleterious materials.
.2 Dry density in place: minimum 2600 kg per cubic metre.
.3 Ballast stone to be well graded with maximum sizes not exceeding 400 mm on any side and minimum size of not less than 250 mm on any side.

2.1 MATERIALS (Cont'd)

.8 Gravel: Evenly graded pit run or crushed stone, maximum size, 50 mm, with not more than 8% passing the 0.075 mm sieve.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Excavate area of crib base to elevation indicated on drawings or bedrock.

.2 Contractor to confirm with Departmental Representative that excavated cribseat is adequate for cribwork placement.

.3 Before construction, stockpile sufficient ballast to completely fill cribs. Provide suitable plant and equipment to keep crib in proper position and alignment during sinking operations.

.4 Take closely spaced accurate soundings and probings, 1500 mm centre to centre or less, precisely located by template, to determine actual configuration of base area of crib. Construct crib bottom to match base configuration. Scribe cribwork to bedrock if required.

.5 Cribs out of alignment or not correctly located to be refloated and replaced in correct position.

3.2 CRIB CONSTRUCTION

.1 Construct timber cribwork to 400 mm above LNT prior to sinking in final position in work.

.2 Levelling Pieces:
.1 Place treated timber levelling pieces beneath bottom timbers to conform to shape of base area.
.2 Place levelling pieces horizontally.
.3 Secure succeeding pieces at intersections of bottom timbers and vertical posts, and other levelling pieces with machine bolts.

.3 Bottom timbers:
.1 Place bottom timbers lengthwise, and crosswise to form bottom three courses of cribs.
.2 Crosswise bottom timbers to be of one piece.
.3 Lengthwise bottom timbers to be of one piece.
.4 Secure three courses of bottom timbers together with machine bolts at every intersection with each other and with vertical posts.

3.2 CRIB CONSTRUCTION (Cont'd)

.4 Ballast floor:
.1 Place ballast floor on pockets on bottom or middle course of bottom timbers.
.2 Secure each ballast floor timber to bottom timbers with drift bolts such that adjacent ballast floor timbers are not secured to the same bottom timber.

.5 Longitudinals:
.1 Longitudinals one length for individual cribs below LNT.
.2 Longitudinals minimum 6100 mm long above LNT.
.3 Where cribs are married together, longitudinals of sufficient length to span a minimum of a half a bay of one crib and one and a half bays of the adjacent crib.
.4 Butt join exterior and interior longitudinals a minimum distance of 600 mm from crosstie with joint in centre of a 1200 mm long joiner block.
.5 Secure block to lower timber with drift bolt at centre and secure longitudinals and splice at ends to block with drift bolts.
.6 Stagger joints in longitudinal timbers. Do not join in same bay or on same vertical post.
.7 Secure longitudinals to intersection of cross ties with drift bolt and to intersection of vertical posts with machine bolt every third course of longitudinals, along with the top course.
.8 Countersink machine bolts on exterior face above LNT.

.6 Cross ties: one length across cribs.
.1 Secure cross ties to intersection of longitudinals with drift bolt and to intersection of vertical posts with machine bolt every third course of cross tie, along with the top course.
.2 One row of crossties and verticals may be eliminated from one crib where cribs marry together above +400 mm LNT.

.7 Vertical posts: one length from bottom of cribwork to top of cribwork. Locate one vertical post at corner of each crib and at intersection of crossties with longitudinals.

.8 Blocking: install treated timber filler blocking as indicated on drawings.
.1 Cut blocking exact length to completely fill spaces and such that the total thickness of crossties and longitudinals carrying the bearing weight of the deck be a minimum of 600 mm if cribwork ends on a crosstie.

3.2 CRIB CONSTRUCTION (Cont'd)

.8 (Cont'd)
.2 If cribwork ends on a longitudinal one additional tier of blocking is required.
.3 Blocking of same size and material as crossties or longitudinals and fastened with 2 drift bolts into timber immediately below it.

.9 Levelling: treated timber required for levelling of cribwork after ballasting, must be full width continuous over entire length to be levelled.

.10 Bolt Sizing and Holing:
.1 Drift Bolts: length of drift bolts equal to thickness of timbers fastened less 50 mm, unless otherwise specified. Bore holes for drift bolts 2 mm smaller diameter than bolt and for full length of bolt.
.2 Machine Bolts: length of machine bolts equal to thickness of timbers fastened plus thickness of washers plus 40 mm. Where bolts are countersunk, the length, as noted above, less depth of countersink. Thread machine bolts for 64 mm. Bore holes for machine bolts to same diameter as bolts.

3.3 HANDLING TREATED TIMBER

.1 Handle treated material without damaging original treatment.
.1 Replace treated timber with major damage to original treatment, as instructed by Departmental Representative.

.2 Field treatment: to CAN/CSA-O80. Apply and saturate cuts, minor surface damage, abrasions, and nail and spike holes with preservative.

.3 Ripping of treated timber not permitted without prior approval of Departmental Representative.

3.4 BALLAST

.1 Place ballast to avoid damage to timber cribwork.

.2 Place ballast so that differential height of fill between adjacent cells, at any time, will be less than 1 m.

.3 Pockets of cribs ballasted within 100 mm of top of crib timbers.

3.5 GRAVEL

.1 Install a 100 mm layer of gravel over the top of ballast to form a base for the reinforced concrete deck.

.2 Hand place final items of ballast stone to fill voids and depressions to hold gravel in place.

.3 Install gravel to grade required and compact in preparation for concrete deck work.

.4 Clean any loose gravel off timber surface prior to placement of deck.

3.6 TOLERANCES

.1 1 in 300 in overall dimensions.

.2 Locate cribs within 100 mm of location as indicated. Horizontal misalignment within 100 mm along the outside faces.

.3 Space between ballasted cribs within 200 mm. No payment for this space will be made above or below LNT.

3.7 PROTECTION

.1 Protect work from damage resulting from work on other sections and from damage resulting from environmental conditions.

.2 Repair or replace portion or entire crib at no additional cost if damaged by work.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section specifies requirements for supply and installation of structural timber as follows:
.1 Supply and installation of treated dimension timber wheelguard, wheelguard blocking, coping, cribwork timbers, floating docks, associated hardware, and painting.
.2 Supply and installation of treated or untreated dimension hardwood timber fenders and associated painting.
.3 Supply and installation of timber hardwood ladders, ladder handgrips, and associated hardware.

1.2 RELATED WORK

.1 Section 06 05 73 - Wood Treatment.

.2 Section 31 53 13 - Timber Cribwork.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM International).
.1 ASTM A307-14, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.

.2 American Society for Testing and Materials (ASTM International)
.1 ASTM A3125, Specification for Steel Bolts, 120,000 PSI Tensile.

.3 American Wood-Preserver's Association (AWPA).
.1 AWPA M4-15, Standard for the Care of Preservation - Treated Wood Products.

.4 Canadian Standards Association (CSA International).
.1 CSA B111-1974, Wire Nails, Spikes and Staples.
.2 CAN/CSA-G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Steel.
.3 CAN/CSA-O80 Series-15, Wood Preservation.

.5 Canadian Wood Council.
.1 Wood Design Manual.

.6 National Lumber Grades Authority (NLGA).
.1 Standard Grading Rules for Canadian Lumber.

1.4 DIMENSIONS

.1 Check existing site dimensions and report discrepancies to Departmental Representative before commencing work.

1.5 PROTECTION

.1 Avoid dropping, bruising or breaking of wood fibres.

.2 Avoid breaking surfaces of treated timber.

.3 Do not damage surfaces of treated timber by boring holes or driving nails or spikes into them to support temporary material or staging.

.4 Treat cuts, breaks or abrasions on surfaces of treated timber with 3 brush coats of preservative to CSA 080.

.5 Treat bolt holes, cutoffs and field cuts in accordance with CSA 080.

1.6 DELIVERY AND STORAGE

.1 Store timber horizontally, evenly supported and open piled permit circulation when stored for prolonged period.

.2 When handling long timber, provide support at sufficient number of points, properly located to prevent damage due to excessive bending.

.3 Handle treated timber with hemp, manilla or sisal rope slings or other approved means of support that will not damage surface.

.4 Do not use sharp pointed tools to handle treated timber. Any timber so handled will be rejected and be replaced at Contractor's expense.

1.7 MEASUREMENT FOR PAYMENT

.1 Structural Timber (Supply and Install):
.1 Treated Dimension Timber: The supply and installation of treated dimension timber for wheelguard, wheelguard blocking, and coping will be measured by the cubic metre(m^3) of timber secured in place, including all timber, fastenings, painting, wheel guard bolt hole levelling sealant, and any other plant, material, equipment and labour.

1.7 MEASUREMENT FOR PAYMENT (Cont'd)

.1 (Cont'd)

.2 Untreated Dimension Timber: The supply and installation of untreated dimension timber for fenders will be measured by the cubic metre (m^3) of timber secured in place, including all timber, fastenings, and any other plant, material, equipment and labour.

.3 Ladders - (Untreated): The supply and installation of untreated ladders as a unit will be measured by the unit secured in place. Contractor will provide all timber, fastenings, plant, material, equipment, and labour, including untreated dimension hardwood timber ladder uprights, ladder rungs, ladder handgrips, and painting of all faces of ladder uprights.

.2 Mobilization to, accommodations at, and demobilization from the individual identified project locations to be incidental to all of the above pay items.

.3 Payment for all dimension timber will be made on volume calculated from nominal sizes as indicated on drawing and specified, eg. 200 mm x 200 mm.

1.8 SUBMITTALS

.1 Submit shop drawings for buoyancy compartment shells and foam filler.

PART 2 - PRODUCTS

2.1 TIMBER MATERIALS

.1 Timber: Use 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.

.2 Species

.1 Wheelguard, wheelguard blocks, cribwork timbers: Hemlock or Douglas Fir (CCA or ACA treated).

.2 Hardwood fenders and ladder uprights: Birch or Maple (untreated).

.3 Grade: No. 1 Structural Grade

.4 Grading Authority: NLGA

2.1 TIMBER MATERIALS (Cont'd)

.5 Preservative Treatment: Treat to CSA 080, for coastal waters and Section 06 05 73 - Wood Treatment. Timbers will be treated in the lengths required. Unnecessary field cutting will not be permitted.

.6 Primer: Alkyd undercoat, exterior oil wood primer, similar to Pittsburgh 6-9.

.7 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "Safety Yellow" Product ID 7-808. Paint to conform to CAN/CGSB-1.61.

.8 Plywood: Unsanded marine grade Canadian softwood plywood to latest edition of CSA O151 or unsanded marine grade Douglas Fir plywood to latest edition of CSA O141.

2.2 MISCELLANEOUS STEEL AND FASTENINGS

.1 Miscellaneous Steel: All steel and fastenings to be CSA G40.21, Grade 300 W, galvanized.

.2 Nails and Spikes: to CSA B111.

.3 Machine Bolts and Nuts: to ASTM A307. All machine bolts and nuts to be galvanized.
.1 Lengths and sizes as detailed on drawings.

.4 Drift Bolts: to G40.21 from round stock button head and diamond or wedge point. All drift bolts to be galvanized.
.1 Lengths and sizes as detailed on drawings.

.5 Washers:
.1 Round Plate Washers: for 16 mm machine bolts will be 76 mm diameter by 6.4 mm thick, for 19 mm machine bolts will be 79 mm diameter by 7.9 mm thick and have a hole diameter of 18 mm and 21 mm diameter respectively. Washers to conform to G40.21. All washers to be galvanized.
.2 Plain Washers: to CSA B19.1, Class 2. All washers to be galvanized.
.3 Square washers are not permitted.

.6 Galvanizing: will conform to ASTMA123/A123M. Unless otherwise specified, minimum weight of zinc coating will be as stated in Table 1 of this standard. Fabricator is to adhere to recommendations of ASTM 123.

.7 Ladder Rungs and Hand Grips: to CSA G40.21, galvanized.

2.2 MISCELLANEOUS STEEL AND FASTENINGS (Cont'd)

.8 Welding in accordance with CSA Standards. The welders will be qualified to the appropriate classification as stated in CSA W47.1 "Certification of Companies for Fusion Welding of Steel Structures." Conform welding to all appropriate requirements and recommendations of CSA Standard W59 "Welded Steel Construction" (metal arc welding).

2.3 ANCHOR BOLTING SYSTEM

.1 Anchor bolts, where required, for anchoring coping and/or wheelguard will be 19 mm diameter resin cartridge anchors.

.2 Submit shop drawings and manufacturer's specification for anchor bolts for approval.

.3 Anchor bolts to be installed with strict adherence to manufacture specifications.

2.4 BUOYANCY COMPARTMENTS

.1 Buoyancy compartment shells to be manufactured from linear virgin polyethylene resin containing UV ray inhibitors and carbon black pigment to protect against ultra-violet deterioration. Shells shall be rotationally molded for seamless, one-piece construction with a 3.2 mm wall thickness.

.2 Buoyancy compartment shells to be filled with urethane foam with a maximum density of 32 kg/m^3.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Install structural timbers to details shown on drawings or as specified.

3.2 WHEELGUARD AND WHEELGUARD BLOCKING

.1 Wheelguard timbers to be 200 mm x 200 mm and will be in minimum lengths of 6100 mm or as specially required with butt joints made over wheelguard blocking. Wheelguard timbers to be chamfered on top, 25 mm on each horizontal and vertical surface.

.2 Wheelguard blocks will be installed at 1500 mm on centre as support for wheelguard.

3.2 WHEELGUARD AND WHEELGUARD BLOCKING (Cont'd)

.3 Wheelguard will be secured through wheelguard blocking, coping and two (2) crib timbers below with two (2) 25 mm diameter drift bolts as shown on detail drawings.

.4 The installation of wheelguard and wheelguard blocking as per detail.

3.3 COPING

.1 Install 200 mm x 250 mm, or dimensions as indicated, treated timber coping in minimum length of 7620 mm around perimeter of wharf as directed.

.2 Secure coping to timber below with 19 mm diameter drift bolts spaced at 1500 mm on centre.

.3 Secure coping to new concrete deck as indicated. All bolts to be countersunk on the exterior face. all countersinking to be drilled.

3.4 LADDERS

.1 Install ladders on face of wharf in locations shown on drawings or designated by Departmental Representative.

.2 Ladder uprights size to be 150 mm x 150 mm and installed from 1000 mm below LNT to wheelguard elevation. Uprights to be bevelled at 45° on top and painted on all faces as specified.

.3 Construction details and steel handgrips as per detail.

.4 Secure each upright with four (4) each evenly spaced 19 mm diameter galvanized lag screws. All lag screws to be countersunk.

.5 Provide notch in upright for ladders as detailed on drawings to accommodate waterline.

3.5 PAINTING

.1 Paint four (4) sides and exposed ends of wheelguard, exposed sides of wheelguard blocking, tops of fenders, and complete ladder uprights as directed by the Departmental Representative.

3.5 PAINTING (Cont'd)

.2 Use one (1) coat of exterior oil wood primer and two (2) coats of alkyd/oil resin paint as specified. Paint materials for each coat to be product of a single manufacturer as specified. Ensure previous coat of primer or paint is dry before second coat is applied.

3.6 FLOATING DOCK TIMBER

.1 Install floating dock timbers and all other floating dock components as indicated on drawings.

3.7 BOLT SIZING

.1 Drift Bolts: Drift bolts used in the work will have a length equal to thickness of timbers being fastened less 50 mm unless otherwise specified. Holes for drift bolts will be bored 2 mm smaller diameter than size of steel used and for full length of bolts.

.2 Machine Bolts: Machine bolts used in work will have a length equal to thickness of timbers being fastened plus thickness of washers plus 40 mm. Where bolts are countersunk, the length will be as above less depth of countersinking. Machine bolts will be threaded for 64 mm. Holes will be drilled same diameter as bolt.

.3 Lag Screws: All lag screws used in the work will have a length equal to thickness of timbers being fastened less 50 mm and depth of countersinking. Holes for lag screws to be drilled same diameter as shank portion of screw and to inside thread diameter for threaded portion of screw and for full length. All lag screws will be countersunk, screwed, not driven in place, and will have one (1) standard washer under the head.

.4 Countersink drift bolts and/or lag screws in hardwood fenders, chocks, ladders, and slipway runners to the extent that the minimum distance from face of timber to head of bolt is 12 mm.

.5 Bolting of timbers without properly drilled bolt holes will not be accepted.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 Section 31 05 16 - Aggregate Materials.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
.1 ASTM C 117-13, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
.2 ASTM C 131-14, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
.3 ASTM C 136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
.4 ASTM D 698-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft^3) (600kN-m/m^3).
.5 ASTM D 1557-12, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft^3) (2,700kN-m/m^3).
.6 ASTM D 1883-16, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
.7 ASTM D 4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and stockpile aggregates in accordance with Section 31 05 16 - Aggregate Materials. Stockpile minimum 50% of total aggregate required prior to beginning operation.

.2 Store cement in weather tight bins or silos that provide protection from dampness and easy access for inspection and identification of each shipment.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Divert unused granular material from landfill to local facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular base: material in accordance with Section 31 05 16 - Aggregate Materials and following requirements:

.1 Crushed stone or gravel.

.2 Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1.

.1 Gradation Method #1 to:

Designation	Type I	Type II
75mm	-	-
50mm	-	100
37.5mm	-	-
25mm	-	60-100
19mm	100	-
12.5mm	70-100	38-70
9.5mm	-	-
4.75mm	40-70	25-55
2.00mm	23-50	13-42
0.425mm	7-25	5-28
0.180mm	-	-
0.075mm	3-8	2-10

.2 Material to level surface depressions to meet gradation (2) limits in accordance with Method #1.

.3 Liquid limit: to ASTM D 4318, maximum 25

.4 Plasticity index: to ASTM D 4318, 6 maximum

.5 Los Angeles degradation: to ASTM C 131. Max. % loss by weight: 45

.6 Crushed particles: at least 60% of particles by mass within each of following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C 136.

Passing		Retained on
50mm	to	25mm
25mm	to	19.0mm

25mm	to	19.0mm
19.0mm	to	4.75mm

PART 3 - EXECUTION

3.1 SEQUENCE OF OPERATION

.1 Place granular base after sub-base surface is inspected and approved by Departmental Representative.

.2 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 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
.5 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
.6 Remove and replace that portion of layer in which material becomes segregated during spreading.

.3 Compaction Equipment
.1 Compaction equipment to be capable of obtaining required material densities.

.4 Compacting
.1 Compact to density not less than 100% maximum dry density in accordance with ASTM D 698 ASTM D 1557.
.2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
.3 Apply water as necessary during compacting to obtain specified density.
.4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
.5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.2 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.

3.3 PROTECTION

.1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance by Departmental Representative.

.2 Given the unknown structural integrity of the existing buildings foundations the Contractor shall take great care when placing and compacting fills. The Contractor shall make all provisions to ensure existing buildings and their foundations are not susceptible to major loading.

3.4 TESTING

.1 Contractor will appoint and pay for a third-party quality assurance/quality control testing laboratory firm, certified by the Canadian Council of Independent Laboratories (CCiL).

.2 Testing of Type I Base and Type II Granulars Sub-base: Provide laboratory testing, field monitoring and compaction testing.

.3 Third-party firm will provide regular reports of all testing activities completed.

.4 Testing shall be completed on the entirety of each area aggregate materials are placed. Testing shall include, but not be limited to the following:
.1 Verification of subgrade prior to placement of aggregate.
.2 Gradation and proctor lab analysis of all aggregate materials used for the project.
.3 In-field compaction testing of each aggregate material placed.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

.1 This method covers measurement of loss of Marshall Stability resulting from action of water on compacted asphalt paving mixtures containing penetration grade asphalt cement.

.2 Numerical index of retained stability is obtained by comparing stability of specimens determined in accordance with usual Marshall procedures with stability of specimens that have been immersed in water for prescribed period.

.3 Have tests carried out by approved testing company.

.4 Pay all cost associated with testing.

1.2 REFERENCES

.1 American Association of State Highway and Transportation Officials (AASTHO):
.1 AASHTO T245-15, Standard Method of Test for Resistance to Plastic flow of Bituminous Mixtures Using Marshall Apparatus.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Representative samples of each asphalt paving mixture proposed for use on Project.

2.2 EQUIPMENT

.1 One or more water baths with automatic controls for immersing specimens. Baths normally used for Marshall test are suitable for test.

.2 Scale and water bath with suitable accessory equipment for weighing test specimens in air and in water to determine their densities.

.3 Flat transfer plates of glass or metal. Keep one plate under each specimen during immersion period and during subsequent handling, except when weighing and testing, to prevent breakage or distortion of specimens.

.4 Apparatus required to conduct Marshall test.

PART 3 - EXECUTION

3.1 PREPARATION OF TEST SPECIMENS

.1 Prepare at least four (4) specimens for each test, in accordance with AASHTO T245, except where specified otherwise.

3.2 TEST PROCEDURE

.1 Do Marshall testing in accordance with AASHTO T245, except where specified otherwise.

.2 Weigh each specimen in air and in water. Weigh in water as rapidly as possible to minimize absorption.

.3 Calculate specific gravity of each specimen as follows:
.1 Specific Gravity = A / (A-B)
.2 Where A = weight of specimen in air in grams
.3 B = weight of specimen in water in grams

.4 Sort each set of four (4) specimens into two (2) groups of two (2) specimens each so that average specific gravity of specimens in group 1 is essentially same as that of group 2.

.5 Test group 1 specimens for Marshall stability. Calculate S1 = Marshall stability of group 1 (average).

.6 Immerse group 2 specimens in water for 24 h at 60 °C, then test immediately for Marshall stability. Calculate S2 = Marshall stability of group 2 (average).

3.3 TEST REPORT

.1 Test results to be provided to Departmental Representative.

.2 Report numerical index of retained stability as resistance of asphaltic paving mixtures to detrimental effect of water, expressed as percentage of original stability retained after immersion period.

.3 Calculate index as follows:
.1 Index of Retained Stability = S2 / S1 x 100.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and application of asphalt tack coat to an existing asphalt or concrete surface prior to asphalt paving.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.

.2 American Society of Testing and Materials (ASTM):
.1 ASTM D140/D140M-16, Standard Practice for Sampling Asphalt Materials.
.2 ASTM D977-19, Standard Specification for Emulsified Asphalt.
.3 ASTM D2028/D2028-15, Standard Specification for Cutback Asphalt (Rapid Curing Type).

1.3 QUALITY ASSURANCE

.1 Upon request by Departmental Representative, submit manufacturer's test data and certification that asphalt tack coat material meets requirements of this section.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with ASTM D 140.

.2 Provide, maintain and restore asphalt storage area.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 The Contractor has the option of using type RC-70 cut back asphalt, a solution of type RS-1k emulsified asphalt or a solution of type SS-1h emulsified asphalt, as the tack coat material, or other materials approved by the Departmental Representative. The Departmental Representative shall be notified in advance as to which type the Contractor intends to use and the tack coat shall meet the following standards:
.1 Type RC-70 cut back asphalt shall conform to ASTM D2028.

2.1 MATERIALS (Cont'd)

.1 (Cont'd)

.2 Type RS-1k emulsified asphalt shall conform to ASTM D977.

.3 Type SS-1h emulsified asphalt shall conform to ASTM D977. Water for forming the solution with the SS-1h shall be clean water free from impurities.

2.2 EQUIPMENT

.1 Apply tack coat by means of an approved pressure distributor equipped with thermometer, pressure gauge, fifth wheel tachometer and suitable spray nozzles which shall all be of the same orifice and manufacturer and capable of producing a fog-type spray. Set the slot of each nozzle at 30 degrees to the axis of the spray bar and the spray bar shall be set at a height above the existing pavement that will permit the fan from each nozzle to overlap its neighbouring fan by exactly half.

PART 3 - EXECUTION

3.1 APPLICATION

.1 Apply asphalt tack coat only on clean and dry surface and then only when the atmospheric temperature is a least 10 degrees C.

.2 Apply type RC-70 tack coat at a temperature between 38°C and 80°C and at a rate of 0.25 l/m² on old pavement. Do not exceed the recommended application rate. However, on pavement which was placed during the previous construction season the rate of application shall be as directed by the Departmental Representative. The rate will not exceed the rate for the old pavement.

.3 Apply type RS-1k tack coat at a temperature between 38°C and 80°C and at a rate of 0.15 l/m² on old pavement. Do not exceed the recommended application rate. However, on pavement which was placed during the previous construction season the rate of application shall be as directed by the Departmental Representative. The rate will not exceed the rate for the old pavement.

3.1 APPLICATION (Cont'd)

.4 Dilute type SS-1h emulsion with an equal volume of water prior to the application. Apply the diluted SS-1h emulsion at a rate of 0.5 l/m² of diluted emulsion on old pavement. Both the mixing temperature and the application temperature shall be between 20°C and 50°C. Care must be exercised no to exceed the recommended application rate. However, on pavement which was placed during the previous construction season the rate of application shall be as directed by the Departmental Representative. Do not exceed the rate for old pavement.

.5 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.

.6 Do not apply asphalt tack coat when rain is forecast within 2 hours of application.

.7 Apply asphalt tack coat only on unfrozen surface.

.8 Evenly distribute localized excessive deposits of tack coat by brooming as directed by Departmental Representative.

.9 Where traffic is to be maintained, treat no more than one half of width of surface in one application.

.10 Keep traffic off tacked areas until asphalt tack coat has set.

.11 Re-tack contaminated or disturbed areas as directed by Departmental Representative.

.12 Permit asphalt tack coat to set before placing asphalt pavement.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for asphalt concrete paving including asphalt patching.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 35 28 - Health and Safety Requirements.

.3 Section 31 05 16 - Aggregate Materials.

.4 Section 32 12 10 - Marshall Immersion Test for Bitumen.

1.3 REFERENCES

.1 American Association of State Highway and Transportation Officials (AASHTO):
.1 AASHTO T283-14(R2018), Standard Specification for Resistance of Compacted Asphalt Moisture-Induced Damage.
.2 AASHTO T329-15, Standard Test Method for Moisture Content of Hot-Mix Asphalt (HMA) by Oven Method.
.3 AASHTO M320-17, Standard Specification for Performance Graded Asphalt Binder.
.4 AASHTO R29-15, Standard Specification for Grading or Verifying the Performance Graded of an Asphalt Binder.
.5 AASHTO T245-15, Resistance to Plastic flow of Bituminous Mixtures Using Marshall Apparatus.

.2 Asphalt Institute (AI):
.1 AI MS2-1994 Sixth Edition, Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.

.3 American Society for Testing and Materials International, (ASTM):
.1 ASTM C88-18, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
.2 ASTM C117-17, Standard Test Method for Material Finer Than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
.3 ASTM C123-14, Standard Test Method for Lightweight Particles in Aggregate.
.4 ASTM C127-15, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.

1.3 REFERENCES (Cont'd)

.3 (Cont'd)

.5 ASTM C128-15, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.

.6 ASTM C131-14, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.7 ASTM C136-14, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

.8 ASTM C207-18, Standard Specification for Hydrated Lime for Masonry Purposes.

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

.10 ASTM D2419-14, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

.11 ASTM D3203-17, Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.

.12 ASTM D4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

.4 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-8.2-M88, Sieves Testing, Woven Wire, Metric.

.2 CAN/CGSB-16.3-M90, Asphalt Cements for Road Purposes.

1.4 PRODUCT DATA

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit viscosity-temperature chart for asphalt cement to be supplied showing either Saybolt Furol viscosity in seconds or Kinematic Viscosity in centistokes, temperature range 105 to 175 degrees C at least one (1) week prior to beginning Work.

.3 Submit manufacturer's test data and certification that asphalt cement meets requirements of this Section.

.4 Submit asphalt concrete mix design and trial mix test results to Departmental Representative for review at least one (1) week prior to beginning Work.

1.5 SAMPLES

.1 Submit test certificates from testing laboratory showing suitability of materials for this project.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver and stockpile aggregates in accordance with Section 31 05 16 - Aggregate Materials. Stockpile minimum 50% of total amount of aggregate required before beginning asphalt mixing operation.

.2 When necessary to blend aggregates from one or more sources to produce required gradation, do not blend in stockpiles.

.3 Stockpile fine aggregate separately from coarse aggregate, although separate stockpiles for more than two mix components are permitted.

.4 Provide approved storage, heating tanks and pumping facilities for asphalt cement.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.3 Divert unused aggregate materials from landfill to quarry facility for reuse as approved by Departmental Representative.

.4 Divert unused asphalt from landfill to facility capable of recycling materials.

.5 Fold up metal banding, flatten and place in designated area for recycling.

1.8 MEASUREMENT FOR PAYMENT

.1 Full depth asphalt removal and patch, including granulars:

1.8 MEASUREMENT FOR PAYMENT (Cont'd)

.1 (Cont'd)

.1 Removal of existing, and supply and installation of new, asphalt and granulars to be measured by the square meter (m^2), calculated from actual field measurements. Contractor to provide all plant, equipment, labour and material required to complete the work as detailed and specified. Include incidental to the unit price, all costs for saw cutting, tack coat, quality control testing, and demolition, removal and disposal to complete the work.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Performance graded asphalt cement: to AASHTO M320, grade PG 58 - 28 when tested to AASHTO R29.

.2 Aggregates: in accordance with Section 31 05 16 - Aggregate Materials: General and following requirements:

.1 Crushed stone or gravel.

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

.3 Table 1

Sieve Designation	% Passing	
	Lower Course	Surface Course
22.0 mm	100	100
19.0 mm	90-100	100
12.5 mm	75-90	93-100
9.5 mm	63-84	75-92
4.75 mm	35-70	55-75
2.00 mm	20-55	32-55
0.425 mm	10-25	12-25
0.150 mm	5-12	5-12
0.075 mm	3-7	3-7

.4 Asphalt cement (% by weight of total mixture) to be 4.5 - 7.0 for surface course and lower course.

.5 Coarse aggregate: aggregate retained on 4.75 mm sieve and fine aggregate is aggregate passing 4.75 mm sieve when tested to ASTM C136.

.6 When dryer drum plant or plant without hot screening is used, process fine aggregate through 4.75 mm sieve and stockpile separately from coarse aggregate.

2.1 MATERIALS (Cont'd)

.2 (Cont'd)

.7 Do not use aggregates having known polishing characteristics in mixes for surface courses.

.8 Sand equivalent: ASTM D2419. Min: 50.

.9 Magnesium Sulphate soundness: to ASTM C88. Max% loss by mass:

.1 Coarse aggregate surface course: 12%.

.2 Coarse aggregate lower course: 12%.

.3 Fine aggregate, surface course: 16%.

.4 Fine aggregate, lower course: 16%.

.10 Los Angeles degradation: Grading B, to ASTM C131. Max % loss by mass:

.1 Coarse aggregate, surface course: 35%.

.2 Coarse aggregate, lower course: 35%.

.11 Absorption: to ASTM C127. Max % by mass:

.1 Coarse aggregate, surface course: 1.75%.

.2 Coarse aggregate, lower course: 2.00%.

.12 Loss by washing: to ASTM C117. Max % passing 0.075 mm sieve:

.1 Coarse aggregate, surface course: 1.75%.

.2 Coarse aggregate, lower course: 1.75%.

.13 Lightweight particles: to ASTM C123. Max % by mass less than 1.95 relative density:

.1 Surface course: 1.5%.

.2 Lower course: 3.0%.

.14 Flat and elongated particles: to ASTM D4791, (with length to thickness ratio greater than 5): Max % by mass:

.1 Coarse aggregate, surface course: 20%.

.2 Coarse aggregate, lower course: 20%.

.15 Crushed fragments: at least 60 % of particles by mass within each of following sieve designation ranges, to have at least 1 freshly fractured face. Material to be divided into ranges, using methods of ASTM C136.

Passing		Retained on
25 mm	to	12.5 mm
12.5 mm	to	4.75 mm

.16 Regardless of compliance with specified physical requirements, fine aggregates may be accepted or rejected on basis of past field performance.

.3 Mineral filler:

.1 Finely ground particles of limestone, hydrated lime, Portland cement or other approved non-plastic mineral matter, thoroughly dry and free from lumps.

2.1 MATERIALS (Cont'd)

.3 (Cont'd)
.2 Add mineral filler when necessary to meet job mix aggregate gradation or as directed to improve mix properties.
.3 Mineral filler to be dry and free flowing when added to aggregate.

.4 Provide and pay for test results from a reputable testing company approved by the Departmental Representative showing sieve analysis for each type of mixture, asphalt cement content, and confirming aggregate properties meet the requirements of this Section.

2.2 EQUIPMENT

.1 Pavers: mechanical grade controlled self-powered pavers capable of spreading mix within specified tolerances, true to line, grade and crown indicated.

.2 Rollers: sufficient number of type and weight to obtain specified density of compacted mix.

.3 Vibratory rollers:
.1 Minimum drum diameter: 1200 mm.
.2 Maximum amplitude of vibration (machine setting): 0.5 mm for lifts less than 40 mm thick.

.4 Haul trucks: sufficient number and of adequate size, speed and condition to ensure orderly and continuous operation and as follows:
.1 Boxes with tight metal bottoms.
.2 Covers of sufficient size and weight to completely cover and protect asphalt mix when truck fully loaded.
.3 In cool weather or for long hauls, insulate entire contact area of each truck box.

.5 Hand tools:
.1 Lutes or rakes with covered teeth for spreading and finishing operations.
.2 Tamping irons having mass not less than 12 kg and bearing area not exceeding 310 cm^2 for compacting material along curbs, gutters and other structures inaccessible to roller. Mechanical compaction equipment, when approved by Departmental Representative, may be used instead of tamping irons.
.3 Straight edges, 4.5 m in length, to test finished surface.

2.3 MIX DESIGN

.1 Mix design to be approved by Departmental Representative.

.2 Mix design to be developed by testing laboratory approved by Departmental Representative.

.3 Design of mix: by Marshall method to requirements below.
.1 Compaction blows on each face of test specimens: 75.
.2 Mix physical requirements:

Property	Roads
Marshall Stability at 60°C kN mm	8.0 surface course 5.4 lower course
Flow Value mm	2.5-4.25
Air Voids in Mixture, %	2.5-4.0 surface course 3.0-5.0 lower course
Voids in Mineral Aggregate, % min	15 surface course 14 lower course
Index of Retained Stability % minimum	75

.3 Modified Lotman AASWTO T283 - Tensile Strength ratio to be a minimum of 0.7.
.4 Moisture content of Hot Mix Asphalt by Oven Method, AASHTO T329 as percent of HMA to be a maximum of 0.3.
.5 Measure physical requirements as follows:
.1 Marshall load and flow value: to AASHTO T245.
.2 Compute void properties on basis of bulk specific gravity of aggregate to ASTM C127 and ASTM C128. Make allowance for volume of asphalt absorbed into pores of aggregate.
.3 Air voids: to ASTM D3203.
.4 Voids in mineral aggregates: to AI MS2, chapter 4.
.5 Index of Retained Stability: measure in accordance with Section 32 12 10 - Marshall Immersion Test for Bitumen.
.6 Do not change job-mix without prior approval of Departmental Representative. When change in material source proposed, new job-mix formula will be provided to be approved to be reviewed by Departmental Representative.

2.3 MIX DESIGN (Cont'd)

.3 (Cont'd)
.7 Return plant dust collected during processing to mix in quantities acceptable to Departmental Representative.

.4 Contractor to provide and pay for testing confirming that mix provided meets the requirements of this Section. Testing company to be CSA certified and approved by the Departmental Representative.

PART 3 - EXECUTION

3.1 PLANT AND MIXING REQUIREMENTS

.1 Batch and continuous mixing plants:
.1 To ASTM D995.
.2 Feed aggregates from individual stockpiles through separate bins to cold elevator feeders. Do not load frozen materials into bins.
.3 Feed cold aggregates to plant in proportions to ensure continuous operations.
.4 Calibrate bin gate openings and conveyor speeds to ensure mix proportions are achieved.
.5 Before mixing, dry aggregates to moisture content not greater than 1% by mass or to lesser moisture content if required to meet mix design requirements.
.6 Immediately after drying, screen aggregates into hot storage bins in sizes to permit recombining into gradation meeting job-mix requirements.
.7 Store hot screened aggregates in manner to minimize segregation and temperature loss.
.8 Heat asphalt cement and aggregate to mixing temperature directed by Departmental Representative. Do not heat asphalt cement above maximum temperature indicated on temperature-viscosity chart.
.9 Make available current asphalt cement viscosity data at plant. With information relative to viscosity of asphalt being used, Departmental Representative to review temperature of completed mix at plant and at paver after considering hauling and placing conditions.
.10 Maintain temperature of materials within 5 degrees C of specified mix temperature during mixing.
.11 Mixing time:
.1 In batch plants, both dry and wet mixing times as directed by Departmental Representative. Continue wet mixing as long as necessary to obtain thoroughly blended mix but not less than 30s or more than 75s.

3.1 PLANT AND MIXING REQUIREMENTS (Cont'd)

.1 (Cont'd)

.11 (Cont'd)

.2 In continuous mixing plants, mixing time as directed by Departmental Representative but not less than 45s.

.3 Do not alter mixing time unless directed by Departmental Representative.

.2 Dryer drum mixing plant:

.1 To ASTM D995.

.2 Load aggregates from individual stockpiles to separate cold feed bins. Do not load frozen materials into bins.

.3 Feed aggregates to burner end of dryer drum by means of multi-bin cold feed unit and blend to meet job-mix requirements by adjustments of variable speed feed belts and gates on each bin.

.4 Meter total flow of aggregate by an electronic weigh belt system with indicator that can be monitored by plant operator and which is interlocked with asphalt pump so that proportions of aggregate and asphalt entering mixer remain constant.

.5 Provide for easy calibration of weighing systems for aggregates without having material enter mixer.

.6 Calibrate bin gate openings and conveyor speeds to ensure mix proportions are achieved. Calibrate weigh bridge on charging conveyor by weighing amount of aggregate passing over weigh bridge in set amount of time. Difference between this value and amount shown by plant computer system to differ by not more than plus or minus 2%.

.7 Make provision for conveniently sampling full flow of materials from cold feed.

.8 Provide screens or other suitable devices to reject oversize particles or lumps of aggregate from cold feed prior to entering drum.

.9 Provide system interlock stop on feed components if either asphalt or aggregate from bin stops flowing.

.10 Accomplish heating and mixing of asphalt mix in approved parallel flow dryer-mixer in which aggregate enters drum at burner end and travels parallel to flame and exhaust gas stream. Control heating to prevent fracture of aggregate or excessive oxidation of asphalt. Equip system with automatic burner controls and provide for continuous temperature sensing of asphalt mixture at discharge, with printing recorder that can be monitored by plant operator. Submit printed record of mix temperatures at end of each day.

3.1 PLANT AND MIXING REQUIREMENTS (Cont'd)

.2 (Cont'd)
.11 Mixing period and temperature to produce uniform mixture in which particles are thoroughly coated, and moisture content of material as it leaves mixer to be less than 2%.

.3 Temporary storage of hot mix:
.1 Provide mix storage of sufficient capacity to permit continuous operation and designed to prevent segregation.
.2 Do not store asphalt mix in storage bins in excess of 3 hours.

.4 Mixing tolerances:
.1 Permissible variation in aggregate gradation from job mix (percent of total mass).

4.75 mm sieve and larger	5.0
2.00 mm sieve	4.0
0.425 mm sieve	3.0
0.180 mm sieve	2.0
0.075 mm sieve	1.0

.2 Permissible variation of asphalt cement from job mix: 0.25%.
.3 Permissible variation of mix temperature at discharge from plant: 5 degrees C.

3.2 PREPARATION

.1 Prior to laying mix, clean surfaces of loose and foreign material.

3.3 TRANSPORTATION OF MIX

.1 Transport mix to job site in vehicles cleaned of foreign material.

.2 Paint or spray truck beds with lime water, soap or detergent solution, or non petroleum based commercial product, at least daily or as required. Elevate truck bed and thoroughly drain. No excess solution to remain in truck bed.

.3 Schedule delivery of material for placing in daylight, unless Departmental Representative approves artificial light.

.4 Deposit mix from surge or storage silo to trucks in multiple drops to reduce segregation. Do not dribble mix into trucks.

3.3 TRANSPORTATION OF MIX (Cont'd)

.5 Deliver material to paver at uniform rate and in an amount within capacity of paving and compacting equipment.

.6 Deliver loads continuously in covered vehicles and immediately spread and compact. Deliver and place mixes at temperature within range as directed by Departmental Representative, but not less than 135 degrees C.

3.4 PLACING

.1 Obtain Departmental Representative's approval of existing concrete deck surface prior to placing asphalt bituminous tack coat.

.2 Place asphalt concrete to thicknesses, grades and lines as indicated. Bevel all perimeter edges of asphalt as indicated on drawings.

.3 Placing conditions:
.1 Place asphalt mixtures only when air temperature is above 5 degrees C, or as acceptable and approved by Departmental Representative.
.2 When temperature of surface on which material is to be placed falls below 10 degrees C, provide extra rollers as necessary to obtain required compaction before cooling.
.3 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 Place asphalt concrete in compacted lifts of thickness as indicated.
.1 Lower course in 1 layer of 37.5 mm.
.2 Surface course in 1 layer of maximum 37.5 mm.

.5 No course shall be placed upon a previously laid course less than 12 hours after final compaction of the latter, except with the permission of the Departmental Representative.

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

.7 Spread and strike off mixture with self propelled mechanical finisher.
.1 Construct longitudinal joints and edges true to line markings. Departmental Representative to establish lines for paver to follow parallel to centerline of proposed pavement. Position and operate paver to follow established line closely.

3.4 PLACING (Cont'd)

.7 (Cont'd)

.2 When using pavers in echelon, have first paver follow marks or lines, and second paver follow edge of material placed by first paver. Work pavers as close together as possible and in no case permit them to be more than 30 m apart.

.3 Maintain constant head of mix in auger chamber of paver during placing.

.4 If segregation occurs, immediately suspend spreading operation until cause is determined and corrected.

.5 Correct irregularities in alignment left by paver by trimming directly behind machine.

.6 Correct irregularities in surface of pavement course directly behind paver. Remove by shovel or lute excess material forming high spots. Fill and smooth indented areas with hot mix. Do not broadcast material over such areas.

.7 Do not throw surplus material on freshly screened surfaces.

.8 When hand spreading is used:

.1 Distribute material uniformly. Do not broadcast material.

.2 During spreading operation, thoroughly loosen and uniformly distribute material by lutes or covered rakes. Reject material that has formed into lumps and does not break down readily.

.3 After placing and before rolling, check surface with templates and straightedges and correct irregularities.

.4 Provide heating equipment to keep hand tools free from asphalt. Control temperature to avoid burning material. Do not use tools at higher temperature than temperature of mix being placed.

3.5 COMPACTING

.1 Have compaction testing carried out by an approved testing company.

.2 Cost of testing shall be paid for by the Contractor.

.3 Testing company shall issue reports on compaction to Departmental Representative.

.4 Do not change rolling pattern unless mix changes or lift thickness changes. Change rolling pattern only as directed by Departmental Representative.

.5 Roll asphalt continuously to density not less than 98% of blow Marshall density to AASHTO T245

3.5 COMPACTING (Cont'd)

.6 General:

.1 Provide at least two (2) rollers and as many additional rollers as necessary to achieve specified pavement density. When more than two rollers are required, one roller must be pneumatic tired type.

.2 Start rolling operations as soon as placed mix can bear weight of roller without excess displacement of material or cracking of surface.

.3 Operate roller slowly initially to avoid displacement of material. Do not exceed 5 km/h for breakdown and intermediate rolling for static steel-wheeled and pneumatic tired rollers. Do not exceed 9 km/h for finish rolling.

.4 For lifts 50 mm thick and greater, adjust speed and vibration frequency of vibratory rollers to produce minimum of 25 impacts per metre of travel. For lifts less than 50 mm thick, impact spacing not to exceed compacted lift thickness.

.5 Overlap successive passes of roller by minimum of 200 mm and vary pass lengths.

.6 Keep wheels of roller slightly moistened with water to prevent pick-up of material but do not over-water.

.7 Do not stop vibratory rollers on pavement that is being compacted with vibratory mechanism operating.

.8 Do not permit heavy equipment or rollers to stand on finished surface before it has been compacted and has thoroughly cooled.

.9 After traverse and longitudinal joints and outside edge have been compacted, start rolling longitudinally at low side and progress to high side. Confirm all points across width of pavement receive essentially equal numbers of passes of compactors.

.10 When paving in echelon, leave unrolled 50 to 75 mm of edge which second paver is following and roll when joint between lanes is rolled.

.11 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.

.7 Breakdown rolling:

.1 Begin breakdown rolling with static steel wheeled roller vibratory roller immediately following rolling of transverse and longitudinal joint and edges.

.2 Operate rollers as close to paver as necessary to obtain adequate density without causing undue displacement.

3.5 COMPACTING (Cont'd)

.7 (Cont'd)
.3 Operate breakdown roller with drive roll or wheel nearest finishing machine. When working on steep slopes or super-elevated sections use operation approved by Departmental Representative.
.4 Use only experienced roller operators.

.8 Intermediate rolling:
.1 Use pneumatic-tired, steel wheel or vibratory rollers and follow breakdown rolling as closely as possible and while paving mix temperature allows maximum density from this operation.
.2 Rolling to be continuous after initial rolling until mix placed has been thoroughly compacted.

.9 Finish rolling:
.1 Accomplish finish rolling with two-axle or three-axle tandem steel wheeled rollers while material is still warm enough for removal of roller marks. If necessary to obtain desired surface finish, use pneumatic-tired rollers as directed by Departmental Representative.
.2 Conduct rolling operations in close sequence.

3.6 JOINTS

.1 General:
.1 Remove surplus material from surface of previously laid strip. Do not deposit on surface of freshly laid strip.
.2 Paint contact surfaces of existing structures such as Portland cement concrete deck, manholes, curbs or gutters with bituminous material prior to placing adjacent pavement.

.2 Transverse joints:
.1 Offset transverse joint in succeeding lifts by at least 600 mm.
.2 Cut back to full depth vertical face and tack face with thin coat of hot asphalt prior to continuing paving.
.3 Compact transverse joints to provide smooth riding surface. Use methods to prevent rounding of compacted surface at joints.

.3 Longitudinal joints:
.1 Offset longitudinal joints in succeeding lifts by at least 150 mm.
.2 Cold joint is defined as joint where asphalt mix is placed, compacted and left to cool below 100 degrees C prior to paving of adjacent lane.

3.6 JOINTS (Cont'd)

.3 (Cont'd)
.2 (Cont'd)
.1 If cold joint can not be avoided, cut back by saw cutting previously laid lane, by at least 150 mm, to full depth vertical face, and tack face with thin coat of hot asphalt of adjacent lane.
.3 Overlap previously laid strip with spreader by 25 to 50 mm.
.4 Before rolling, carefully remove and discard coarse aggregate in material overlapping joint with lute or rake.
.5 Roll longitudinal joints directly behind paving operation.
.6 When rolling with static or vibratory rollers, have most of drum width ride on newly placed lane with remaining 150 mm extending onto previously placed and compacted lane.

.4 Construct bevel joints so that thinner portion of joint contains fine graded material obtained by changed mix design or by raking out coarse aggregate in mix. Place and compact joint so that joint is smooth and without visible breaks in grade.

.5 Construct butt joints as directed by Departmental Representative.

3.7 ASPHALT PATCHING

.1 Cutting out:
.1 The area to be patched shall be agreed upon by the Departmental Representative. Cut out the sections marked true and square to expose a fresh vertical face clear of any broken or loose material.

.2 Application of asphaltic material:
.1 Where new asphalt is to meet existing asphalt a tack coat of asphalt cement is to be applied to the face of the existing asphalt prior to placing the asphaltic concrete.

.3 Placing asphalt:
.1 Before placing any asphalt the Contractor shall compact all backfilled materials; place and compact to 95% modified proctor density, of Type I granular base to the thickness of original bedding and to a maximum of 150 mm.
.2 Confirm all asphaltic patching is equal in thickness to the original pavement but in no case less than 50 mm or more than 100 mm.

3.7 ASPHALT PATCHING (Cont'd)

.4 Complete spreading, finishing and rolling as specified in this Section.

3.8 FINISH TOLERANCES

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

.2 Finished asphalt surface not to have irregularities exceeding 5 mm when checked with 4.5 m straight edge placed in any direction.

3.9 DEFECTIVE WORK

.1 Correct irregularities which develop before completion of rolling by loosening surface mix and removing or adding material as required. If irregularities or defects remain after final compaction, remove surface course promptly and lay new material to form true and even surface and compact immediately to specified density.

.2 Repair areas showing checking, rippling, or segregation.

.3 Adjust roller operation and screed settings on paver to prevent further defects such as rippling and checking of pavement.

3.10 TESTING

.1 Contractor will appoint and pay for a third-party quality assurance/quality control testing laboratory firm, certified by the Canadian Council of Independent Laboratories (CCiL).

.2 Testing of asphalt courses: Provide laboratory testing, field monitoring and compaction testing.

.3 Third-party firm will provide regular reports of all testing activities completed.

.4 Testing shall include, but not be limited to the following:
.1 Marshall lab analysis for each course of asphalt placed.
.2 Field monitoring of asphalt during placement, including for temperature, thickness, and compaction.

END OF SECTION

APPENDIX A
CCA-COVID-19-STANDARDIZED PROTOCOLS FOR ALL CANADIAN CONSTRUCTION SITES

Canadian Construction Association

COVID-19 - Standardized Protocols for All Canadian Construction Sites

Version 7
April 19, 2021

For inquiries: Contact Mary Ghobrial
at mghobrial@cca-acc.com

TABLE OF CONTENTS

COVID-19 - STANDARDIZED PROTOCOLS FOR ALL CANADIAN CONSTRUCTION SITES

The Standardized Protocols for All Canadian Construction Sites outlines the best practices for construction sites in order to maintain the health and safety of all workers required to perform duties during the COVID-19 crisis. The protocols, which include prevention, detection and response measures, will minimize the impacts of the crisis and ensure business continuity in the construction industry. This is not a legal document. Some provinces and municipalities have implemented stricter measures than those found in this document, and contractors are responsible for compliance with the rules, regulations and practices required by the applicable authorities. At the end of this document, there are links to information from some of our partner associations and other industry stakeholders that are further tailored to province specific requirements.

The objectives of the Standardized Protocols are to:

- Prioritize the health and safety of workers and of their surrounding communities;
- Apply recommendations and best practices from federal, provincial, and municipal public health authorities to construction site procedures;
- Establish and maintain a common COVID-19 Pandemic Response Plan across construction sites; and
- Foster open communication amongst stakeholders and ensure a respectful work environment.

Standardized Protocols for All Canadian Construction Sites

Prevention measures

Communication and awareness

- Clear signage is posted at entry points on the construction site and outline the commitment of the contractor to maintain health and safety measures during the COVID-19 crisis, with relevant updates from appropriate jurisdictions' public health authorities and self-identification screening tools.
- Worksite policies as they relate to the COVID-19 crisis are communicated to workers and made available on site.
- All workers exercise the following recommended practices for reducing the risk of transmission as identified by the Public Health Agency of Canada (PHAC), Health Canada, and Centers for Disease Control and Prevention, as well as provincial authorities:
    - o Avoid touching eyes, nose and mouth with unwashed hands;
    - o When coughing or sneezing:
        - Cough or sneeze into a tissue or the bend of your arm, not your hand;
        - Dispose of any tissues you have used as soon as possible in a lined waste basket and wash your hands afterwards;
    - o Clean and disinfect frequently touched objects and surfaces, including all reusable personal protective equipment (PPE);

- Do not share personal items or supplies such as phones, pens, notebooks, tools, PPE, etc.;
- Use and remove PPE with care, being mindful of which surfaces may be contaminated. Individuals must clean their hands after handling any used PPE;
- Avoid common physical greetings, such as handshakes;
- Maintain a minimum physical distance of two metres from others; and
- Wash hands often with soap and water for at least 20 seconds after using the washroom, before handling food, after blowing nose, coughing, or sneezing, and before smoking. If hands are not visibly soiled, and soap and water are unavailable, alcohol-based hand sanitizer can be used.

Use of face masks

- All individuals on the site have facial respirators on hand at all times. N95 respirator masks, or the commercial-grade equivalent, should be worn as a potential mitigant to catching and transmitting the virus, but are not to be treated as substitutes for proper handwashing, physical distancing, and other protective measures. Masks should not be worn where they put an individual at risk (e.g. when it may get caught in machinery), however, physical distancing should be practiced in the alternative, whenever possible. Individuals working around an unmasked person without a shielding barrier should wear PPE.
- Such face masks are worn whenever individuals are:
  - Unable to maintain two-metre distancing;
  - Moving between zones, work areas, or other facilities;
  - Indoors; or
  - In non-open air environments or other areas with limited airflow.
- Individuals wash or sanitize their hands before and after applying, removing, or otherwise touching their face mask.
- Single-use facial respirators are disposed after use.

Business-related travel

- Non-essential business travel is not authorized. Business travel is limited and on an exceptional basis only.
- All individuals returning from out of country must undergo a 14-day self-isolation period, as mandated by the federal government and outlined here: Mandatory quarantine or isolation – Travel restrictions in Canada – Travel.gc.ca.
- As some provincial governments impose similar restrictions for inter-provincial travel, any such requirements for self-isolation must be obeyed as applicable.

Working remotely

- Where practical, all office employees supporting a project work remotely. Meetings are held through teleconferencing or videoconferencing.
- Some provincial governments have imposed mandatory remote-working for employees, except for work that cannot be done remotely. Any such provincial requirements must be obeyed as applicable.

Access and movement to/from construction site

- Wherever possible, workers travel to site using individual modes of transportation (e.g., personal vehicle or bicycle). Additional parking arrangements are made as required.
- Whenever possible, workers should travel alone in their vehicles in order to practice physical distancing. Alternatively, the number of individuals inside a vehicle should be limited, and the number of trips should be increased to allow for physical distancing.
- If physical distancing within a vehicle cannot be respected, workers are encouraged to wear PPE.
- Workers are encouraged to change out of work clothes before entering their vehicle at the end of their shift. Work clothes should be handled carefully and washed upon arriving home.
- Entering and exiting of the worksite is monitored and controlled to ensure that the minimum physical distancing is not broken when shifts begin and end. Shift start and end times are staggered in five-minute intervals to accommodate this if needed.
- All non-essential individuals are not permitted access to the site.

Monitoring the status of workers

- Detailed tracking of worker's status on-site and off-site are kept at all times (e.g. fit to work, sick, off-work for family caring duties, etc.). A list of all quarantined workers is updated daily, with their privacy maintained.
- Records are kept of which individuals work together and when.
- Provide information, instruction, and supervision to workers to protect their health and safety.

Construction site and site trailer cleaning protocols

- All offices and jobsites implement additional cleaning measures of common areas. All door handles, railings, ladders, switches, controls, eating surfaces, shared tools and equipment, taps, toilets, and personal workstation areas are wiped down at least twice a day with a disinfectant, such as disinfectant wipes. Individuals are responsible for cleaning and disinfecting their workstations.
- Additional sanitary measures are implemented on site: hand washing stations with a posted hand washing protocol, hand sanitizer stations, provision of disinfectant wiping products. These types of facilities are made available at site entries, exits, washrooms, eating areas, offices, and any other areas with commonly touched surfaces.
- Commonly touched surfaces on vehicles and equipment are thoroughly cleaned and disinfected at the end of shifts and between users.
- All cleaning and disinfecting is carried out per PHAC's recommendations here: COVID-19: Cleaning and disinfecting - Canada.ca.
- Offices and jobsites are also encouraged to develop a Cleaning and Disinfecting Program, as per CCOHS's recommendations at: CCOHS: COVID-19 Health and Safety Resources.

Limiting and removing internal touch point areas

- Limit access and use of shared devices like coffee machines, water fountains, microwave ovens, and similar; and wash hands after handling such items. Means to clean and disinfect such devices between uses is to be provided.

- Limit use of common pens for sign-in sheets to construction sites. Supervisors are encouraged to sign-in for workers, or have workers sign-in through SMS, email, or other electronic means..
- Washroom modifications - Install more sinks and sinks with physical separation between users where feasible. Change out taps, paper towel dispensers and garbage cans to hands-free models.
- Remove doors/door handles - Look at all reasonable opportunities to remove doors or replace handles with hands-free options, such as foot-pull devices.
- Where touch points like door handles and water coolers remain, paper towels are provided to allow users to avoid skin contact.
- Gloves are worn whenever possible while on the worksite, but are treated the same as bare hands in terms of minimizing unnecessary touching of anything on site and the user's face.

Compartmentalization

- The construction site is to be segregated to the extent possible in zones or other methods to keep different crews/trades physically separated at all times. This promotes physical distancing and supports the containment of propagation should it arise.
- Eating is restricted to clearly identified dedicated eating areas with handwashing stations, cleaning and disinfectant materials, and adequate space to maintain minimum physical distancing.
- Upper limits are put on the number of people allowed in each zone and in facilities like washrooms, trailers, and eating areas at once to allow for the recommended minimum physical distancing.
- One-way staircases are established wherever practical to minimize worker contact.
- Freight elevators are operated/occupied by only one individual at a time or where feasible, by respecting the minimum physical distancing guidelines.

Working in close proximity

- Alternate arrangements are made as necessary to ensure workers avoid breaking the minimum physical distance with others for prolonged periods. Where this is not possible due to task-specific safety risks, a risk assessment is done to identify controls to protect the health and safety of workers. This can include methods to minimize the duration or proximity of the task, use of physical controls (such as the use of clear plastic barriers), and wearing of PPE.
- A record is kept of all tasks requiring close-proximity work, including the task-specific safety risks that justify close-proximity and all the control measures implemented to protect workers from the risk of infection. The record should be reviewed regularly to determine if there are any additional safety measures that can be implemented for each task.
- Whenever possible, allow for increased ventilation, including but not limited to keeping windows and doors open as much as possible, using portable ventilation fans, and continuing ventilation and air exchange after regular work hours.

Site operation

- The number of in person meetings is minimized. If required, meetings should involve only necessary individuals and include six people or fewer. Minimum physical distancing is maintained, and meetings are held in open

spaces when possible. If needed, 'Toolbox Talks' and similar meetings/updates are held in multiple sessions to accommodate this.

- The worksite is rearranged to reduce high-traffic areas and allow for the minimum physical distancing. Travel paths on worksites should be designated to account for physical distancing requirements.
- Site teams are encouraged to put forward split/alternating shifts to avoid extensive intermingling. Voluntary shift offset and implementing time gaps between shifts are highly encouraged.
- Vehicles, equipment, and tools are assigned to a single individual, or, to the minimum number of operators needed for safe use.
- Where work is done in crews, the work is planned to minimize or eliminate the crossover of workers between crews.
- Project teams stagger break and lunch schedules to minimize the number of people in close proximity to one another. Enclosed lunchrooms are only made available during inclement weather.
- Work schedules are adjusted to provide time for proper cleaning and disinfecting as required.

Deliveries

- Delivery zones are clearly identified and limited to receivers and deliverers only.
- When possible, nothing is passed between the deliverer and the receiver (e.g. shipment documents and pens for signatures). Deliveries are unloaded solely by receivers using proper PPE, while deliverers remain in their vehicles.

Work in occupied spaces

- When working in spaces currently occupied (e.g. private residences), the minimum physical distancing with any occupants is strictly enforced. Where possible, workers and occupants are segregated in different rooms.
- Non-emergency work should not be done in any occupied spaces where an occupant is suspected to have contracted COVID-19 or is under self-isolation (per the directions of the applicable authorities). Emergency work can be carried out provided workers are equipped with nitrile gloves, Tyvek suits or coveralls, and facial/respiratory protection.
- Hands and tools are thoroughly cleaned before entering the workplace and after leaving, and any surfaces or equipment in the occupied space are disinfected before work is done on them.

Protocol auditing

- The jobsite's safety officer is responsible for ensuring appropriate health and safety measures have been implemented, and that directions of the appropriate health authorities are followed with respect to workers returning to work following a presumed or confirmed case of COVID-19.
- Contractors are to conduct periodic audits (frequency to be determined based on project scale and scope) to verify that the appropriate measures have been implemented and are maintained.
- Display signage to reinforce health and safety policies and control measures on worksites.

Other

- Any other measures deemed to increase the safety or limit the propagation of the virus.

Detection measures

Screening at entry of construction site

- Before entering the site, individuals must confirm that:
  - They are not currently exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion;
  - They have not returned from outside of Canada within the past 14 days;
  - To the best of their knowledge, they have not been in contact with someone with a confirmed or probable case of COVID-19; and
  - They have not been working on a site that was shut down due to the virus.
- Individuals who are at increased risk of serious illness (due to age, pregnancy or other medical condition) are not to be permitted on site.
- Any responses or results of any screening measures, whether they permit an individual on site or not, are to be kept private and treated as sensitive medical information.
- Workers who are not authorized to access the site are to be safely transported directly back home, or to a preferred location of self-isolation. When unable to do so themselves, a vehicle and driver will be arranged for them.
- When transporting a potentially ill individual, both driver and passenger are to be given masks and nitrile gloves. The passenger is to sit in the backseat, and the driver is to open and close the doors for them.

Response measures

Possible cases of COVID-19

- Individuals who have been potentially exposed to the virus, or who are exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion are instructed to:
  - Not come to work;
  - Contact their supervisor and/or human resources department;
  - Stay at home and self-isolate; and
  - Contact local health authorities for further direction.

  Such individuals are required to follow the directions of the local health authority and may not return to work until given approval by the proper health authorities.
- Individuals who begin to display flu-like symptoms on site are instructed to avoid touching anything, take extra care to contain coughs and sneezes, and return home immediately to undergo self-isolation as directed by the local health authority.
- All areas on site potentially infected by a confirmed or probable case are barricaded to keep individuals two metres away until the area is properly cleaned and disinfected.

- Employers must inform other workers that they may have been exposed to COVID-19 in the workplace, including details regarding the date and time of the potential exposure and where it took place. However, information that might identify the infectious person should not be shared.

Response plans

- All contractors are to complete an integrated continuity plan to respond to partial or complete shutdown of construction sites or in the case of a severe limitation of site operations.

Other

- Refer to canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html for the latest information.

The situation related to COVID-19 is changing rapidly. This Protocol will be updated on an as required basis to reflect the latest broadly adopted measures.

For province specific guidance, please review the resources linked below. Questions on province-specific health and safety matters can be directed to the listed contacts.

British Columbia
British Columbia Construction Association
bccassn.com/media/Guidance%20to%20Construction%20Sites%20Operating%20During%20COVID19.pdf

BC Construction Safety Alliance
Mike Mckenna, Executive Director mmckenna@bccsa.ca
Tammy Oliver, Senior Director toliver@bccsa.ca

Alberta
Alberta Construction Association
albertaconstruction.net/wp-content/uploads/2020/04/PANDEMIC-PLANNING-FOR-THE-CONSTRUCTION-INDUSTRY.pdf

Alberta Roadbuilders and Heavy Construction Association
279e5ecb-ae4a-4a97-bda5-1b2fe77f0894.filesusr.com/ugd/77f1bc_683524748e3c482aac8a8f59e5a86218.pdf?index=true

Alberta Construction Safety Association
Dan MacLennan, CEO dmaclennan@youracsa.ca
Tammy Hawkins, COO thawkins@youracsa.ca

Saskatchewan
Saskatchewan Construction Association
scaonline.ca/third-party-information-bulletins.html

Saskatchewan Construction Safety Association
Thomas Archer, VP of Operations thomasa@scsaonline.ca
Collin Pullar, President collinp@scsaonline.ca

Heavy Construction Safety Association of Saskatchewan
Al Goldstone, Safety Director alg@hcsas.sk.ca

Manitoba
Winnipeg Construction Association
togetherwebuild.ca/

Construction Safety Association of Manitoba
Sean Scott, Executive Director sean@constructionsafety.ca
Derek Pott, Director of Operations derek@constructionsafety.ca

Manitoba Heavy Construction Association
Don Hurst, Director don@mhca.mb.ca

Ontario
ORBA / OGCA / RESCON / OSPE / OHBA
orba.org/wp-content/uploads/2020/03/ORBA-branded-COVID19-resource-and-best-management-practices-document-Final.pdf

Infrastructure Health & Safety Association
Enzo Garritano, President egarritano@ihsa.ca
Paul Casey, Vice President pcasey@ihsa.ca

Quebec
L'Association de la construction du Québec
acq.org/coronavirus/sante-securite-du-travail/

Commission des normes, de l'équité, de la santé et de la sécurité du travail
cnesst.gouv.qc.ca/salle-de-presse/covid-19/Pages/trousse.aspx?utm_source=CNESST&utm_medium=Carrousel-accueil&utm_campaign=Trousse_doutils

ASP Construction
Sylvie L'Heureux, Executive Director slheureux@asp-construction.org

New Brunswick
New Brunswick Construction Association
nbcsa.ca/wp-content/uploads/2020/04/Construction-Site-COVID-19-Prevention-Procedures.pdf

New Brunswick Construction Safety Association
Roy Silliker, CEO rsilliker@nbcsa.ca
Shelley Poirier, Senior Safety Advisor spoirier@nbcsa.ca

Nova Scotia
Construction Association of Nova Scotia
cans.ns.ca/covid-19-managing-covid-19-on-the-worksite/

Construction Safety Association of Nova Scotia
MJ MacDonald, CEO mmacdonald@constructionsafetyns.ca
Damon Alcock, Chief Safety Officer dalcock@constructionsafetyns.ca

Prince Edward Island
Construction Association of PEI
capei.ca/member_access/LiveEditor/images/Public%20Health%20Order%20-%20March%202020.pdf

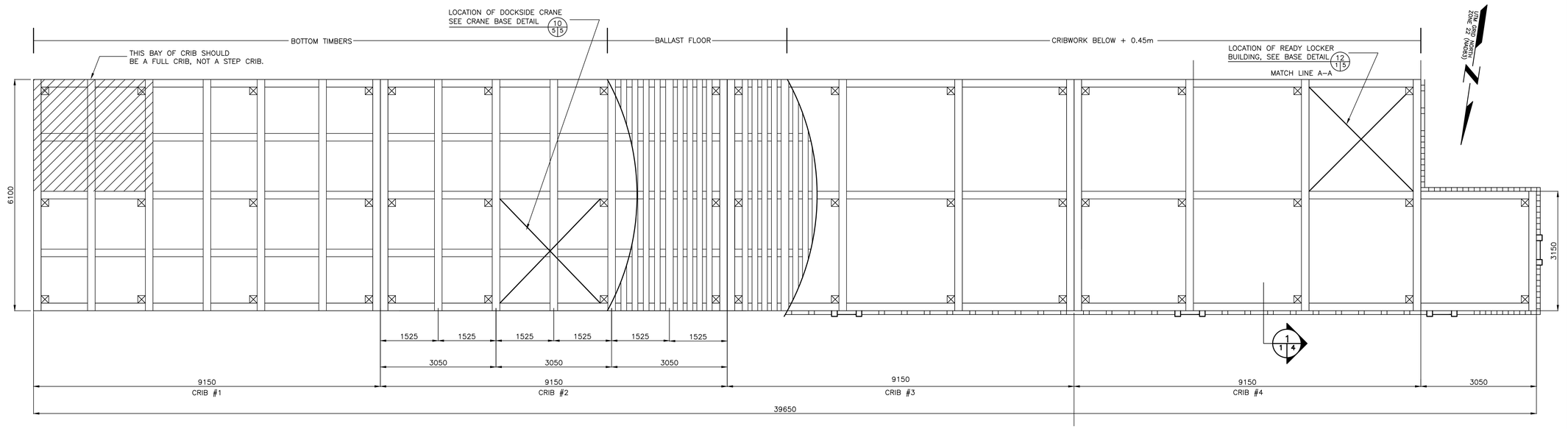
Newfoundland and Labrador
Newfoundland and Labrador Construction Association
nlca.ca/critical-information-covid-19/

Newfoundland and Labrador Construction Safety Association
Jackie Manuel, CEO jmanuel@nlcsa.com

Yukon
Northern Safety Network Yukon
Sheila Sergy, Executive Director sheila@yukonsafety.com

Northwest Territories and Nunavut
Northern Construction Safety Association
Chris Johnston, Executive Director chris@nsa-nt.ca

APPENDIX B
EXISTING FLOATING DOCK DRAWINGS
FOR INFORMATION ONLY



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PWGSC B1

Public Works and Government Services Canada / Travaux Publics et Services gouvernementaux Canada

10 Thompson Street
Clarenville
Newfoundland
A5A 1Y9

Davis Engineering & Associates Limited
Consulting Engineers
Project Managers

amec
AMEC E&C Services Limited
AMEC Bldg. 133 Crosbie Road A1A 3C1 St. John's Newfoundland Tel: (709) 753-6252 Fax: (709) 739-5458

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This Permit Allows
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To practice Professional Engineering in Newfoundland and Labrador.
Permit No as issued by APEGN X0127
which is valid for the year 2004.

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REGISTERED PROFESSIONAL ENGINEERS NEWFOUNDLAND & LABRADOR
DEAN REID
SIGNATURE
DATE
MEMBER ENGINEERED IN NEWFOUNDLAND CONSULTING ENGINEERS OF NFLD & LABRADOR

revisions		date
D	AS–BUILT	06/04/19
C	ISSUED FOR TENDER	04/03/19
B	ISSUED FOR 99% REVIEW	02/09/30
A	ISSUED FOR 66% REVIEW	02/05/27

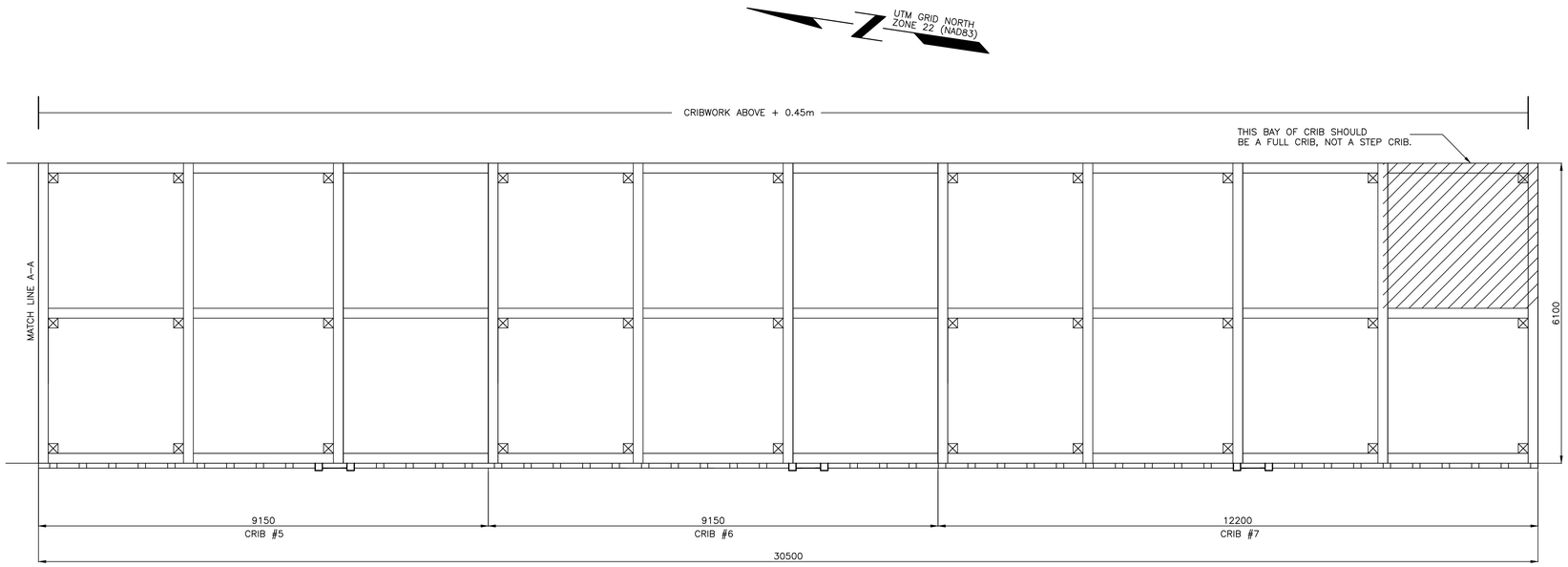
A detail no. no. du detail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet
NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin
PLAN & ELEVATION (MARGINAL WHARF) SHEET 1

designed D. REID / concu
date SEPTEMBER 2002
drawn R. SNOW / dessine
date SEPTEMBER 2002
approved / approuve
date
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet
303390
drawing no. / no. du dessin
M1 OF 9

EDRM Document No. Not in System



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PLAN

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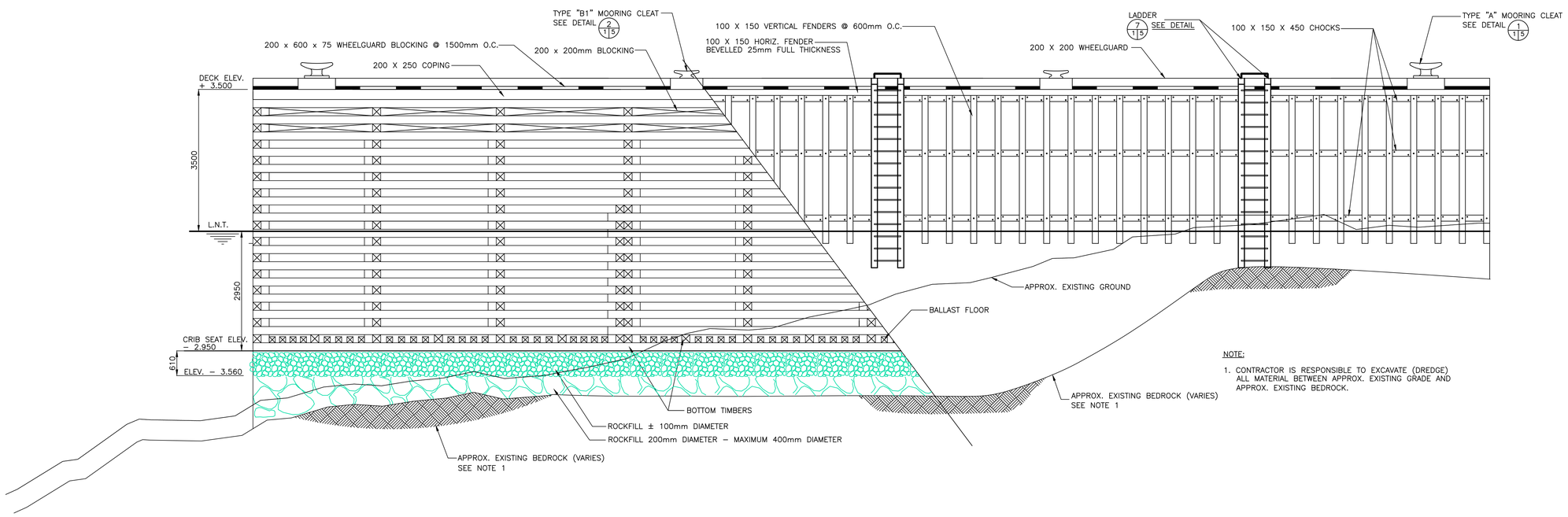

NOTE:

1. CONTRACTOR IS RESPONSIBLE TO EXCAVATE (DREDGE) ALL MATERIAL BETWEEN APPROX. EXISTING GRADE AND APPROX. EXISTING BEDROCK.

1/2/2

ELEVATION

SCALE: 1:50

0m 1m 2m 3m 4m 5m

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Plot Scale 1:1

PWGSC B1

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D	AS–BUILT	06/04/07
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A	ISSUED FOR 66% REVIEW	02/05/27
revisions		date

A detail no. / no. du detail
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

project / projet

NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin

PLAN & ELEVATION (MARGINAL WHARF) SHEET 2

designed D. REID — concu
date SEPTEMBER 2002
drawn R. SNOW — dessine
date SEPTEMBER 2002
approved — approuve
date
Tender — Soumission
PWGSC Project Manager — Administrateur de projets TPSGC
project number — no. du projet
303390
drawing no. — no. du dessin
M2 OF 11

EDRM Document No. Not in System

LEGEND

- ELECTRICAL PEDESTAL (TYP.)
- MOORING RINGS
- LADDER
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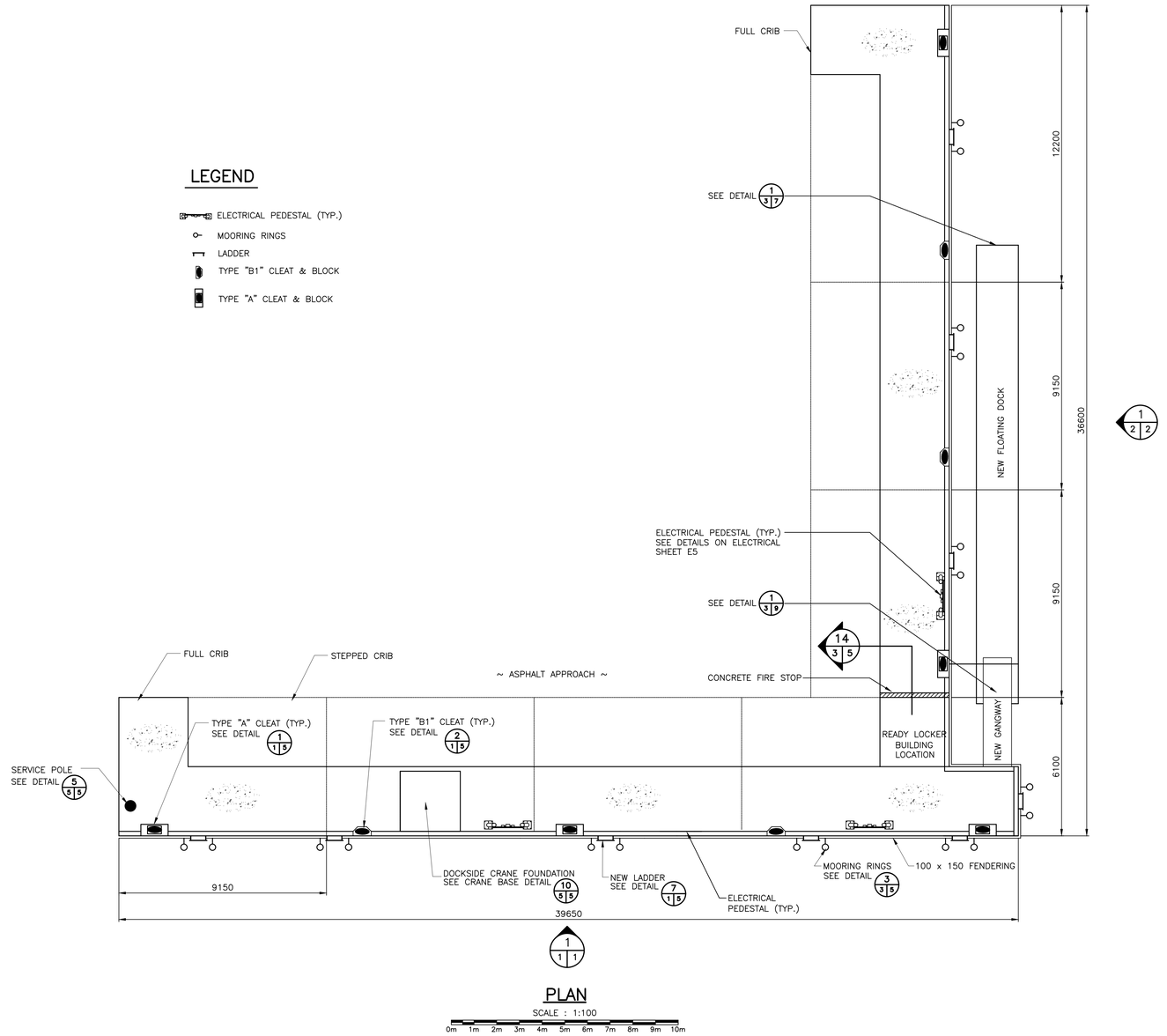
- TYPE "A" CLEAT & BLOCK



PLAN

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MEMBER — ENGINEERED IN NEWFOUNDLAND — CONSULTING ENGINEERS OF N.F.L.D. & LABRADOR

revisions		date
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C drawing no. dessin no.

project / projet

NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin

WHARF PLAN

designed D. REID — concu
date SEPTEMBER 2002
drawn R. SNOW — dessine
date SEPTEMBER 2002
approved — approuve
date
Tender — Soumission
PWGSC Project Manager — Administrateur de projets TPSGC
project number / no. du projet: 303390
drawing no. / no. du dessin: M3 OF 9

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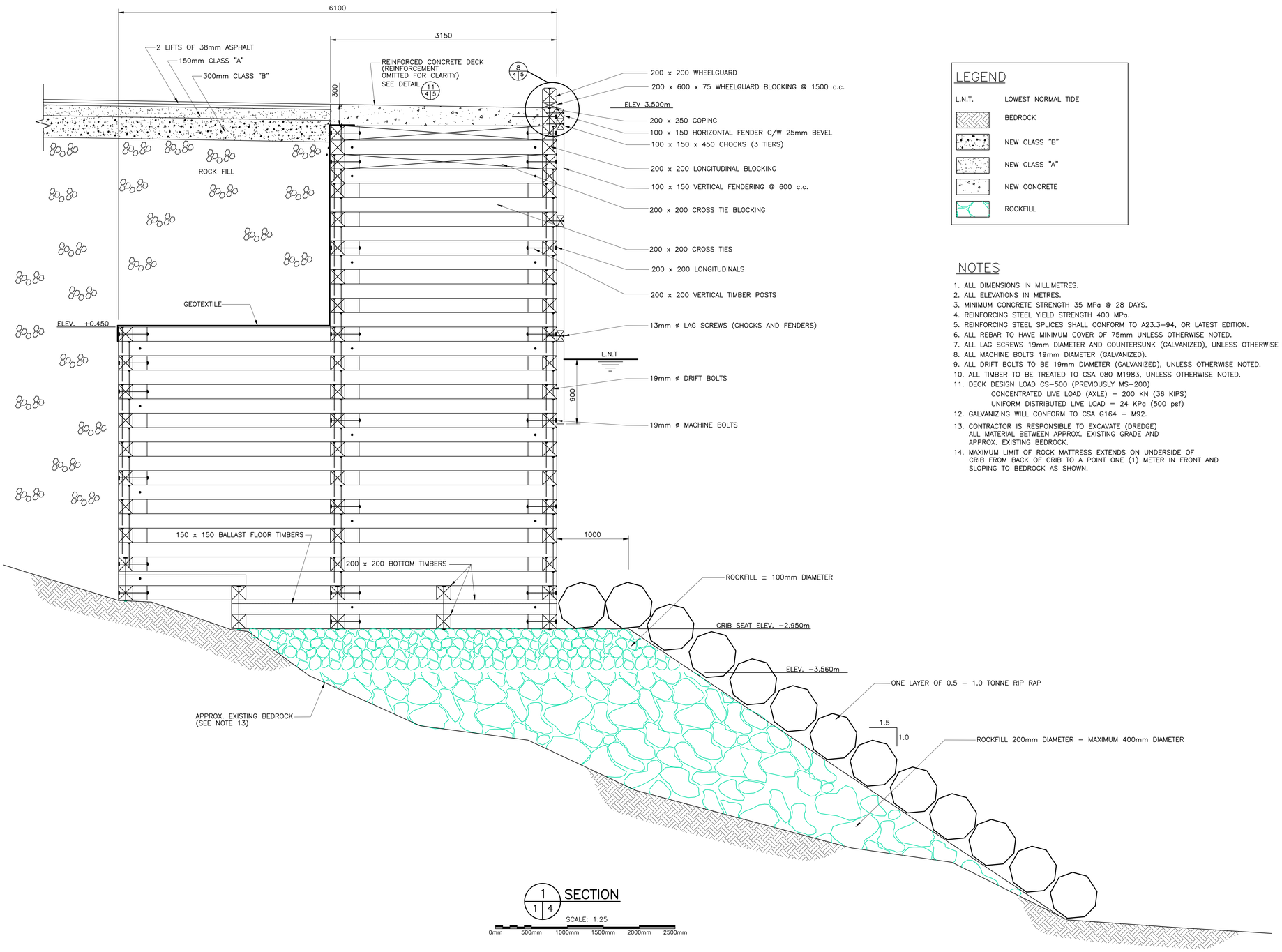

1/1/4 SECTION

SCALE: 1:25

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LEGEND

L.N.T.	LOWEST NORMAL TIDE
	BEDROCK
	NEW CLASS "B"
	NEW CLASS "A"
	NEW CONCRETE
	ROCKFILL

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL ELEVATIONS IN METRES.
3. MINIMUM CONCRETE STRENGTH 35 MPa @ 28 DAYS.
4. REINFORCING STEEL YIELD STRENGTH 400 MPa.
5. REINFORCING STEEL SPLICES SHALL CONFORM TO A23.3-94, OR LATEST EDITION.
6. ALL REBAR TO HAVE MINIMUM COVER OF 75mm UNLESS OTHERWISE NOTED.
7. ALL LAG SCREWS 19mm DIAMETER AND COUNTERSUNK (GALVANIZED), UNLESS OTHERWISE NOTED.
8. ALL MACHINE BOLTS 19mm DIAMETER (GALVANIZED).
9. ALL DRIFT BOLTS TO BE 19mm DIAMETER (GALVANIZED), UNLESS OTHERWISE NOTED.
10. ALL TIMBER TO BE TREATED TO CSA 080 M1983, UNLESS OTHERWISE NOTED.
11. DECK DESIGN LOAD CS-500 (PREVIOUSLY MS-200)
    CONCENTRATED LIVE LOAD (AXLE) = 200 KN (36 KIPS)
    UNIFORM DISTRIBUTED LIVE LOAD = 24 KPa (500 psf)
12. GALVANIZING WILL CONFORM TO CSA G164 - M92.
13. CONTRACTOR IS RESPONSIBLE TO EXCAVATE (DREDGE) ALL MATERIAL BETWEEN APPROX. EXISTING GRADE AND APPROX. EXISTING BEDROCK.
14. MAXIMUM LIMIT OF ROCK MATTRESS EXTENDS ON UNDERSIDE OF CRIB FROM BACK OF CRIB TO A POINT ONE (1) METER IN FRONT AND SLOPING TO BEDROCK AS SHOWN.

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DEAN REID
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project / projet
NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin
SECTION

designed D. REID / concu
date SEPTEMBER 2002
drawn R. SNOW / dessine
date SEPTEMBER 2002
approved / approuve
date
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet
303390
drawing no. / no. du dessin
M4 OF 9

EDRM Document No. Not in System

Plot Scale: 1:1
PWGSC B1
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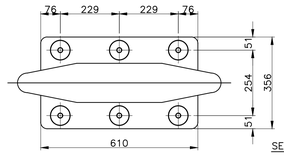
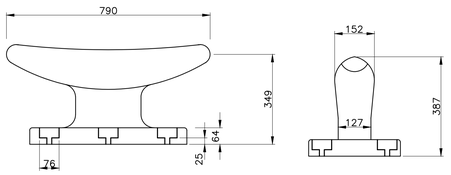


PLAN

SEE DETAIL 1/5/6

FOR TYPICAL CLEAT PEDESTAL DETAILS



FRONT ELEV. SIDE ELEV.

1/1/5 TYPICAL TYPE 'A' CLEAT DETAIL

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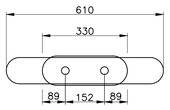
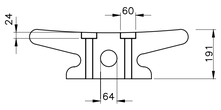


WEIGHT – 36.2 kg.
RECESSED HOLE – 60mmø x 38 CSK
BOLT HOLE – 28mmø

SEE DETAIL 4/5/5

FOR CLEAT PEDESTAL DETAILS



FRONT ELEVATION SIDE ELEVATION

2/1/5 TYPICAL TYPE 'B1' CLEAT DETAIL

SCALE : 1:10

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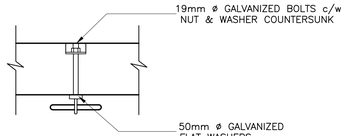
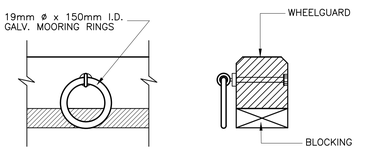


PLAN



ELEVATION TYPICAL SECTION

3/3/5 MOORING RING DETAIL

SCALE : 1:10

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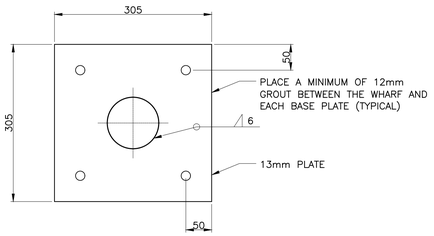

6/5/5 BASE PLATE DETAIL

SCALE : 1:5

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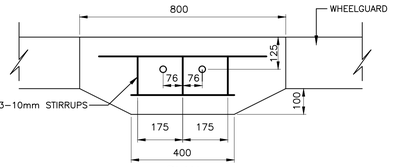

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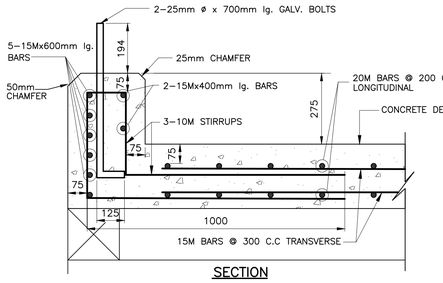

SECTION

4/5/5 TYPICAL 'B1' CLEAT PEDESTAL

SCALE: 1:10

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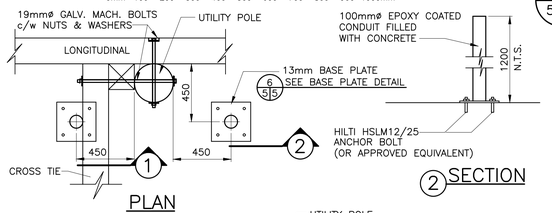

PLAN

2 SECTION

1 SECTION

5/5/5 UTILITY POLE INSIDE CRIBWORK

SCALE: 1:20

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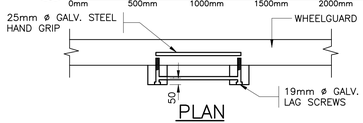
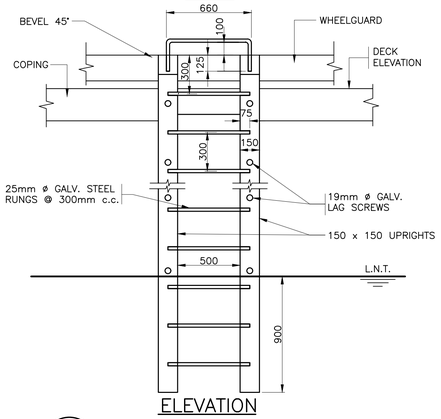


PLAN



ELEVATION

7/1/5 TYPICAL LADDER DETAILS

SCALE: 1:20

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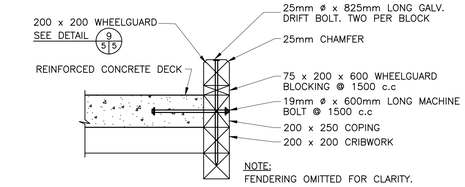

NOTE: FENDERING OMITTED FOR CLARITY.

8/4/5 WHEELGUARD AND COPING DETAIL

SCALE: 1:20

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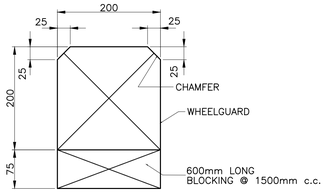

9/5/5 WHEELGUARD SECTION

SCALE : 1:5

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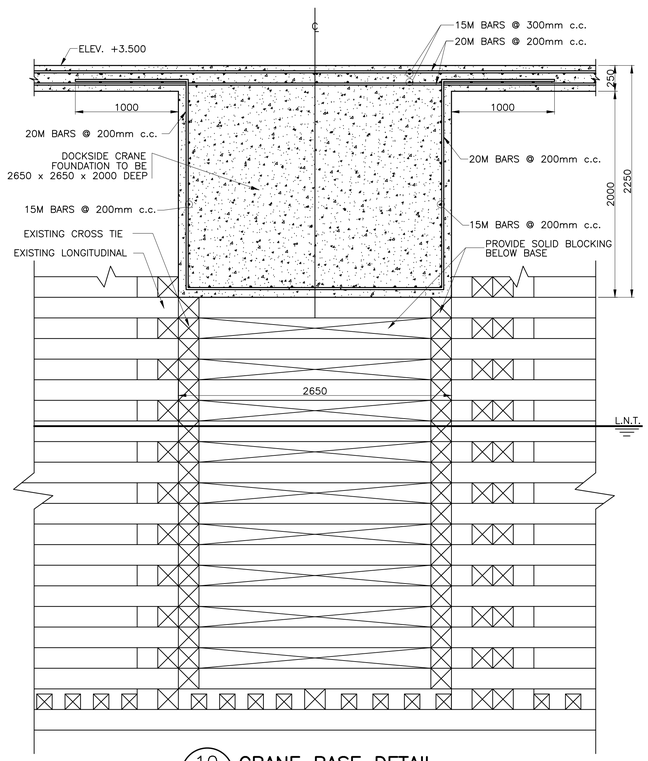

10/5/5 CRANE BASE DETAIL

SCALE: 1:25

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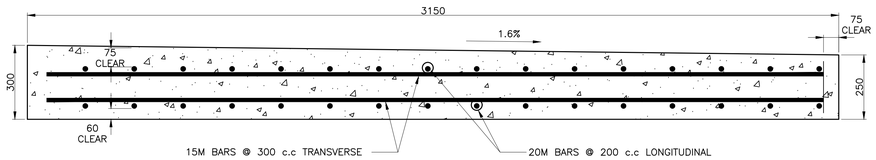

11/4/5 SECTION

SCALE : 1:10

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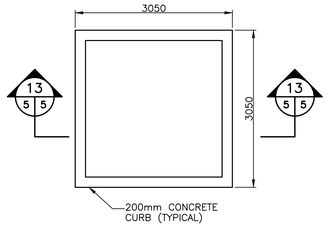

PLAN

12/1/5 READY LOCKER BUILDING

SCALE: 1:50

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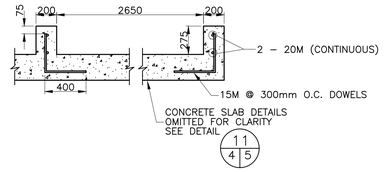

13/5/5 FOUNDATION SECTION

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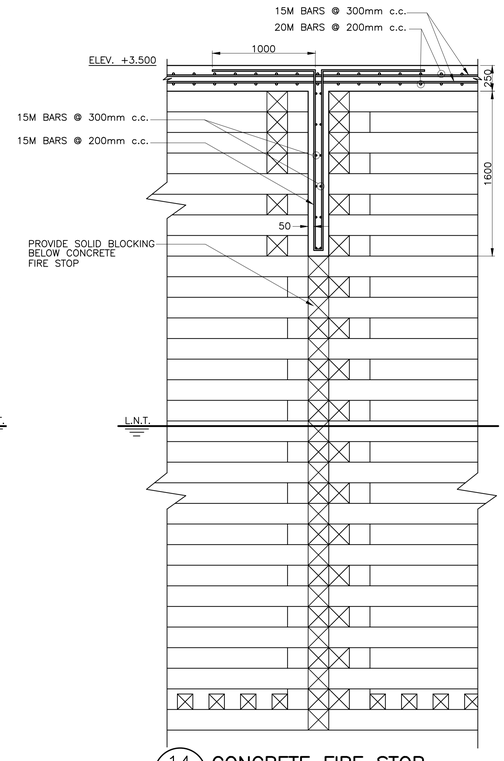

14/3/5 CONCRETE FIRE STOP

SCALE: 1:25

0mm 500mm 1000mm 1500mm 2000mm 2500mm

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL ELEVATIONS IN METRES.
3. MINIMUM CONCRETE COVER = 75mm. UNLESS NOTED OTHERWISE.

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project / projet
NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin
PLAN AND DETAILS

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date SEPTEMBER 2002
drawn R. SNOW / dessine
date SEPTEMBER 2002
approved / approuve
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303390
drawing no. / no. du dessin
M5 OF 9

EDRM Document No. Not in System

Plot Scale: 1:1
PWGSC B1
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NOTES

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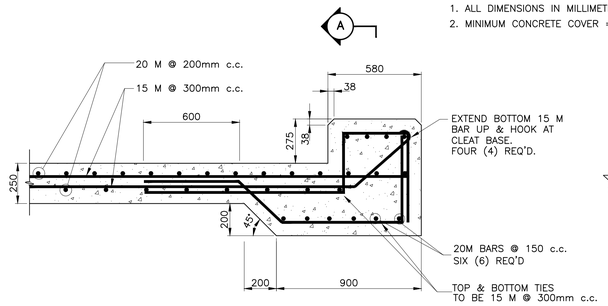

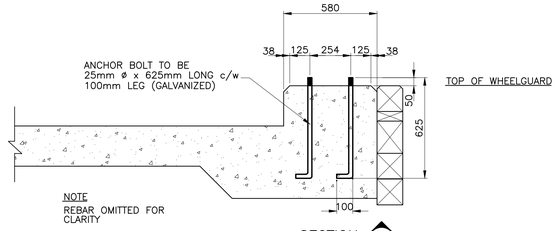

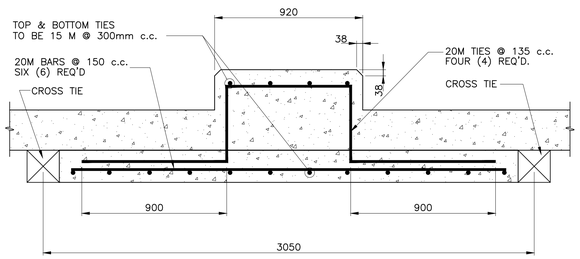

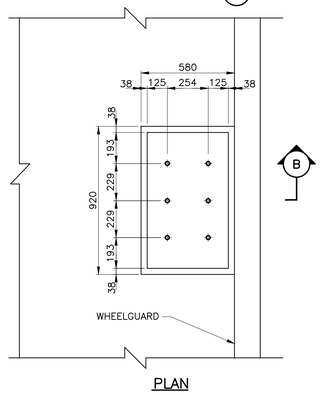

REINFORCING DETAILS

ANCHOR BOLT LAYOUT

1/5/6 TYPICAL TYPE 'A' MOORING CLEAT PEDESTAL DETAIL

SCALE: 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

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PWGSC B1

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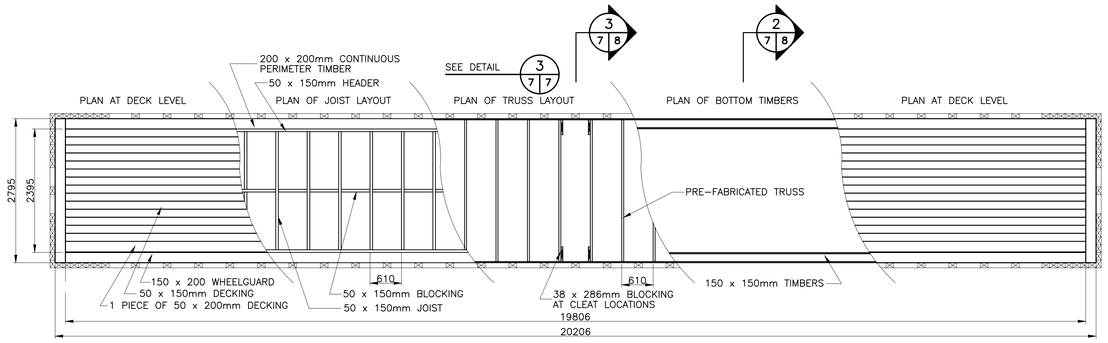
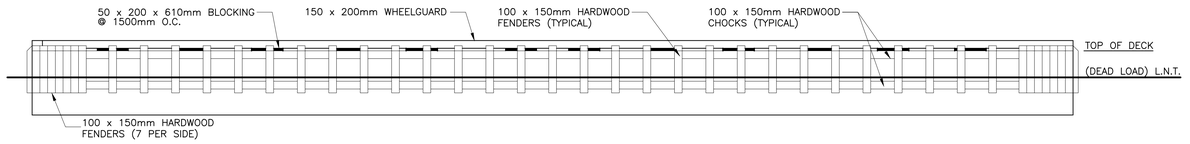


1/3/7 PLAN OF FLOATING DOCK

SCALE: 1:50

0m 1m 2m 3m 4m 5m



2/7/7 ELEVATION OF FLOATING DOCK

SCALE: 1:50

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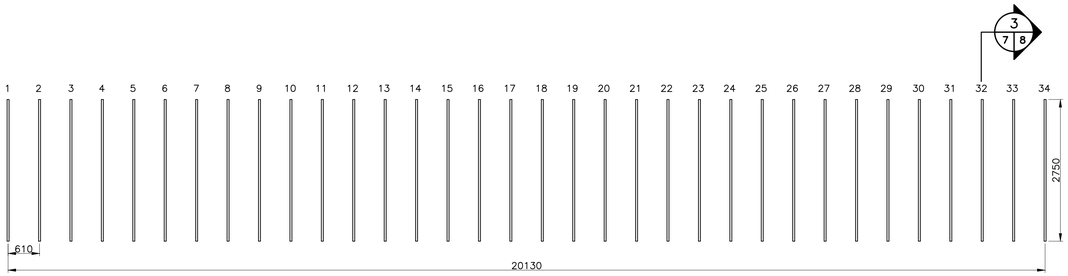

3/7/7 PLAN VIEW – TRUSS LAYOUT

SCALE: 1:50

0m 1m 2m 3m 4m 5m

NOTES:

1. SAFE LOADING CAPACITY OF FLOATING DOCK IS AS FOLLOWS:
   A) UNIFORM DISTRIBUTED LOAD = 3.8 KPa (80 lbs/ft^2)
   B) CONCENTRATED LOAD = 2.2 KPa (500 lbs)
2. WOODEN DECKING SHOULD BE FASTENED WITH GALVANIZED OR EQUIVALENT No. 10, 100mm LONG, SCREWS. USE TWO (2) SCREWS AT EACH JOIST/DECKING INTERSECTION.
3. ALL OTHER CONNECTIONS FOR THE WOODEN JOIST AND FLOOR SYSTEM SHALL UTILIZE 100mm LONG GALVANIZED NAILS. THE JOISTS SHALL BE CONNECTED TO THE HEADER WITH TWO (2) NAILS PER INTERSECTION. THE HEADER AND JOIST SHALL THEN BE PLACED INSIDE THE 200 x 200mm PERIMETER TIMBERS AND CONNECTED WITH FOUR (4) NAILS PER 610mm SPAN.
4. CHOCKS SHALL BE CONNECTED WITH 12.5mm DIAMETER LAG SCREWS. TWO (2) REQUIRED BER BLOCK. BEFORE PLACING LAG SCREWS FILL HOLE WITH MASTIC SEALANT (INDUSTRIAL MARINE GRADE).
5. THE INTERIOR OF THE FLOATS SHALL BE COMPLETELY FILLED WITH A COMBINATION OF EXTRUDED POLYSTYRENE (STYROFOAM) AND/OR EXPANDED–PELLET POLYSTYRENE.
6. ALL MACHINE BOLTS SHALL BE 19mm DIAMETER AND GALVANIZED UNLESS OTHERWISE STATED.
7. PREFABRICATED TRUSSES SHALL BE DESIGNED AS PER FOLLOWING GUIDELINES:
   A) LOADS:
      1) UNIFORM DISTRIBUTED LOAD = 4.8 KPa (100 lbs/ft^2)
      2) CONCENTRATED LOAD = 2.2 KPa (500 lbs)
      3) UPLIFT CAPACITY OF 8.9 KN (2000 lbs)
   B) ALL WOOD SHALL BE S–P–F No. 1/No. 2 RATING.
   C) PLYWOOD SHALL BE DOUGLAS FIR, GOOD ONE SIDE.
   D) 6.25mm LAYER OF FIBERGLAS REINFORCED COMPOSITE (FRC) WITH 1 LAYER OF 6 MIL DRY THICKNESS EPOXY COATING AND 2 LAYERS OF 8 MIL DRY TOTAL THICKNESS OF ANTI–FOULING COATING SUITABLE FOR MARINE ENVIRONMENT. ALSO BOTTOM SHOE SHALL HAVE AN ADDITIONAL 6.25mm LAYER OF FRC.
   E) GUSSET PLATES AND OTHER HARDWARE SHALL BE GALVANIZED.
8. TYPE "B1" CLEAT AND STEEL PLATE TO BE GALVANIZED.
9. ALL BOLTS PENETRATING FRC FLOATATION BILLETS SHOULD BE HELD FIRMLY INTO POSITIONS DURING CONSTRUCTION.
10. ALL PENETRATING THROUGH FRC FLOATATION BILLETS SHOULD BE SEALED WITH MASTIC SEALANT (MARINE GRADE).
11. FRC FLOATATION BILLETS ARE WATER–PROOF STRUCTURES. UPON TESTING BY ENGINEER, ANY INFILTRATION OF WATER (LEAKAGE) WILL NOT BE ACCEPTABLE. CONTRACTOR WILL BE TOTALLY RESPONSIBLE TO REPAIR FLOATATION BILLETS AT HIS OWN EXPENSE.

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FLOATING DOCK PLANS AND DETAILS

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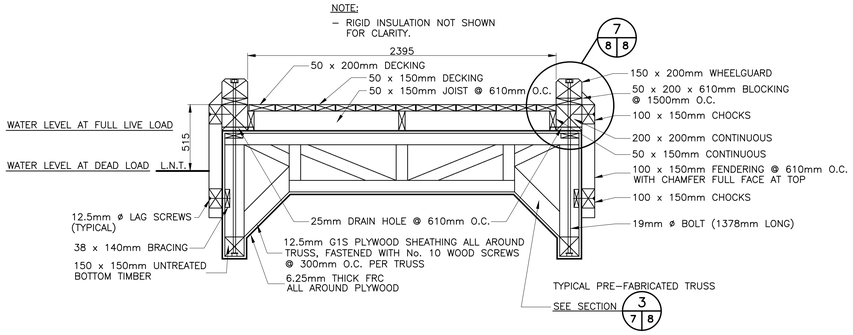

2 7 8 TYPICAL FLOATING DOCK SECTION

SCALE: 1:20

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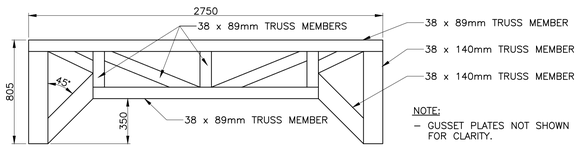

3 7 8 TYPICAL PRE-FABRICATED TRUSS SECTION

SCALE: 1:20

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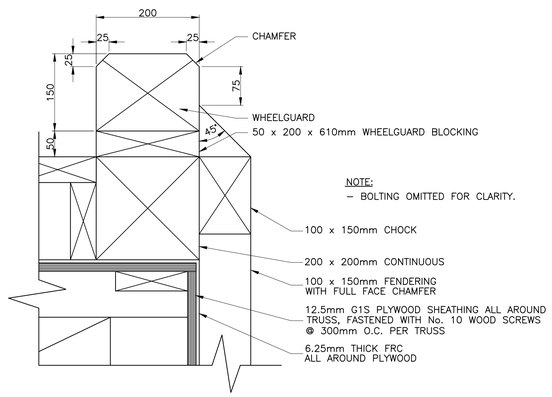

7 8 8 FENDERING DETAIL

SCALE : 1:5

0mm 100 200 300 400 500mm

Plot Scale: 1:1

PWGSC B1

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Public Works and Government Services Canada
Travaux Publics et Services gouvernementaux Canada

10 Thompson Street
Clarenville
Newfoundland
A5A 1Y9

Davis Engineering & Associates Limited
Consulting Engineers
Project Managers

amec
AMEC E&C Services Limited
AMEC Bldg. 133 Crosbie Road A1A 3C1 St. John's Newfoundland Tel: (709) 753-6252 Fax: (709) 739-5458

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DEAN REID
SIGNATURE
DATE
NEWFOUNDLAND & LABRADOR

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revisions		date
D	AS-BUILT	06/04/07
C	ISSUED FOR TENDER	04/03/19
B	ISSUED FOR 99% REVIEW	02/09/30
A	ISSUED FOR 66% REVIEW	02/05/27

A detail no. no. du detail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet

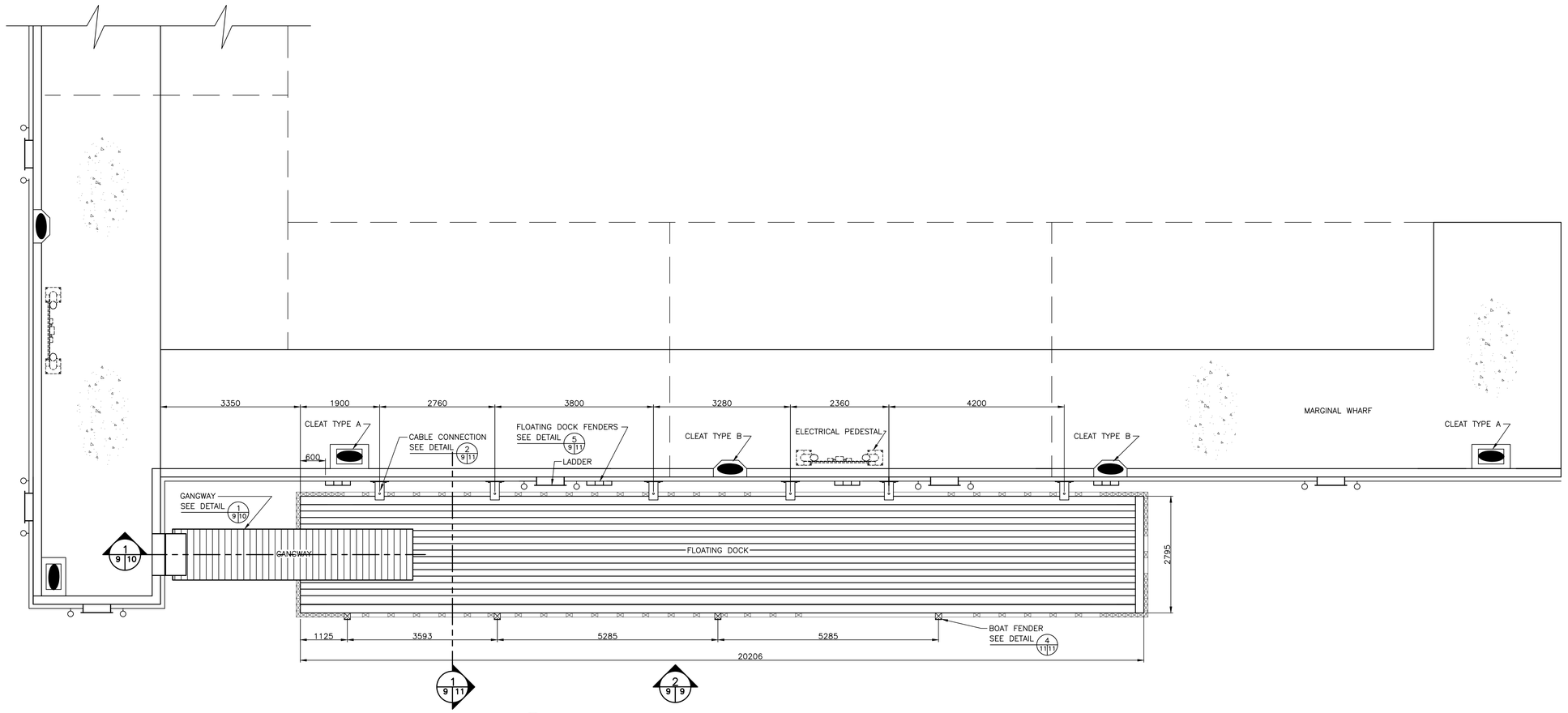
NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin

FLOATING DOCK SECTIONS AND DETAILS

designed D. REID / concu
date SEPTEMBER 2002
drawn R. SNOW / dessine
date SEPTEMBER 2002
approved / approuve
date
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet
303390
drawing no. / no. du dessin
M8 OF 11

EDRM Document No. Not in System



1 9 9 WHARF PLAN AT FLOATING DOCK LOCATION

SCALE: 1:50

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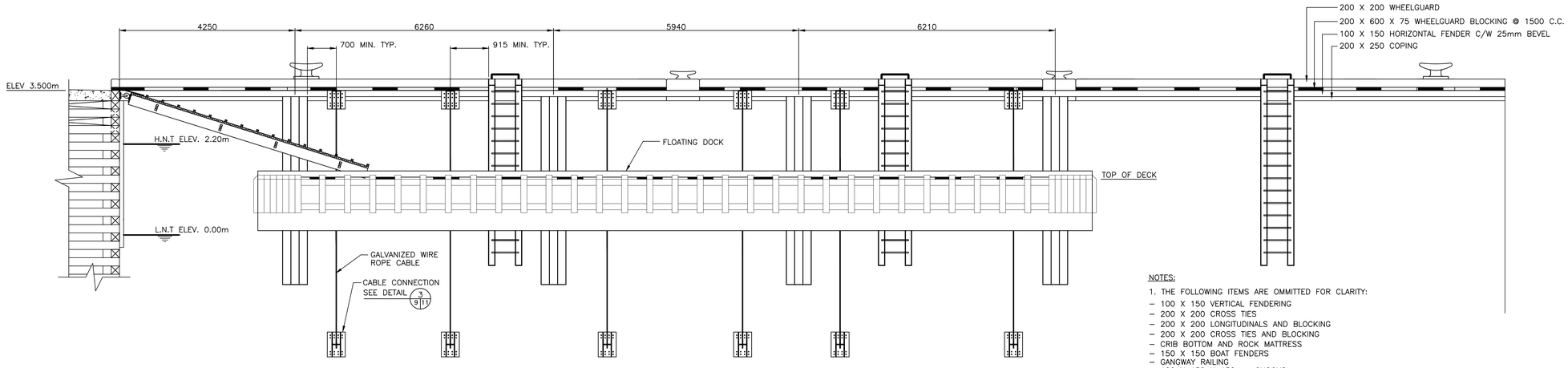

NOTES:

1. THE FOLLOWING ITEMS ARE OMMITTED FOR CLARITY:
- 100 X 150 VERTICAL FENDERING
- 200 X 200 CROSS TIES
- 200 X 200 LONGITUDINALS AND BLOCKING
- 200 X 200 CROSS TIES AND BLOCKING
- CRIB BOTTOM AND ROCK MATTRESS
- 150 X 150 BOAT FENDERS
- GANGWAY RAILING
- 100 X 150 X 450mm CHOCKS

2 9 9 WHARF SECTION AT FLOATING DOCK LOCATION

SCALE: 1:50

0m 1m 2m 3m 4m 5m

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A5A 1Y9

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revisions		date
C	AS-BUILT	06/04/07
B	ISSUED FOR CONSTRUCTION	04/11/03
A	ISSUED FOR REVIEW	04/10/22

A detail no. no. du detail
B location drawing no. sur dessin no.
C drawing no. dessin no.

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NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin

FLOATING DOCK AND GANGWAY PLAN CONNECTION

designed K. WHITE / concu
date OCTOBER 2004
drawn R. SNOW / dessine
date OCTOBER 2004
approved / approuve
date
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet
303390
drawing no. / no. du dessin
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Plot Scale: 1:1
PWGSC B1
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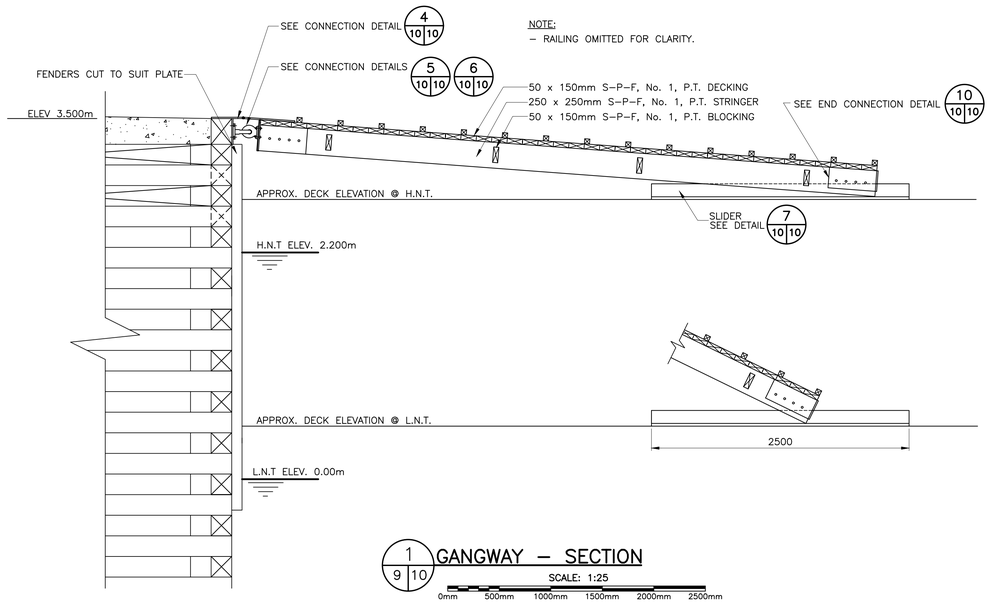

NOTE:
– RAILING OMITTED FOR CLARITY.

1 9 10 GANGWAY – SECTION

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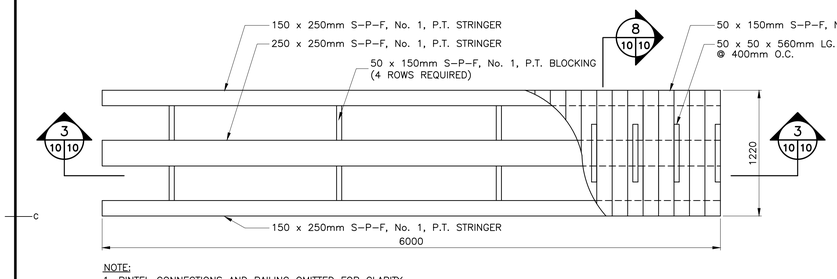

NOTE:
1. PINTEL CONNECTIONS AND RAILING OMITTED FOR CLARITY.

2 10 10 PLAN OF GANGWAY

SCALE: 1:25

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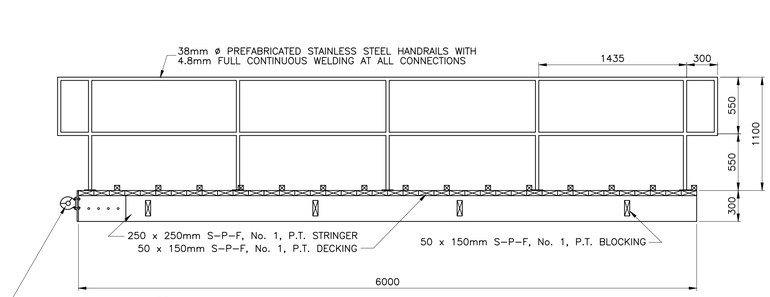

3 10 10 GANGWAY – HANDRAIL SECTION

SCALE: 1:25

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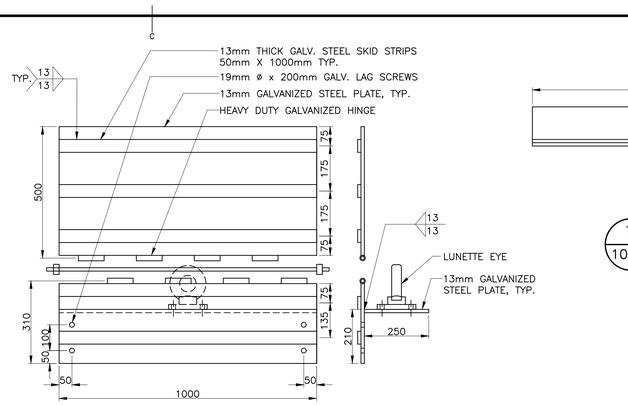

4 10 10 RAMP CONNECTION DETAIL

SCALE : 1:10

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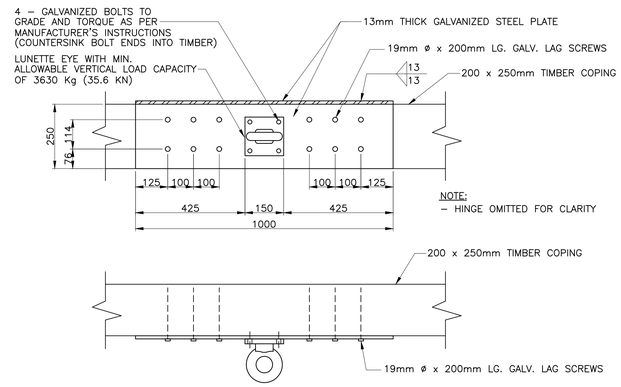

5 10 10 LUNETTE EYE CONNECTION DETAIL

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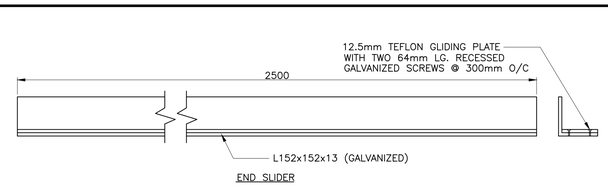

7 10 10 SLIDER DETAIL

SCALE : 1:10

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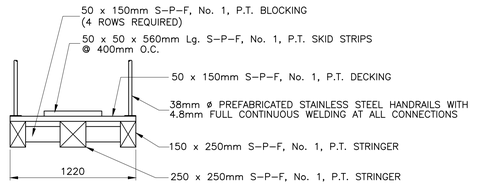
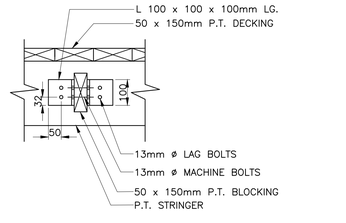


NOTES:
1. DECKING FASTENED TO STRINGERS AT EACH SUPPORT WITH 3 – 100mm GALVANIZED NAILS.
2. SKID STRIPS FASTENED WITH 4 – 100mm GALVANIZED NAILS.
3. EACH BLOCKING PIECE TO BE FASTENED TO STRINGERS WITH ANGLE CONNECTIONS, SEE DETAIL 9 10 10

8 10 10 GANGWAY SECTION

SCALE: 1:25

0mm 500mm 1000mm 1500mm 2000mm 2500mm



9 10 10 CONNECTION DETAIL

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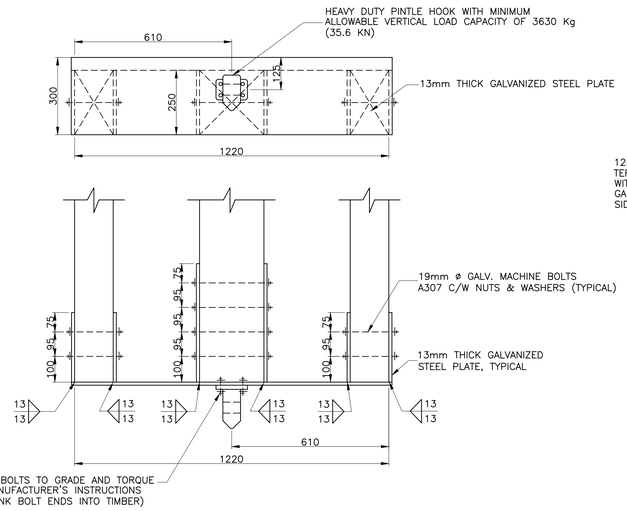

6 10 10 PINTLE HOOK CONNECTION DETAIL

SCALE : 1:10

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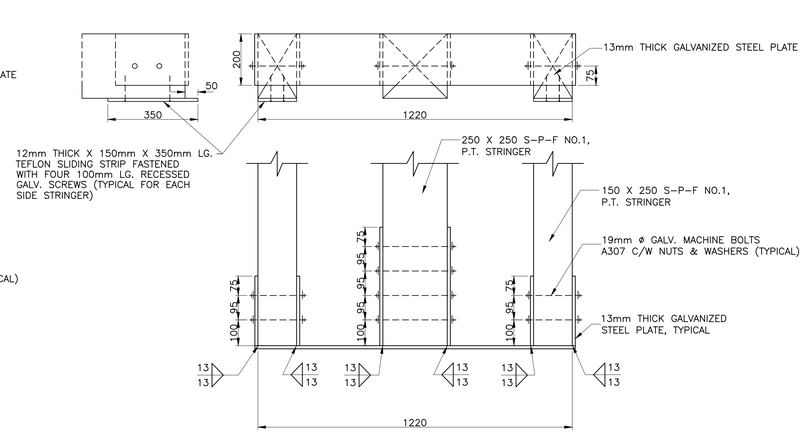

10 10 10 END PLATE CONNECTION DETAIL

SCALE : 1:10

0mm 100 200 300 400 500 600 700 800 900 1000mm

Plot Scale: 1:1

PWGSC B1

0 10 20mm 40 60 80 100 120 140 160 180 200mm

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C	AS-BUILT	06/04/07
B	ISSUED FOR CONSTRUCTION	04/11/03
A	ISSUED FOR REVIEW	04/10/22
revisions		date

A detail no. no. du detail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet

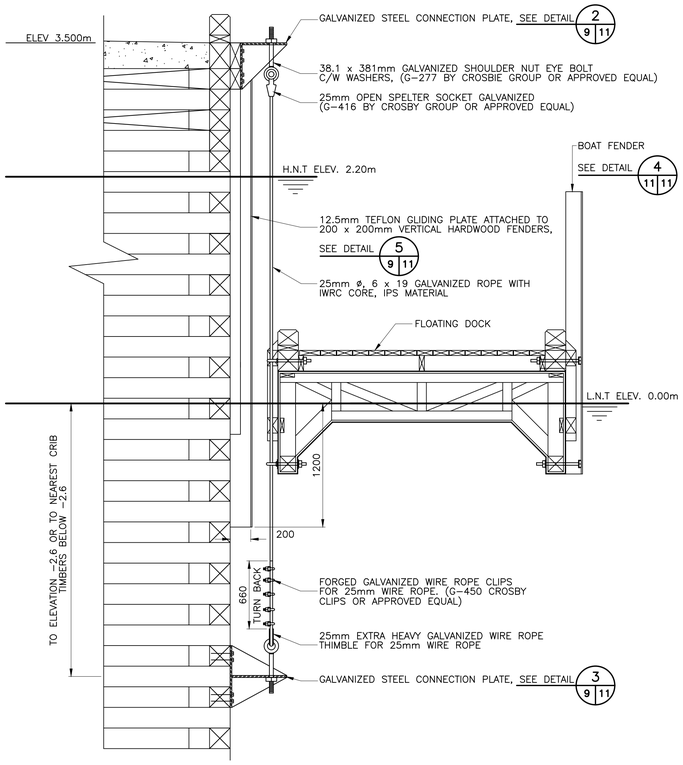
NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin

FLOATING DOCK GANGWAY DETAILS

designed K. WHITE / concu
date OCTOBER 2004
drawn R. SNOW / dessine
date OCTOBER 2004
approved / approuve
date
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet
303390
drawing no. / no. du dessin
M10 OF 11

EDRM Document No. Not in System



1 9 11 SECTION

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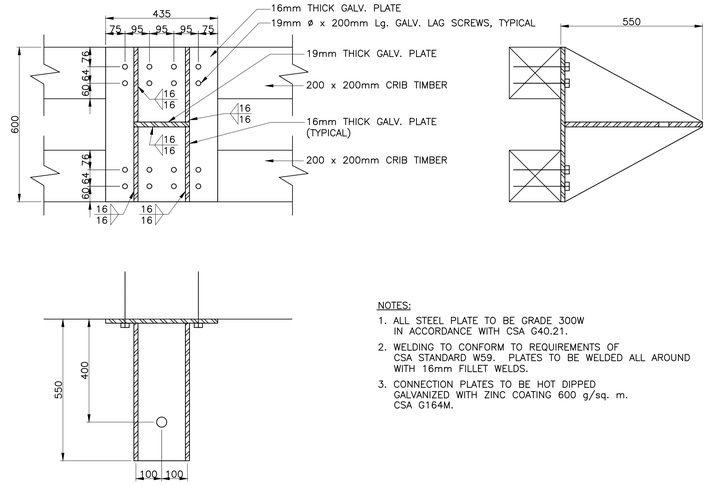

NOTES:

1. ALL STEEL PLATE TO BE GRADE 300W IN ACCORDANCE WITH CSA G40.21.
2. WELDING TO CONFORM TO REQUIREMENTS OF CSA STANDARD W59. PLATES TO BE WELDED ALL AROUND WITH 16mm FILLET WELDS.
3. CONNECTION PLATES TO BE HOT DIPPED GALVANIZED WITH ZINC COATING 600 g/sq. m. CSA G164M.

3 9 11 BOTTOM PLATE CONNECTION DETAIL

SCALE : 1:10

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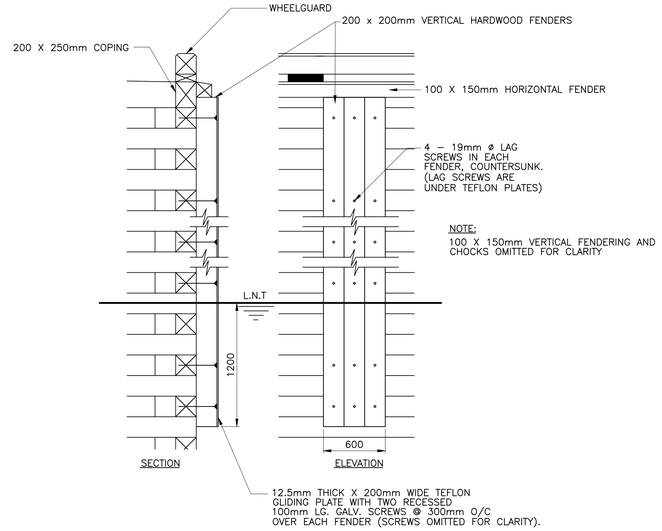

5 9 11 FLOATING DOCK FENDERS

SCALE: 1:25

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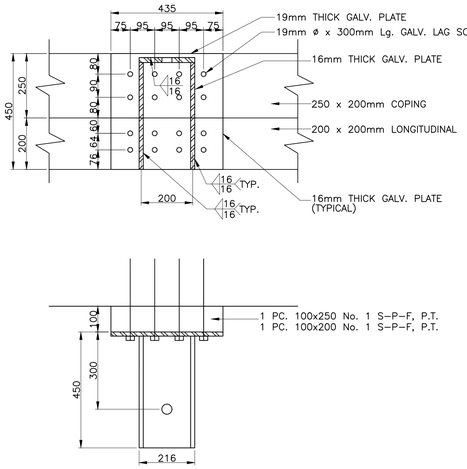

NOTES:

1. ALL STEEL PLATE TO BE GRADE 300W IN ACCORDANCE WITH CSA G40.21.
2. WELDING TO CONFORM TO REQUIREMENTS OF CSA STANDARD W59.
3. CONNECTION PLATES TO BE HOT DIPPED GALVANIZED WITH ZINC COATING 600 g/sq. m. CSA G164M.

2 9 11 TOP PLATE CONNECTION DETAIL

SCALE : 1:10

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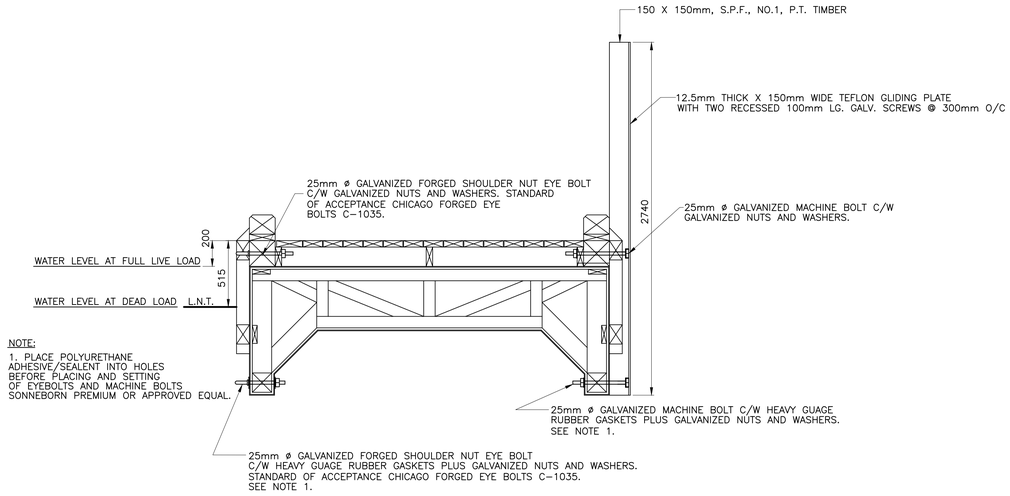

4 11 11 EYE BOLT AND BOAT FENDER CONNECTION DETAIL

SCALE : 1:20

0mm 500mm 1000mm 1500mm 2000mm 2500mm

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B	ISSUED FOR CONSTRUCTION	04/11/03
A	ISSUED FOR REVIEW	04/10/22

A detail no. no. du detail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet

NEW SEARCH AND RESCUE FACILITIES
BURGEO
NEWFOUNDLAND & LABRADOR

drawing / dessin

FLOATING DOCK SLIDING SYSTEM DETAILS

designed	K. WHITE
date	OCTOBER 2004
drawn	R. SNOW
date	OCTOBER 2004
approved	
date	
Tender	
PWGSC Project Manager	
project number	303390
drawing no.	M11 OF 11

concu / dessine / approuve / Soumission / Administrateur de projets TPSGC / no. du projet / no. du dessin

Plot Scale: 1:1

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APPENDIX C
IMPACT ASSESSMENT ACT - SIGNIFICANCE OF ENVIRONMENTAL EFFECTS DETERMINATION (SEED) FORM

IMPACT ASSESSMENT ACT - SIGNIFICANCE OF ENVIRONMENTAL EFFECTS DETERMINATION (SEED) FORM

The purpose of this form is to identify and document the significant adverse environmental effects of a project as per s.82 of the IAA. Consult Departmental Procedure s.3.6 for Basic / Non Basic Project criteria and s.3.8 and 3.9 on significance of environmental effects and factors to consider. The SEED form can be completed internally by the proponent for Basic projects or via a Consultant/PSPC for Non-Basic projects. Complete as much detail as possible and upload to PATH. Follow the SEED Guidelines (Entry Instructions & Linkages to PATH Record Keeping and Impact Assessment Act Registry). ROEC is available to provide advice on how to complete the SEED form as required.

GENERAL INFORMATION

1. Project Title: Burgeo Search and Rescue Floating Dock Construction	
2. Authority: DFO RPSS	
3. Other Contacts: PSPC	**4. Role of each contact:** OGD Consultant
5. Source (Contact): William Duggan, Project Officer, DFO RPSS	
6. Received Date or Assessment starting date: September 22, 2021	
Fill out all applicable fields (7-10):	
7. PATH No(s).:	**8. DFO File No:**
9. EKME File No.:	**10. Canadian Impact Assessment Registry Reference No.:** 83094

PROJECT DESCRIPTION and JUSTIFICATION

11. Project Summary: *A concise description of the project, including a description of the proposed development/construction (ex. Activity details including start & end dates, project phase, machinery used on site, HazMat used, etc.) Include additional details that are not addressed in field 12 of the Project Exclusion Tracking form. Note, details on description of environment is to be reflected in section 25.*

The proposed project involves the replacement of an existing floating dock in Burgeo, NL. The existing floating dock will be removed along with armourstone and asphalt cover. Asphalt cover removal will allow for minor excavation of underlying soils adjacent to the existing Search and Rescue (SAR) Operations building. A new treated timber cribwork crib-block will be added in the location of the removed asphalt cover and soil excavation. A new floating dock will be connected to the crib-block and additional floating docks will be added to the existing configuration immediately adjacent the proposed crib-block and floating dock. The proposed project will be conducted using heavy equipment (e.g., excavators, dump trucks) and manual labour. It is anticipated that the proposed project will be conducted in Fall 2021, pending funding and approvals. The handling and disposal of wastes generated from the project will be in accordance with applicable legislation, regulations, and guidelines.

PROJECT REVIEW

12. Rationale for the Application of section 82 of IAA

Project is on federal land ☒ and;

☒ DFO-RPSS is proposing the project, as the proponent

☐ DFO-RPSS proposal to issue *Fisheries Act* Authorization, *Species at Risk Act* Permit or other regulatory approval

☐ DFO-RPSS proposal to provide financial assistance to another party to enable the project to proceed

☐ DFO-RPSS proposal to lease or sell federal land to enable the project to proceed

☐ Other

13. Primary Authority: DFO RPSS	
14. Primary Authority's rational for involvement: DFO RPSS is the proponent for this project.	**15. Other Authority's rationale for involvement:** Transport Canada, Navigation Protection Program – *Canadian Navigable Waters Act* (*CNWA*) Minor Works for Docks.

16. Other Contacts and Responses *(I.e. other organizations, government agencies, expert departments, etc. contacted or consulted and their responses):*

As the project is occurring entirely within DFO RPSS property, additional outreach was not deemed necessary.

17. Nature of Project: *Please indicate what was selected on the REGISTRY :*

☐ Building and Property Development	☐ Remediation and conservation	☐ Airport and Airfields
☐ Mines and Minerals	☐ Maintenance Activities (fences, walls)	☐ Dams and Reservoirs
☒ Ports and Harbours	☐ Nuclear Energy	☐ Railways
☐ Oil and Gas	☐ Bridges	☐ Hydroelectric Energy
☐ Highways and Roads	☐ Waste Management	☐ Alternative Energy
☐ Water Management	☐ Agriculture	☐ Other, not otherwise specified
☐ Recreation and Tourism	☐ Forestry	

18. Scope of Project & the Assessment (details of the project subject to review)

(ex. Project descriptions, activities carried out during operation, decommissioning, scheduling, etc.)

Project Description

Wharf Demolition and Reconstruction

The proposed project involves the removal of an existing floating dock, armourstone and asphalt cover and minor excavation of underlying soils adjacent to the existing SAR Operations building in Burgeo NL. A new treated timber cribwork crib-block will be added in the location of the removed asphalt cover and soil and a new floating dock connected to the crib-block. Additional floating docks will also be added to the existing configuration immediately adjacent the proposed crib-block and floating dock. The project will involve the use of heavy equipment such as excavators, dump trucks as well as manual labour.

Schedule

The proposed project is expected to commence Fall 2021, pending funding and approvals. The work is expected to be completed by December 31, 2021.

Operation / Maintenance

The Environmental Management System with an integrated Environmental Management Plan (EMP) cover operational aspects of environmental management at SAR facilities and constitute the basis for the environmentally responsible management of operations (i.e., fuelling, waste disposal, activities at the property and on the water). As such, environmental effects resulting from the floating dock operations are not considered further.

Maintenance of the floating dock will be conducted on an as-needed basis and will undergo separate impact assessment and legislative review as future stand-alone project(s).

Accidents and Malfunctions

Accidents and malfunctions have the potential to occur when undertaking a physical activity. Potential environmental effects resulting from accidents and malfunctions over the course of the proposed project are, therefore, considered in this assessment.

19. Project Location (physical environment):

(ex. Details of location – address, latitude/longitude points, access routes, nearest community, local waterbody, geographic object type, and/or reference figures)

The proposed project is located in the town of Burgeo at coordinates Latitude: 47° 36' 58" N, Longitude: 57° 37' 8" W. Burgeo is a small community of approximately 1,300 residents on the south coast of Newfoundland, located approximately 214 kilometers east of Channel-Port aux Basques. The project is occurring on federal lands and is accessible via local community roads. The immediate project site is in an active commercial harbour with developed wharf infrastructure (i.e., finger pier wharves, floating docks) and a paved parking/service area on the surrounding shoreline. An aerial photo of the project site (Appendix A) indicates that the adjacent land use is industrial/commercial and residential.

OTHER REQUIREMENTS (if applicable)

20. Adverse impact(s) on rights provided with respect to the project:

(ex. Include a description of the consultation with Indigenous peoples with respect to the project prior to any decision which could allow the project to proceed. Note, in addition to the IAA consultation required to understand any adverse impacts on rights, there may be a related, parallel legal obligation to consult.)

Indigenous fishers are not known to utilize the SAR facility in Burgeo, nor are there any known Indigenous groups in the surrounding area. As such, Indigenous consultation was not deemed necessary as part of this determination.

21. Indigenous knowledge provided with respect to the project:

(ex. Include a brief description of Indigenous knowledge provided with respect to the project.)

Given the small scale, the temporal and spatial bounds, and the current environmental setting of the proposed works, Indigenous Knowledge was not sought for this project.

22. Community knowledge provided with respect to the project:

(ex. Provide description of community knowledge, such as via public consultation (i.e. public meeting) conducted. If no public consultation, provide rationale.)

The project was posted to the public Impact Assessment Act Registry Sept 22, 2021 for the required 30-day public comment period. The project is occurring entirely on federal land. Given the isolated location of the project site, additional public input was not sought out.

23. Summary of public notification

(ex. Summary of the Registry comments and explain how they have been taken into consideration.)

The project was posted to the public Impact Assessment Act Registry on Sept 22, 2021 for the required 30-day public comment period.

ENVIRONMENTAL EFFECTS & MITIGATION MEASURES

24. Scope of Effects Considered

Table 1: Potential Project / Environment Interactions Matrix

Identify the relevant potential adverse environmental effects attached to each project phase. Keep project phases in work sequence if possible and add additional rows as required. Note, this is a reductive list of the scope of effects to consider. Include in the Matrix and other scopes applicable and refer to definition of Environment and Environmental Effects as noted in the Departmental Guidance.

Add the following symbol to the applicable Valued Ecological Components (VECs):

"+" = potential positive interaction

"-" = potential negative interaction

"+/-"= potential positive and negative interactions

VECs	Environmental Acts			Impacts with Respect to Indigenous Peoples & Rights				Other Impacts			Due Diligence					
Project Phase / Physical Work / Activity	***Fish (Fisheries Act)***	***Species at Risk (SARA)***	***Migratory Birds (MBCA)***	***Social, Economic, Health***	***Physical and Cultural Heritage*** *(land use, HAPA* significance)*	***Indigenous Culture***	***Indigenous Knowledge***	***Health*** *(human health)*	***Social*** *(services/infrastructure, land/resource use, navigation, community, HAPA, etc.)*	***Economic*** *(conditions and livelihoods, etc.)*	***Water*** *(ground, surface, drainage, etc.)*	***Wetlands***	***Terrestrial / Aquatic Species***	***Soil / Marine Sediments***	***Air Quality***	***Others***
Construction/Installation																
Wharf Demolition and Reconstruction	-										-		-	-	-	
Accidents / Malfunctions	-										-		-	-		

*structure, site or thing that is of historical, archaeological, paleontological or architectural significance

Evaluation of Environmental Effects

The Valued Ecological Components (VECs) interactions identified in Table 1 must be supplemented with table 2 and section 26 in order to address in Environmental Effects and Mitigation Measures in table 3 in section 27. The physical works/activities and required mitigation measures are detailed. The assessment is based on:

- information provided by the proponent;
- a review of project related activities;
- an appraisal of the environmental setting, and identification of resources at risk;
- the identification of potential impacts within the temporal and spatial bounds;
- community/indigenous knowledge when provided, public comments and consultations with Indigenous Peoples;
- professional judgement of the assessor;
- specialist advice/knowledge from experts.

The significance of project related impacts was determined in consideration of their frequency, the duration and geographical extent of the effects, magnitude relative to natural or background levels, and whether the effects are reversible or are positive or negative in nature. These criteria are described in Table 2 and used in Mitigation Measures.

Table 2: Assessment Criteria for Determination of Significance

Magnitude	Magnitude, in general terms, may vary among issues, but is a factor that accounts for size, intensity, concentration, importance, volume and social or monetary value. It is rated as compared with background conditions, protective standards or normal variability.	
	Small	Relative to natural or background levels
	Moderate	Relative to natural or background levels
	Large	Relative to natural or background levels
Reversibility	Reversible	Effects can be reversed
	Irreversible	Effects are permanent
Geographic Extent	Immediate	Confined to project site
	Local	Effects beyond immediate project site but not regional in scale
	Regional	Effects on a wide scale
Duration	Short-term	Between 0 and 6 months in duration
	Medium-term	Between 6 months and 2 years
	Long-term	Beyond 2 years
Frequency	Once	Occurs only once
	Intermittent	Occurs occasionally at irregular intervals
	Continuous	Occurs on a regular basis and regular intervals

Methodology

The environmental effects evaluation methodology used in this form focuses the evaluation of those environmental components of greatest concern. Other concerns identified should also added on to the existing form. The VECs most likely to be affected by the project as described are indicated in Table 1. VECs were selected based on ecological importance to the existing environment (above), the relative sensitivity of environmental components to project influences, and their relative social, cultural or economic importance. The potential impacts resulting from these interactions are described below.

Scoping

These environmental effects evaluation considers the full range of project / environment interactions and the environmental factors that could be affected by the project as defined above and the significance of related impacts with mitigation.

25. Environmental Effects

Provide relevant and reliable information on the environment in the area of the project. In particular, identify those environmental components with which the project may interact and potentially be affected by or conversely, have an effect on the project. Relate back to the effects and their scope. All effects previously identified must be addressed in this section. If no effect is anticipated, this should be noted. (i.e., potential increased total suspended solids may affect marine water quality in the vicinity of the project).

Fish

- Increased suspended solids/sediments and turbidity generated from floating dock replacement may negatively impact fish and quality of potential fish habitat.
- Equipment use in the marine environment may negatively impact fish.
- Accidental discharge of fuels and fluids from heavy machinery or other hazardous substances may negatively impact fish or fish habitat.

Water

- Increased suspended solids/sediments and turbidity generated from floating dock replacement may negatively impact marine water quality at the project site.
- Improper disposal of treated timber from existing dock may negatively impact groundwater by introducing contamination.
- Demolition and construction-related refuse may be deposited in the waterbody, potentially decreasing marine water quality.
- Accidental discharge of fuels and fluids from heavy machinery or other hazardous substances may negatively impact marine water quality.

Terrestrial/Aquatic Species

- Increased suspended solids/sediments and turbidity generated from floating dock replacement may negatively impact aquatic species and the potential for aquatic habitat within the project site.
- Smothering of sessile and slow-moving benthic species during placement of armour stone within the project site.
- Equipment use in the marine environment may negatively impact aquatic species.
- Construction activities may result in permanent loss of habitat used by aquatic species within the project site.
- Accidental discharge of fuels and fluids from heavy machinery or other hazardous substances may negatively impact marine water quality.

Soil

- Improper handling and disposal of treated timber from the existing floating dock may result in contamination of surrounding terrestrial soils.
- Accidental release of hazardous materials and/or heavy machinery fuel/fluids onto land may negatively impact terrestrial soils in immediate project area or along transport route.

Air Quality

- Construction activities associated with floating dock replacement may result in nuisance impacts to noise and dust.

26. Mitigation Measures for Project

(ex. list the effect and its mitigation measures of the work (operation), including factors such as Habitat compensation, SARA, Migratory Birds Act, etc., if applicable. Be consistent with the information provided in the IAA Mitigation Monitoring Form.)

Table 3: Potential Project/Environment Interactions and Recommended Mitigation Measures

Project (Burgeo Search and Rescue Floating Dock Construction**)**	
Effect	***Recommended Mitigation Measures***
Potential Effects on Fish	

Increased suspended solids/sediments and turbidity generated from floating dock replacement may negatively impact fish and quality of potential fish habitat in the project site. Potential impacts are anticipated to be small, reversible, immediate, short term, once.
 	
Equipment use in the marine environment may negatively impact fish. Potential impacts are anticipated to be moderate, reversible, local, short-term, intermittent.
 	
Accidental discharge of fuels and fluids from heavy machinery or other hazardous substances may negatively impact fish or fish habitat. Potential impacts are anticipated to be small, reversible, immediate, short term, once.
	• Limit the duration of in-water works to only activity related to the above noted project elements so that it does not diminish the ability of fish to carry out one or more of their life processes (spawning, rearing, feeding, migrating).
	• Conduct in-water undertakings and activities during periods of low flow, low tide and low wind/wave conditions.
	• Implement erosion and sedimentation controls as needed to avoid the introduction of sediment into any waterbody during all phases of work
	  ○ Install effective erosion and sediment control measures prior to beginning work in order to stabilize all erodible areas;
	  ○ Regularly inspect and maintain the erosion and sediment control measures and structures during all phases of the project;
	  ○ Regularly monitor the watercourse for signs of sedimentation during all phases of the project and take corrective action;
	  ○ Keep the erosion and sediment control measures in place until all disturbed ground has been permanently stabilized;
	  ○ Remove all exposed, non-biodegradable sediment control materials once the site is stabilized;
	  ○ Schedule work to avoid wet, windy, and rainy periods that may result in high flow volumes and/or increase erosion and sedimentation;
	• Operate machinery on land in stable, dry areas or from stable floating platforms.
	• All materials placed in or near water should be clean and free of fines or any other deleterious substance (eg., paint, primers, solvents, degreasers, concrete, or other chemicals) and of sufficient size to resist displacement by wave action. Ensure that construction materials used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.
	• Armour stone materials should be clean, quarry run material and must not be removed from intertidal areas.
	• Rock material should not be end dumped; rather it should be placed on station using an excavator or similar equipment.
	• When works are completed, shoreline and approaches should be restored to original condition.

	• Be aware of Alien Invasive Species (AIS) species in the area and take precautions with respect to any vessel traffic and gear movement between affected and unaffected areas to prevent introductions and spread:
	  ○ All equipment used in water should be cleaned, drained and dried on land before and after use for the purposes of preventing the introduction or spread of aquatic invasive/non-indigenous species; and
	  ○ Report any AIS and non-indigenous species to DFO at 1-855-862-1815 or AISEAE.XNFL@dfo-mpo.gc.ca.
	• Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
	• On site, crews must have emergency spill clean-up equipment adequate for the activity involved, and it must be on site. Spill equipment will include, as a minimum, at least one 250 L (i.e., 55 gallon) overpack spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). Note that this applies to spills to the aquatic environment or anything on land over 70 litres (L).

Potential Effects on Water	
Increased suspended solids/sediments and turbidity generated from floating dock replacement may negatively impact marine water quality at the project site. Potential impacts are anticipated to be small, reversible, immediate, short term, once. Improper disposal of treated timber from existing dock may negatively impact groundwater by introducing contamination. Potential impacts are anticipated to be small, reversible, immediate, short term, once. Demolition and construction-related refuse may be deposited in the waterbody, potentially decreasing marine water quality. Potential impacts are anticipated to be small, reversible, immediate, short-term, intermittent. Accidental discharge of fuels and fluids from heavy machinery or other hazardous substances may negatively impact marine water quality. Potential impacts are anticipated to be small, reversible, immediate, short term, once.	• Reduce duration of in-water work wherever possible. • Construction activities that involve in-water work will be conducted during periods of low flow, or at low tide, to further reduce the potential for effects on water quality. • An Erosion and Sediment Control Plan will be developed for the site that minimizes risk of sedimentation to the marine environment. • Construction material and debris are not to become waterborne. Do not dispose of any materials or waste into marine environment. • Cribbing ballast should be, to the greatest extent possible, free of fine-grained materials to help minimize sedimentation of the waterbody and must not be obtained from below the highwater mark. • All equipment to be used in or over the marine environment is to be clean, in good repair, and free from leaks or coating of hydrocarbon-based fluids and/or lubricants harmful to the environment. Hoses and tanks are to be inspected on a regular basis to prevent fractures and breaks. • Wash, refuel, and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water. Waste materials should not be deposited in the tidal waters. • Remove all construction materials from site upon project completion. • On site, crews must have emergency spill clean-up equipment adequate for the activity involved, and it must be on site. Spill equipment will include, as a minimum, at least one 250 L (i.e., 55 gallon) overpack spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour

	Environmental Emergencies Report System (1-800-565-1633). Note that this applies to spills to the aquatic environment or anything on land over 70 litres (L). • All materials placed in or near water should be clean and free of fines or any other deleterious substance and of sufficient size to resist displacement by wave action. • Rock material should not be end dumped; rather, it should be placed on station using an excavator or similar equipment. • When works are completed, shoreline and approaches should be restored to original condition.
Potential Effects on Terrestrial/Aquatic Species	
Increased suspended solids/sediments and turbidity generated from floating dock replacement may negatively impact aquatic species and the potential for aquatic habitat within the project site. Potential impacts are anticipated to be small, reversible, immediate, short term, once Smothering of sessile and slow-moving benthic species during placement of armour stone within the project site. Potential impacts are anticipated to be small, reversible, immediate, short-term, intermittent. Equipment use in the marine environment may negatively impact aquatic species. Potential impacts are anticipated to be moderate, reversible, local, short-term, intermittent. Construction activities may result in permanent loss of habitat used by aquatic species within the project site. Potential impacts are anticipated to be small, irreversible, immediate, long-term, once. Accidental discharge of fuels and fluids from heavy machinery or other hazardous substances may negatively impact marine water quality. Potential impacts are anticipated to be small, reversible, immediate, short term, once.	• Reduce duration of in-water work wherever possible. • Construction activities that involve in-water work will be conducted during periods of low flow, or at low tide, to further reduce the potential for effects on water quality. • An Erosion and Sediment Control Plan will be developed for the site that minimizes risk of sedimentation to the marine environment. • Construction material and debris are not to become waterborne. Do not dispose of any materials or waste into marine environment. • Cribbing ballast should be, to the greatest extent possible, free of fine-grained materials to help minimize sedimentation of the waterbody and must not be obtained from below the highwater mark. • All equipment to be used in or over the marine environment is to be clean, in good repair, and free from leaks or coating of hydrocarbon-based fluids and/or lubricants harmful to the environment. Hoses and tanks are to be inspected on a regular basis to prevent fractures and breaks. • Wash, refuel, and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water. Waste materials should not be deposited in the tidal waters. • Any hazardous materials produced as a result of this project are to be transported off-site for disposal/treatment at an approved waste handling facility, pursuant to applicable provincial and federal regulations/legislation. • Remove all construction materials from site upon project completion. • On site, crews must have emergency spill clean-up equipment adequate for the activity involved, and it must be on site. Spill equipment will include, as a minimum, at least one 250 L (i.e., 55 gallon) overpack spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). Note that this applies to spills to the aquatic environment or anything on land over 70 litres (L). • All materials placed in or near water should be clean and free of fines or any other deleterious substance and of sufficient size to resist displacement by wave action. • Rock material should not be end dumped; rather, it should be placed on station using an excavator or similar equipment.

	• When works are completed, shoreline and approaches should be restored to original condition.
Potential Effects on Soils	
Improper handling and disposal of treated timber from the existing floating dock may result in contamination of surrounding terrestrial soils. Potential impacts are anticipated to be small, reversible, immediate, short term, once. Accidental release of hazardous materials and/or heavy machinery fuel/fluids onto land may negatively impact terrestrial soils at the project site or along transport route. Potential impacts are anticipated to be moderate, reversible, immediate, short-term, once.	• Removal of potentially hazardous materials from on-site structures slated for demolition should be completed by qualified individuals. • Any hazardous materials produced as a result of this project are to be transported off-site for disposal/treatment at an approved waste handling facility, pursuant to applicable provincial and federal regulations/legislation. • Remove all construction materials from site upon project completion. • Develop a response plan that is to be implemented in the event of an accidental sediment release or spill of hazardous materials and keep an emergency spill kit on site with staff trained in its use. ○ On site, crews must have emergency spill clean-up equipment adequate for the activity involved, and it must be on site. Spill equipment will include, as a minimum, at least one 250 L (i.e., 55 gallon) overpack spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). Note that this applies to spills to the aquatic environment or anything on land over 70 litres (L).
Potential Effects on Air Quality	
Construction activities associated with floating dock replacement may result in nuisance impacts to noise and dust. Potential impacts are anticipated to be small, reversible, immediate, short-term, intermittent.	• Where feasible, mitigation measures, such as dust suppressors, will be implemented to reduce the potential for increased dust during project activities. • All construction materials shall be removed from the site upon project completion.

27. Description of any Significant Adverse Environmental Effects of the project (after considering the application of mitigation measures):

Significant adverse environmental impacts, including residual effects, are not anticipated as a result of this project, provided appropriate mitigation measures are implemented.

28. Other monitoring and Compliance Requirements (i.e., *Fisheries Act*, *Species at Risk Act and/or Migratory Birds Convention Act* permits or authorizations) and general follow-up of the Mitigation Measures.

Include any monitoring or compliance requirements (site visits, inspections or reporting) to confirm that mitigation measures or compensation or other conditions are being met or implemented. If not required, indicate n/a. Be consistent with Mitigation Monitoring Form.

N/A

CONCLUSION

29. Conclusion on Significance of Adverse Environmental Effects:

(ex. Select one of the following conclusions and define if any significant environmental impacts are anticipated as a result of the proposed project. Summarize any potential impacts are expected to be minimal/high and insignificant/significant.)

☒ The project is not likely to cause significant adverse environmental effects; DFO-RPSS may exercise its power, duty or function, i.e. may issue the authorization.

☐ The project is likely to cause significant adverse environmental effects; DFO-RPSS has decided not to exercise its power, duty or function. The project will not be referred to the Governor in Council.

☐ The project is likely to cause significant adverse environmental effects that may be justified in the circumstances. The project will then be referred to Governor in Council (GIC) as per section 90 to determine if the effects are justified in the circumstances. The GIC decision will determine what action DFO-RPSS will take, i.e. exercise its power, duty or function or not.

Summary: Given the proper implementation of appropriate mitigation measures, significant adverse impacts are not anticipated as a result of this project.

Prepared by: **Name:** **Title:**	**Date:**
Approved by: **Name:** **Title:**	**Date:**

DECISION

Decision(s) Taken

Based on this SEED conclusion, identify the course of action(s) to take:
☐ DFO-RPSS to issue *Fisheries Act* Authorization and/or SARA permit
☒ DFO-RPSS to proceed with project (as proponent)
☐ DFO-RPSS to provide financial assistance for project to proceed
☐ DFO-RPSS to provide federal land for project to proceed
☐ Other: *define*

Include any other decision taken by other authorities (if applicable):
ex. If different forms were used by other departments, please copy and paste the decision.

Approved by: **Name:** **Title:**	**Date:**

Note: additional signoffs may be added as required by the implicated parties for coordinated assessments.

References

30. References:

Fisheries and Oceans Canada Real Property Safety and Security (DFO-RPSS). 2015. Probable Effects Determination Report, CEAA 2012, Marginal Wharf Reconstruction, Burgeo, NL.

Appendix A

Map and Aerial Photographs of Project Location

Canada	Floating Dock Reconstruction	PAGE NO: 1	PREPARED BY: sem
	Burgeo, Newfoundland & Labrador	COORDINATE SYSTEM: NAD 83 UTM Zone 21	DATE: 20/10/2021

Figure 1: Aerial imagery of project site (indicated by yellow marker and label).