CONSTRUCTION SPECIFICATIONS

TOBEY DOCK RECONSTRUCTION

GEORGIAN BAY ISLANDS NATIONAL PARK

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E7 Engineering

WORK SPECIFICATIONS

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BEAUSOLEIL ISLAND TOBEY DOCK RECONSTRUCTION

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01 11 00 – SUMMARY OF WORK

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises reconstruction of the Parks Canada Tobey Dock, located on Beausoleil Island in Georgian Bay Islands National Park.

1.2 CONTRACT METHOD

.1 Construct Work under unit price contract.

1.3 SUMMARY OF WORK

.1 The work under this contract covers the removal and storage of the existing floating dock, finger piers and anchors, removal of the existing rubble mound pier and timber deck and ramp, storage of the existing ramp for reuse, stockpiling of existing dock boulders and rip rap for reuse, supply and installation of Steel Sheet Piling (SSP), Steel Beams, precast concrete deck slabs, cast in place concrete and all related materials, and reinstallation of the existing floating dock and finger piers and anchors and related works as indicated.

.2 The work to be done by the Contractor under this Contract shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, transportation, disbursements, accommodation, insurance, and all things necessary for and incidental to the satisfactory performance and completion of all work as specified herein. All work to be done in accordance with details shown on the accompanying plans as specified herein.

1.4 SCOPE OF WORK

.1 Provide all documentation, certificates, insurance, bonds, construction schedule, shop drawings, test reports etc. as stipulated.

.2 Prepare and protect site, install temporary fast fencing and signage around site and contractors yard. Allow for public and Parks Canada access to existing park in-shore facilities. Co-ordinate on site and mainland staging areas and berthing with Parks Canada

.3 Mobilize contractors site trailers, washrooms, and storage to site.

.4 Remove all pier and floating dock fixtures and equipment and store for reuse.

.5 Demolish and remove timber decking and fixed ramp. Remove and store existing moving ramp and connections for reuse. Remove and store existing pier boulders and rip rap. Remove and store existing pier granular materials for use as cell fill. Dredge and store rocks and boulders from lakebed at new cell locations to facilitate SSP installation.

.6 Disconnect, remove and store existing floating dock & piers at PCA designated site. Floating dock, piers and anchors may be relocated directly to final location, or temporarily stored.

.7 Remove and relocate existing floating dock anchors as required to allow SSP work.

.8 Confirm length, dimensions and connections for SSP requirements. Confirm length of SSP for each cell by installing a test pile at both ends of each cell to at least the depth indicated or solid rock. Test results shall be given to the engineer for confirmation of pile lengths.

.9 Supply and Install steel sheet pile (SSP), wales, tie rods and anchors as indicated.

.10 Backfill and compact SSP Cells with stored granular material and new granular backfill as required. Reuse excavated & stored pier granular material and supply additional approved granular fill as needed.

.11 Supply and install concrete formwork, reinforcing, inserts, conduit, membranes, anchors and ancillary items as indicated.

.12 Supply and place concrete as indicated, including finish, protect, cure, install control joints and all ancillary items required to perform the work.

.13 Supply and install bridge beams and precast decks as indicated.

.14 Supply and install bollards, fenders, and fixtures as indicated.

.15 Supply and install electrical service conduit as indicated.

.15 Reinstate the shore to dock access pathway.

.16 Place stored boulders and rip rap at the toe of the SSP at the east (offshore) end of the cells.

.17 Install floating dock and pier anchors.

.18 Install floating dock and piers and connect to anchors.

.19 Supply and install access ramp connection hardware to suit existing ramp.

.20 Install stored floating dock access ramp.

.20 Cleanup and restore site. Repair any damaged paving, slabs, deck, curbs, roadway or sidewalks, at no cost to the owner.

.21 Demobilize.

.22 Provide a one (1) year warranty for the work, subject to a ten month warranty inspection by Parks Canada, which findings could trigger a second year warranty extension if warranty work required.

Definitions

.1 The word "provide" means "supply and install".

.2 For purposes of this contract, “PCA”, “Owner” "Departmental Representative" and “Parks Canada” shall have the same meaning.

.3 For the purposes of this contract, “Engineer" and “Consultant” shall have the same meaning.

1.5 DIVISION OF WORK

.1 Division of work among subcontractors and suppliers is solely the Contractors responsibility. Parks Canada and the Consultant assume no responsibility to act as arbiter to establish subcontract limits between sections or divisions of work.

1.6 SUBMITTALS

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

1.7 INTERPRETATION OF DOCUMENTS

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

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

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

1.8 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:

- .1 Contract Drawings and current as-builts.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed Shop Drawings.
- .5 Change Orders.
- .6 Other Modifications to Contract.
- .7 Copy of Approved Work Schedule.
- .8 Health and Safety Plan, Covid protocols, and Other Safety Related Documents.
- .9 BIA (environmental mitigations from Parks Canada)
- .10 Other documents as specified.

1.9 CODES AND STANDARDS

.1 Perform work in accordance with the National Building Code of Canada (NBC) and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Work to meet or exceed requirements of contract documents, specified standards, codes and referenced documents.

1.10 SETTING OUT OF WORK

.1 The layout and alignment of the dock reconstruction will be on the extension of the existing dock and all elevations and dimensions are relative to the existing dock as indicated. Establish control points and elevations prior to demolition of the existing pier.

.2 Provide devices needed to layout and construct work.

.3 Supply such devices as straight edges and templates required to facilitate Engineer's inspection of work.

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

1.11 ADDITIONAL DRAWINGS

.1 Engineer may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.

.2 When additional drawings and instructions are required by the Contractor, provide reasonable notice in writing to the Engineer in advance of the date they are required.

1.12 SITE INSPECTION

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

1.13 DRAWINGS

.1 The following drawings are to be read in conjunction with this specification:

ISSUED FOR TENDER

TITLED: BEAUSOLEIL ISLAND TOBEY DOCK RECONSTRUCTION

0.0 COVER SHEET

1.0 GENERAL ARRANGEMENT PLAN & SCOPE OF WORK

1.1 EXISTING DOCK

2.0 PIER PLAN & SECTION

2.1 CELL 1 & 2 PLAN & SECTION

2.2 CELL 3 PLAN SECTION & DETAILS

3.0 BRIDGES PLAN & DETAILS

01 29 00 – PAYMENT PROCEDURES

1.1 ADMINISTRATION

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

.2 Submit to Parks Canada and Engineer, at least 14 days before Information for first application for payment, cost breakdown, Progress Payment in detail as per Parks Canada Documentation required which will be outlined during the kickoff meeting.

.3 Submit statutory declaration and WSIB certificate with payment applications

1.2 MEASUREMENT FOR PAYMENT

.1 **Mobilization** will be paid as a lump sum once the Contractor has mobilized to site and installed all fencing, traffic control signage all required documentation schedules, certifications, bonds, insurance and related items as required and specified.

.2 **Site Maintenance** will be paid proportionally monthly as determined by the approved schedule and include the maintenance and recurring work as indicated in the contract documents

.3 **Demobilization** will be paid as a lump sum once the contractor has completed the work and is fully demobilized from the site and provided all documentation, as-builts, warranties, manuals clearance certificates etc. as indicated in the contract documents

.5 **Dredging and Demolition** will be paid for as a lump sum upon completion of the demolition and accepted disposal, or reclamation as indicated in the contract documents.

.6 **Turbidity Curtain** will be paid for as a Lump Sum for supply, installation and maintenance as required for all in-water work. 50% of the lump sum will be paid after installation and the balance will be paid for maintenance and removal upon completion of the requirement for the turbidity curtain.

.7 **Steel Sheet Piling Supply** will be paid for as indicated in Section 31 62 16.13

.8 **Steel Sheet Piling Installation** will be paid for as indicated in Section 31 62 16.13

.9 **Tie Rods, Wales, Pile Cap, Connectors & Misc. Steel** will be paid for as indicated in Section 31 62 16.13

.10 **Type 1 Reinforced Concrete** will be paid for as indicated in Section 03 30 00

.11 **Steel Beam Supply** will be paid for as indicated in Section 05 12 33

.12 **Bridge Beam Installation** will be paid for as indicated in Section 03 41 00

.13 **Precast Deck Slab Supply** will be paid for as indicated in Section 03 41 00

.14 **Precast Deck Slab Installation** will be paid for as indicated in Section 03 41 00

.15 **Floating Dock Removal Storage & Repositioning** will be paid for as a lump sum to be paid 50% upon removal and storage and 50% upon installation at the final location.

.16 **Relocate Anchors** will be paid for as a lump sum when relocation is complete.

.17 **Ramp Hardware and Installation** will be paid for as a lump sum when connection hardware and ramp is installed on the new dock.

.18 **Service Conduits** will be measured as indicated in Section 26 00 00.

.19 **Armour Stone and Rip Rap** will be measured as indicated in Section 35 31 22.

END OF SECTION

01 32 16 – PROJECT SCHEDULE

Part 1 General

1.1 WORK SCHEDULE

.1 Submit within 10 working days after Contract award, schedule showing anticipated progress stages and final completion of work within time period required by contract documents. Schedule must be in the form of a critical path method Gantt chart using Microsoft project or excel. Include milestone dates for substantial performance of the work.

.2 Interim reviews of work progress based on work schedule will be conducted as decided by Engineer and schedule updated by Contractor in conjunction with and to approval of Engineer. Schedule review to be performed during regular meetings with the contractor to advise of next steps and if there are any changes.

.3 Work under this contract is to be performed in a timely manner. Commence planning and preparatory work immediately upon receipt of official notification of acceptance of Contract and schedule the work in accordance with the following:

.1 Award of Contract -.

.2 Commence work on site –

.3 Complete work and demobilize from site –

.4 Schedule work in accordance with all permits from authorities.

01 33 00 – SUBMITTAL PROCEDURES

General

1.1 ADMINISTRATIVE

.1 All correspondence and submittals shall be to the Departmental Representative.

.2 Submit to Departmental Representative & Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.3 Do not proceed with Work affected by submittal until review is complete.

.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 converted values are acceptable.

.6 Review submittals prior to submission to Departmental Representative & Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.7 Notify Departmental Representative & Consultant, 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 are co-ordinated.

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

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

.11 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 5 days for Departmental Representative's &Consultant's review of each submission.

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

.6 Make changes in shop drawings as Departmental Representative or Consultant may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

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

.10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative or Consultant where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative & Consultant.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative & Consultant.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative or Consultant.

.15 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.16 Delete information not applicable to project.

.17 Supplement standard information to provide details applicable to project.

.18 If upon review by Departmental Representative or Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned, and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.19 Submit an electronic copy of the Operations and Maintenance Manuals and two (2) hard copies of the O&M manuals in binders to the Departmental Representative and Consultant for review and approval.

.20 Submit a 1-year warranty letter to Departmental Representative upon contract completion.

.21 The review of shop drawings by Departmental Representative and Consultant is for sole purpose of ascertaining conformance with general concept.

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

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic digital photography in jpg format, fine resolution prior to commencing work to document existing conditions and weekly thereafter in combination with progress statement and as directed by Departmental Representative or Consultant.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Take periodic digital photography to document and provide a photographic record of the progress of the work.

.4 Frequency of photographic documentation: weekly by email or as directed by Departmental Representative or Consultant. Do not use progress photos for promotional purposes without Departmental Representative's written consent.

.5 Arrange for final photographs to be taken.

1.4 CERTIFICATES AND TRANSCRIPTS

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

.2 Submit transcription of insurance immediately after award of Contract.

END OF SECTION

01 35 29 – HEALTH AND SAFETY REQUIREMENTS

Part 1 General

1.1 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

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

.3 Material Safety Data Sheets (MSDS).

.4 Canadian Standards Association (CSA): Canada

.1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

.5 National Building Code of Canada 2015 (NBC)

.1 Division B – Part 8 – Safety Measures at Construction and Demolition Sites

.6 National Fire Code 2015 (NFC)

.1 Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan

.7 Province of Ontario

.1 Occupational Safety and Health Act and Regulations for Construction Projects.

.2 O. Reg.490/09, Designated Substances

.3 Workplace Safety and Insurance Act, 1997

.4 Municipal Statutes and Authorities

.8 Treasury Board of Canada Secretariat (TBS)

.1 Treasury Board, Fire Protection Standard April 1 2010

1.2 SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 10 days after date of Notice to Proceed and prior to commencement of Work.

.1 Results of site specific safety hazard assessment.

.2 Submit copies of incident and accident reports to Parks Canada.

.3 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.4 Measures and controls to be implemented to address identified safety hazards and risks.

.3 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations.

.4 Parks Canada will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor after receipt of plan. Revise plan as appropriate

and resubmit plan to Engineer within 5 days after receipt of comments from Parks Canada.

.5 Parks Canada review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.6 Submit names of personnel and alternates responsible for site health and safety.

.7 Submit records of Contractors Health and Safety meetings when requested.

.8 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.

.9 Submit copies of incident and accident reports.

.10 Submit Material Safety Data Sheets (MSDS)

1.3 SAFETY ASSESSMENT

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

1.4 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Observe and enforce construction safety measures required by Canadian Construction Safety Code, Provincial Government, Worker’s Compensation Board and municipal statutes and authorities.

.3 In the event of a conflict between any provisions of above authorities having the most stringent provision will apply.

1.5 RESPONSIBILITY

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

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.6 PROJECT/SITE CONDITIONS

.1 Work at site will involve:

.1 Above water, underwater, and near water work.

.2 Operation of cranes, excavators, tug boats, and other large equipment.

.3 Work in a remote location only accessible by water craft.

.4 Contact with silica in concrete.

.5 Contact with preservative treated timber elements.

1.7 GENERAL REQUIREMENTS

.1 Complete Parks Canada Agency Health and Safety attestation form prior to commencement of work.

.2 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.3 Parks Canada Agency Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

.4 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Parks Canada Agency Representative in writing.

1.8 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.

1.9 RESPONSIBILITY

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

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act and Regulations for Construction Projects for the Province of Ontario.

1.10 UNFORSEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Parks Canada Agency Representative verbally and in writing.

.2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.11 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Parks Canada Agency Representative.

.1 Contractor's Safety Policy

.2 Constructors Name

.3 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).

.4 Ministry of Labour Orders and reports.

.5 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.

.6 Address and phone number of nearest Ministry of Labour office.

.7 Material Safety Data Sheets.

.8 Written Emergency Response Plan.

.9 Site Specific Safety Plan.

.10 Valid certificate of first aider on duty.

.11 WSIB "In Case of Injury at Work" poster.

.12 Location of toilet and cleanup facilities.

1.12 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Parks Canada Agency Representative.

.2 Provide Parks Canada Agency Representative with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Parks Canada Agency Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.13 BLASTING

.1 Blasting or other use of explosives is not permitted.

1.13 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from Parks Canada Agency Representative.

1.14 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

.2 Assign responsibility and obligation to Competent Supervisor to stop or start Work when, at Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety.

.3 Parks Canada Agency Representative may also stop Work for health and safety considerations.

END OF SECTION

01 35 43 – ENVIRONMENTAL PROCEDURES

PART 1 – GENERAL

1.1 RELATED WORK

.1 Section 01 74 20 –CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL
.2 Section 35 20 24 –DREDGING
.3 Section 35 49 25 –TURBIDITY CURTAIN

1.2 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 BASIC IMPACT ASSESSMENT

.1 All environmental impact assessments and surveillance will be completed by a Parks Canada Agency impact assessment officer.

.2 All work shall comply with requirements included in the Specifications, and mitigations listed in the Parks Canada environmental impact assessment document, 'Basic Impact Assessment (BIA) for Tobey Dock Reconstruction, Georgian Bay Islands National Park, 2021", which is contained Appendix B.

1.4 DREDGING

.1 If dredging is necessary, an additional environmental impact analysis and subsequent mitigations may be required. Refer to the Parks Canada Agency Ontario Waterways Environmental Standards and Guidelines document – "Dredging and Sediment Removal ESG-6-C" contained in APPENDIX C for mitigations.

1.5 SUBMITTALS

.1 The contractor must submit an Environmental Protection Plan (EPP). The EPP must be submitted prior to work commencing, allowing time for review, comment and approval by the Parks Canada Agency (PCA) Impact Assessment Officer. PCA may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

1.6 POLLUTION CONTROL

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

.2 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

.3 Do not allow any debris, fill, deleterious material, or other foreign material to enter the waterway. A shop-vac system shall be used during any drilling, and/or cutting processes to prevent material shavings from entering the waterway.

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

.5 Prevent spillage of gasoline, diesel fuel and other oil products into the waterways and on land. Clean up spills promptly at own cost in accordance with Provincial regulatory requirements. Report any fuel spills immediately to Parks Canada Agency Representative and to the Ontario Ministry of Environment and Energy Spills Action Centre (1-800-268-6060).

.6 Fuelling of machinery must take place at least 10m away from the waterway.

.7 All cut or drilled pressure treated lumber surface must be sealed with a water based marine sealer and moisture repellent. Wherever possible, all wood should be treated and dried on the mainland, before transport to the island.

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

.9 Provide a turbidity curtain around the existing structures that are to be removed. The turbidity curtain shall be extended to the shoreline such that the zone contained within the turbidity curtain is isolated from the remainder of the waterway.

.10 Provide a floating debris containment boom whenever any work operations could potentially result in creation of floating debris.

.11 Abide by local noise by-laws.

1.9 EROSION AND SEDIMENT CONTROL PLAN

.1 Submit an erosion and sediment control plan, as part of the EPP for review.

.2 All efforts must be made to minimize disturbance caused by barge use in shallow water. All efforts must be made to avoid prop scour and grounding out of barge.

.3 A turbidity curtain will be required for work that has a potential to result in considerable disturbance to bottom substrates.

1.10 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site unless approved by Parks Canada Agency Representative.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

.3 All waste materials including containers and waste fluids associated with vehicle maintenance should be disposed of in a legal manner at a site approved by Local Authorities.

1.9 FIRES

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

1.10 DRAINAGE

.1 Do not pump water containing suspended materials (or other harmful substances) into waterways, sewer or drainage systems.

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

1.11 ENVIRONMENTAL PROTECTION PLAN

.1 Prior to the commencement of construction activities or the delivery of any construction materials to the work site, the contractor must submit an Environmental Protection Plan for and approval by the Departmental Representative. Parks Canada Agency will provide a template.

.2 Parks Canada Agency may respond in writing regarding deficiencies or concerns that exist in submitted Environmental Protection Plans (EPP). The response will include are noted deficiencies and/or concerns and may include a request for a re-submission of the EPP, complete with corrections of the noted deficiencies and/or concerns.

1.12 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties where indicated.

.2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Parks Canada Agency Representative.

1.13 CLEANING

.1 Maintain project free of accumulated water and rubbish.

1.14 SPECIAL PROTECTION AND PRECAUTIONS

.1 Comply with the requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials and regarding labelling and the provision of material safety data sheets acceptable to Labour Canada.

1.15 WILDLIFE PROTECTION

.1 Should nests of migrating birds in wetlands be encountered during work, immediately notify Parks Canada Agency Representative for directives to be followed.

.2 Do not disturb nest site and neighboring vegetation until nesting is completed.

.3 Minimize work adjacent to such areas until nesting is completed.

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

1.16 REGULATORY APPROVALS

.1 The work is subject to approval by various regulatory agencies.

.2 The contractor will execute the work in compliance with all conditions stipulated in the permits issued by the regulatory agencies.

.3 Work shall not commence until all permits and approvals are in place.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

00 39 00 – PROJECT MEETINGS

1.0 PROJECT MEETINGS

.1 Engineer will arrange project meetings and assume responsibility for setting times and recording and distributing minutes. Minutes to be distributed within 3 business days.

.2 A start-up meeting will be scheduled prior to construction.

.3 Site meetings will be weekly or as determined by PCA or the Engineer.

END OF SECTION

01 45 00 – QUALITY CONTROL

PART 1 - GENERAL

1.1 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Parks Canada Agency Representative for purpose of inspecting and/or testing work. Cost of such services will be borne by Parks Canada Agency Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection /testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Parks Canada Agency Representative at no cost to Parks Canada Agency Representative. Pay costs for retesting and re-inspection.

1.2 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.3 PROCEDURES

.1 Notify appropriate agency and Parks Canada Agency Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.4 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Parks Canada Agency Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Parks Canada Agency Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Parks

Canada Agency Representative may deduct from Contract Amount difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Parks Canada Agency Representative

01 51 00 – TEMPORARY UTILITIES

1.1 TEMPORARY UTILITIES

.1 Contractors may use PCA Power and water; it is nearby but not immediately adjacent to the site. Contractors to temporarily extend services for their use as required.

1.2 EXISTING SERVICES

.1 Notify Parks Canada and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Parks Canada 72 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions.

.3 Establish location and extent of service lines in area of work before starting Work. Notify Parks Canada of findings.

.4 Submit schedule to and obtain approval from Engineer for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.5 Where unknown services are encountered, immediately advise Parks Canada and confirm findings in writing.

.6 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.7 Record locations of maintained, re-routed and abandoned service lines.

END OF SECTION

01 52 00 – CONSTRUCTION FACILITIES

1.1 CONTRACTOR'S USE OF SITE

.1 Co-ordinate use of premises under direction of Parks Canada. Schedule and construct work to accommodate Owner's use of surrounding premises by staff and/or public during construction. Owner will occupy premises during entire construction period. No restricted work hours, but contractor will have to gain permission from PCA for any weekend work.

.2 Do not unreasonably encumber the site with materials and equipment.

.3 Assume full responsibility for protection and safekeeping of products under this Contract.

.4 Move stored products or equipment which interfere with operations of the Park.

.5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Engineer.

.7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

.8 Smoking is not permitted.

.9 Contractors to use PCA washrooms on site.

.10 Site access is by boat only.

.11 The contractor will be responsible for finding a mainland laydown, storage and parking area and a dock for vessel or barge berthing, unloading and loading purposes.

.12 Small vessel berthing and minimal vehicle parking may be possible at the Georgian Bay Islands National Park – Honey Harbour location with coordination and approval from the Parks Canada departmental representative. Space at the Parks Canada Honey Harbour facility is limited and not suitable for receiving large deliveries or berthing large vessels or barges.

.13 Provide and maintain temporary fire protection systems and equipment during construction.

END OF SECTION

01 56 00 – TEMPORARY BARRIERS AND ENCLOSURES

1.1 TEMPORARY BARRIERS AND ENCLOSURES

.1 The park will still be open to visitors during construction.

.2 Co-ordinate use of premises and temporary barriers with Parks Canada.

.3 Provide, maintain and remove upon completion, Fast fence around construction and staging areas.

.4 Provide and Assume responsibility for site security at the construction site and staging area

END OF SECTION

01 74 00 – CLEANING

1.1 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Parks Canada Agency Representative. Do not burn or bury waste materials on site.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

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

.5 Provide and use marked separate bins for recycling.

.6 Dispose of waste materials and debris off site.

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

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

1.2 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris including that caused by Owner or other Contractors.

.5 Broom clean and wash dock walks, steps and surfaces; rake clean other surfaces of grounds.

.6 Remove dirt and other disfiguration from exterior surfaces.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 24 - Waste Management and Disposal.

END OF SECTION

01 74 24 – CONSTRUCTION/DEMOLITION AND WASTE MANAGEMENT

Part 1 General

1.1 CONSTRUCTION AND DEMOLITION WASTE

.1 Carefully deconstruct and source separate materials/equipment and divert at least 90%, by weight, of all construction and demolition waste from landfills, per DSDS 2020-23. Reuse, recycle or sell material for reuse except where indicated otherwise. On site sales are not permitted.

.2 Source separate waste and maintain waste audits in accordance with the Environmental Protection Act, Ontario Regulation 102/94 and Ontario Regulation 103/94.

.1 Provide facilities for collection, handling and storage of source separated wastes.

.2 Source separate the following waste:

.1 Brick and hardened concrete.

.2 Corrugated cardboard and paper.

.3 Wood.

.4 Fresh concrete waste.

.5 Concrete admixtures and additives.

.6 Steel.

1.2 WASTE PROCESSING SITES

.1 To be confirmed

1.3 MEASUREMENT FOR PAYMENT

.1 Payment for Demolition removal and disposal of all components identified on the drawings is covered in work for other items

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Government Chief Responsibility for the Environment:

.1 Province: Ontario

.1 Ministry of Environment and Energy:

.2 Address: 135 St Clair Avenue West, Toronto, ON M4V 1P5 Canada, general inquiries (800)565-4923 or (416)323-4321, fax (416)323-4682

.2 Environment Canada:

.1 Address: Toronto, ON, general inquiries (416)734-4494.

1.4 PROTECTION

.1 Protect structures, existing pavement not designated for removal, and portions of existing wharf structure from damage. In event of damage, immediately replace or make repairs to approval of Departmental Representative at no additional cost.

.2 Prevent movement, settlement, or damage to adjacent structures, and utilities that are to remain in place. Provide bracing and shoring as required.

1.5 DEMOLITION, REMOVAL AND DISPOSAL

.1 All removals to be performed as per Contract Drawings and/or as directed by Departmental Representative.

.2 Retain all dump tickets for records.

.2 The following is a summary of removals:

.1 Remove and dispose timber deck and guard on existing pier.

.2 Remove and store:

.1 Existing ramp to floating docks.

.3 Remove and salvage:

.1 Armour stone boulders and rip rap on existing pier.

.2 Granular materials suitable for cell fill.

END OF SECTION

01 77 00 – CLOSEOUT PROCEDURES

Part 2 General

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor to conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.2 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Engineer.

.2 When Work incomplete according to Engineer, complete outstanding items and request re-inspection.

.3 Final Payment:

.1 When Engineer considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

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

1.4 RECORD DRAWINGS

.1 Maintain project “as-built” record drawings and record accurately significant deviations from Contract documents caused by site conditions and changes ordered by Engineer.

.2 Mark “as-built” changes in red coloured ink.

.3 Record the following information:

.1 Field changes of dimension and detail.

.2 Changes made by Change Order or Field Order.

.4 At completion of project and prior to final inspection, neatly transfer “as-built” notations to second set and submit both sets and electronic set (.pdf) to Parks Canada and the Engineer.

1.3 PRICE AND PAYMENT PROCEDURES

.1 Measurement and Payment:

.1 Demobilization will be paid as a lump sum once the Contractor has completed all work and cleanup, restoration, and removed all equipment, facilities, surplus materials, provided all documentation, as-built drawings warranties, manuals etc. and restored the pier to public use to the satisfaction of Parks Canada and the Engineer.

END OF SECTION

DIVISION 03 – CONCRETE

03 20 00 – CONCRETE REINFORCING

1.1 RELATED SECTIONS

.1 Section 03 30 00 – Cast-in-place Concrete

.2 REFERENCES

.3 Canadian Standards Association (CSA International) latest edition and others

- .1 CSA A23.1-14 Concrete Materials and Methods of Concrete Construction.
- .2 CSA A23.2-14 Methods of Test and standard practices for concrete.
- .3 CAN/CSA G40.18 Billet Steel Bars for Concrete Reinforcement
- .4 CSA A23.3-14 Design of Concrete Structures
- .5 CAN/CSA-S269.3 Concrete Formwork
- .6 RSIC Reinforcing Steel Manual of Standard Practice1

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Prepare and submit reinforcement drawings in accordance with RSIC Manual of Standard Practice.

.2 Shop Drawings:

- .1 Submit drawings with the following:
  - .1 Indicate placing of reinforcement and:
    - .1 Bar bending details.
    - .2 Lists.
    - .3 Quantities of reinforcement.
    - .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved, with identifying code marks to permit correct placement without reference to structural drawings.

2 Detail lap lengths and bar development lengths to CAN/CSA-A23.3.

- .1 Provide type A tension lap splices unless otherwise indicated.

1.3 PRICE AND PAYMENT PROCEDURES

.1 Measurement and Payment:

- .1 Reinforcing steel is incidental to work in other sections.

Part 2 Products

2.1 MATERIALS

.1 Reinforcing Steel: Grade 400 to CAN/CSA G40.18

Part 3 EXECUTION

3.1 FIELD BENDING

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

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

.3 Replace bars, which develop cracks or splits.

3.03 PLACING REINFORCEMENT

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

.3 Prior to placing concrete, obtain Engineers approval of reinforcing material and placement.

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

END OF SECTION

03 30 00 – CAST-IN-PLACE CONCRETE

Part 1 General

1.1 RELATED SECTIONS

.1 Section 03 20 00 Concrete Reinforcement

.2 REFERENCES

.3 Canadian Standards Association (CSA International) latest edition and others

- .1 CSA A23.1-14 Concrete Materials and Methods of Concrete Construction.
- .2 CSA A23.2-14 Methods of Test and standard practices for concrete.
- .3 CAN/CSA G40.18 Billet Steel Bars for Concrete Reinforcement
- .4 CSA A23.3-14 Design of Concrete Structures
- .5 CAN/CSA-S269.3 Concrete Formwork
- .6 CPCA Design and Control of Concrete Mixtures
- .7 RSIC Reinforcing Steel Manual of Standard Practice

1.2 PRICE AND PAYMENT PROCEDURES

.1 Measurement and Payment:

- .1 Cast-in place concrete will be measured in cubic metres incorporated into the as determined from dimensions indicated on the drawings, and will include the supply and placing of the concrete and supply and installation of all reinforcing steel, inserts, anchor bolts, and formwork, finishing, curing and protection.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

- .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching. Concrete tickets shall be retained and provided to the engineer or Departmental Representative.
- .2 Do not modify maximum time limit without receipt of prior written agreement from Engineer and concrete producer as described in CSA A23.1/A23.2.
- .3 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .4 Truck clean-out location must be approved by PCA and all contents must be contained and disposed of properly. Disposal on bare ground or into waterways is not permitted.

1.4 APPROVAL

.1 Methods and Materials:

- .1 2 weeks prior to placing concrete submit to the Engineer the proposed mix design, rebar shop drawings, and method and procedures statement to place cure and protect concrete for approval.

Part 2 Products

2.1 MATERIALS

.1 Portland Cement: to CSA A3001, Type GU

.2 Water, Aggregates, Curing Compounds, Admixtures: to CSA A23.1/A23.2.

.3 Reinforcing Steel: Grade 400 to CAN/CSA G40.18

2.2 MIXES

.1 Structural Concrete

.1 Strength: 35MPa @ 28 Days

.2 Class of Exposure: C-1, Air entrainment 5-8%

.3 Aggregate: maximum size 20mm

3 EXECUTION

3.1 PREPARATION

.1 Obtain Engineers written approval before placing concrete.
.1 Provide 24 hours minimum notice prior to placing of concrete.

.2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.

.3 During concreting operations:
.1 Development of cold joints not allowed.
.2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.

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

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

.6 Prior to placing of concrete obtain Engineers approval of proposed method for protection of concrete during placing and curing.

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

.10 Where new concrete is dowelled to existing work, drill holes in existing concrete.
.1 Place steel dowels of deformed steel reinforcing bars and pack solidly with shrinkage compensating grout or epoxy grout to anchor and hold dowels in positions as indicated.

.11 Do not place load upon new concrete until authorized by Engineer.

3.2 INSTALLATION/APPLICATION

.1 Do cast-in-place concrete work to CSA A23.1/A23.2.

.2 Sleeves and inserts:
.1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through

slabs, except where indicated or approved by Engineer.

.2 Where approved by Engineer, set sleeves, ties, pipe hangers and other inserts and openings as indicated.

.4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from Engineer before placing of concrete.

.5 Confirm locations and sizes of sleeves and openings shown on drawings.

.3 Anchor bolts:

.1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.

.2 Protect anchor bolt holes from water accumulations, snow and ice build-ups.

.3 Set bolts and fill holes with shrinkage compensating grout or epoxy grout.

.4 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.

.4 Grout under base plates using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

.5 Finishing and curing:

.1 Use procedures as reviewed by those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.

.2 Use curing compounds compatible with applied finish on concrete surfaces.

.3 Provide broom sidewalk finish to deck surfaces.

.4 Rub exposed sharp edges of concrete with carborundum to produce 3 mm minimum radius edges unless otherwise indicated.

3.3 SURFACE TOLERANCE

.1 Concrete tolerance to CSA A23.1

3.4 FIELD QUALITY CONTROL

.1 Site tests: conduct tests as follows

.1 Concrete pours.

.2 Slump.

.3 Air content.

.4 Compressive strength at 7 and 28 days.

.5 Air and concrete temperature.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated Engineer to CSA A23.1/A23.2.

.3 Owner will pay for costs of tests as specified.

.4 Inspection or testing by Consultant will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

END OF SECTION

03 41 00 – PRECAST STRUCTURAL CONCRETE

1.1 MEASUREMENT PROCEDURES

.1 Measure precast elements in units supplied, delivered, and stored on site.

.2 Measure precast elements in units installed and anchored in place as indicated.

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CSA A23.1/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA A23.3-14, Design of Concrete Structures.

.3 CAN/CSA-A23.4-16, Precast Concrete - Materials and Construction.

.4 CAN/CSA- A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.5 CAN/CSA-G30.18-09(R2014), Carbon steel bars for concrete reinforcement.

.6 CAN/CSA-G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

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

.8 CSA G279-M1982 (R1998), Steel for Prestressed Concrete (Metric Version).

1.3 DESIGN REQUIREMENTS

.1 Design precast elements to CSA A23.3 and CAN/CSA A23.4 to carry handling stresses.

.2 Design precast elements to carry loads as indicated in accordance with applicable codes.

.3 Design connections/attachments of precast elements to load/forces as indicated.

.4 Provide detailed calculations and design drawings for typical precast elements and connections as described in PART 1 - SUBMITTALS.

1.4 PERFORMANCE REQUIREMENTS

.1 Tolerance of precast elements to CAN/CSA-A23.4.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Precast Structural Concrete and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit WHMIS Safety Data Sheet (SDS) in accordance with Section 01 47 15 - Sustainable Requirements: Construction and Section 02 81 00 - Hazardous Materials.

.1 Submit 2 copies of WHMIS SDS.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by qualified professional engineer registered or licensed in Ontario.

.2 Submit shop drawings prepared in accordance with CSA A23.3 and CAN/CSA-A23.4 and include following items:

.1 Design calculations for items designed by manufacturer.

.2 Details of prestressed and non-prestressed members, reinforcement and connections.

.3 Finishing schedules.

.4 Methods of handling and erection.

.5 Openings, sleeves, inserts and related reinforcement.

.3 Submit 2 copies of detailed calculations and design drawings for typical precast elements and connections for review by Consultant 2 weeks prior to manufacture.

.4 Quality Assurance Submittals:

.1 Submit in accordance with Section 01 45 00 - Quality Control and as described in PART 2 - SOURCE QUALITY CONTROL.

.2 Mill Test Report: [upon request,] submit to Parks Canada Agency Representative certified copy of mill test report of reinforcing steel, minimum 2 weeks prior to beginning reinforcing work.

.3 Submit concrete supplier's certification.

1.6 QUALITY ASSURANCE

.1 Quality Control Plan: submit written report, to Parks Canada Agency Representative verifying concrete provided meets performance requirements of concrete as established in PART 2 - PRODUCTS.

.2 Precast concrete manufacturers to be certified to Canadian Precast Concrete Quality Assurance (CPCQA) Certification Program in Commercial Precast and Prestressed Concrete Products (Structural), C

.3 Only precast elements fabricated under the CPCQA plant certification program to be acceptable, and plant certification is to be maintained for the duration of fabrication, and until warranty expires.

1.7 QUALIFICATIONS

.1 Precast concrete manufacturer certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting Bid and to verify as part of Bid that plant has current certification in appropriate category Structural

.2 Welding companies certified to CSA W47.1.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle and store precast/ units according to manufacturer's instructions.

.2 Protect unit corners from contacting earth to prevent from staining.

1.9 WARRANTY

.1 Warrants precast elements not to spall or show visible evidence of cracking, except for normal hairline shrinkage cracks, in accordance with subsection GC32.1 of General Conditions "C", but warranty period extended to 60 months.

Part 2 Products

2.1 MATERIALS

.1 Cement to CAN/CSA-A3001, Type GU.

.2 Reinforcing steel: to CSA 30.18.

.3 Prestressing steel tendons and bars: to CSA S6.

.4 Welded wire fabric:

.1 Plain in accordance ASTM A1064/A1064M, fabricated from as drawn steel wire into flat sheets; sizes as indicated on Drawings.

.2 Finish:

.1 Galvanized: Fabricated from galvanized wire having Class A coating in accordance with ASTM A641/A641M.

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

.6 Forms: to CAN/CSA-A23.4.

.7 Anchors and supports: to CAN/CSA-G40.20/G40.21Type 300 W galvanized after fabrication].

.8 Galvanizing: hot dipped galvanizing with minimum zinc coating of [610] g/m^2 to CAN/CSA-G164 and ASTM A 123/123M, Coating Grade [85]

.9 Air entrainment admixtures: to ASTM C260/C260M.

2.2 MIXES

.1 Concrete:

.1 Performance Method for specifying concrete: to meet indicated performance criteria in accordance with CSA A23.1/A23.2.

.1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance.

.2 Provide concrete mix to meet following plastic state requirements:

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

2.3 FABRICATION

.1 Precast fabrication to meet the requirements of CAN/CSA-A23.4, including Annexes A and B, PCI MNL-116 and 117 and CPCQA certification requirements.

.2 Mark each precast unit to correspond to identification mark on shop drawings for location with date cast in location not exposed in finished work.

.3 Cast members in accurate rigid moulds designed to withstand high frequency vibration. Set reinforcing anchors and auxiliary items to indicated on shop drawings. Cast in anchors, blocking and inserts supplied by other Sections as required to accommodate their work. Vibrate concrete during casting for full thickness. Provide necessary holes and sinkages for flashings, anchors, and cramps. Maintain even and uniform appearance.

.4 Anchors, lifting hooks, shear bars, spacers and other inserts or fittings required for a complete and rigid installation. Each to conform to requirements of local codes. Lift hooks adequately sized to safely handle panels according to member dimension and weight. Conceal anchors and inserts where practical.

.5 Galvanize anchors and steel embedments after fabrication and touch up with zinc-rich primer after welding.

2.4 FINISHES

.1 Finish units to commercial grade / standard grade to CAN/CSA-A23.4.

2.5 SOURCE QUALITY CONTROL

.1 Provide Parks Canada Agency Representative & Consultant with certified copies of quality control tests related to this project as specified in CAN/CSA-A23.4.

.2 Provide records from in-house quality control program based upon plant certification requirements to Parks Canada Agency Representative & Consultant for review.

.3 Upon request, provide Parks Canada Agency Representative & Consultant with certified copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.

.4 Precast plants to keep complete records of supply source of concrete material, steel reinforcement, prestressing steel and provide to Parks Canada Agency Representative & Consultant for review upon request.

Part 3 Execution

3.1 ERECTION

.1 Precast concrete work in accordance with CAN/CSA-A23.4, CSA A23.3 and CSA S6.

.2 Welding in accordance with CSA-W59, for welding to steel structures and CSA-W186, for welding of reinforcement.

.3 Non-cumulative erection tolerances in accordance with CAN/CSA-A23.4.

.4 Set elevations and alignment between units to within allowable tolerances before connecting units.

.5 Fasten precast units in place as indicated.

.6 Secure with bolts using lock-washers.

.7 Uniformly tighten bolted connections with torque indicated.

.8 Use grout to align elevations of surfaces at joints.

END OF SECTION

DIVISION 05 – METALS

05 12 33 – STRUCTURAL STEEL FOR BRIDGES

1.1 General

1.2 RELATED REQUIREMENTS

.1 Section 03 41 00 – Precast Structural Concrete.

1.3 PRICE AND PAYMENT PROCEDURES

.1 Measurement for payment will be as a Single Fixed Item (SFI) and include all materials, and fasteners, transportation and work required under this section for structural steel for bridges. includes:

1.4 REFERENCE STANDARDS

.1 ASTM A123/A123M-17, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM F325/F325M, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

.2 CSA Group (CSA)

.1 CSA G40.20-13/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

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

.3 CSA S6-14, Canadian Highway Bridge Design Code.

.4 CSA S16-14, Design of Steel Structures.

.5 CSA W59-13, Welded Steel Construction, (Metal Arc Welding).

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.1 Submit WHMIS Safety Data Sheet (SDS) in accordance with Section 01 47 15 - Sustainable Requirements: Construction

.2 Submit 2 copies of WHMIS SDS.

.3 Shop Drawings:

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

.2 Indicate shop and erection details including shop splices, cuts, copes, connections, holes, bearing plates, threaded fasteners, rivets and welds. Indicate welds by CSA W59, welding symbols.

.3 Proposed welding procedures to be stamped and approved by Canadian Welding Bureau.

.4 Submit description of methods, temporary bracing and strengthening, sequence of erection and type of equipment proposed for use in erecting structural steel.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Provide all equipment to deliver, store and handle Structural Steel.

.2 Provide protective blocking for lifting, transportation and storing.

.1 Exercise care during fabrication, transportation and erection so as not to damage beams.

.2 Do not notch edges of members.

.3 Do not cause excessive stresses.

.4 Replace defective or damaged materials with new.

.3 Mark mass on members weighing more than [3] tonnes.

.4 Ensure that no portion of steel comes into contact with ground.

.5 Provide Parks Canada Departmental Representative & Consultant with delivery schedules minimum 7 days prior to shipping.

1.7 QUALITY ASSURANCE

.1 Preconstruction Testing:

.1 Provide suitable facilities and cooperate with inspection organization, Parks Canada Agency Representative & Consultant in carrying out inspection and tests required.

Part 2 Products

2.1 MATERIALS

.1 Structural steel: to CSA G40.20/G40.21, grade 350AT Category 2.

.1 Leave atmospheric corrosive resistant steel and connections material in unpainted, include bolts, nuts, washers and weld deposits of compatible weathering characteristics.

.2 High strength bolts, nuts and washers: to ASTM F325/F125M as approved by Consultant.

.3 Anchor bolts, washers and nuts: to CSA G40.20/G40.21, grade 300W galvanized.

.4 Bearings: to CSA G40.20/G40.21, Grade 350A elastomer bearing pads of neoprene grade 50 or 60 to CSA S6.

.5 Welding electrodes: to CSA W48 series.

.6 Hot dip galvanizing: to ASTM A123/A123M, minimum zinc coating of 600 g/m^2, Coating Grade 85.

2.2 SOURCE QUALITY CONTROL

.1 Steel producer qualifications: certified in accordance with CSA G40.20/G40.21.

.2 Submit to Parks Canada Agency Representative & Consultant 2 copies of certified test reports for Charpy V-notch test.

Part 3 Execution

3.1 EXAMINATION

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

.1 Inform Parks Canada Agency Representative & Consultant of unacceptable conditions immediately upon discovery.

.2 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from PCA Representative.

3.2 PREPARATION

.1 Clean steel surfaces as directed by

.2 Verify location of substructure units, elevations of bearing seats and location of anchor bolts before erection of structural steel; report discrepancies to PCA Representative & Consultant.

.3 Restrict drifting during assembly to minimum required to bring parts into position without enlarging or distorting holes, and without distorting, kinking or sharply bending metal of any unit.

.1 Enlarge holes if necessary by reaming only after receipt of approval from Consultant.

.2 Ensure reamed holes are [2] mm maximum larger than bolt size used.

.4 Fabricate and install bearings as indicated.

.5 Place anchor bolts at elevations and locations indicated.

.1 Protect holes against entry of water and foreign material.

.2 Provide heating and protection as directed by Departmental Representative & Consultant and completely fill space around anchor bolts with grout.

3.3 INSTALLATION

.1 Do falsework in accordance to CSA S269.1.

.2 Do fabrication and erection of structural steel in accordance with CSA S6, Design of Highway Bridges & [Ontario Highway Bridge Design Code.

.3 Do welding in accordance with CSA W59, except where specified otherwise.

.1 For CSA G40.20/G40.21, grade 350A steel, deposited weld metal to have Charpy V-Notch value not lower than that of steel.

.2 Do welding in shop unless otherwise permitted by PCA Representative.

.3 Weld only at locations indicated.

.4 High strength bolting: in accordance with CSA S16]. Use 'turn-of-nut' tightening method.

.5 Finish: members true to line, free from twists, bends, open joints, sharp corners and sharp edges.

.6 Allowable tolerance for bolt holes:

.1 Matching holes for bolts to line up so that dowel 2 mm less in diameter than hole passes freely through assembled members at right angles to such members.

.2 Finish holes not more than 2 mm in diameter larger than diameter of rivet or bolt unless otherwise specified by Departmental Representative & Consultant.

.3 Centre-to-centre distance between any two holes of group to vary by not more than 1 mm from dimensioned distance between such holes.

.4 Centre-to-centre distance between any two groups of holes to vary not more than maximum of the following:

Centre-to-Centre distance in metres	Tolerance in plus or minus mm
less than 10	1
10 to 20	2
20 to 30	3

.5 Correct mispunched or misdrilled members only as directed by Consultant.

.7 Span length tolerances:

.1 Girders and beams: plus or minus 6 mm

.2 Centre-to-centre of bearing stiffeners and bearing plates: plus or minus 3 mm.

.8 Girder support requirements:

.1 Support top and bottom flanges of ends of girders and intermediate bearing locations of continuous girders parallel to each other at 90 degrees to girder web.

.2 Install flat and smooth except as otherwise indicated.

.3 Install bearing stiffeners after girder support requirements have been met.

.4 Correct irregularities of flanges of girders as permitted by Parks Canada Departmental Representative & Consultant.

.9 Shop splices:

.1 Use complete joint penetration groove welds finished flush.

.2 Details of butt joints to CSA W59.

.3 Use only as approved by PCA & Consultant.

.10 Camber:

.1 Camber tolerances for plate girders to be to CSA W59.

.2 Record measurements of camber of each girder, at points indicated.

.3 Fabricate field splices to conform to required camber.

.4 Submit diagram to PCA Representative & Consultant showing camber for each girder fabricated.

.5 Advise PCA Representative & Consultant immediately when camber of fabricated girder is greater than specified tolerances.

.6 Submit proposal for corrective measures.

.7 Undertake remedial measures as approved by PCA & Consultant.

.11 Shop erection:

.1 Support each girder on its bearing points and measure and record deflection at same points indicated for measurement of camber.

.2 Measure deflections in plane of girder web.

.12 Mark members in accordance with CSA G40.20/G40.21.

.1 Do not use die stamping.

.2 Place marking at locations hidden when viewed from exterior after erection when steel is to be left in unpainted condition.

.13 Match marking: shop mark [bearing assemblies and splices].

3.4 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, protecting and cleaning of steel.

.2 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Ensure manufacturer's representative is present before installation, & during critical periods of installation.

.4 Schedule site visits:

.1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.

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

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section [01 74 00 - Cleaning].

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.3 Waste Management: separate waste materials for in accordance with Section 01 74 19 - Waste Management and Disposal.

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

END OF SECTION

DIVISION 06 – WOOD

06 05 73 – WOOD TREATMENT

Part 1 General

1.1 RELATED SECTIONS

.1 Section 31 53 13 – Timber Fenders

.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.2 CSA O80 Series-97(R2002) - O80S2-05, Wood Preservation.

.3 CSA O322-02, Procedure for Certification of Pressure-Treated Wood Materials for Use in Preserved Wood Foundations.

Part 2 Products

2.1 MATERIALS

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

Part 3 Execution

3.1 APPLICATION: PRESERVATIVE

.1 Treat timber to CSA O80 Series preservative to obtain minimum net retention of 6.4 kg/$m^3$of wood.

3.2 CARE OF PRESSURE-TREATED WOOD PRODUCTS

.1 Apply the recommended and accepted practices followed in the care and handling of all wood products to pressure-treated wood products.

.2 Avoid damage of field fabrication causing alteration of the original pressure-treated surface.

.3 Thoroughly saturate all cuts or injuries occurring subsequent to pressure treatment by liberal brushing, spraying, dipping, soaking or coating with preservative solution.

.4 Fill holes necessarily bored after pressure treatment with preservative solution to allow ample soaking time for penetration of solution.

.5 Use in any of the above the same preservative solution as that used in the original pressure treatment or a field treating solution of colour to match original treatment.

.6 Treatment of timber cuts and holes on site shall not occur over water or within 5m of the waters edge. Treatment area shall be designated and approved by the engineer in accordance to regulations and manufacturers specifications. Provide barriers and membranes to prevent all hazardous materials from entering the water or ground.

END OF SECTION

DIVISION 26 – ELECTRICAL

26 00 00 – ELECTRICAL SERVICE

Part 1 General

1.1 MEASUREMENT PROCEDURES

.1 Electrical Service will be measured as a single lump sum payment for all labour, materials, hangers, equipment, permits and inspections required to install electrical conduit as indicated.

1.2 SUBMITTALS

.1 Submit to Engineer for approval, two weeks before commencing the work, data sheets for the proposed electrical conduit, fittings and hangers.

1.3 REGULATORY REQUIREMENTS

.1 Comply with municipal, provincial and Canadian Electrical Code and regulations relating to project.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Metals, wood and recyclable materials removed during the work must be diverted appropriate recycling facilities.

1.5 INSPECTION OF SITE

.1 Contractor to visit site of Work and become thoroughly familiar with extent and nature of Work and conditions affecting Work before tendering.

Part 2 Products

2.1 ELECTRICAL

.1 All materials shall comply with the Canadian Electrical Code and shall be suitable and rated for exterior and wet environments. Existing components not suitable or compliant with existing codes shall be replaced.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Obtain all necessary permits, notifications and inspection to perform the Work.

2. Do all work in accordance with the Canadian Electrical Code.

END OF SECTION

DIVISION 31 – EARTHWORKS

31 05 16 – BACKFILL & AGGREGATE MATERIALS

Part 1 General

3.3 MEASUREMENT PROCEDURES

.1 Backfilling of SSP Cells will be measured in m^3 installed and shall include all labour, equipment and materials necessary to complete the work as measured in height from the lakebed to the underside of concrete slab and in area as measured by the exterior dimensions of each SSP cell.

.2 Supply of additional Aggregate Materials will be measured by the tonne supplied to site and installed and shall include all labour, equipment and materials necessary to complete the work.

.3 Installation of reclaimed Backfill aggregate will be measured in m^3 installed and shall include all labour, equipment and materials necessary to complete the work as measured by dimensions indicated on the drawings.

Part 4 Products

4.1 MATERIALS

.1 Granular Backfill: OPSS 1010 Granular O, Crushed Stone 50mm, Coarse sand, Granular B Type 2 or Select Reclaimed Excavated Granular Material from the Existing Pier.

.2 Armour Stone & Rip Rap: Reclaimed select excavated stone greater than 100mm from the existing pier.

4.2 INSPECTION

.1 Inspection of backfill will be on an individual basis

4.3 WEIGHING OF IMPORTED MATERIALS

.1 Weigh all imported materials at quarry on a scale approved and certified as correct by Department of Consumer and Corporate Affairs, Weights and Measures Inspection Branch.

.2 Provide Engineer with weigh tickets at time of delivery to site.

Part 5 Execution

5.1 PLACEMENT

.1 Place Granular Backfill evenly distributed in the SSP cells in 300mm layers. Material placed below water level shall be self compacting. Granular Backfill place above the water level shall be placed in 200mm layers and compacted to at least 125kPa bearing capacity as determined by the Engineer.

END OF SECTION

31 62 16.13 – STEEL SHEET PILING

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 03 33 00 Cast-in-place Concrete.

1.2 MEASUREMENT PROCEDURES

.1 Measure supply of steel sheet piling in square metres of piling authorized by Engineer and delivered to site and shall include 6 test piles installed (and removed) at the ends of each cell to determine the pile lengths required.
- .1 Calculate area by multiplying lengths of piles by widths.
- .2 Width of steel sheet pile section is defined as centre to centre distance between pile interlocks measured along a plane parallel to finished wall.

.2 Measure installation of sheet piling in square metres of piling remaining in place after cut-off.
- .1 Piling will be measured in plane of bulkhead, calculated by multiplying straight horizontal centre line length of bulkhead measured at top of piles by average vertical length of piles installed and left in work. Installation of sheet piling shall include preparation, storage, handling, concrete cutting for tie rods, grouting, welding, cutting, driving, temporary works, installation of all wales, tie rods, bolts and hardware. Installation sheet piling shall also include all work and materials required to remove of existing stone and lakebed materials required to facilitate sheet piling installation.

.3 Tie rods, nuts, sleeve nuts, turnbuckles, pipe sleeves, bearing plates, washers, transfer bolts, wales, pile cap angles and other associated hardware supplied and incorporated in Work, are to be measured by the kilogram supplied and installed as determined from the measurements indicated.

.7 Measure backfill in cubic metres of concrete placed to dimensions as indicated and incorporated in completed work.

.9 Mobilization and de-mobilization of equipment for installation of steel sheet piling is incidental to the installation of the sheet piling.

1.3 REFERENCES

.1 ASTM International
- .1 ASTM A 6/A 6M-11, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
- .2 ASTM A 307-10, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
- .3 ASTM A 1011/A 1011M-10, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, and Ultra High Strength.
- .5 ASTM A 328/A 328M-07 Standard Specification for Steel Sheet Piling.
- .6 ASTM A 857/A 857M-07, Standard Specification for Steel Sheet Piling, Cold Formed, Light Gage.

.3 CSA International
.1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CSA W47.1-09, Certification of Companies for Fusion Welding of Steel Structures.
.3 CSA W59-03(R2008), Welded Steel Construction (Metal Arc Welding).

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the following 2 weeks prior to supply

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for piles and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit drawings showing proposed SSP layout configuration anchorage and corners.

.4 Certificates:
.1 Submit 2 weeks prior to fabrication, 2 copies mill test reports in accordance with CSA G40.20/G40.21.
.2 Submit copy of certification for fusion welding in accordance with CSA W47.1.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Storage and Handling Requirements:
.1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect sheet piles from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

.4 Use slings for lifting piling make sure mass is evenly distributed and piling is not subjected to excessive bending stresses.

.5 Store sheet piling on level ground or provide supports so that sheet piling is level when stored.
.1 Provide blocking at spacing not exceeding 5 m so that there is no excessive sagging in piling.
.2 Overhang at ends not to exceed 0.5 m.
.3 Block between lifts directly above blocking in lower lift.

.6 If material is stock-piled on structure, ensure structure is not overloaded.

2 PRODUCTS

2.1 MATERIALS

.1 Steel sheet piles: to CSA G40.21, including chemical and mechanical requirements grade 350W, and following:

.2 Sheet piling: section modulus of 528 cm^3 / m or equivalent as approved by Engineer.
.1 Minimum thickness of any portion: 8.0mm.

.3 Special corners: shop fabricate by welding as indicated or provide fabricated special corners as specified by manufacturer for type of sheet piling supplied.

.4 Interlocks: to be such that section of interlock bar of 1m minimum length will pass along full length of pile without binding.

.5 Mark each piece of sheet piling legibly by stenciling or die-and-stamping with information as follows:

.1 Heat number.

.2 Manufacturer's name.

.3 Length and section number.

.6 Do not precut lifting or slinging holes in sheet piles.

.5 Structural steel for wales, bearing plates, wales splices, capping channels, support angles and miscellaneous steel: to CSA G40.21, Grade 300 W.

.6 Tie rods, sleeve nuts and turnbuckles:

.1 Tie rods: to ASTM A615, Grade 300W.

.2 Tie rods: to continuously threaded bar.

.3 Sleeve nuts, and connector sleeves: to have load capacity in excess of capacity of tie rod.

.4 Preassemble, mark and test tie rod assemblies in shop. Align threaded connection to following tolerances at sleeve nut or connector sleeve: 1/80 of normal rod diameter, deviation of centreline, 1 in 160.

.7 Nuts and bolts: hexagon nuts, bolts, and washers: to ASTM A 307.

.8 Backfill material: to 31 05 16 – Backfill & Aggregate Materials

2.2 SOURCE QUALITY CONTROL: COLD FORMED STEEL SHEET PILING

.1 Provide results of tension tests of sheet piling material to be used on project as follows:

.1 1 tension test from each heat for quantities of finished material less than 50 tonnes.

.2 Tension tests: to CSA G40.20/G40.21.

.3 Provide results of bend tests of sheet piling material to be used on project as follows:

.1 Bend tests: to ASTM A 6/A 6M, with amendments as follows:

.1 Perform S14.1 bend tests with material in condition as used in cold forming operation. 3 tests to be made from each heat and each thickness of material produced. Take bend test specimens from edge of each coil. Longitudinal axis of specimen to be transverse to coil rolling direction.

.2 S14.1.1 - Except as provided below, bend test specimens to have minimum width to thickness ratio of 8, with both edges parallel throughout section in which bending occurs, and is maintained.

.3 S14.2 - Minor surface separations less than 0.8mm in depth related to superficial steel surface or subsurface discontinuities to not cause rejection. Surface separations in excess of 0.8mm depth or cracks normal to metal surface are cause for rejection.

2.3 EQUIPMENT

.1 Equipment information: Supply equipment of sufficient size and capacity to adequately install the piling to indicated depth. Prior to bringing on site, submit to Departmental Representative for review, details of equipment for installation of piles. For impact hammers give manufacturer's name, type, rated energy per blow at normal working rate, mass of striking parts of hammer and mass of driving cap. For non-impact methods of installation such as auguring, jacking, vibratory hammers or other means, give full details of characteristics necessary to evaluate performance.

.2 Floating plant used in the work to be of sufficient capacity and in good operating conditions to satisfactorily complete the work, within the time schedule and in accordance with the specifications.

.3 Contractor shall submit a complete list of proposed floating plant to Departmental Representative for review prior to commencement of work. Any modifications required to floating plant and associated equipment shall be performed by Contractor prior to commencing work at no additional cost to Departmental Representative.

.4 Mark floating equipment with lights in accordance with the Collision Regulations with Canadian Modifications 1983, and maintain a VHF marine radio watch on board.

.5 Do not impede navigation during progress of work in accordance with the Collision Regulations with Canadian Modifications 1983. Make no claims for delays resulting from vessel movements in harbour area.

3 EXECUTION

3.1 INSTALLATION

.1 Prior to installation inspect the lakebed and remove any rock debris or obstructions that may interfere with installation. Retain and store all granular materials, rip rap and boulder size material for reuse. Dispose of unreclaimable removed material as indicated elsewhere.

.2 Do welding in accordance with CSA W59.

.3 Do not begin pile installation until required quality control tests have been completed and test results approved by Engineer.

.4 Submit full details of method and sequence of installation of piling Engineer for approval prior to start of pile installation work. Details must include templates, bracing, setting and driving sequence and number of piles in panels for driving.

.5 When installing sheet piles in bulkhead wall, use procedure as follows:

- .1 Provide temporary templates or bracing to hold piles in alignment during setting and driving.
- .2 Drive piles two at a time. Drive first double pile to full depth, then place panel of five to eight double sheet piles in templates and secure last (end) double pile in location to prevent spreading of piles in panel.
- .3 Drive end double pile in panel sufficiently deep into ground to ensure that it will remain plumb, then, drive remaining double piles in panel to full depth beginning

with double pile next to end double pile and finishing with double pile next to double pile first driven.

.4 After one panel has been driven, place and drive succeeding panels in similar manner. Complete driving of end double pile of first panel after double piles of second panel have been driven.

.6 When installation is complete, face of wall at top of sheet piles to be within 75mm of location as indicated and deviation from vertical not to exceed 1 in 100.

3.2 OBSTRUCTIONS

.1 If obstruction encountered during driving, leave obstructed pile and proceed to drive remaining piles. Return and attempt to complete driving of obstructed pile later.

.2 Advise Engineer immediately if impossible to drive pile to full penetration, and obtain direction from Engineer on further steps required to complete Work.

3.3 HOLES

.1 Patch holes in sheet pile wall, except where permanent holes are indicated.
- .1 Use 8.0mm thick plate of material equal to that of piling to patch holes and overlap not less than hole diameter.
- .2 Weld to develop full strength of plate.

.2 Drill any required holes in piling. Do not use flame cutting without permission of Engineer.

3.4 CUTTING

.1 When flame cutting tops of piles, and flame cutting holes in piles approved by Engineer, use following procedure:
- .1 When air temperature is above 0°C, no pre-heat is necessary.
- .2 When air temperature is below 0°C, pre-heat until steel 25mm on each side of line of cut has reached a temperature very warm to hand (approximately 35°C).
- .3 Use torch guiding device to ensure smooth round holes or straight edges.
- .4 Make cut smooth and free from notches throughout thickness. If grinding is employed to remove notch or crack, finished radius to be minimum 5mm.

3.5 SPLICING

.1 Use full length piles.

3.6 TIE ROD ANCHORAGE SYSTEM

.1 Do not place backfill behind anchored bulkhead or remove material from in front of bulkhead until piles have been completely driven, adjusted and secured in final position by anchorage system.

.2 Support tie rods at mid span or along their length as indicated.

.3 Fit and adjust tie rod systems so that connections at waling and anchor end of tie rods are tight before backfilling.

.4 Brace steel sheet pile with waling strips in accordance with shop drawings. Make wales one length between corners and bolt to piles.

3.7 BACKFILLING

.1 Backfill Steel sheet Piles with Granular Backfill as per Section – Cast-in-place Concrete and as indicated.

.2 Protect piling tie rods and anchorage systems from damage or displacement during backfilling operations.

3.11 CLEANING

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

END OF SECTION

DIVISION 35 – WATERWAY AND MARINE CONSTRUCTION

35 20 23 – DREDGING, EXCAVATION AND DEMOLITION

Part 1 General

1.1 MEASUREMENT PROCEDURES

.1 Dredging, Demolition and Excavation will be measured as a single lump sum payment for all material cut and excavated and disposed to lines and grades as specified on drawings.

.2 Payment will include disposal of excess excavation material, at approved location.

1.2 DEFINITIONS

.1 Excavation: excavating, transporting and disposing of underwater materials.

.2 Grade: plane above which material is to be excavated.

1.3 SUBMITTALS

.1 Submit to Engineer for approval, two weeks before excavation, the proposed location of disposal site.

1.4 REGULATORY REQUIREMENTS

.1 Comply with municipal, provincial and national codes and regulations relating to project.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Metals, wood and recyclable materials removed during the excavation activities must be diverted appropriate recycling facilities.

1.6 INSPECTION OF SITE

.1 Contractor to visit site of Work and become thoroughly familiar with extent and nature of Work and conditions affecting Work before tendering.

1.7 SURVEY REQUIREMENTS

.1 Provide, at own expense, survey vessel, equipment and crew to set up and maintain control for location of excavation limits and to sound areas immediately after excavation to verify that grade depth has been attained.

Part 2 Products

2.1 EXCAVATION EQUIPMENT

.1 Contractor to determine required equipment necessary to cut, demolish, excavate material specified and to dispose of excavated material.

Part 3 Execution

3.1 GENERAL

.1 Contractor to install approved barricades and warning signs around perimeter of work site for the duration of project. Company advertising signs are not allowed

.2 Lay out Work from bench marks and base lines established by Engineer. Be responsible for accuracy of Work relative to established bench marks and baseline.

.3 Carefully remove the existing moving ramp from the end of the existing walkway and store for re-use.

.4 Cut and demolish existing timber walkway and dispose materials.

.5 Remove existing Armour stone, boulders and rip rap from the existing pier and sort and store on site for reuse.

.6 Excavate existing pier fine and granular materials to original lakebed level or as directed by the PCA Representative or Consultant and store in the dry on site for reuse as cell backfill.

.7 Immediately notify Engineer upon encountering an object which might be classified as an obstruction. By-pass the object after clearly marking its location and continue work.

.8 Contractor to clean up site upon completion of work.

END OF SECTION

35 31 22 – ARMOUR STONE & RIP RAP

Part 1 General

5.2 MEASUREMENT PROCEDURES

.1 Boulders, armour stone and rip rap removal and reclaiming work is incidental to work in other sections.

.2 Boulders and Rip Rap placement will be measured as a Single Fixed Item (SFI) for reclaiming, storage, sorting and reuse of all existing armour stones, boulders and Rip Rap required to be removed from the existing dock and installed and shall include all labour, equipment and materials necessary to complete the work.

Part 6 Products

6.1 MATERIALS

.1 Rip Rap Rock Description: existing reclaimed rip rap with 100mm-300mm least dimension.

.2 Boulders Description: existing reclaimed solid rock with least dimension > 300mm.

6.2 INSPECTION

.1 Inspection of armour stone will be on an individual basis

Part 7 Execution

7.1 PLACEMENT OF ARMOUR STONE & RIP RAP

.1 Place Boulders and Rip Rap to lines, grades and dimensions indicated.

.2 Place large armour stone individually by crane. on the lakebed at the east end of the SSP Cells to the lines, grades and dimensions indicated.

.3 Sort, fit and tightly key each rock to ensure stability of face.

.4 Place armour stones to elevations and location indicated. Placement not meeting approval of the Engineer must be removed and replaced.

.5 Place Rip Rap by clam or backhoe to the lines, grades and dimensions indicated.

7.2 TOLERANCES

.1 Completed stone to be within plus or minus 300mm of lines and grades as indicated.

END OF SECTION

35 49 14 – TURBIDITY CURTAIN

Part 1 General

1.1 REFERENCES

.1 Ontario Provincial Standard Specifications (OPSS):
- .1 OPSS 805 November 2010, Construction Specification for Temporary Erosion and Sediment Control Measures.

.2 Ontario Provincial Standard Drawings (OPSD):
- .1 OPSD 219.260 November 2006, Turbidity Curtain.
- .2 OPSD 219.261 November 2006, Turbidity Curtain, Seam Detail.

.3 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB 148.1, No. 2-M85, Methods of Testing Geotextiles and Geomembranes - Mass per Unit Area.
- .2 CAN/CGSB 148.1, No. 3-M85, Methods of Testing Geotextiles and Geomembranes - Thickness of Geotextiles.
- .3 CAN/CGSB 4.2, No. 11.2-M89(R2013), Textile Test Methods Bursting Strength - Ball Burst Test.

.4 American Society for Testing and Materials (ASTM):
- .1 ASTM D4595-11, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.

1.2 SUBMITTALS

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

1.3 MEASUREMENT PROCEDURES

.1 As per Section 01 29 00

1.4 DELIVERY, STORAGE AND HANDLING

.1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

Part 2 Products

2.1 MATERIALS

.1 Geotextile: woven synthetic fibre fabric, supplied in rolls.
- .1 Composed of: minimum 85% by mass of polypropylene polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure for 60 days.

.2 Physical properties:
- .1 Thickness: to CAN/CGSB-148.1, No. 3, minimum 0.8 mm.
- .2 Mass per unit area: to CAN/CGSB-148.1, No. 2, minimum 220 g/m2.

.3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
- .1 Tensile strength: minimum 900 N, wet condition.
- .2 Elongation at break: minimum maximum 25%.
- .3 Seam strength: minimum 900 N equal to or greater than tensile strength of fabric.
- .4 Mullen burst strength: to CAN/CGSB-4.2, No. 11.2, minimum 2400 N, equal to or greater than tensile strength of fabric.

.4 Seams: sewn in accordance with manufacturer's recommendations.

.5 Thread for sewn seams: equal or better resistance to chemical and biological degradation than geotextile.

.6 Curtain height: to suit water depth and be bottom-weighted to maintain its vertical position.

Part 3 Execution

3.1 GENERAL

.1 Supply, install, maintain and remove turbidity curtains when instructed by the Departmental Representative.

.2 Monitoring of water turbidity outside the turbidity curtain will be done by the Departmental Representative. Turbidity shall not exceed 25 mg/l total suspended solids.

3.2 INSTALLATION

.1 Turbidity curtains shall consist of geosynthetic, load line, flotation, ballast, anchors, mooring buoys, mooring lines, adjustment lines, and tie-downs.

.2 Design to conform to Ontario Provincial Standard Specification, OPSS 805 and Ontario Provincial Standard Drawings OPSD 219.260 and OPSD 219.261 as a minimum.

.3 Turbidity curtains shall be constructed as follows:

.1 The flotation shall provide support along the length of the turbidity curtain.

.2 A sleeve shall be formed and heat-sealed or sewn along the entire bottom edge of the turbidity curtain geosynthetic, to contain the ballast in the sleeve. Breaks may be made in the sleeve to facilitate pulling, provided they are a minimum 100 mm in size and spaced at minimum 3 m intervals.

.3 Where turbidity curtain geosynthetic is joined to provide a continuous run, the sections shall be connected to provide a continuous seal and prevent the escape of turbid water between the sections.

.4 Turbidity curtain, as prepared for installation, shall be of sufficient width to account for water depth and wave action.

.5 Turbidity curtain shall be of sufficient length to permit work inside the area enclosed by the curtain without restricting equipment operations, and personnel from working.

.6 Seal the ends of the turbidity curtain where it terminates at the existing structure face.

.7 Anchor locations shall be established as is necessary to maintain the turbidity curtain in place and functioning.

3.3 OPERATION AND MAINTENANCE

.1 Turbidity curtains shall be installed to prevent sediment passage, from the area enclosed by the curtain, to the remaining water body. Turbidity curtains shall be installed and maintained in a manner that avoids entry of equipment, other than hand-held equipment or boats, to the remaining water body.

.2 Equipment is permitted in the work area enclosed by the turbidity curtain.

.3 Turbidity curtains shall be operated and maintained in the specified location, with the entire top edge above the water surface.

.4 The curtain shall be free of tears and gaps, and the bottom edge of the curtain is to be continuously in contact with the water course bed so that sediment passage from the area enclosed is prevented.

.5 Any folds in the turbidity curtain which form next to the flotation collar shall be regularly monitored and freed of collected sediment.

.6 Monitor and maintain the turbidity curtains booms both during and outside normal working shifts as required. Provide all personnel, materials and equipment necessary to maintain, repair or relocate the turbidity curtain system.

.7 Carry out construction operations to minimize impact on fish habitat from both disturbed sediments and fill materials.

.8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.

.9 Remove turbidity curtain when authorized by the Departmental Representative after completion of the work.

END OF SECTION

35 57 13 – TIMBER FENDERS

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 05 73 Wood Treatment

1.2 MEASUREMENT PROCEDURES

.1 Treated fenders will be paid for by the lineal metre of fender supplied, installed and remaining in the work. This item includes all fastenings.

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM A307-04, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 Canadian Standards Association (CSA International)

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.2 CSA-O80 Series-97(R2002), Wood Preservation.

.3 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 2003 edition.

1.4 QUALITY ASSURANCE

.1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29 - Health and Safety Requirements.

.2 Worker protection:

.1 Workers must wear gloves, eye protection and protective clothing when handling, drilling, sawing or cutting 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 approved landfill.

1.5 WASTE MANAGEMENT

.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 an approved landfill.

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.

- .1 Species: Spruce-Pine-Fir.
- .2 Grade: No 1.
- .3 Grading authority: BCLMA
- .4 All timber to be sawn sized lumber.
- .5 All specified treated timber and planks to be pressure treated with ACQ preservative, incision method, to 6.4 kg/cubic metre (0.40 lb/cubic foot) retention or refusal. Treatment to conform to the latest edition of CSA specification 080.
- .6 All end cuts, abrasions and bolt holes to be well soaked with two coats of ACQ preservative acceptable to Engineer.
- .7 Machine bolts used are to be of sufficient length to accept two washers and one fully threaded hexagonal headed nut.

.2 Miscellaneous steel:

- .1 Hot dip galvanized: to CAN/CSA-G164.
- .2 Bolts, nuts, washers: to ASTM A307.

Part 3 Execution

3.1 PREPARATION

.1 Install all anchor bolts on concrete bridges as indicated.

3.2 FENDER

.1 To be fastened to precast concrete deck slabs with 12.7x100mm epoxy type anchor bolts as indicated on the drawings

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 Engineer.

.2 Field treatment: apply and saturate cuts, minor surface damage, abrasions, and nail and spike holes with preservative to CAN/CSA-O80 Series.

3.4 CLEANING

.1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION