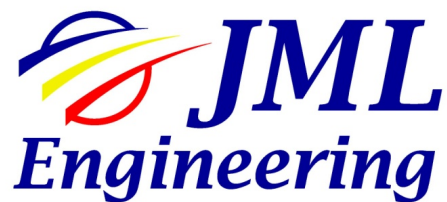




CONTRACT SPECIFICATIONS  
PUKASKWA RIVERBANK STABILIZATION  
FOR  
PARKS CANADA



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Senior Project Engineer  
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**END OF SECTION**

**Part 1 General**

**1.1 DESCRIPTION OF WORK**

- .1 The work site described in this specification is located along the Pic River riverbank within Pukaskwa National Park. Pukaskwa National Park is located off of Highway 627 approximately 25 km east of Marathon, Ontario.
- .2 The scope of work under this contract includes, but is not limited to the following:
  - .1 Establish traffic, pedestrian, and environmental protection.
  - .2 Prepare slope to extents shown on Contract Drawings.
  - .3 Install geotextile on river bank to extents shown on Contract Drawings.
  - .4 Install armour stone from bottom of channel to water line.
  - .5 Install upper section of armour stone to extents shown, smaller rocks to be chinked in large voids between larger rocks.
  - .6 Install top soil 600mm thick.
  - .7 Install seed to extents shown on Contract Drawings.
  - .8 Install erosion control blanket on exposed slope to extents shown on Contract Drawings.
  - .9 Transplant trees and shrubs from adjacent forested areas, as directed by Parks Canada Agency (PCA) staff.
  - .10 Install two new concrete mooring anchors as shown on Contract Drawings.
  - .11 Remove traffic, pedestrian, and environmental protection.
- .3 The work to be done by the Contractor under this Contract shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, insurance, and all things necessary for and incidental to the satisfactory performance and completion of all work as specified herein. All work to be done in accordance with details shown on the accompanying plans and as specified herein.

**1.2 DEFINITIONS**

- .1 The word “provide(s)” means “supply and install”.

**1.3 CERTIFICATES AND TRANSCRIPTS**

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

**1.4 FEES, PERMITS AND CERTIFICATES**

- .1 Provide authorities having jurisdiction with information requested. Pay fees and obtain certificates and work permits required.
- .2 Furnish certificates and permits when requested.

## **1.5 INTERPRETATION OF DOCUMENTS**

- .1 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.
- .2 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 Contract Administrator 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.
- .3 Do not scale off drawings.
- .4 In the event of discrepancies or conflicts in interpreting the Plans (drawings) and Specifications, Specifications take precedence over drawings bound with specifications.

## **1.6 CONTRACT METHOD**

- .1 Construct Work under lump sum contract.
- .2 Relations and responsibilities between Contractor and subcontractors and suppliers subcontractors assigned by Parks Canada Agency (PCA) are as defined in Conditions of Contract.

## **1.7 WORK BY OTHERS**

- .1 Co-ordinate with Parks Canada Agency (PCA) staff for removal and re-installation of three floating docks within the construction site.

## **1.8 CONTRACTOR USE OF PREMISES**

- .1 Co-ordinate use of premises under direction of the Contract Administrator.
- .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 Contract Administrator or other harbour users.
- .5 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .6 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .7 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Contract Administrator.
- .8 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

**1.9 OWNER/PUBLIC OCCUPANCY**

- .1 Parks Canada Agency (PCA) will occupy premises during entire construction period for execution of normal operations.
- .2 Maintain traffic and pedestrian access to dock.

**1.10 TRANSPORT CANADA REQUIREMENTS**

- .1 These works fall under the Minor Works Order of the Canadian Navigable Waters Act.
  - .1 Signs stating “Construction Ahead” and “Travaux de Construction” that are legible from at least 50 m are required upstream and downstream of the work site at the minimum set out distance, 200 m for the width of the Pic River.
  - .2 During construction, works are to be marked from dusk to dawn and during periods of restricted visibility with yellow flashing lights, located at each end of the works and at any other location alongside the works so that the bouys are not spaced more than 30 m apart.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 General**

**1.1 ACCESS AND EGRESS**

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

**1.2 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Contract Administrator to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Contractor is responsible to arrange for their own temporary sanitary facilities, located within the construction site. Keep facilities clean.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

**1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to building operations, public, and normal use of premises. Arrange with Contract Administrator to facilitate execution of work.

**1.4 EXISTING SERVICES**

- .1 Provide access for pedestrian and vehicular traffic.
- .2 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

**1.5 SPECIAL REQUIREMENTS**

- .1 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .3 Keep within limits of work and avenues of ingress and egress.

**1.6 SECURITY**

- .1 Security clearances:
  - .1 Personnel employed on this project may be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter premises.

**1.7 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. Smoking is not permitted within construction site.

**Part 2            Products**

**2.1                NOT USED**

.1            Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**



**Part 1 General**

**1.1 ADMINISTRATIVE**

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Contract Administrator.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Contract Administrator.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Produce and distribute copies of minutes within three days after meetings and transmit to Contract Administrator, meeting participants, and affected parties not in attendance.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.
- .9 Maintain physical distancing as per current Covid-19 requirements for all meetings.

**1.2 PRECONSTRUCTION MEETING**

- .1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Parks Canada Agency (PCA), Contract Administrator, Contractor, major Subcontractors, and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda items in addition to the Pre-Construction Start-Up Meeting Checklist to include:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
  - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5 Delivery schedule of specified equipment.
  - .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
  - .7 Health and safety in accordance with Section 01 35 29.06.
  - .8 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

- .9 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Monthly progress claims, administrative procedures, photographs, hold backs.
- .11 Insurances, transcript of policies.

### **1.3 PROGRESS MEETINGS**

- .1 During course of Work and 2 weeks prior to project completion, schedule progress meetings, monthly at minimum.
- .2 Contract Administrator, Contractor, and major Subcontractors involved in Work are to be in attendance.
- .3 Notify parties minimum 5 days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.
- .5 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.
  - .11 Review proposed changes for affect on construction schedule and on completion date.
  - .12 Other business.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **Part 1 General**

### **1.1 DEFINITIONS**

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Contract Administrator to enable monitoring of project work in relation to established milestones.

### **1.2 REQUIREMENTS**

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

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

- .2 Submit to Contract Administrator within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Contract Administrator within 5 working days of receipt of acceptance of Master Plan.

#### **1.4 MASTER PLAN**

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Contract Administrator will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

#### **1.5 PROJECT SCHEDULE**

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  - .1 Award.
  - .2 Shop Drawings, Samples.
  - .3 Permits.
  - .4 Mobilization.
  - .5 Environmental Protection.
  - .6 Preparation of Slope.
  - .7 Installation of Armour Stone.
  - .8 Installation of Concrete Moorings.
  - .9 Transplanted Vegetation.

#### **1.6 PROJECT SCHEDULE REPORTING**

- .1 Update Project Schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

#### **1.7 PROJECT MEETINGS**

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

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**Part 2            Products**

**2.1                NOT USED**

.1            Not used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not used.

**END OF SECTION**

**Part 1            General**

**1.1                ADMINISTRATIVE**

- .1        Submit to Contract Administrator 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.
- .2        Do not proceed with Work affected by submittal until review is complete.
- .3        Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4        Where items or information is not produced in SI Metric units converted values are acceptable.
- .5        Review submittals prior to submission to Contract Administrator. 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.
- .6        Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7        Verify field measurements and affected adjacent Work are co-ordinated.
- .8        Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- .9        Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review.
- .10       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 licensed in the Province of 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 working days for Contract Administrator's review of each submission.
- .5        Adjustments made on shop drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.

- .6 Make changes in shop drawings as Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify Contract Administrator in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in [duplicate], 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 Contract Administrator's review, distribute copies.
- .10 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as Contract Administrator may reasonably request.
- .11 Submit one electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit one electronic copy of test reports for requirements requested in specification Sections and as requested by Contract Administrator.

- .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.
- .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit one electronic copy of certificates for requirements requested in specification Sections and as requested by Contract Administrator.
  - .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 one electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Contract Administrator.
  - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit one electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Contract Administrator.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Contract Administrator.
- .18 If upon review by Contract Administrator, 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.

### **1.3 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic digital photography in jpg format, standard resolution weekly with progress statement and as directed by Contract Administrator.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 4 locations.
  - .1 Viewpoints and their location as determined by Contract Administrator.
- .4 Frequency of photographic documentation: weekly or as directed by Contract Administrator

### **1.4 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board Experience Report.
- .2 Submit qualification of all sub-contractors identified for this project



- .3 Submit transcription of insurance immediately after award of Contract.
- .4 Submit professional certificates of the trade persons engaged in the project.

**1.5 FEES, PERMITS AND CERTIFICATES**

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates and permits required.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 National Building Code 2015 (NBC):
  - .1 NBC 2015, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
- .2 National Fire Code 2015 (NFC):
  - .1 NFC 2015, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.
- .3 Province of Ontario
  - .1 Occupational Health and Safety Act, R.S.O. 1990 as amended.
  - .2 Regulations for Construction Projects, O. Reg. 213/91 as amended.
  - .3 Designated Substances, O. Reg. 490/09 as amended.
  - .4 Workplace Safety and Insurance Act, 1997 as amended.
  - .5 Workers' Compensation Act, R.S.O. 1990, c. W.11 as amended.
  - .6 Municipal statutes and authorities.
- .4 Fire Commissioner of Canada (FCC):
  - .1 FC-301 Standard for Construction Operations, June 1982.
  - .2 FC-302 Standard for Welding and Cutting, June 1982.
- .5 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .6 Safety in Demolition of Structures.
- .7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Safety Data Sheets (SDS).

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
  - .3 Measures and controls to be implemented to address identified safety hazards and risks.
  - .4 Contractor's and Sub-contractors' Safety Communication Plan.
  - .5 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Coordinate plan with existing Parks Canada Agency Emergency Response requirements and procedures provided by Contract Administrator.

- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Contract Administrator, weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit names of personnel and alternates responsible for site health and safety.
- .7 Submit records of Contractor's Health and Safety meetings when requested.
- .8 Submit Safety Data Sheets (SDS).
- .9 Submit Workplace Safety and Insurance Board (WSIB) - Experience Rating Report.
- .10 Contract Administrator will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Contract Administrator within 5 days after receipt of comments from Contract Administrator.
- .11 Contract Administrator's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .12 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Contract Administrator.
- .13 Submit a Covid-19 Health and Safety Plan.

### **1.3 FILING OF NOTICE**

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

### **1.4 SAFETY ASSESSMENT**

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

### **1.5 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Contract Administrator prior to commencement of Work.

### **1.6 REGULATORY REQUIREMENTS**

- .1 Comply with the Acts and regulations of the Province of Ontario.
- .2 Comply with specified standards and regulations to ensure safe operations at site.

### **1.7 PROJECT/SITE CONDITIONS**

- .1 Contract limits shall be strictly adhered to and contractor is to take special care to minimize damage and disruption and protect existing features and of construction.

## **1.8 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, the most stringent provision will apply.
- .4 Contract Administrator may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- .5 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 Contract Administrator in writing.

## **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 for the Province of Ontario.

## **1.10 COMPLIANCE REQUIREMENTS**

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

## **1.11 UNFORSEEN HAZARD**

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise contract Administrator 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.

## **1.12 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
  - .1 Have site-related working experience specific to activities associated with riverbank stabilization and in-water work activities.
  - .2 Have working knowledge of occupational safety and health regulations.

- .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .4 Be responsible for implementation, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

### **1.13 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 the Province of Ontario, and in consultation with Contract Administrator.
  - .1 Contractor's Safety Policy.
  - .2 Constructor's Name.
  - .3 Notice of Project.
  - .4 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).
  - .5 Ministry of Labour Orders and reports.
  - .6 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
  - .7 Address and phone number of nearest Ministry of Labour office.
  - .8 Material Safety Data Sheets.
  - .9 Written Emergency Response Plan.
  - .10 Site Specific Safety Plan.
  - .11 Valid certificate of first aider on duty.
  - .12 WSIB "In Case of Injury at Work" poster.
  - .13 Location of toilet and cleanup facilities.

### **1.14 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Contract Administrator.
- .2 Provide Contract Administrator with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Contract Administrator may stop Work if non-compliance of health and safety regulations is not corrected.

### **1.15 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 Health and Safety Coordinator or Competent Supervisor to stop or start Work when, at Health and Safety Coordinator's or Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Contract Administrator may also stop Work for health and safety considerations.

**Part 2            Products**

**2.1                NOT USED**

.1            Not used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not used.

**END OF SECTION**

**Part 1            General**

**1.1                MEASUREMENT AND PAYMENT**

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

**1.2                RELATED REQUIREMENTS**

- .1        Section 31 23 33.01 – Excavating, Trenching and Backfilling.

**1.3                REFERENCES**

- .1        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.
- .2        Canadian Environmental Assessment Act (CEAA), 2012
- .3        Basic Impact Assessment, prepared by Parks Canada

**1.4                FIRES**

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

**1.5                DRAINAGE**

- .1        Provide temporary drainage and pumping required to keep excavations and site free from water.
- .2        Water shall be pumped into sediment storage pond approved by Parks Canada Environmental Surveillance Officer.
- .3        Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .4        Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

**1.6                WORK ADJACENT TO WATERWAYS**

- .1        All materials and equipment used for the purpose of site preparation and project completion shall be operated, maintained, and stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt etc.) from entering the water.
- .2        No construction debris from work activities will be allowed to enter the river. The work site must be cleaned daily. Every effort will be made to minimize the introduction of sediment to the river during work activities.

- .3 Any impacts below the ordinary high water mark that are not shown on the site plan are not permitted without written approval from the Engineer. Up to 30 days may be required for approval.
- .4 Areas used for stockpiling construction materials, including fill or other equipment storage will be well back from the edge of the water body and in areas which have already been disturbed or are devoid of vegetation.
- .5 The Contractor shall not remove, destroy or disturb species at risk, their residences or their critical habitat.
- .6 The Contractor shall not disturb migratory bird nests.
- .7 A double silt curtain shall be installed and maintained as described below.
- .8 Silt fences shall be installed on the downslope side adjacent to new backfill areas.
- .9 Turbidity curtains and silt fences shall be as per OPSS 805.
- .10 Construction equipment shall not enter the river.
- .11 Avoid damage to shoreline.
- .12 Restore disturbed areas to previous or better condition.

#### **1.7 VERTICAL DOUBLE SILT CURTAIN**

- .1 Contractor to supply, install and maintain silt curtain(s) for environmental protection for all in-water work. Silt curtain(s) to fully isolate the work area(s) from the waterbody outside the work area(s).
- .2 Cost for supply, installation, maintenance, and removal of the silt curtain(s) will be considered as part of the lump sum arrangement and shall include all labour, material and equipment to do the work.

#### **1.8 TURBIDITY CURTAIN**

- .1 The turbidity curtain(s) must meet the following requirements:
  - .1 free of tears and gaps;
  - .2 of enough width to account for water depth and wave action.
  - .3 Geosynthetics shall have a grab tensile strength of at least 990 N, meeting CAN/CGSB 148.1, No. 7.3 and be one of geotextile or geomembrane.
  - .4 Geotextile shall be a woven material. The filtration opening size (FOS) shall be no greater than 300 µm, meeting CAN/CGSB 148.1, No. 10. tasks.
  - .5 Floatation shall be a material that has sufficient buoyancy to provide the curtain with continuous support.
  - .6 Ballast shall be 8 mm steel chain.
  - .7 Anchors shall be mushroom or kedge anchors with a minimum mass of 34 kg for firm mud bottoms or self-burying anchors with a minimum mass of 5 kg for sandy bottoms.
  - .8 Load lines shall be 8 mm diameter steel cable or 19 mm diameter nylon or polypropylene rope.
  - .9 Bright colours shall be used or Hazard Markers shall be added to load line.



- .10 Mooring buoys shall have provision for the mooring line to be securely attached and be sufficiently buoyant to remain afloat under normal load conditions.
- .11 An acceptable product is "Tough Guy" type 1E Turbidity Barrier or approved equivalent.
- .2 Contractor to submit details of the temporary silt curtain system(s) to Contract Administrator prior to start of the Work.
- .3 Installation:
  - .1 Install turbidity curtain(s) adjacent to the existing structure and push outwards to exclude fish from the area. Conduct a fish salvage if fish cannot be excluded with the turbidity curtain.
  - .2 Design to conform to OPSS 805, and OPSD 219.260 and OPSD 219.261 as a minimum.
  - .3 Once installed, the turbidity curtain(s) shall remain in place until all in-water work is completed, and all suspended sediments are settled out.
  - .4 The bottom edge of the turbidity curtain(s) shall be continuously in contact with the waterbody bed and the sides shall be continuously in contact with the adjacent walls or shoreline, so that sediment passage from the enclosed area is prevented as well as fish passage into the enclosed area is prevented.
  - .5 Folds in the turbidity curtain(s) that form next to the floatation collar shall be regularly monitored and cleared of collected sediment.
  - .6 On completion of the project carefully remove silt curtain(s) to ensure settled sediment is not disturbed.

## **1.9 POLLUTION CONTROL**

- .1 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .2 Prevent extraneous materials from contaminating air and waterways beyond application area.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 Locate temporary fuel storage 100 meters from shore and comply with Provincial Environmental legislation.
- .5 Refueling, servicing or cleaning of equipment within 100 meters of shore is prohibited.
- .6 Contractor shall ensure all equipment operating on project is free of external fluid leaks, grease, oil and mud.
- .7 Contractor to contain all oil leaks from equipment working adjacent to waterways.
- .8 The Contractor shall not use chemical dust suppressant materials on roads within 100 metres of the construction site.
- .9 No maintenance of vehicles or equipment in construction areas.
- .10 Use drip pans to catch leaking oil from compressors, pumps, etc.
- .11 All required machinery should be supplied with appropriate spill containment kits as a precaution in the event of accidental fuel spills or hydraulic leaks. Additional kits should be available on site with the capacity to contain any spills of deleterious substances that

may be reasonably expected to occur. Contractors should ensure that all personnel are familiar with the spill kits.

- .12 The Contractor shall report spills of fuels or other contaminants to Pukaskwa National Park and the Ontario Spills Hotline.

#### **1.10 DISPOSAL OF WASTES**

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways. Hazardous waste including fuels, oils and lubricants to be disposed of by a licensed hazardous waste carrier/handler in accordance with Provincial Environmental Legislation.
- .3 Collect all rubbish and waste material and dispose of in accordance with applicable governing authorities.
- .4 Do not allow debris of any type to enter waterway.
- .5 The Contractor shall dispose of non-reusable construction debris and solid waste from construction at a waste disposal ground operating under the authority of a permit under Provincial regulation.
- .6 All food waste shall be stored wildlife-proof containment and removed from site daily.

#### **1.11 PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties.
- .2 Avoid disturbance of topsoil and vegetation unless otherwise specified. The Contractor is responsible to restore all impacted areas to original state.
- .3 The Contractor shall revegetate soil in areas exposed by construction with vegetation native to the area. These areas shall be revegetated as quickly as possible following construction to prevent soil erosion and establishment of noxious weeds.
- .4 All equipment and machinery shall be cleaned from mud, vegetation debris, and soil before mobilization to site to prevent the introduction of invasive/exotic vegetation.

#### **1.12 IN-WATER WORKS**

- .1 All in-water works shall conform to Department of Fisheries and Oceans (DFO) Guidelines, CEAA Basic Impact Analysis and industry best practices.
- .2 The contractor shall be experienced in in-water construction and will have knowledge of river and sediment control.
- .3 No in-water work shall be done prior to the turbidity curtain being installed.
- .4 Machines or equipment used in water shall:
  - .1 Be thoroughly cleaned before arrival on site.
  - .2 Be thoroughly inspected for leaks prior to use on site.
  - .3 Be inspected twice daily during use for leaks or damage.
  - .4 All equipment used shall be in sound mechanical condition and free of any leaks or contaminants.

- .5 All in-water work shall be subject to DFO in-water work timing window guidelines. Currently the timing windows for in-water work are July 15 to August 30, but are subject to change.
- .6 All equipment refueling and maintenance shall be done in a controlled manner at least 100 metres from the watercourse to prevent petroleum products or any other deleterious substance from entering the water.

### **1.13 EMERGENCY RESPONSE**

- .1 The contractor shall be responsible for ensuring that they are adequately prepared for an emergency response. This may include having available at the construction site, prior to the commencement of operations and throughout the duration of the contract, additional temporary erosion and sediment control devices.
- .2 Contractor shall have a spill kit onsite at all times capable of containing 110% of total fuel volume and a spill response plan in place prior to commencing work.
- .3 Spill response plan shall detail the containment and storage, security, handling, use and disposal of containers, surplus products or waste generated in the application of these products in accordance with all applicable federal and provincial legislation. The plan shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment.
- .4 In the event that unforeseen events cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, contractor is to respond in a timely manner with all reasonable measures consisted with safety to prevent, counteract or remedy any effects on fish or fish habitat that may result.
- .5 Existing spill reporting procedures establish by the Ministry of the Environment (MOE) shall be used to report any unexpected discharge of silt or sediment or other deleterious substance into the river. The spill shall also be reported to Pukaskwa National Park as soon as possible.

### **1.14 BASIC IMPACT ANALYSIS**

- .1 A CEAA Basic Impact Analysis will be completed by Parks Canada prior to construction.
- .2 Contractor to adhere to all aspects of the Basic Impact Analysis for the duration of the contract.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 INSPECTION**

- .1 Allow Contract Administrator access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Contract Administrator, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Contract Administrator will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Contract Administrator shall pay cost of examination and replacement.

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

**1.4 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 Contract Administrator 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 Contract Administrator it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by.

**1.5                REPORTS**

- .1        Submit 4 copies of inspection and test reports to Contract Administrator.
- .2        Provide copies to subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

**1.6                TESTS AND MIX DESIGNS**

- .1        Furnish test results and mix designs as requested.
- .2        Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Contract Administrator and may be authorized as recoverable.

**1.7                MILL TESTS**

- .1        Submit mill test certificates as required of specification Sections.

**Part 2            Products**

**2.1                NOT USED**

- .1        Not Used.

**Part 3            Execution**

**3.1                NOT USED**

- .1        Not Used.

**END OF SECTION**

**Part 1            General**

**1.1            RELATED REQUIREMENTS**

- .1        Section 01 52 00 - Construction Facilities.
- .2        Section 01 56 00 - Temporary Barriers and Enclosures.

**1.2            REFERENCES**

- .1        U.S. Environmental Protection Agency (EPA) / Office of Water
  - .1        EPA 832R92005, Storm Water Management for Construction Activities:  
Developing Pollution Prevention Plans and Best Management Practices.

**1.3            ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.4            INSTALLATION AND REMOVAL**

- .1        Provide temporary utilities controls in order to execute work expeditiously.
- .2        Remove from site all such work after use.

**1.5            WATER SUPPLY**

- .1        Contractor to provide continuous supply of potable water for construction use.

**1.6            TEMPORARY POWER AND LIGHT**

- .1        Contractor to provide generator for construction power.

**1.7            TEMPORARY COMMUNICATION FACILITIES**

- .1        Provide and pay for temporary telephone, fax, and data hook up, lines, and equipment necessary for own use.

**1.8            FIRE PROTECTION**

- .1        Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

**Part 2           Products**

**2.1            NOT USED**

- .1        Not Used.

**Part 3            Execution**

**3.1                TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1      Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion control drawings.
- .2      Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3      Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

**END OF SECTION**



**Part 1            General**

**1.1               RELATED REQUIREMENTS**

- .1       Section 01 51 00 – Temporary Utilities.

**1.2               REFERENCES**

- .1       Canadian General Standards Board (CGSB)
  - .1       CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood.
  - .2       CGSB 1.59-[97], Alkyd Exterior Gloss Enamel.
- .2       Canadian Standards Association (CSA International)
  - .1       CSA-A23.1/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2       CAN/CSA-Z321-96(R2006), Signs and Symbols for the Occupational Environment.
- .3       U.S. Environmental Protection Agency (EPA) / Office of Water
  - .1       EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

**1.3               ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.4               INSTALLATION AND REMOVAL**

- .1       Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2       Identify areas which have to be gravelled to prevent tracking of mud.
- .3       Indicate use of supplemental or other staging area.
- .4       Provide construction facilities in order to execute work expeditiously.
- .5       Remove from site all such work after use.

**1.5               SITE STORAGE/LOADING**

- .1       Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2       Do not load or permit to load any part of Work with weight or force that will endanger Work.

**1.6               CONSTRUCTION PARKING**

- .1       Parking will be permitted on site in location designated by Parks Canada Agency (PCA).
- .2       Provide and maintain adequate access to project site.

- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

#### **1.7 SECURITY**

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays, if deemed necessary by PCA.

#### **1.8 OFFICES**

- .1 Provide marked and fully stocked first-aid case in a readily available location.
- .2 Subcontractors to provide their own offices as necessary. Direct location of these offices.

#### **1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

#### **1.10 SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

#### **1.11 CONSTRUCTION SIGNAGE**

- .1 No other signs or advertisements, other than warning signs, are permitted on site unless approved.
- .2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of offsite on completion of project or earlier if directed by Contract Administrator.

#### **1.12 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Contract Administrator.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by [Departmental Representative] [DCC Representative] [Consultant].
- .12 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .13 Provide snow removal during period of Work.
- .14 Remove, upon completion of work, haul roads designated by [Departmental Representative] [DCC Representative] [Consultant].

#### **1.13 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 All food waste shall be stored wildlife-proof containment and removed from site daily.
- .3 Clean dirt or mud tracked onto paved or surfaced roadways.
- .4 Store materials resulting from demolition activities that are salvageable.
- .5 Stack stored new or salvaged material not in construction facilities.
- .6 Repair all Parks Canada Agency (PCA) assets that were damaged by the contractor during construction.

#### **Part 2 Products**

##### **2.1 NOT USED**

- .1 Not Used.

#### **Part 3 Execution**

##### **3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control drawings.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

**END OF SECTION**

**Part 1            General**

**1.1               RELATED REQUIREMENTS**

- .1       Section 01 14 00 – Work Restrictions.

**1.2               REFERENCES**

- .1       Canadian General Standards Board (CGSB)
  - .1       CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
  - .2       CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2       Canadian Standards Association (CSA International)
  - .1       CSA-O121-08(R2013), Douglas Fir Plywood.

**1.3               INSTALLATION AND REMOVAL**

- .1       Provide temporary controls in order to execute Work expeditiously.
- .2       Remove from site all such work after use.

**1.4               GUARD RAILS AND BARRICADES**

- .1       Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs, and work under construction.

**1.5               WEATHER ENCLOSURES**

- .1       Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2       Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3       Design enclosures to withstand wind pressure.

**1.6               DUST TIGHT SCREENS**

- .1       Provide dust tight screens or [insulated] partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2       Maintain and relocate protection until such work is complete.

**1.7               ACCESS TO SITE**

- .1       Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

**1.8               PUBLIC TRAFFIC FLOW**

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

**1.9 FIRE ROUTES**

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

**1.10 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

**1.11 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Contract administrator locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

**1.12 WASTE MANAGEMENT AND DISPOSAL**

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

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures.

**1.2 REFERENCES**

- .1 If there is question as to whether products or systems are in conformance with applicable standards, Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.
- .2 Cost for such testing will be born by the Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

**1.3 QUALITY**

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Contract Administrator based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

**1.4 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Contract Administrator of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Contract Administrator at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Contract Administrator

reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

## **1.5 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Contract Administrator.
- .9 Touch-up damaged factory finished surfaces to Contract Administrator's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

## **1.6 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.

## **1.7 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Contract Administrator in writing, of conflicts between specifications and manufacturer's instructions, so that Contract Administrator will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Contract Administrator to require removal and re-installation at no increase in Contract Price or Contract Time.

## **1.8 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Contract



Administrator if required Work is such as to make it impractical to produce required results.

- .2 Do not employ anyone unskilled in their required duties. Contract Administrator reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Contract Administrator, whose decision is final.

## **1.9 CO-ORDINATION**

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

## **1.10 REMEDIAL WORK**

- .1 Refer to Section 01 73 00 - Execution Requirements.
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

## **1.11 FASTENINGS**

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

## **1.12 FASTENINGS - EQUIPMENT**

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.

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

### **1.13 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Contract Administrator.

### **1.14 EXISTING UTILITIES**

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1            REFERENCES**

- .1      Owner's identification of existing survey control points and property limits.

**1.2            SURVEY REFERENCE POINTS**

- .1      Existing base horizontal and vertical control points are designated on drawings.
- .2      Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .3      Make no changes or relocations without prior written notice to Contract Administrator.
- .4      Report to Contract Administrator when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5      Require surveyor to replace control points in accordance with original survey control.

**1.3            SURVEY REQUIREMENTS**

- .1      Establish two permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2      Establish lines and levels, locate and lay out, by instrumentation.
- .3      Stake for grading, fill and topsoil placement.
- .4      Stake slopes.

**1.4            EXISTING SERVICES**

- .1      Before commencing work, establish location and extent of service lines in area of Work and notify Contract Administrator of findings.

**1.5            LOCATION OF EQUIPMENT AND FIXTURES**

- .1      Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2      Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3      Inform Contract Administrator of impending installation and obtain approval for actual location.
- .4      Submit field drawings to indicate relative position of various services and equipment when required by Contract Administrator.

**1.6            RECORDS**

- .1      Maintain a complete, accurate log of control and survey work as it progresses.

- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

**1.7 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 On request of Contract Administrator, submit documentation to verify accuracy of field engineering work.

**1.8 SUBSURFACE CONDITIONS**

- .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1               SUBMITTALS**

- .1       Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2       Submit written request in advance of cutting or alteration which affects:
  - .1       Structural integrity of elements of project.
  - .2       Integrity of weather-exposed or moisture-resistant elements.
  - .3       Efficiency, maintenance, or safety of operational elements.
  - .4       Visual qualities of sight-exposed elements.
  - .5       Work of Parks Canada Agency (PCA) or separate contractor.
- .3       Include in request:
  - .1       Identification of project.
  - .2       Location and description of affected Work.
  - .3       Statement on necessity for cutting or alteration.
  - .4       Description of proposed Work, and products to be used.
  - .5       Alternatives to cutting and patching.
  - .6       Effect on Work of Parks Canada Agency (PCA) or separate contractor.
  - .7       Written permission of affected separate contractor.
  - .8       Date and time work will be executed.

**1.2               MATERIALS**

- .1       Required for original installation.
- .2       Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

**1.3               PREPARATION**

- .1       Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2       After uncovering, inspect conditions affecting performance of Work.
- .3       Beginning of cutting or patching means acceptance of existing conditions.
- .4       Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5       Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

**1.4               EXECUTION**

- .1       Execute cutting, fitting, and patching including excavation and fill, to complete Work.

- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .6 Restore work with new products in accordance with requirements of Contract Documents.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

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

**Part 2 Products not Used**

- .1 Not Used.

**Part 3 Execution not Used**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Parks Canada Agency (PCA) or other Contractors.
- .2 All food waste shall be stored wildlife-proof containment and removed from site daily.
- .3 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site.
- .4 Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Provide on-site containers for collection of waste materials and debris.
- .7 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .8 Dispose of waste materials and debris off site.
- .9 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .10 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .11 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .12 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .13 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

**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 other than that caused by Parks Canada Agency (PCA) or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

**1.3 WASTE MANAGEMENT AND DISPOSAL**

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

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



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**Part 1            General**

**1.1                WASTE MANAGEMENT GOALS**

- .1      Accomplish maximum control of solid construction waste.
- .2      Preserve environment and prevent pollution and environment damage.

**1.2                DEFINITIONS**

- .1      Class III: non-hazardous waste - construction renovation and demolition waste.
- .2      Inert Fill: inert waste - exclusively asphalt and concrete.
- .3      Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .4      Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .5      Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .6      Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
  - .1          Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2          Returning reusable items including pallets or unused products to vendors.
- .7      Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .8      Separate Condition: refers to waste sorted into individual types.
- .9      Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

**1.3                STORAGE, HANDLING AND PROTECTION**

- .1      Store, materials to be reused, recycled and salvaged in locations as directed by Parks Canada Agency (PCA).
- .2      Unless specified otherwise, materials for removal become Contractor's property.
- .3      Protect, stockpile, store and catalogue salvaged items.
- .4      Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Consultant.
- .7 Protect surface drainage, mechanical and electrical from damage and blockage.
- .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.
  - .3 Provide waybills for separated materials.

#### **1.4 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner, or paint into waterways, storm, or sanitary sewers.

#### **1.5 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility.

#### **1.6 SCHEDULING**

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

### **Part 2 Products**

#### **2.1 NOT USED**

- .1 Not Used.

### **Part 3 Execution**

#### **3.1 APPLICATION**

- .1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

#### **3.2 CLEANING**

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 All food waste shall be stored wildlife-proof containment and removed from site daily.

- .3 Clean-up work area as work progresses.
- .4 Source separate materials to be reused/recycled into specified sort areas.

**END OF SECTION**

**Part 1            General**

**1.1            ADMINISTRATIVE REQUIREMENTS**

- .1    Acceptance of Work Procedures:
  - .1    Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - .1    Notify Contract Administrator 2 days in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2    Request Contract Administrator's inspection.
  - .2    Contract Administrator's Inspection:
    - .1    Contract Administrator and Contractor to inspect Work and identify defects and deficiencies.
    - .2    Contractor to correct Work as directed.
  - .3    Completion Tasks: submit written certificates in English that tasks have been performed as follows:
    - .1    Work: completed and inspected for compliance with Contract Documents.
    - .2    Defects: corrected and deficiencies completed.
    - .3    Work: complete and ready for final inspection.
  - .4    Final Inspection:
    - .1    When completion tasks are done, request final inspection of Work by Contract Administrator, and Contractor.
    - .2    When Work incomplete according to Parks Canada Agency (PCA) and Contract Administrator, complete outstanding items and request re-inspection.
  - .5    Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .6    Commencement of Lien and Warranty Periods: date of Parks Canada Agency (PCA)'s acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
  - .7    Final Payment:
    - .1    When Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
    - .2    When Work is deemed incomplete by Contract Administrator, complete outstanding items and request re-inspection.
  - .8    Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

**1.2 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedure..
- .2 Provide evidence, if requested, for type, source and quality of products supplied.

## **1.2 AS -BUILT DOCUMENTS AND SAMPLES**

- .1 Maintain, in addition to requirements in General Conditions, at site for Contract Administrator one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to Contract.
  - .5 Reviewed shop drawings, product data, and samples.
  - .6 Field test records.
  - .7 Inspection certificates.
  - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
  - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
  - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
  - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Contract Administrator.
- .6 Turn one set, paper copy and electronic copy, of AS-BUILT drawings and specifications over to Contract Administrator on completion of work. Submit files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Contract Administrator.
- .7 If project is completed without significant deviations from Contract drawings and specifications submit to Contract Administrator one set of drawings and specifications marked "AS-BUILT".

## **1.3 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Contract Administrator.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
  - .1 Do not conceal Work until required information is recorded.

- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Field changes of dimension and detail.
  - .2 Changes made by change orders.
  - .3 Details not on original Contract Drawings.
  - .4 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

#### **1.4 FINAL SURVEY**

- .1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

#### **1.5 WARRANTIES AND BONDS**

- .1 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
  - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
  - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within [ten] days after completion of applicable item of work.
  - .4 Except for items put into use with Parks Canada Agency (PCA)'s permission; leave date of beginning of time of warranty until the Date of Certificate of Substantial Performance is determined.
  - .5 Verify that documents are in proper form, contain full information, and are notarized.
  - .6 Co-execute submittals when required.
  - .7 Retain warranties and bonds until time specified for submittal.
- .2 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .3 Written verification to follow oral instructions.
  - .1 Failure to respond will be cause for the Contract Administrator to proceed with action against Contractor.

**Part 2            Products**

**2.1                NOT USED**

.1            Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**



**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 03 30 00 Cast-In-Place Concrete.

**1.2 PRICE AND PAYMENT PROCEDURES**

- .1 Measurement and Payment:
  - .1 No measurement will be made under this Section.
  - .2 Include reinforcement costs in items of concrete work in Section 03 30 00 - Cast-In-Place Concrete.

**1.3 REFERENCES**

- .1 CSA International
  - .1 CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
  - .2 CSA-A23.3-14, Design of Concrete Structures.
  - .3 CSA-G30.18-09 (R2014), Carbon Steel Bars for Concrete Reinforcement.
  - .4 CSA-G40.20/G40.21-13 General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .5 CSA W186-M1990(R2016), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .2 Reinforcing Steel Institute of Canada (RSIC)
  - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

**1.4 QUALITY ASSURANCE**

- .1 Mill Test Report: upon request, provide Contract Administrator with certified copy of mill test report of reinforcing steel, minimum four weeks prior to beginning reinforcing work. Test report to show physical and chemical analysis.
  - .1 Upon request submit in writing to Contract Administrator proposed source of reinforcement material to be supplied.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Substitute different size bars only if permitted in writing by Contract Administrator.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CSA-G30.18, unless indicated otherwise.
- .3 Cold-drawn annealed steel wire ties: to ASTM A82/A82M.
- .4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .5 Mechanical splices: subject to approval of Engineer.
- .6 Plain round bars: to CSA-G40.20/G40.21.

**2.2 FABRICATION**

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Obtain Contract Administrator's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Do not weld reinforcement unless approved by Contract Administrator. If approved, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

**Part 3 Execution**

**3.1 FIELD BENDING**

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Contract Administrator.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which develop cracks or splits.

**3.2 PLACING REINFORCEMENT**

- .1 Place reinforcing steel as indicated on placing drawings in accordance with CSA-A23.1/A23.2.
- .2 Prior to placing concrete, obtain Contract Administrator's approval of reinforcing material and placement.
- .3 Ensure cover to reinforcement is maintained during concrete pour.
- .4 Reinforcing steel in the slab may be supported off the granular base using small pieces of concrete block.

**3.3 CLEANING**

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

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

**END OF SECTION**

**Part 1 General**

**1.1 MEASUREMENT FOR PAYMENT**

- .1 Payment for the reinforced concrete mooring anchors will be lump sum.

**1.2 RELATED REQUIREMENTS**

- .1 Section 03 20 00 Concrete Reinforcing
- .2 Section 31 23 33.01 Excavating and Backfilling

**1.3 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.
- .2 CSA International
  - .1 CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2 CSA A3000-18, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  - .3 CAN/CSA-G30.18-09(R2014), Billet-Steel Bars for Concrete Reinforcement.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit concrete mix design(s) that meet the minimum performance criteria for the various types of concrete(s) as shown on the Drawings and specified in Part 2 – Materials. The concrete mix design(s) for the required type(s) of concrete shall specify the following:
  - .1 Cementitious content in kilograms per cubic metre or equivalent unit for each type of cementitious material.
  - .2 Designated size, or sizes, of aggregates, and the gradation.
  - .3 Aggregate source locations.
  - .4 Weights of aggregates in kilograms per cubic metre or equivalent units. Mass of aggregates shall be in saturated surface dry basis.
  - .5 Maximum allowable water content in kilograms per cubic metre or equivalent units design water/cement ratio.
  - .6 The limits for slump.
  - .7 The limits for air content.
  - .8 Quantity in millilitres per cubic metre or equivalent units and brand name for each type of admixture.
  - .9 Certification that all concrete constituents are compatible.
  - .10 Certification that the concrete mix(es) will meet the specified concrete performance criteria.

- .2 Provide testing and inspection results reports for review by Contract Administrator upon request and do not proceed without written approval when deviations from mix design or parameters are found.
- .3 Concrete hauling time: provide for review by Contract Administrator deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.
- .4 Provide concrete supplier certification that the plant is certified with Concrete Ontario (formerly the Ready-Mix Concrete Association of Ontario)
- .5 Provide Weather Protection Plans (hot and cold temperature weather conditions)
  - .1 It shall be the full responsibility of the Contractor to review the schedule, anticipate the impacts of work / concreting, and incorporate the costs for such weather protection schemes and associated works.
  - .2 When concrete is to be placed and cured in extreme temperature conditions (less than 5 degrees Celsius and more than 25 degrees Celsius), the Contractor shall submit written descriptions of proposed methods of providing appropriate concreting conditions and preventing cold weather damage (with drawings or sketches, as required).
  - .3 Incorporate modifications (from comments provided) for protective measures before placing concrete.

## **1.5 QUALITY ASSURANCE**

- .1 Provide to Contract Administrator, upon request, four weeks minimum prior to starting concrete work, valid and recognized certificate from plant delivering concrete.
- .2 Quality Control Plan: provide written report to Contract Administrator, upon request, verifying compliance that concrete in place meets performance requirements of concrete as established in Part 2 – Products.
- .3 Minimum four weeks prior to starting concrete work, upon request, provide quality control procedure for review by Contract Administrator for the following items:
  - .1 Hot weather concrete,
  - .2 Cold weather concrete,
  - .3 Curing,
  - .4 Finishes,
  - .5 Formwork removal,

## **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery and Acceptance Requirements:
  - .1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.
    - .1 Do not modify maximum time limit without receipt of prior written agreement from Engineer and concrete producer as described in CSA A23.1/A23.2.
    - .2 Deviations to be submitted for review by the Engineer.

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

## **Part 2 Products**

### **2.1 DESIGN CRITERIA**

- .1 To CSA A23.1/A23.2.

### **2.2 PERFORMANCE CRITERIA**

- .1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established by Contract Administrator and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

### **2.3 MATERIALS**

- .1 Concrete:
  - .1 Type 10 (Type GU) cement for all applications.
  - .2 Compressive strength when tested in accordance with CAN/CSA-A23.2, (9°C): average 28 day compressive strength to be minimum 30 MPa with 5-8% air entrainment.
  - .3 Air content when tested in accordance with CAN/CSA-A23.2, (4°C), immediately after discharge: in accordance with CSA A23.1 Table 10.
  - .4 Class of exposure: Class F-1.
  - .5 Use of chemical admixture will be approved only when specified mix requirements or workability cannot be achieved by proportioning of aggregates, water, cement and air entraining admixture.
  - .6 Maximum coarse aggregate size shall be 20 mm.
  - .7 Water: to CSA A23.1/A23.2.
- .2 Other concrete materials:
  - .1 To CSA A23.1/A23.2.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Provide Contract Administrator six (6) business day's notice before each concrete pour.
- .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.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.

- .4 Prior to placing of concrete obtain Contract Administrator's approval of proposed method for protection of concrete during placing and curing, including protection of concrete during placing and curing in adverse weather.
- .5 Surfaces shall be thoroughly cleaned of all foreign material prior to depositing fresh concrete. For hardened concrete surfaces, the aggregate shall be partially exposed and surface to be rough.
- .6 Protect previous Work from staining.
- .7 Clean and remove stains prior to application of concrete finishes.
- .8 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .9 Do not place load upon new concrete until authorized by Departmental Representative.

### **3.2 REINFORCING STEEL AND DOWELS**

- .1 Placing reinforcing steel as indicated and to Section 03 20 00 – Concrete Reinforcing.
- .2 Remove oil, grease, dirt and deleterious material from reinforcing bars before placing concrete.
- .3 Steel placement to be approved by Contract Administrator before placing concrete.

### **3.3 INSTALLATION/APPLICATION**

- .1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.
- .2 Place concrete to lines, grades and depths as indicated.
- .3 Discharge concrete into forms as soon as practical after mixing.
- .4 Use hand placing where machine spreading is not feasible.
- .5 Spread uniformly with approved equipment to thickness sufficient to allow for proper consolidation and finishing.
- .6 When completing concrete placement for day, carry placement through to scheduled control joint location.
- .7 Where concrete placement is stopped for more than 30 minutes due to breakdowns, weather or other reasons, construct extra bulkhead and construction joint as directed by Contract Administrator.
- .8 Do not place concrete on frozen surface.
- .9 No concrete shall be placed during rain.
- .10 When rain appears imminent pouring operation should cease. Protect freshly laid concrete from rain damage and adverse weather condition and in accordance with CAN/CSA A23.1. Extend protective coverings over edges of concrete and arrange so as not to bear on unprotected edges.
- .11 Concrete placed when the ambient temperature is at or above 27 degrees C to be cured by continuous water curing from soaker hoses providing complete coverage of the pavement to minimize the temperature rise of the concrete.
- .12 When concrete has been placed in cold weather and the air temperature is expected to drop below 5 degrees C, insulating curing blankets or other suitable material shall be

placed on the concrete pavement and weighted to prevent movement. Curing to continue until the cumulative number of days, or fraction thereof, during which the temperature of the concrete is 10 degrees C, has totalled a minimum of 7 days.

.13 Concrete Mooring Anchors:

- .1 Screed to plane surfaces and use non-steel floats.
- .2 Provide chamfered edges and joint spacings using standard forms and tools.
- .3 Broom finish in the transverse direction to provide lightly brushed non-slip finish.

**3.4 CURING**

- .1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and to CSA A23.1/A23.2.

**3.5 SITE TOLERANCES**

- .1 Concrete finishing tolerance to CSA A23.1/A23.2.

**3.6 FIELD QUALITY CONTROL**

- .1 Concrete testing: to CSA A23.1/A23.2 by testing laboratory designated and paid for by Owner.

**END OF SECTION**



**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 32 11 23 – Aggregate Materials

**1.2 MEASUREMENT OF PAYMENT**

- .1 Excavation, stock-piling and reuse of native materials will be considered as part of the lump sum amount.
- .2 Excavation and legal disposal of excess and/or unsuitable materials will be considered as part of the lump sum amount.
- .3 Removal, salvage and re-installation of stone, rock, armour stone, rock protection is considered part of the lump sum amount and will not be measured separately for payment.
- .4 Supply and installation of erosion and sedimentation control is considered incidental to excavating and backfilling and will not be measured separately for payment.
- .5 Payment for geotextiles shall be as per Section 31 32 19.01 – Geotextiles.
- .6 Payment for backfilling using new Armour Stone shall be as per Section 32 11 23 – Aggregate Materials.

**1.3 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C117-17, Standard Test Method for Material Finer than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C136-14 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D422-63(2007)e2, Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>).
  - .5 ASTM D1557-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup>) (2,700 kN-m/m<sup>3</sup>).
  - .6 ASTM D4318-17e1, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

**1.4 DEFINITIONS**

- .1 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .2 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .3 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .4 Unsuitable materials:

- .1 Weak, chemically unstable, and compressible materials.
- .2 Frost susceptible materials:
  - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 ASTM C136: Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
- .5 Underwater excavation definitions:
  - .1 Dredging: excavating, transporting and disposing of underwater materials.
  - .2 Class A material: solid rock requiring drilling and blasting to loosen, and boulders or rock fragments of individual volumes 1.5 m
  - .3 Class B material: loose or shale rock, silt, sand, quick sand, mud, shingle, gravel, clay, sand, gumbo, boulders, hardpan and debris of individual volumes less than 1.5 m
  - .4 Obstructions: material other than class A, having individual volumes of 1.5 m
  - .5 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.
  - .6 Grade: plane above which material is to be dredged.
  - .7 Sub-grade: plane parallel to and 300 mm below grade.
  - .8 Estimated quantity:
    - .1 Volume of material calculated to be above sub-grade and within specified side slopes unless otherwise specified.
    - .2 Areas in square metres of material calculated horizontally to exist above grade and within dredge limits, unless otherwise specified.
  - .9 Side slope: inclined surface or plane from subgrade at side limit of dredging area to intersect original ground line outside of side limit and to be expressed as ratio of horizontal to vertical.
  - .10 Chart Datum: permanently established plane from which soundings or tide heights are referenced, usually Lowest Normal Tide (LNT).
  - .11 Universal Transverse Mercator Projection (UTM) or Modified Transverse Mercator Projection (MTM) Co-ordinates: plane rectangular coordinates used in grid system in which grid network is applied to UTM. or MTM. projection. Horizontal control information as indicated.
  - .12 Minimum Mode: mode of operation of hydrographic survey equipment where minimum sounding over length of travel between position updates will be retained in memory. Soundings taken in this mode may be shallower than actual bottom elevations due to variations in water depths due to wave action.
  - .13 Matrix Block: each dredge area is presented as number of [1.2 x 3.0] m long blocks. Dependent on position of sounding, block may have [0 to 4] soundings contained within it.
  - .14 Least of Minimum Plan: hydrographic survey plan in which least sounding in grouping of matrix blocks is plotted.
  - .15 Instantaneous Mode: mode of operation of hydrographic survey equipment where only sounding observed at predetermined distance interval is retained in memory.

- .16 Average of Instantaneous Plan: hydrographic survey plan in which average sounding in appropriate grouping of matrix blocks is plotted.
- .17 Lowest Normal Tide (LNT): plane so low that tide will seldom fall below it.
- .18 Cleared Area: area of dredging accepted as complying with plans and specifications.

## **1.5 SUBMITTALS**

- .1 Quality Control:
  - .1 Submit for review by Parks Canada Environmental Surveillance Officer proposed dewatering methods as described in PART 3 of this Section.
  - .2 Submit to Contract Administrator written notice when slope has been prepared.
- .2 Preconstruction Submittals:
  - .1 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field, clearance record from utility authority, and location plan of relocated and abandoned services, as required.
- .3 Submit to Parks Canada Environmental Surveillance Officer for approval, four weeks prior to excavation, the proposed location for dewatering purposes and location of disposal.

## **1.6 EXISTING CONDITIONS**

- .1 Buried services:
  - .1 Before commencing work verify location of buried services on and adjacent to site.
  - .2 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
  - .3 Where utility lines or structures exist in area of excavation, obtain direction of Engineer before removing or re-routing.
  - .4 Record location of maintained, re-routed and abandoned underground lines.
- .2 Existing buildings and surface features:
  - .1 Conduct condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, pavement, survey bench marks and monuments which may be affected by Work. Notify Departmental Representative of any damage prior to starting work.
  - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Engineer.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Geotextiles: Section 31 32 19.01 - Geotextiles
- .2 Aggregates: Section 32 11 23 - Aggregate Materials

**Part 3 Execution**

**3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, walkways and waterways.
- .2 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

**3.2 SITE PREPARATION**

- .1 Remove obstructions from surfaces to be excavated within limits indicated.

**3.3 PREPARATION/PROTECTION**

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 Protect buried services that are required to remain undisturbed.

**3.4 DEWATERING**

- .1 Keep excavations in non-wetted areas free of water while Work is in progress.
- .2 Provide details of proposed dewatering methods to Parks Canada Environmental Surveillance Officer for approval.
- .3 Protect open excavations against flooding and damage due to surface run-off.
- .4 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to public and private property, or portion of Work completed or under construction.

**3.5 EXCAVATION**

- .1 Advise Contract Administrator at least 7 days in advance of excavation operations for slope preparation.
- .2 Prepare slope to lines, grades, elevations and dimensions as indicated.
- .3 Remove and dispose of excavated material from site to a licensed facility.
- .4 Obtain Contract Administrator approval of completed slope preparation.
- .5 Correct unauthorized over-excavation by backfilling with approved material (without cost to Owner), to the satisfaction of the Contract Administrator.
- .6 Install geotextile at limits of excavation, as indicated on the Drawings and in accordance with Section 31 32 19.01 - Geotextiles.

**3.6 EQUIPMENT**

- .1 Contractor to determine required equipment necessary to carry out underwater excavation, handling and disposal of the material and locations specified for removal.

**3.7 UNDERWATER EXCAVATION**

- .1 Remove materials in dredge location shown on drawings.

- .1 Dredge side slopes to two horizontal to one vertical.
- .2 Remove spillage, shoaling or infilling which occurs prior to acceptance by Contract Administrator.
- .3 Immediately notify Contract Administrator upon encountering object which might be classified as obstruction. By-pass object after clearly marking its location and continue Work.
- .4 The Contractor shall install all protection measures required prior to initiating underwater excavation activities.
- .5 Upon completion of underwater excavation, Contractor to confirm, in presence of Contract Administrator, that grade depth has been achieved.
- .6 Do not dispose of debris in river.

### **3.8 BACKFILLING**

- .1 Do not proceed with backfilling operations until completion of following:
  - .1 Contract Administrator has inspected and approved installations.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.

### **3.9 RESTORATION**

- .1 Upon completion of Work, remove waste materials and debris off site.

**END OF SECTION**

**Part 1 General**

**1.1 MEASUREMENT AND PAYMENT**

- .1 Payment for geotextiles shall be by square metres of surface covered by material. No allowance will be made for seams and overlaps.

**1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-4.2 No. 11.2-M89 (R2013), Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
  - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
    - .1 No.2-M85 Methods of Testing Geosynthetics - Mass per Unit Area.
    - .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
    - .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
    - .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
    - .5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.
- .2 Ontario Provincial Standard Specifications (OPSS)
  - .1 OPSS.PROV 1860 – April 2018, Material Specification for Geotextiles.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for geotextiles and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Test and Evaluation Reports:
  - .1 If requested, submit copies of mill test data and certificate at least 4 weeks prior to start of Work.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Storage and Handling Requirements:
  - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect geotextiles from direct sunlight and UV rays.

- .3 Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 MATERIAL**

- .1 Non-woven geotextiles shall be Class II and consist of a manufactured sheet, web, or batt of directionally or randomly oriented fibres, filaments, or other elements produced by bonding or interlocking the elements by mechanical, thermal, or chemical means.
  - .1 Tensile strength, Marv, minimum 660 N to CAN/CGSB 148.1, Method No. 7.3.
  - .2 Elongation at break, typical, >50% to CAN/CGSB 148.1, Method No. 7.3.
  - .3 Tear strength, MARV, minimum, 250 N to CAN/CGSB 4.2, Method No. 12.2.
  - .4 Puncture strength, MARV minimum, 1375 N to ASTM D 6241.
  - .5 Permittivity, minimum, to 0.05 CAN/CGSB 148.1, Method No. 4 s<sup>-1</sup>.
  - .6 Ultraviolet stability, minimum, 50% retained tensile strength at 500 hours to ASTM D 4355.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geotextile material installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Contract Administrator.
  - .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied.

### **3.2 INSTALLATION**

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated.
- .2 Place geotextile at the following locations:
  - .1 Below Armour Stone at river bottom.
- .3 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .4 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .5 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .6 After installation, cover with overlying layer within 4 hours of placement.
- .7 Replace damaged or deteriorated geotextile to approval of Contract Administrator.
- .8 Place and compact soil layers in accordance with Section 32 11 23 – Aggregate Materials.

**3.3 CLEANING**

- .1 Progress Cleaning:
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**3.4 PROTECTION**

- .1 Vehicular traffic not permitted directly on geotextile.

**END OF SECTION**



**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 31 23 33.01 – Excavating, Trenching and Backfilling

**1.2 MEASUREMENT AND PAYMENT**

- .1 Payment for Armour Stone shall be by tonnes and shall include all labour, equipment and materials required to supply, place and consolidate armour stone materials as required.
- .2 Weigh all stone placed in the Work at the quarry on a scale approved and certified as correct by the Department of Consumer and Corporate Affairs Weights and Measures Inspection Branch. Prior to use, have weigh scale certified as meeting requirements of Statutes of Canada, Chapter 36, Weights and Measures Act 1971 and subsequent amendments. Provide the Contract Administrator with a copy of the certificate and display certificate in prominent location. Costs for maintenance and operation of scale shall be considered incidental to the work.
- .3 Provide the Contract Administrator with weight tickets at time of delivery to site.
- .4 Construction, maintenance and removal of haul roads are to be considered incidental to this work. Construction and maintenance of haul roads will not be measured for payment.

**1.3 REFERENCES**

- .1 ASTM International
  - .1 ASTM C117-17, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C131-14, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3 ASTM C136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft<sup>3</sup>) (600kN-m/m<sup>3</sup>).
  - .5 ASTM D1557-12e1, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft<sup>3</sup>) (2,700kN-m/m<sup>3</sup>).
  - .6 ASTM D1883-16, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .7 ASTM D4318-17e1, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Ontario Provincial Standard Specification (OPSS)
  - .1 OPSS 1004, Material Specification for Aggregate – Miscellaneous

- .2 OPSS 1010, Material Specification for Aggregate – Base, Subbase, Select Subgrade, and Backfill Material

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Armour Stone
  - .1 Hard, dense with relative density (formally specific gravity) not less than 2.65, durable quarry stone, free from seams, cracks or other structural defects.
  - .2 Greatest dimensions of each stone not to exceed two times least dimension.
  - .3 40 kg to 1.0 tonnes each by weight.
  - .4 Armour stone is to be free from cracks, seams and other defects which may impair durability. The Los Angeles abrasion loss determined using ASTM procedures shall not exceed 35%. The armour stone shall be durable blasted limestone or granite. Slate and shale are not acceptable.
  - .5 Stones are to be fractured and angled. Field stone is not acceptable.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Haul roads: construct and maintain haul roads.

### **3.2 PLACEMENT AND INSTALLATION**

- .1 Armour Stone
  - .1 Place each armour stone in stable position with general arrangement as shown on the Contract Drawings.
  - .2 The stone shall be placed in such a way that the whole structure will be bound and consolidated to as great an extent as the nature of the rock will allow.
    - .1 Rock to be placed in a random, but stable fashion.
  - .3 Placing shall be done in such a manner that the surface of the armour stone treated slope shall have a random appearance.
  - .4 Place armour stone to lines, grades, slopes and dimensions as indicated on the drawings.
  - .5 Place armour stone in thickness courses to total layer thickness as shown on drawings.
  - .6 Placement not deemed acceptable must be removed and replaced.

### **3.3 SITE TOLERANCES**

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

- .2 Armour Stone: plus or minus 300 mm.

### **3.4 CLEANING**

- .1 Progress Cleaning.
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

### **3.5 PROTECTION**

- .1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance by Contract Administrator.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 32 93 10 – Trees, shrubs and Ground Cover Planting.

**1.2                PAYMENT**

- .1            Payment for topsoil will be lump sum.

**1.3                REFERENCES**

- .1            Agriculture and Agri-Food Canada
  - .1            The Canadian System of Soil Classification, Third Edition, 1998.
- .2            Canadian Environmental Assessment Act, 2012.

**1.4                DEFINITIONS**

- .1            Compost:
  - .1            Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
  - .2            Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.
  - .3            Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below (25) (50)), and contain no toxic or growth inhibiting contaminants.
  - .4            Composed bio-solids to: CCME Guidelines for Compost Quality, Category (A). Category (B) compost not acceptable.

**1.5                ACTION AND INFORMATIONAL SUBMITTALS**

- .1            Quality control submittals to Parks Canada environmental Surveillance Officer:
  - .1            Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**1.6                WASTE MANAGEMENT AND DISPOSAL**

- .1            Separate waste materials for reuse/recycling.
- .2            Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

**Part 2            Products**

**2.1                TOPSOIL**

- .1            Topsoil shall be salvaged from site.

- .2 Imported topsoil to be approved by Parks Canada Environmental Surveillance Officer.

## **2.2 SEED**

- .1 Canada "Certified" seed, "Parks Canada Seed Mix" by DLF Pickseed.
  - .1 Mixture composition:
    - .1 5% Canada Anemone (*Anemone canadensis*).
    - .2 70% Fowl Bluegrass (*Poa palustris*).
    - .3 5% Fowl Mannagrass (*Glyceria striata*).
    - .4 10% Fringed Sedge (*Carex crinita*)
    - .5 5% Spotted Joe Pye Weed (*Eupatorium maculatum*)
    - .6 5% Canada Avens (*Geum canadense*)

## **2.3 SOURCE QUALITY CONTROL**

- .1 Advise Contract Administrator of sources to be utilized.
- .2 Contractor is responsible for amendments to supply topsoil as specified.

## **Part 3 Execution**

### **3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control plan, specific to site, that complies with Environmental Protection measures identified in the Canadian Environmental Assessment Act (CEAA), 2012.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### **3.2 PREPARATION OF EXISTING GRADE**

- .1 Verify that grades are correct.
  - .1 If discrepancies occur, notify Contract Administrator and do not commence work until instructed by Contract Administrator.

### **3.3 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL**

- .1 Place topsoil after Contract Administrator has accepted Armour Stone placement.
- .2 Place topsoil onto Armour Stone allowing material to fill voids.
- .3 Once voids are filled, spread topsoil in uniform layers not exceeding 150 mm.

### **3.4 FINISH GRADING**

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.

- .1 Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by Contract Administrator.
- .1 Leave surfaces smooth, uniform and firm against deep foot printing.

**3.5 ACCEPTANCE**

- .1 Contract Administrator will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

**3.6 SURPLUS MATERIAL**

- .1 Dispose of materials not required where directed by Parks Canada Agency (PCA) staff.

**3.7 CLEANING**

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

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1        Section 31 23 33.01 – Excavating, Trenching and Backfilling
- .2        Section 32 91 19.13 – Topsoil Placement and Grading

**1.2                DELIVERY, STORAGE AND HANDLING**

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

**1.3                WARRANTY**

- .1        The warranty period for transplanted trees and shrubs shall be 12 months.
- .2        Contractor hereby warrants that transplanted trees and shrubs will remain free of defects for 1 full growing season, providing adequate maintenance has been provided.
- .3        End-of-warranty inspection will be conducted by Contract Administrator.
- .4        Contract Administrator reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

**Part 2            Products**

**2.1                PLANT MATERIAL**

- .1        Trees and shrubs to be transplanted from site as directed by Parks Canada Agency (PCA) staff.

**2.2                WATER**

- .1        Free of impurities that would inhibit plant growth.

**2.3                STAKES**

- .1        Wood, pointed one end, 38 x 38 x 2300 mm.

**2.4                WIRE TIGHTENER**

- .1        Type 1:galvanized steel, stamped plate type, rod, triangular shape.
- .2        Type 2: turnbuckle, galvanized steel, 9.5 mm diameter with 270 mm open length.

**2.5                GUYING WIRE**

- .1        Type 1: steel, 3 mm wire.
- .2        Type 2: 1.5 mm diameter multi-wire steel cable.
- .3        Type 3: 3 mm diameter multi-wire steel cable.

## **2.6 CLAMPS**

- .1 U-bolt: galvanized, 13 mm diameter, c/w curved retaining bar and hex nuts.
- .2 Crimp type.

## **2.7 ANCHORS**

- .1 Wood:
  - .1 Type 1: 38 x 38 x 460 mm.
  - .2 Type 2: 38 x 67 x 600 mm.

## **2.8 GUYING COLLAR**

- .1 Tube: plastic, 13 mm diameter, nylon reinforced.

## **2.9 FLAGGING TAPE**

- .1 Fluorescent.

# **Part 3 Execution**

## **3.1 PRE-PLANTING PREPARATION**

- .1 Remove damaged roots and branches from plant material.
- .2 Temporary Erosion and Sedimentation Control:
  - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control plan, specific to site, that complies with Environmental Protection measures identified in the Canadian Environmental Assessment Act (CEAA), 2012.
  - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
  - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

## **3.2 EXCAVATION AND PREPARATION OF PLANTING BEDS**

- .1 Preparation of planting beds in accordance with Section 32 91 19.13 - Topsoil Placement and Grading.
- .2 For individual planting holes:
  - .1 Stake out location and obtain approval from Parks Canada Agency (PCA) staff prior to excavating.
  - .2 Excavate to depth and width as indicated.
  - .3 Remove rocks, roots, debris and toxic material from excavated material that will be used as planting soil for trees and individual shrubs. Dispose of excess material.
  - .4 Scarify sides of planting hole.



- .5 Remove water which enters excavations prior to planting.

### 3.3 PLANTING

- .1 For trees and shrubs:
  - .1 Backfill soil in 150 mm lifts.
    - .1 Tamp each lift to eliminate air pockets.
    - .2 When two thirds of depth of planting pit has been backfilled, fill remaining space with water.
    - .3 After water has penetrated into soil, backfill to finish grade.
  - .2 Form watering saucer as indicated.
- .2 For ground covers, backfill soil evenly to finish grade and tamp to eliminate air pockets.
- .3 Water plant material thoroughly.
- .4 After soil settlement has occurred, fill with soil to finish grade.

### 3.4 TREE SUPPORTS

- .1 Install tree supports as indicated.
- .2 Use single stake tree support for deciduous trees less than 3 m in height and evergreens less than 2 m in height.
  - .1 Place stake on prevailing wind side and 150 mm minimum from trunk.
  - .2 Drive stake 150 mm minimum into undisturbed soil beneath roots.
    - .1 Ensure stake is secure, vertical and unsplit.
  - .3 Install 150 mm long guying collar 1500 mm above grade.
  - .4 Thread Type 1 guying wire through guying collar tube.
    - .1 Twist wire to form collar and secure firmly to stake. Cut off excess wire.
- .3 Use 3 guy wires and anchors for deciduous trees greater than 3 m in height and evergreens greater than 2 m in height.
  - .1 Use Type 2 guying wire with clamps for trees less than 75 mm in diameter and Type 3 guying wire with clamps for trees greater than 75 mm in diameter.
  - .2 Use Type 1 anchors for trees less than 75 mm in diameter and Type 2 anchors for trees greater than 75 mm in diameter.
  - .3 Install guying collars above branch to prevent slipping at approximately 2/3 height for evergreens and 1/2 height for deciduous trees. Collar mounting height not to exceed 2.5 m above grade.
  - .4 Guying collars to be of sufficient length to encircle tree plus 50 mm space for trunk clearance. Thread guy wire through collar encircling tree trunk and secure to lead wire by clamp or multi-wraps; cut wire ends close to wrap. Spread lead wires equally proportioned about trunk at 120 degrees.
  - .5 Install anchors at equal intervals about tree and away from trunk so guy wire will form 45 30 degree angle with ground. Install anchor at angle to achieve maximum resistance for guy wire.

- .6 Attach guy wire to anchors. Tension wire and secure by multi-wraps or installing clamps.
- .7 Install wire tightened ensuring that guys are secure and leave room for slight movement of tree.
- .8 Saw tops off wooden anchors which extend in excess of 100 mm above grade or as directed by Contract Administrator.
- .9 Install flagging tape to guys as indicated.
- .4 After tree supports have been installed, remove broken branches with clean, sharp tools.

### **3.5 MAINTENANCE DURING ESTABLISHMENT PERIOD**

- .1 Perform following maintenance operations from time of planting to acceptance by Contract Administrator at end of project.
  - .1 Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
    - .1 For evergreen plant material, water thoroughly in late fall prior to freeze-up to saturate soil around root system.
    - .2 For non-mulched areas, cultivate as required to keep top layer of soil friable.
    - .3 Keep guy wires in proper repair and adjustment.
    - .4 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

### **3.6 CLEANING**

- .1 Progress Cleaning:
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment from site.

**END OF SECTION**