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1503 PPNP – Marsh Area Renewal Project – Phase 1

Point Pelee National Park

FEBRUARY 1, 2018

Contract Documents and Specifications

(Issued for Tender)

Prepared For;

Southwestern Ontario Field Unit
Point Pelee National Park

Prepared by;



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SUMMARY OF WORK

Part 1 General**1.1 WORK COVERED BY CONTRACT DOCUMENTS**

- .1 Work of this Contract comprises general construction of Marsh Area Renewal – Phase 1, located at Point Pelee National Park, Leamington, Ontario.

1.2 CONTRACT METHOD

- .1 Construct Work under single combined price contract.

1.3 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work, for storage, and for access, to allow:
 - .1 Parks Canada Agency (PCA) occupancy.
 - .2 Partial Parks Canada Agency (PCA) occupancy.
 - .3 Work by other contractors.
 - .4 Public usage.
- .2 Co-ordinate use of premises under direction of Departmental Representative or Designate.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative or Designate.
- .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.4 EXISTING SERVICES

- .1 Notify, Departmental Representative or Designate and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative or Designate 48hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance.
- .3 Provide alternative routes for personnel and vehicular traffic.

SUMMARY OF WORK

- .4 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative or Designate of findings.
- .5 Submit schedule to and obtain approval from Departmental Representative or Designate for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services to maintain critical building and tenant systems.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise Departmental Representative or Designate and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.
- .11 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 DOCUMENTS REQUIRED

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

Part 2 Products**2.1 NOT USED**

- .1 Not used.

SUMMARY OF WORK

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

WORK RESTRICTIONS

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 applicable 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 Departmental Representative or Designate 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 sanitary facilities for use by Contractor's personnel.
- .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 and normal use of premises. Arrange with Departmental Representative or Designate to facilitate execution of work.

1.4 EXISTING SERVICES

- .1 Notify, Departmental Representative or Designate and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative or Designate 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for personnel and vehicular traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

WORK RESTRICTIONS

1.5 SPECIAL REQUIREMENTS

- .1 Work (including noise generating) may occur sunrise to sunset, 7 days a week, with permission from the Departmental Representative. Work after hours or on holidays may also be granted with permission from the Departmental Representative.
- .2 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
- .3 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .4 Keep within limits of work and avenues of ingress and egress.
- .5 Ingress and egress of Contractor vehicles at site as instructed by Departmental Representative or Designate.

1.6 SECURITY CLEARANCES

- .1 Personnel will be provided a park pass to gain access to the park, from sunrise to sunset.

1.7 BUILDING SMOKING ENVIRONMENT

- .1 Smoking is not permitted on the construction site - a smoking area outside of the site may be designated with permission from the Departmental Representative.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

PAYMENT PROCEDURES FOR TESTING LABORATORY SERVICES

Part 1 General**1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE**

- .1 Particular requirements for inspection and testing to be carried out by qualified testing Departmental Representative or Designate specified under various sections.

1.2 APPOINTMENT AND PAYMENT

- .1 Departmental Representative or Designate will appoint and pay for services of testing laboratory except followings:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests specified to be carried out by Contractor under the supervision of Departmental Representative or Designate.
 - .6 Additional tests specified as follows:
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative or Designate to verify acceptability of corrected work.

1.3 CONTRACTOR'S RESPONSIBILITIES

- .1 Provide labour, equipment and facilities to:
 - .1 Provide access to Work for inspection and testing.
 - .2 Facilitate inspections and tests.
 - .3 Make good Work disturbed by inspection and test.
 - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative or Designate sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative or Designate.

PAYMENT PROCEDURES FOR TESTING LABORATORY SERVICES

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

PROJECT MEETINGS

Part 1 General**1.1 ADMINISTRATIVE**

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative or Designate.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative or Designate.
- .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 Reproduce and distribute copies of minutes within three days after meetings and transmit to 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.

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 Departmental Representative or Designate, the Consultant, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Agenda 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 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

PROJECT MEETINGS

- .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .7 Parks Canada Agency (PCA) provided products.
- .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work and 2 weeks prior to project completion, schedule progress meetings in weekly basis and/or as directed by the Departmental Representative or Designate.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative or Designate are to be in attendance.
- .3 Notify parties minimum 4 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.

PROJECT MEETINGS

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

SUBMITTAL PROCEDURES

Part 1 General**1.1 ADMINISTRATIVE**

- .1 Submit to Departmental Representative or Designate 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 Departmental Representative or Designate. 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 Departmental Representative or Designate, 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 Departmental Representative or Designate's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative or Designate 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 shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in 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

SUBMITTAL PROCEDURES

adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

- .4 Allow 15 days for Departmental Representative or Designate's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative or Designate are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative or Designate prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative or Designate may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative or Designate in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in high definition PDF format, 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.

SUBMITTAL PROCEDURES

- .9 After Departmental Representative or Designate's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative or Designate may reasonably request.
- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative or Designate where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative or Designate.
 - .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 electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative or Designate.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative or Designate.
 - .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 electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative or Designate.
 - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit electronic copies of Operation and Maintenance Data and manuals for requirements requested in specification Sections and as requested by Departmental Representative or Designate.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative or Designate, 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.

SUBMITTAL PROCEDURES

1.3 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative or Designate's business address.
- .3 Notify Departmental Representative or Designate in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative or Designate are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative or Designate prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative or Designate may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 CERTIFICATES AND TRANSCRIPTS

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

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

ENVIRONMENTAL, WILDLIFE AND ARCHAEOLOGICAL PROTECTION

Part 1 General

1. No go zone will be identified by the PCA Archaeologist (these are areas where archaeological remains exist and will need to be avoided).
2. If significant features (i.e., structural remains and/or high artifact concentrations) are encountered during construction activities, excavation should cease in the immediate area, and the Department Representative be informed. The Departmental Representative or Designate should then contact Parks Canada's Terrestrial Archaeology section for advice and assessment of significance, which will in turn determine the requirements to mitigate the find.
3. Excavation of any sort outside of the approved boardwalk area is prohibited and must be approved by the Parks Canada Terrestrial Archaeologist.
4. If human remains are encountered during construction activities, excavation should cease in the immediate area, and the Department Representative or Designate be informed immediately.
5. An archaeological consultant may monitor excavation activities, for each day of monitoring 1hr will be allocated so that the archaeologist can record profiles and findings. No claims will be entertained for delays up to 1hr. Contractor to submit records of all delays to the Departmental Representative or Designate for review.
6. The site is known to be archeologically sensitive. Some or all excavation activities may be monitored by Parks Canada Archeologists (PCA). Stop work immediately as directed by Archeologist and await direction on how to proceed. The Contractor is to allow for the allotment of a total of twenty (20) hours of down time over the duration of the project to account for any unexpected archeological details. No claims will be entertained for delays up to this upset limit. Contractor to submit records of all delays to the Departmental Representative or Designate for review.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

HEALTH AND SAFETY REQUIREMENTS

Approved: 2013-06-30

Part 1 General**1.1 REFERENCES**

- .1 Province of Ontario
 - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. - Updated 2005.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit 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 Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports authority having jurisdiction, weekly. Departmental Representative or Designate Departmental Representative or Designate
- .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 WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 47 15 - Sustainable Requirements: Construction and Section 02 81 01 - Hazardous Materials.
- .7 Departmental Representative or Designate Departmental Representative or Designate will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 3 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative or Designate Departmental Representative or Designate within 3 days after receipt of comments from Departmental Representative or Designate Departmental Representative or Designate.
- .8 Departmental Representative or Designate'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.
- .9 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 Departmental Representative or Designate Departmental Representative or Designate.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

HEALTH AND SAFETY REQUIREMENTS

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award. Contractor to submit written acknowledgement to CSST along with Ouverture de Chantier Notice.
- .3 Work zone locations include:
 - .1 Limits of proposed work as indicated on drawings.
- .4 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

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 Departmental Representative or Designate Departmental Representative or Designate prior to commencement of Work.

1.6 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.7 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 Departmental Representative or Designate may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 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 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- .3 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.

HEALTH AND SAFETY REQUIREMENTS

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.

1.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative or Designate Departmental Representative or Designate verbally and in writing.
- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Ontario having jurisdiction and advise Departmental Representative or Designate verbally and in writing.

1.11 POSTING OF DOCUMENTS

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

1.12 CORRECTION OF NON-COMPLIANCE

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

1.13 BLASTING

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

1.14 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative or Designate Departmental Representative or Designate.

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.

HEALTH AND SAFETY REQUIREMENTS

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

REGULATORY REQUIREMENTS

Part 1 General

1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

1.3 NATIONAL PARKS ACT

- .1 Perform Work in accordance with National Parks Act when projects are located within boundaries of National Park.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

QUALITY CONTROL

Part 1 General**1.1 INSPECTION**

- .1 Allow Departmental Representative or Designate 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 Departmental Representative or Designate instructions, 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 Departmental Representative or Designate will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Departmental Representative or Designate will engage, as required, independent inspection/testing agencies for purpose of quality assurance only, that is, verify and validate contractor's quality control process for construction materials, workmanship, environmental protection, waste disposal, etc. Contractor is responsible for quality control. Employment of inspection/testing agencies does not relax responsibility to perform work in accordance with contract documents. Cost of such services will be borne by Departmental Representative or Designate.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative or Designate at no cost to Departmental Representative or Designate. Parks Canada Agency to pay costs for retesting and re-inspection.

1.3 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.

QUALITY CONTROL

1.4 PROCEDURES

- .1 Notify appropriate inspection/testing agency through Departmental Representative or Designate 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.

1.5 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 Departmental Representative or Designate resulted from inspection/testing and 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 Departmental Representative or Designate it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Parks Canada Agency (PCA) 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.

1.6 REPORTS

- .1 Submit 2 copies of inspection and test reports to Departmental Representative or Designate.
- .2 Provide copies to subcontractor of work being inspected or tested.

1.7 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 Departmental Representative or Designate and may be authorized as recoverable.

1.8 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Departmental Representative or Designate.
- .3 Prepare mock-ups for Departmental Representative or Designate review with reasonable promptness and in orderly sequence, to not cause delays in Work.

QUALITY CONTROL

- .4 Failure to prepare mock-ups 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.
- .5 If requested, Departmental Representative or Designate will assist in preparing schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative or Designate.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.9 MILL TESTS

- .1 Submit mill test certificates as requested.

1.10 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical systems.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

TEMPORARY UTILITIES

Part 1 General**1.1 INSTALLATION AND REMOVAL**

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

1.2 DEWATERING

- .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water. Confirm acceptable drainage locations with Parks Canada Agency (PCA).

1.3 WATER SUPPLY

- .1 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- .2 Pay for utility charges at prevailing rates.

1.4 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Maintain temperatures of minimum 10degrees C in areas where construction is in progress.
- .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

TEMPORARY UTILITIES

- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .6 Permanent heating system of building, to be used when available. Be responsible for damage to heating system if use is permitted.
- .7 On completion of Work for which permanent heating system is used, replace filters.
- .8 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Departmental Representative or Designate.
- .9 Pay costs for maintaining temporary heat, when using permanent heating system.
- .10 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .11 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.5 TEMPORARY POWER AND LIGHT

- .1 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .2 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Departmental Representative or Designate.
- .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.
- .4 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative or Designate provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.6 FIRE PROTECTION

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

TEMPORARY UTILITIES

- .2 Burning rubbish and construction waste materials is not permitted on site.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

- .1 01 57 13 Temporary Erosion and Sedimentation Control

END OF SECTION

CONSTRUCTION FACILITIES

Part 1 General**1.1 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.

1.2 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, temporary stairs and similar temporary works.

1.3 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.

1.4 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of Work and Park operation.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways and taxi areas where used by Contractor's equipment.

1.5 SECURITY

- .1 Contractor to provide construction fencing and lock it at end of shift daily.

1.6 OFFICES

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

CONSTRUCTION FACILITIES

- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices to be approved by Departmental Representative or Designate.

1.7 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.

1.8 SANITARY FACILITIES

- .1 Contractors are allowed to utilize the facilities in the marsh boardwalk parking lot (north entrance), as well as facilities at northwest beach (across the road from the boardwalk).
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.9 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.
- .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 off site on completion of project or earlier if directed by Departmental Representative or Designate.

1.10 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 Departmental Representative or Designate.
- .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.

CONSTRUCTION FACILITIES

- .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 as 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 or Designate.
- .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 or Designate.

1.11 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution

- .1 01 57 13 Temporary Erosion and Sediment Control

END OF SECTION

TEMPORARY BARRIERS AND ENCLOSURES

Part 1 General**1.1 INSTALLATION AND REMOVAL**

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

1.2 CONSTRUCTION FENCE

- .1 Erect temporary site enclosures using 1.8m high fence panels, installed as per manufacturers instructions or approved alternate.
- .2 Provide two lockable truck entrance/exit gates and at least one pedestrian gate as directed and conforming to applicable traffic restrictions on adjacent street. Equip gates with locks and keys.
- .3 Maintain public side of enclosure in clean condition.
- .4 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.3 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 similar hazards.
- .2 Provide as required by governing authorities.

1.4 ACCESS TO SITE

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

1.5 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.

1.6 FIRE ROUTES

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

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

TEMPORARY BARRIERS AND ENCLOSURES

- .2 Be responsible for damage incurred.

1.8 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 Be responsible for damage incurred due to lack of or improper protection.

1.9 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

TEMPORARY EROSION AND SEDIMENTATION CONTROL

Part 1 Execution

1.1 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 requirements of authorities having jurisdiction.
- .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

COMMON PRODUCT REQUIREMENTS

Part 1 General**1.1 REFERENCES**

- .1 SPEC NOTE: Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative or Designate reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative or Designate in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 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 Departmental Representative or Designate 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.

1.3 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.

COMMON PRODUCT REQUIREMENTS

- .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, lumber and other moisture sensitive materials 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 Departmental Representative or Designate.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative or Designate's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Parks Canada Agency (PCA) will be paid for by Parks Canada Agency. Unload, handle and store such products.

1.5 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 Departmental Representative or Designate in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative or Designate will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative or Designate to require removal and re-installation at no increase in Contract Price or Contract Time.

1.6 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

COMMON PRODUCT REQUIREMENTS

Departmental Representative or Designate if required Work is such as to make it impractical to produce required results.

- .2 Do not employ anyone unskilled in their required duties. Departmental Representative or Designate 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 Departmental Representative or Designate, whose decision is final.

1.7 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.8 CONCEALMENT

- .1 Before installation inform Departmental Representative or Designate if there is interference. Install as directed by Departmental Representative or Designate.

1.9 REMEDIAL WORK

- .1 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.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative or Designate of conflicting installation. Install as directed.

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.

COMMON PRODUCT REQUIREMENTS

- .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 Departmental Representative or Designate.

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, and pedestrian and vehicular traffic.
- .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.

COMMON PRODUCT REQUIREMENTS

END OF SECTION

EXAMINATION AND PREPARATION

Part 1 General**1.1 QUALIFICATIONS OF SURVEYOR**

- .1 Qualified registered land surveyor, licensed to practice in Province of Ontario, acceptable to Departmental Representative or Designate.

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 and approval of Departmental Representative or Designate.
- .4 Report to Departmental Representative or Designate 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 lines and levels, locate and lay out, by instrumentation.
- .2 Stake for grading, fill and landscaping features.
- .3 Stake slopes and berms.
- .4 Establish pipe invert elevations.
- .5 Stake batter boards for foundations.
- .6 Establish foundation column locations and floor elevations.
- .7 Establish lines and levels for mechanical and electrical work.

1.4 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative or Designate of findings.
- .2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as per the contract document and/or directed by Departmental Representative or Designate.

EXAMINATION AND PREPARATION

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 Departmental Representative or Designate 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 Departmental Representative or Designate.

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 SUBMITTALS

- .1 Submit name and address of Surveyor to Departmental Representative or Designate.
- .2 On request of Departmental Representative or Designate, submit documentation to verify accuracy of field engineering work.
- .3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

EXECUTION

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.

EXECUTION

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 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .7 Restore work with new products in accordance with requirements of Contract Documents.
- .8 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .9 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

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**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

CLEANING AND WASTE PROCESSING

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 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative or Designate. Do not burn waste materials on site, unless approved by Departmental Representative or Designate.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Clean separated materials such as gravel, sod and soil will be accepted by Parks Canada Agency (PCA) upon review.
- .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.

CLEANING AND WASTE PROCESSING

- .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 Departmental Representative or Designate. Do not burn waste materials on site, unless approved by Departmental Representative or Designate.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .11 Sweep and wash clean paved areas.
- .12 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .13 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .14 Remove snow and ice from access to building.

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.

CLEANING AND WASTE PROCESSING

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

Part 1 General**1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative or Designate to review and discuss PCA's Waste Management Plan and Goals.
- .2 Waste Management Goal: Divert as much Project Waste as possible from landfill sites. Provide Departmental Representative or Designate documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Accomplish maximum control of solid construction waste.
- .4 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 **Materials Source Separation Program (MSSP):** consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .4 **Recyclable:** ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .5 **Recycle:** process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6 **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.
- .7 **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.
- .8 **Salvage:** removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .9 **Separate Condition:** refers to waste sorted into individual types.

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

- .10 **Source Separation:** acts of keeping different types of waste materials separate beginning from first time they became waste.
- .11 **Waste Audit (WA):** detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.
- .12 **Waste Management Co-ordinator (WMC):** contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .13 **Waste Reduction Workplan (WRW):** written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (Schedule A).

1.3 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
 - .1 Waste Audit.
 - .2 Waste Reduction Workplan.
 - .3 Material Source Separation Plan.
 - .4 Schedules A, B completed for project.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Submit 2 copies of completed Waste Audit (WA): Schedule A.
 - .2 Submit 2 copies of completed Waste Reduction Workplan (WRW): Schedule B.
 - .3 Submit 2 copies of Materials Source Separation Program (MSSP) description.
- .3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using deconstruction/disassembly material audit form.
 - .1 Failure to submit could result in hold back of subsequent progress claim and/or final payment.
 - .2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.
 - .3 For each material reused, sold or recycled from project, include amount in tonnes or quantities by number, type and size of items, and the destination.
 - .4 For each material land filled or incinerated from project, include amount in tonnes of material and identity of landfill, incinerator or transfer station.

1.5 WASTE AUDIT (WA)

- .1 Conduct WA prior to project start-up.

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

- .2 Prepare WA: Schedule A.
- .3 Record, on WA - Schedule A, extent to which materials or products used consist of recycled or reused materials or products.

1.6 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare WRW prior to project start-up.
- .2 WRW should include but not limited to:
 - .1 Destination of materials listed.
 - .2 Deconstruction/disassembly techniques and sequencing.
 - .3 Schedule for deconstruction/disassembly.
 - .4 Location.
 - .5 Security.
 - .6 Protection.
 - .7 Clear labelling of storage areas.
 - .8 Details on materials handling and removal procedures.
 - .9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.
- .3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .4 Describe management of waste.
- .5 Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA.
- .6 Post WRW or summary where workers at site are able to review content.
- .7 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.
- .8 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.

1.7 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 Prepare MSSP and have ready for use prior to project start-up.
- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative or Designate.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated material[s] in area[s] which minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
 - .1 Transport to approved and authorized recycling facility.
- .8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
 - .1 Ship materials to site operating under Certificate of Approval.
 - .2 Materials must be immediately separated into required categories for reuse or recycling.

1.8 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative or Designate.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect surface drainage, mechanical and electrical from damage and blockage.
- .4 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.

1.9 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste volatile materials into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage generated.
 - .4 Tonnage reused or recycled.
 - .5 Reused or recycled waste destination.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

1.10 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.

1.11 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 Do Work in compliance with WRW.
- .2 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 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative or Designate, and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas.
 - .2 Provide instruction on disposal practices.
- .2 On-site sale of recyclable material[s] is not permitted.
- .3 Construction Waste:

Material Type

Recommended Diversion %

Actual Diversion %

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100	<input type="text"/>
Plastic Packaging	100	<input type="text"/>
Rubble	100	<input type="text"/>
Steel	100	<input type="text"/>
Wood (uncontaminated)	100	<input type="text"/>
Other		<input type="text"/>

3.4 WASTE AUDIT (WA)

.1 Schedule A - Waste Audit (WA):

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) % Recycled	(7) % Reused
Wood and Plastics Material Description						
Off-cuts						
Warped Pallet Forms						
Plastic Packaging						
Cardboard Packaging						
Other						
Doors and Windows Material Description						
Painted Frames						
Glass						
Wood						
Metal						
Other						

3.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B:

(1) Material Category	(2) Person(s) Responsible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material(s) Destination

CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

(1) Material Category	(2) Person(s) Respon- sible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material(s)) Destina- tion
Wood and Plastics Material Description							
Chutes							
Warped Pallet Forms							
Plastic Packaging							
Card- board Packaging							
Other							
Doors and Windows Material Description							
Painted Frames							
Glass							
Wood							
Metal							
Other							

3.6 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Schedule E - Government Chief Responsibility for the Environment:

Province	Address	General Inquires	Fax
Ontario	Ministry of Environment and Energy, 135 St. Clair Avenue West Toronto ON M4V 1P5	416-323-4321 800- 565-4923	416-323-4682
	Environment Canada Toronto ON	416-734-4494	

END OF SECTION

CLOSEOUT PROCEDURES

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 Departmental Representative or Designate in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative or Designate inspection.
 - .2 Departmental Representative or Designate Inspection:
 - .1 Departmental Representative or Designate, Consultant 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 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Operation of systems: demonstrated to Parks Canada Agency's (PCA) personnel.
 - .5 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative or Designate.
 - .2 When Work incomplete according to Departmental Representative or Designate, complete outstanding items and request re-inspection.

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.

CLOSEOUT PROCEDURES

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

CLOSEOUT SUBMITTALS

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative or Designate, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Departmental Representative or Designate to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .2 Departmental Representative or Designate to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative or Designate, four final copies of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.3 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

CLOSEOUT SUBMITTALS

- .5 Arrange content by systems under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in acceptable electronic format on CD.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

1.5 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, at site for Departmental Representative or Designate 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.

CLOSEOUT SUBMITTALS

- .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 Departmental Representative or Designate.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative or Designate.
- .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 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 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, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

CLOSEOUT SUBMITTALS

1.7 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.
- .2 Additional requirements: as specified in individual specification sections.

1.8 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.9 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative or Designate.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative or Designate.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.

CLOSEOUT SUBMITTALS

- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative or Designate.
 - .2 Include approved listings in Maintenance Manual.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative or Designate.

1.11 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative or Designate approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative or Designate receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative or Designate for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty 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, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties until time specified for submittal.

CLOSEOUT SUBMITTALS

- .7 Except for items put into use with Parks Canada Agency (PCA)'s permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 12 month warranty inspection, measured from time of acceptance, by Departmental Representative or Designate.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include HVAC balancing, pumps, motors, transformers, and commissioned systems.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
 - .4 Contractor's plans for attendance at 12 month post-construction warranty inspections.
 - .5 Procedure and status of tagging of equipment covered by extended warranties.
 - .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.

CLOSEOUT SUBMITTALS

- .1 Failure to respond will be cause for the Departmental Representative or Designate to proceed with action against Contractor.

1.12 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative or Designate.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

DEMONSTRATION AND TRAINING

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Demonstrate operation and maintenance of equipment and systems to Parks Canada Agency (PCA)'s personnel two weeks prior to date of interim completion.
- .2 Parks Canada Agency (PCA): provide list of personnel to receive instructions, and coordinate their attendance at agreed-upon times.
- .3 Preparation:
 - .1 Verify conditions for demonstration and instructions comply with requirements.
 - .2 Verify designated personnel are present.
 - .3 Ensure equipment has been inspected and put into operation.
 - .4 Ensure testing, adjusting, and balancing has been performed and equipment and systems are fully operational.
- .4 Demonstration and Instructions:
 - .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.
 - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .3 Review contents of manual in detail to explain aspects of operation and maintenance.
 - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks] prior to designated dates, for Departmental Representative or Designate's approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

DEMONSTRATION AND TRAINING

1.3 QUALITY ASSURANCE

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Parks Canada Agency (PCA)'s personnel.
 - .2 Provide written report that demonstration and instructions have been completed.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

SELECTIVE SITE DEMOLITION

1.1 MEASUREMENT AND PAYMENT

- .1 Measurement Procedures.
 - .1 Measure removal of base and sub-base pavement materials in cubic metres in place.
 - .2 Measure removal of culverts, pipe sewers and drains in metres regardless of diameter.
 - .1 End points of measurements will be at centres of maintenance holes or catch basins or open ends of pipes, as applicable.
 - .3 Measure removal of fences, curbs, guard rails in metres.
 - .4 Payment for disposal recycling. Excavating, backfilling and restoration will be included in above removal items.
 - .5 Measure removal of waste from site in tonnes.

1.2 REFERENCES

- .1 Definitions:
 - .1 Demolition: rapid destruction of building following removal of hazardous materials.
 - .2 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCB's, CFC's, HCFC's poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.
 - .3 Waste Audit (WA): detailed inventory of materials in building. Indicates quantities of reuse, recycling and landfill.
 - .1 Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project.
 - .2 Indicates quantities of reuse, recycling and landfill.
 - .4 Waste Management Coordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
 - .5 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.
 - .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .7 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Site Meetings.

SELECTIVE SITE DEMOLITION

- .1 Convene pre-demolition meeting one week prior to beginning in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building sub-trades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
 - .2 Arrange for site visit with Departmental Representative or Designate to examine existing site conditions adjacent to demolition work, prior to start of Work.
 - .3 Ensure key personnel attend.
 - .4 Reporting Requirements: WMC to complete.
 - .5 WMC must provide verbal report on status of waste diversion activity at each meeting.
 - .6 Departmental Representative or Designate will provide verbal notification of change of meeting schedule established upon contract award 24 hours prior to scheduled meeting.
- .2 Scheduling: meet project time lines without compromising specified minimum rates of material diversion.
- .1 Notify Departmental Representative or Designate when unforeseen delays occur.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada
 - .2 Submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, where required by authorities having jurisdiction.
- .3 Hazardous Materials:
 - .1 Provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: ensure Work is performed in compliance with applicable Provincial/Territorial regulations.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Storage and Protection.
 - .1 Protect in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.
 - .2 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval

SELECTIVE SITE DEMOLITION

of Departmental Representative or Designate and at no cost to Departmental Representative or Designate.

- .3 Remove and store materials to be salvaged, in manner to prevent damage.
- .4 Store and protect in accordance with requirements for maximum preservation of material.
- .5 Handle salvaged materials as new materials.

1.7 SITE CONDITIONS

- .1 Site Environmental Requirements.
 - .1 Perform work in accordance with Section 01 35 43 - Environmental Procedures.
 - .2 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
 - .3 Do not dispose of waste of volatile materials including but not limited to, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
 - .1 Ensure proper disposal procedures are maintained throughout the project.
 - .4 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
 - .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.
 - .6 Protect trees, plants and foliage on site and adjacent properties where indicated.
- .2 Existing Conditions.
 - .1 Remove contaminated or hazardous materials listed as hazardous from site, prior to start of demolition Work, and dispose of at designated disposal facilities.

Part 2 Products**2.1 EQUIPMENT**

- .1 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

Part 3 Execution**3.1 PREPARATION**

- .1 Inspect site with Departmental Representative or Designate and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect and Cap Designated Mechanical Services.

SELECTIVE SITE DEMOLITION

- .1 Natural Gas Supply Lines: as directed by Departmental Representative or Designate.
- .2 Sewer and Water Lines: remove as directed by Departmental Representative or Designate and securely plug to form watertight seal.
- .3 Other Underground Services: remove and dispose of as directed by Departmental Representative or Designate.

3.2 REMOVAL OF HAZARDOUS WASTES

- .1 Remove contaminated or dangerous materials defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

3.3 REMOVAL OPERATIONS

- .1 Remove items as indicated.
- .2 Do not disturb items designated to remain in place.
- .3 Removal of pavements, curbs and gutters:
 - .1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Departmental Representative or Designate.
 - .2 Protect adjacent joints and load transfer devices.
 - .3 Protect underlying and adjacent granular materials.
- .4 Prevent contamination with base course aggregates, when removing asphalt pavement for subsequent incorporation into hot mix asphalt concrete paving,
- .5 Excavate at least 300 mm below pipe invert, when removing pipes under existing or future pavement area.
- .6 Decommission water wells and monitoring wells in accordance with Provincial regulations.
- .7 Remove designated trees during demolition.
 - .1 Obtain written approval of Departmental Representative or Designate prior to removal of trees not designated.
- .8 Stockpile topsoil for final grading and landscaping:
 - .1 Provide erosion control and seeding if not immediately used.
- .9 Disposal of Material:
 - .1 Dispose of materials not designated for salvage or reuse on site as instructed by Departmental Representative or Designate.
 - .2 Trim disposal areas to approval of Departmental Representative or Designate.
- .10 Backfill:
 - .1 Backfill in areas as indicated and in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.

SELECTIVE SITE DEMOLITION

3.4 STOCKPILING

- .1 Label stockpiles, indicating material type and quantity.
- .2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.
- .3 Locate stockpiled materials convenient for use in new construction to eliminate double handling wherever possible.
- .4 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

3.5 REMOVAL FROM SITE

- .1 Remove stockpiled material as directed by Departmental Representative or Designate, when it interferes with operations of project.
- .2 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.
- .3 Transport material designated for alternate disposal using approved haulers in accordance with applicable regulations.
- .4 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

3.6 RESTORATION

- .1 Restore areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.
- .2 Use soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Remove debris, trim surfaces and leave work site clean, upon completion of Work
 - .3 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.8 PROTECTION

- .1 Repair damage to adjacent materials or property caused by selective site demolition.

END OF SECTION

STRUCTURAL STEEL

Part 1 GENERAL REQUIREMENTS**1.1 REFERENCES**

- .1 ASTM International Inc.
 - .1 ASTM A36/A36M, Standard Specification for Carbon Structural Steel.
 - .2 ASTM A193/A193M, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature or High-Pressure Service and Other Special Purpose Applications.
 - .3 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .4 ASTM A325, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - .5 ASTM A325M, Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength.
 - .6 ASTM A490M, Standard Specification for High-Strength Steel Structural Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints.
 - .7 ASTM A780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-85.10, Protective Coatings for Metals.
 - .2 CAN/CGSB-1.181 Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturers Association (CPMA).
 - .1 Handbook of the Canadian Institute of Steel Construction.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16, Limit States Design of Steel Structures.
 - .4 CAN/CSA-S136, North American Specifications for the Design of Cold Formed Steel Structural Members.
 - .5 CSA W47.1, Certification of Companies for Fusion Welding of Steel.
 - .6 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding.
 - .7 CSA W55.3, Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
 - .8 CSA W59, Welded Steel Construction (Metal Arc Welding).
- .5 Master Painters Institute
 - .1 MPI-INT 5.1, Structural Steel and Metal Fabrications.
 - .2 MPI-EXT 5.1, Structural Steel and Metal Fabrications.

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- .6 The Society for Protective Coatings (SSPC) and National Association of Corrosion Engineers (NACE) International

- .1 NACE No. 3/SSPC SP-6, Commercial Blast Cleaning.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

- .2 Erection drawings:

- .1 Submit erection drawings indicating details and information necessary for assembly and erection purposes including:

- .1 Description of methods.
 - .2 Sequence of erection.
 - .3 Type of equipment used in erection.
 - .4 Temporary bracings.

- .3 Fabrication drawings:

- .1 Submit fabrication drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in the Province of Ontario, Canada.

- .4 Samples :

- .1 Prepare sample of typical exposed structural connections in accordance with AISC Specifications of Architecturally exposed structural steel for approval of Consultant. Samples to be judged upon alignment of surfaces, uniform contact between surfaces, smoothness and uniformity of finished welds. When approved, sample units will serve as a standard for workmanship, appearance and material acceptable for entire project.

- .5 Source Quality Control Submittals:

- .1 Submit electronic copies of mill test reports 4 weeks prior to fabrication of structural steel.

- .1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.
 - .2 Provide mill test reports certified by metallurgists qualified to practice in Province of Ontario, Canada.

- .6 Fabricator Reports:

- .1 Provide structural steel fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and products standards specified and indicated.

1.3 DELIVERY, STORAGE AND HANDLING

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

- .2 Deliver materials in manufacturer's original, undamaged containers with identification labels intact.

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Part 2 Products**2.1 DESIGN REQUIREMENTS**

- .1 Design details and connections in accordance with requirements of [CAN/CSA-S16 and CAN/CSA-S136 with CSA-S136.1 to resist forces, moments, shears and allow for movements indicated.
- .2 Shear connections:
 - .1 Select framed beam shear connections from an industry accepted publication such as "Handbook of the Canadian Institute of Steel Construction" when connection for shear only (standard connection) is required.
 - .2 Select or design connections to support reaction from maximum uniformly distributed load that can be safely supported by beam in bending, provided no point loads act on beam, when shears are not indicated.
- .3 Submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Ontario, Canada for non-standard connections.
- .4 Connections - General
 - .1 Design in accordance with CSA-S16, Clause 21. - Connections.
 - .2 Connections may be bolted or welded.
 - .3 For structural steel encased in masonry, design connection system so that it is totally concealed within the masonry.
 - .4 For openings, including but not limited to doors and windows, design connection system so that it does not encroach into clear opening.
 - .5 Design connections for end reactions from torsions, moments, shears, and axial loads where indicated.
 - .6 Where no end reactions are indicated design connections on the basis of simple construction for the end reactions of a laterally supported beam of a given span under a uniformly distributed factored load that has attained its maximum moment capacity in accordance with Standardized Shear Connections published by Canadian Institute of Steel Construction (CISC).
 - .7 For beams with intersecting bracing members design connections for beam reactions plus reactions from bracing members.
- .5 Bolted Connections
 - .1 Unless noted otherwise, use bearing type connections with snug-tightened bolts.
 - .2 Where indicated, use slip-critical connections.
 - .3 Use high-strength bolts in accordance with CSA-S16, Clause 22. – Design and Detailing of Bolted Connection.
 - .4 Use clipped double connections where beams of similar size are bolted to both sides of a column at a common location.
 - .5 For bracing and other tension and compression members, design connections, if not finished to bear, to develop the force due to factored loads where indicated, but not less than 50% of strength of the member, in tension or compression, whichever governs.

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- .6 For HSS where no end reactions are indicated design connections to develop not less than 100% of strength of member.
- .7 Design splices for the full strength of the member in torsion, bending, shear, and axial load unless noted otherwise.
- .8 Provide pair of bearing stiffeners on beams at point of concentrated loads.

2.2 MATERIALS

- .1 Structural steel: to CSA-G40.20/G40.21 Grade as indicated and/or CAN/CSA-S136.
- .2 Anchor bolts: to CSA-G40.20/G40.21, Grade 300W ASTM A36/A36M.
- .3 High strength anchor bolts: to ASTM A193/A193M.
- .4 Bolts, nuts and washers: to ASTM A325.
- .5 Welding materials: to CSA W48 Series and certified by Canadian Welding Bureau.
- .6 Shop paint primer: to CISC/CPMA2-75 solvent reducible alkyd, grey.
- .7 Hot dip galvanizing: galvanize steel, where indicated, to CAN/CSA-G164, minimum zinc coating of 600 g/m².

2.3 FABRICATION

- .1 Fabricate structural steel in accordance with CAN/CSA-S16 and in accordance with approved shop drawings.
- .2 Continuously seal members by continuous welds where indicated. Grind smooth.
- .3 Provide holes in flanges or weld threaded studs to flanges for attachment of wood nailers.
- .4 General
 - .1 Fabricate structural steel in accordance with CSA-S16.
 - .2 Verify dimensions prior to commencement of fabrication.
 - .3 Take field measurements of existing conditions required to accurately fabricate members and complete new construction and alterations to existing construction. Do not fabricate until such field measurements have been taken.
 - .4 At panel points on joists and trusses where two or more members are connected, intersect the centroid of each member at a point.
- .5 Welding
 - .1 Weld in accordance with CSA W59. Comply with dimensional tolerances of CSA W59 and ANSI/AWS D1.1.
 - .2 Shop weld unless noted otherwise.
 - .3 Apply for acceptance of supplementary welding.
 - .4 Do not weld at locations where weld is not specified.
- .6 Finish
 - .1 Finish members true to line, free from twists, bends, open joints, sharp corners and sharp edges.
 - .2 Weld and fabricate structural steel members which are permanently exposed at the exterior of the completed structures, such as lintel plates and built up

 STRUCTURAL STEEL

members, and interior members exposed in architecturally finished areas, such as door frames, cover plates, and similar items, in accordance with the following requirements:

- .3 Clean appearance.
 - .4 Snug fit between parts composing built up members.
 - .5 Continuous welds ground smooth.
- .7 Fabrication Tolerances
- .1 Allowable tolerance for bolt holes:
 - .1 Match bolt holes so that a gauge with a diameter matching the nominal diameter of the fastener will pass freely through the assembled members at right angles to such members.
 - .2 Finish holes a maximum of 2 mm in diameter larger than diameter of bolt in accordance with CAN/CSA-S16.1-94, Clause 28.5 - Holes for Bolts or Other Mechanical Fasteners, unless noted otherwise.
 - .3 Limit centre to centre distance between two adjacent holes a maximum of 1 mm from dimensioned distance between such holes.
 - .4 Limit centre to centre distance between any group of holes to the following:

Centre-to-Centre Distance (Metres)	Tolerance +/- (mm)
Less than 10	1
10 to 20	2
Greater than 20	3
 - .5 Do not correct mispunched or misdrilled members. Apply for permission of corrective measures.
- .8 Hot-dip Galvanizing
- .1 Galvanize structural steel where noted in accordance with CSA-G164.
 - .2 Galvanize bolts, nuts, washers, and anchor bolts for connections to galvanized steel in accordance with CSA-G164.
 - .3 Complete fabrication, and prepare surfaces of steel by removing rust, weld spatter, flux and residue, burrs, and surface defects before galvanizing.
 - .4 Tap threads of nuts after galvanizing.

2.4 CATHODIC CORROSION PROTECTION SYSTEM

- .1 Cathodic protection is intended to protect all boardwalk framing beams and joists including entire deck area at base of marsh tower.
- .2 This includes field testing, cathodic protection design, material and installation requirements for sacrificial cathodic protection. All materials and services provided by the contractor shall fully meet the requirement of this specification and shown on the drawings.

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- .3 The contractor shall hire a corrosion consultant to design the cathodic protection system, supply all labour, materials and equipment to complete the work. The contractor and any subcontractor must comply with all local safety requirements.
- .4 Field testing shall be conducted to analyze the water electrical resistivity and determine the cathodic protection current requirements.
- .5 The cathodic protection system shall have a service life of minimum 25 years. The corrosion consultant shall prepare and submit cathodic protection drawings and specifications.
- .6 References:
 - .1 NACE Standard SP0169-200, Control of External Corrosion on Underground or Submerged Metallic Piping Systems
 - .2 NACE Standard SP0176-2007, Corrosion Control of Submerged Areas of Permanently Installed Steel Offshore Structure Associated with Petroleum Production.
- .7 The corrosion cathodic protection system shall be designed, signed and sealed by a professional engineer licensed/registered in the province of Ontario and certified as a Cathodic Protection Specialist by NACE International.

Part 3 Execution**3.1 APPLICATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 GENERAL

- .1 Structural steel work: in accordance with CAN/CSA-S16.
- .2 Welding: in accordance with CSA W59.
- .3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.

3.3 CONNECTION TO EXISTING WORK

- .1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Consultant for direction before commencing fabrication.

3.4 MARKING

- .1 Mark materials in accordance with CSA G40.20/G40.21. Do not use die stamping. When steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.
- .2 Match marking: shop mark bearing assemblies and splices for fit and match.

STRUCTURAL STEEL

3.5 ERECTION

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16 and in accordance with approved erection drawings.
- .2 Provide and maintain temporary bracing required to provide stability for the overall steel frame and or individual members, to successfully complete the erection. Leave bracing in place until permanent bracing is in place.
- .3 Field cutting or altering structural members: to approval of Consultant.
- .4 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.
- .5 Continuously seal members by continuous welds where indicated. Grind smooth.
- .6 Bolting
 - .1 Tighten bolts to a snug-tight condition, unless noted otherwise, in accordance with CSA-S16, Clause 23 – Installation and Inspection of Bolted Joints.
 - .2 Do not reuse bolts that have undergone tightening and loosening more than two times. Replace such bolts with new ones.
 - .3 Install galvanized washer under bolt head and nut when using galvanized bolts.
- .7 Field Welding
 - .1 Fit parts together true to line and level.
 - .2 In cold weather preheat parts prior to welding.
- .8 Alterations in the Field of Shop Fabricated Members
 - .1 Do not alter or cut structural members in the field without written permission.
- .9 Alterations to Existing Structures
 - .1 Refer to information shown on drawings.
- .10 Repair hot-dip galvanized surfaces damaged by welding, cutting, handling during shipping or erection, or otherwise, in accordance with ASTM A780 using a zinc-rich coating. Dry film thickness on repairs to exceed original coating thickness by 25% minimum.

3.6 FIELD QUALITY CONTROL

- .1 Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by Departmental Representative.
- .2 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Departmental Representative.
- .3 Submit test reports to Departmental Representative within 2 weeks of completion of inspection.
- .4 Departmental Representative will pay costs of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.
- .5 Test shear studs in accordance with CSA W59.

STRUCTURAL STEEL

3.7 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

METAL FABRICATION

Part 1 GENERAL REQUIREMENTS**1.1 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A36M Specification for Structural Steel.
 - .2 ASTM A48 Specification for Gray Iron Castings.
 - .3 ASTM A53/A53M, Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.
 - .4 ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - .5 ASTM A325, Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - .6 ASTM A153 Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - .7 ASTM A563M Specification for Carbon and Alloy Steel Nuts.
 - .8 ASTM A570M Specification for Hot Rolled Carbon Steel Sheet and Strip, Structural Quality.
 - .9 ASTM A611 Specification for Steel, Cold Rolled Sheet, Carbon, Structural.
 - .10 ASTM A780 Practice for Repair of Hot Dip Galvanized Coatings.
 - .11 ASTM F738-M Specification for Stainless Steel Metric Bolts, Screws and Studs.
 - .12 ANSI/NAAMM MBG 531-88/NAAMM Metal Bar Grating Material.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.40 97, Anti corrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB 1.181 99, Ready Mixed, Organic Zinc Rich Coating.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA G40.20/G40.21 04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164 M92(C2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA S16 01, Limit States Design of Steel Structures.
 - .4 CSA W47.1 Certification of Companies for Fusion Welding of Steel Structures.
 - .5 CSA W48 06, Filler Metals and Allied Materials for Metal Arc Welding.
 - .6 CSA W59 03, Welded Steel Construction (Metal Arc Welding) Metric.
- .4 The Environmental Choice Program
 - .1 CCD 047a 98, Paints, Surface Coatings.
 - .2 CCD 048 98, Surface Coatings Recycled Water borne.

1.2 SUBMITTALS

- .1 Product Data:

METAL FABRICATION

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

1.3 SYSTEM REQUIREMENTS

- .1 Design Requirements:
 - .1 Design miscellaneous metal items in accordance with applicable standards.
 - .2 Design work of this Section, which will support other items or will be required to support structural loads of any nature, by a professional structural engineer licensed in the Province of Ontario. Affix professional seal and signature to shop drawings for such items.
 - .3 Design connections and splices using high strength bolts or welds. Use bearing type bolts for bolted connections.
 - .4 Design connections for moments, shears and axial loads indicated or specified.
 - .5 Where no moments, shears or axial loads are indicated design in accordance with CSA S16 requirements for Simple Construction. Design connection for greater than half the shear capacity of the member unless indicated otherwise.
 - .6 Design connection for Hollow Structural Sections to develop full strength of member in tension or compression.
 - .7 Unless design loads are indicated, design splices for the full strength of the member in bending, shear and axial load.
 - .8 Unless design loads are indicated, design end connections and/or splices in bracing members for the full axial strength of the member.
 - .9 Where overlapping or contacting surfaces cannot be avoided, completely seal weld these surfaces. Where there is any evidence of rusting or deterioration of finish in such areas, carry out remedial seal welding and refinishing.
 - .10 Design aluminum work to CSA S157 and CSA W59.2.

1.4 QUALITY ASSURANCE

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre installation Meetings: Conduct pre installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .4 Submit certificate that companies which will be welding stainless steel are CSA accepted and comply with CSA W47.1 and W59.

METAL FABRICATION

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Storage and Protection:
 - .1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.
 - .2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

Part 2 Products**2.1 MATERIALS**

- .1 Comply with the National Building Code of Canada and relevant CSA Specifications. Ensure materials are free from scale, buckles, pits and other defects.
- .2 Steel sections and plates: to CAN/CSA G40.20/G40.21, Grade 350W.
- .3 Steel pipe: to ASTM A53/A53M standard weight black finish.
- .4 Welding materials: to CSA W59.
- .5 Welding electrodes: to CSA W48 Series.
- .6 Anchor bolts: to CAN/CSA G40.20/G40.21, Grade 300W or ASTM A307.
- .7 Bolts, nuts and washers: to ASTM A325.
- .8 Where anchors, lifting hooks, screws, bolts, nuts, washers, hangers and other fasteners are not specifically shown or specified, provide such items with at least the strength and corrosion resistance properties of the metal fabrication for which they are required.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self tapping shake proof flat oval headed screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

METAL FABRICATION

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to CAN/CSA G164.
- .2 Shop coat primer: to CAN/CGSB 1.40.
- .3 Zinc primer: zinc rich, ready mix to CAN/CGSB 1.181.
- .4 Exterior painting to Section 09 97 19 - Painting Exterior Metal Surfaces.
- .5 Following the completion of fabrication of any item, grind rough edges straight and finish smooth. Remove all mill scale and rust.
- .6 Backpaint metal surfaces in contact with dissimilar metal or concrete with bituminous paint.
- .7 Carbon steel to be hot-dip galvanized.
- .8 Hot dip galvanize items after fabrication. Galvanize steel scheduled for exposure to exterior conditions or corrosive metals.
- .9 Clean surfaces to be galvanized of slag and impurities immediately before being galvanized.
- .10 Where specified or detailed, galvanize plates and structural shapes in accordance with CSA G164. Where fabrications are too large to be hot-dipped, employ zinc metallizing.
- .11 Repair hot-dip galvanized coatings damaged by welding, cutting, rough handling during shipping or erection or otherwise, in accordance with ASTM A780 using organic zinc rich primer. Dry film thickness on repairs to exceed original coating thickness by 25%.

2.4 ISOLATION COATING

- .1 Isolate aluminum from following components, by means of bituminous paint:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.
 - .3 Wood.

2.5 ANCHORS AND FASTENERS

- .1 Where such structural connections will be normally exposed to atmospheric conditions use ASTM A325 carbon steel bolts hot-dip galvanized to ASTM A153.
- .2 Unless otherwise specified or detailed use hot dip galvanized or stainless steel anchors and fasteners.
- .3 Use corrosion resistant fasteners of stainless steel or aluminum for corrosion resistant items to be fastened.
- .4 Nuts: ASTM A563 and the recommended nut grade and style listed in Appendix X1, Table X1 thereof. Where connections will be normally exposed to atmospheric conditions use Grade C3 or DH3.
- .5 Washers: Bolted connections hardened steel washers conforming to ASTM F436. Hot dip galvanized washers with galvanized or cadmium plated bolts.
- .6 Drilled anchors: Hilti stainless steel HVA, HSL, or Kwik bolts as indicated or accepted.

METAL FABRICATION

- .7 Anchor grout for submerged and exterior conditions: Epoxy acrylate resin HVA by Hilti Ltd.

2.6 STEEL STAIR TREADS

- .1 Supply and install grating type steel stairs as indicated on the Drawings.
- .2 Treads to follow existing stair tread locations and be attached to existing wood stringers.
- .3 Stairs to be open riser type with grating treads, landing and connection designed to support a minimum uniform live load of 4.8 kPa in addition to dead load of the work.
- .4 Grating for stair treads: Welded, galvanized steel grating, 19-W-4 with ALGRIP slip resistant surface.
- .5 Treads to include grating manufacturer's standard cast abrasive safety nosings and welded lugs for bolting to stringers. Include safety nosing to be retrofitted on existing wood landing edges at stairs.
- .6 Nosing to overlap preceding tread by 28mm.
- .7 All members to be welded or bolted into a rigid, structurally sound unit with the existing structure.
- .8 All welds to be ground and buffed smooth.

2.7 GALVANIZED STEEL PIPE RAIL

- .1 Supply and install all pipe rails to locations as shown on the Drawings. Design pipe rails and anchorage of system to accommodate loadings required by code.
- .2 Fabricate pipe rail of standard weight schedule 40 galvanized steel pipe with an outside diameter of 42mm.
- .3 Height of pipe handrails and guardrails to be as indicated on the contract drawings.
- .4 Pipe rails shall be fabricated with all joints neatly and accurately fitted, welded and buffed smooth.
- .5 Touch up any damage to galvanized surface in the field.
- .6 All members as indicated on the drawings for a complete handrail system an anchorage to the wood structure to be galvanized steel.

Part 3 Execution**3.1 ERECTION**

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

METAL FABRICATION

- .5 Provide components for building by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CAN/CSA S16.1, or weld.
- .7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .8 Touch up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .9 Touch up galvanized surfaces with zinc rich primer where burned by field welding.
 - .1 For submerged conditions where bolts are used, use lock nuts or nuts with lock washer.

3.2 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

.3

ROUGH CARPENTRY

Part 1 GENERAL REQUIREMENTS**1.1 RELATED SECTIONS**

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

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
- .2 Canadian Standards Association (CSA International)
 - .1 CSA B111, Wire Nails, Spikes and Staples.
 - .2 CSA O112 Series, CSA Standards for Wood Adhesives.
 - .3 CSA O121, Douglas Fir Plywood.
 - .4 CSA O141 05, Softwood Lumber.
 - .5 CSA O151 04, Canadian Softwood Plywood.
- .3 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber.

1.3 SUBMITTALS

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

1.4 QUALITY ASSURANCE

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, particleboard and wood based composite panels in accordance with CSA standards.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .2 Store materials in dry locations, leave 150mm clearance to floor.

Part 2 Products**2.1 FRAMING AND STRUCTURAL MATERIALS**

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% (S dry) or less in accordance with following standards:
 - .1 CSA O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.

ROUGH CARPENTRY

- .2 Pressure treated lumber: CSA 080.1, to average net retention of 4.0 kg/m³ of CCA preservative.
- .3 Framing and board lumber: in accordance with NBC.
- .4 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:
 - .1 Board sizes: "Standard" or better grade.
 - .2 Dimension sizes: "Standard" light framing or better grade.
 - .3 Post and timbers sizes: "Standard" or better grade.

2.2 ACCESSORIES

- .1 Nails, spikes and staples: to CSA B111.
- .2 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

2.3 FASTENER FINISHES

- .1 Galvanizing: to CAN/CSA G164, use galvanized fasteners for exterior and fire retardant treated lumber.

2.4 WOOD PRESERVATIVE

- .1 SCAQMD Rule #1113 - Architectural Coatings.
- .2 Maximum allowable VOC limit 350g/L.

Part 3 Execution**3.1 PREPARATION**

- .1 Store wood products.

3.2 INSTALLATION

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Install spanning members with "crown edge" up.
- .4 Select exposed framing for appearance. Install lumber and panel materials so that grade marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- .5 Install furring and blocking as required to space out and support casework, cabinets, electrical equipment mounting boards, and other work as required.
- .6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .7 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

ROUGH CARPENTRY

- .8 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.
- .9 Construct for expansion and contraction of materials.
- .10 After cutting and fitting, but before installation, apply one flood coat of wood preservative to cut surfaces including ends, of blocking, furring, strapping, nailers, plywood and other rough carpentry.

3.3 ERECTION

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.

END OF SECTION

WOOD DECKING

Part 1 General**1.1 REFERENCES**

- .1 ASTM International
 - .1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 CSA International
 - .1 CSA B111-74, Wire Nails, Spikes and Staples.
 - .2 CAN/CSA O80 Series, Wood Preservation.
 - .3 CSA O86 Consolidation, Engineering Design in Wood.
 - .4 CAN/CSA-Z809, Sustainable Forest Management.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for wood decking and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
- .4 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit 2 300 x 300 mm samples of each type.
- .5 Certifications: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical properties.

1.3 QUALITY ASSURANCE

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Sustainable Standards Certification:

WOOD DECKING

- .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements 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 off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect wood decking from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products**2.1 MATERIALS**

- .1 Wood decking: to NLGA standard Grading Rules for Canadian Lumber commercial grade Western Red Cedar. Kiln dry decking to 15% maximum moisture content.
 - .1 CAN/CSA-Z809 or FSC or SFI certified.
- .2 Decking lengths: 2.0 to 6 m or longer with a minimum of 90% planks. Square end trimmed. For single spans shorter than 3 m use decking of same length as span.
- .3 Nails: to CSA B111, hot dipped galvanized finish; sizes to CSA O86. Supply 200 mm spiral spikes for lateral nailing.
- .4 Splines: galvanized metal, as recommended by decking manufacturer.
- .5 Wood preservative: odourless type to CSA O80 for natural finish.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for wood decking installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative or Designate.
 - .2 Inform Departmental Representative or Designate of unacceptable conditions immediately upon discovery.

WOOD DECKING

- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative or Designate.

3.2 INSTALLATION

- .1 Do wood deck work to CSA O86 except where specified otherwise.
- .2 Install decking to CSA O86, simple span pattern.
- .3 Supply minimum of 1 bearing support for each plank. Install sloping deck with tongues up. Join butt ends with splines to assure tight square fit.
- .4 Stagger end joints in adjacent planks minimum of 0.5 m.
 - .1 Separate joints in same area by at least 2 intervening courses.
 - .2 Avoid joints in first fifth of end spans.
 - .3 Minimize joints in middle third of span.
- .5 Apply preservative to end cuts of pressure treated lumber.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse, recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

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

END OF SECTION

CLEARING AND GRUBBING

Part 1 General

1.1 N/A

Part 2 Products

2.1 N/A

Part 3 Execution

- .1 PCA will be responsible for removing all vegetation.
- .2 If any clearing is needed, contact PCA representative.

END OF SECTION

SOIL STRIPPING AND STOCKPILING

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 31 22 13 – Rough Grading

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.

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.

3.2 STRIPPING OF TOPSOIL

- .1 Ensure that procedures are conducted in accordance with applicable Provincial requirements.
- .2 Remove topsoil before construction procedures commence to avoid compaction of topsoil.
- .3 Handle topsoil only when it is dry and warm.
- .4 Remove vegetation from targeted areas by non-chemical means and dispose of stripped vegetation by alternative disposal.
- .5 Remove brush from targeted area by non-chemical means and dispose of through alternative disposal.
- .6 Strip topsoil to depths as indicated by Departmental Representative or Designate.
 - .1 Avoid mixing topsoil with subsoil.

SOIL STRIPPING AND STOCKPILING

- .7 Pile topsoil in berms in locations as directed by Departmental Representative or Designate.
 - .1 Stockpile height not to exceed 2.5 - 3 m.
- .8 Dispose of unused topsoil off-site.
- .9 Protect stockpiles from contamination and compaction.
- .10 Cover topsoil that has been piled for long term storage, with trefoil or grass to maintain agricultural potential of soil.

3.3 PREPARATION OF GRADE

- .1 Verify that grades are correct and notify Departmental Representative or Designate. If discrepancies occur, do not begin work until instructed by Departmental Representative or Designate.
 - .1 Grade area only when soil is dry to lessen soil compaction.
 - .2 Grade soil establishing natural contours and eliminating uneven areas and low spots, ensuring positive drainage.

3.4 PLACING OF TOPSOIL

- .1 Place topsoil only after Departmental Representative or Designate has accepted subgrade.
- .2 Spread topsoil during dry conditions in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.
- .3 Establish traffic patterns for equipment to prevent driving on topsoil after it has been spread to avoid compaction.
- .4 Cultivate soil following spreading procedures.

3.5 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

ROUGH GRADING

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 31 14 13 - Soil Stripping
Section 32 91.13 - Topsoil Placement

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM D698-07e1, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
- .2 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations (including Addendum 2007).
 - .2 LEED Canada-NC-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for New Construction and Major Renovations 2009.
 - .3 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Commercial Interiors.
 - .4 LEED Canada-EB: O M-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Existing Buildings: Operations and Maintenance 2009.
- .3 Underwriters' Laboratories of Canada (ULC)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 EXISTING CONDITIONS

- .1 Examine subsurface investigation report which is bound into specifications.
- .2 Known underground and surface utility lines and buried objects are as indicated on site plan.

Part 2 Products**2.1 MATERIALS**

- .1 Excavated or graded material existing on site suitable to use as fill for grading work if approved by Departmental Representative or Designate.

ROUGH GRADING

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 rough grading installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative or Designate.
 - .2 Inform Departmental Representative or Designate of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative or Designate.

3.2 STRIPPING OF TOPSOIL

- .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Departmental Representative or Designate.
- .2 Commence topsoil stripping of areas as indicated by Departmental Representative or Designate after area has been cleared of brush, weeds, and grasses and removed from site.
- .3 Strip topsoil to depths as indicated by Departmental Representative or Designate. Rototill weeds and grasses and retain as topsoil on site. Avoid mixing topsoil with subsoil.
- .4 Stockpile in locations as indicated by Departmental Representative or Designate. Stockpile height not to exceed 2 m.
- .5 Dispose of unused topsoil off site.

3.3 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Slope rough grade away from building 1:50 minimum.
- .3 Grade ditches to depth as indicated.
- .4 Prior to placing fill over existing ground, scarify surface to depth of 150 mm minimum before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .5 Compact filled and disturbed areas to corrected maximum dry density to ASTM D698, as follows:
 - .1 85% under landscaped areas.
 - .2 98% under paved and walk areas.
- .6 Do not disturb soil within branch spread of trees or shrubs to remain.

ROUGH GRADING

3.4 TESTING

- .1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by ULC. Costs of tests will be paid under a Cash Allowance in accordance with Sections 01 29 83 - Payment Procedures for Testing Laboratory Services and 01 45 00 - Quality Control.
- .2 Submit testing procedure, frequency of tests, testing laboratory as designated by ULC or certified testing personnel to Departmental Representative or Designate for review.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

- .1 Protect all structures, fencing, trees, landscaping, natural features, bench marks, buildings, pavement, and surface or underground utility lines which are to remain as directed by Departmental Representative or Designate. If damaged, restore to original or better condition unless directed otherwise.
- .2 Maintain access roads to prevent accumulation of construction related debris on roads.

END OF SECTION

EXCAVATING, TRENCHING AND BACKFILLING

Part 1 GENERAL REQUIREMENTS**1.1 RELATED REQUIREMENTS**

- .1 Section 354219 Preservation of Water Courses and Wetlands
- .2 Section 311100 Clearing and Grubbing
- .3 311413 Soil Stripping and Stockpiling
- .4 320190-33 Tree and Shrub Preservation

1.2 MEASUREMENT PROCEDURES

- .1 Excavated materials will be measured in cubic metres in their original location.
 - .1 Excavation quantities measured will be actual volume removed within following limits:
 - .1 Width for trench excavation as indicated.
 - .2 Width for excavation for structures as indicated.
 - .3 Depth from ground elevation immediately prior to excavation, to elevation as indicated or as directed by Departmental Representative.

1.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.
 - .5 ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - .6 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001, Cementitious Materials for Use in Concrete.
 - .2 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

EXCAVATING, TRENCHING AND BACKFILLING

- .4 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.

1.4 DEFINITIONS

- .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials.
- .8 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.
- .9 No excavation is to occur without the written permission of the Parks Canada Terrestrial Archaeologist.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control:
 - .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
 - .2 Submit to Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
 - .3 Submit to Departmental Representative written notice when bottom of excavation is reached.
 - .4 Submit to Departmental Representative testing and inspection results as described in PART 3 of this Section.
- .3 Preconstruction Submittals:

EXCAVATING, TRENCHING AND BACKFILLING

- .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
- .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field and clearance record from utility authority and location plan of relocated and abandoned services, as required.

1.6 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.
- .2 Submit design and supporting data at least 2 weeks prior to beginning Work.
- .3 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Ontario, Canada.
- .4 Keep design and supporting data on site.
- .5 Engage services of qualified professional Engineer who is registered or licensed in Province of Ontario, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.
- .6 Do not use soil material until written report of soil test results are reviewed and approved by Departmental Representative.
- .7 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Divert excess aggregate materials from landfill as directed by Departmental Representative.

1.8 EXISTING CONDITIONS

- .1 Examine soil report entitled "Proposed Marsh Area Renewal Point Pelee National Park Leamington ON" by Stantec dated December 13, 2016.
- .2 Buried services:
 - .1 Before commencing work establish location of buried services on and adjacent to site.
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
 - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
 - .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .5 Prior to beginning excavation Work, Contractor is to notify applicable Departmental Representative and establish location and state of use of buried utilities and structures. Departmental Representative to clearly mark such locations to prevent disturbance during Work.

EXCAVATING, TRENCHING AND BACKFILLING

- .6 Confirm locations of buried utilities by careful test excavations or soil hydrovac methods.
- .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
- .8 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing.
- .9 Record location of maintained, re-routed and abandoned underground lines.
- .10 Confirm locations of recent excavations adjacent to area of excavation.
- .3 Existing buildings and surface features:
 - .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
 - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative
 - .3 Where required for excavation, cut roots or branches as directed by Departmental Representative in accordance with Section 32 01 90.33 - Tree and Shrub Preservation.

Part 2 Products**2.1 MATERIALS**

- .1 Type 1 and Type 2 fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:
 - .1 Crushed, pit run or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to ASTM C136 ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
 - .3 Table:

Sieve Designation	% Passing	
Type 1	Type 2	
75 mm	-	[100]
50 mm	-	-
37.5 mm	-	-
25 mm	[100]	-
19 mm	[75-100]	-
12.5 mm	-	-
9.5 mm	[50-100]	-
4.75 mm	[30-70]	[22-85]
2.00 mm	[20-45]	-
0.425 mm	[10-25]	[5-30]
0.180 mm	-	-
0.075 mm	[3-8]	[0-10]

EXCAVATING, TRENCHING AND BACKFILLING

- .2 Type 3 fill: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.
- .3 Unshrinkable fill: proportioned and mixed to provide:
 - .1 Maximum compressive strength of 0.4 MPa at 28 days.
 - .2 Maximum cement content of 25 kg/m³ with 40 by volume fly ash replacement: to CSA-A3001, Type GU.
 - .3 Minimum strength of 0.07 MPa at 24 h.
 - .4 Concrete aggregates: to CSA-A23.1/A23.2.
 - .5 Cement: Type GU.
 - .6 Slump: 160 to 200 mm.
- .4 Geotextiles: to Section 31 32 19.01 - Geotextiles.

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 requirements of authorities having jurisdiction.
- .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 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly in accordance with Section 02 41 13 - Selective Site Demolition.

3.3 PREPARATION/PROTECTION

- .1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative approval.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .5 Protect buried services that are required to remain undisturbed.

EXCAVATING, TRENCHING AND BACKFILLING

3.4 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as indicated after area has been cleared of brush, weeds, grasses and removed from site.
- .2 Strip topsoil to depths as directed by Departmental Representative.
 - .1 Do not mix topsoil with subsoil.
- .3 Stockpile in locations as directed by Departmental Representative.
 - .1 Stockpile height not to exceed 2 m and should be protected from erosion.
- .4 Dispose of unused topsoil off site.

3.5 STOCKPILING

- .1 Stockpile fill materials in areas designated by Departmental Representative.
 - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.6 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Construct temporary Works to depths, heights and locations as indicated and directed by Departmental Representative.
- .3 During backfill operation:
 - .1 Unless otherwise indicated or directed by Departmental Representative, remove sheeting and shoring from excavations.
 - .2 Do not remove bracing until backfilling has reached respective levels of such bracing.
 - .3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.
- .4 When sheeting is required to remain in place, cut off tops at elevations as indicated.
- .5 Upon completion of substructure construction:
 - .1 Remove cofferdams, shoring and bracing.
 - .2 Remove excess materials from site and restore watercourses as directed by Departmental Representative.

3.7 EXCAVATION

- .1 Advise Departmental Representative at least 7 days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as indicated.

EXCAVATING, TRENCHING AND BACKFILLING

- .3 Remove obstructions encountered during excavation in accordance with Section 02 41 13 - Selective Site Demolition.
- .4 Excavation must not interfere with bearing capacity of adjacent foundations.
- .5 Do not disturb soil within branch spread of trees or shrubs that are to remain.
 - .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .6 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.
- .7 Restrict vehicle operations directly adjacent to open trenches.
- .8 Dispose of surplus and unsuitable excavated material off site.
- .9 Do not obstruct flow of surface drainage or natural watercourses.
- .10 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .11 Notify Departmental Representative when bottom of excavation is reached.
- .12 Obtain Departmental Representative approval of completed excavation.
- .13 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.

3.8 BACKFILLING

- .1 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .2 Do not use backfill material which is frozen or contains ice, snow or debris.
- .3 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

3.9 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Replace topsoil as directed by Departmental Representative.
- .3 Reinstate lawns to elevation which existed before excavation.
- .4 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .5 Clean and reinstate areas affected by Work as directed by Departmental Representative.
- .6 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

HELICAL PILE DEEP FOUNDATION

Part 1 GENERAL REQUIREMENTS

- 1.1 The work covered by this section includes the furnishing of all labour, materials, and equipment for the construction of the helical piles/anchors as specified within the Contract Documents.
- 1.2 Contractor is fully responsible for installation of the piles in the locations as indicated on the Contract drawings. Note that many installations are located in the marsh and will need to be installed in the water. Take care to not disturb wildlife or other natural elements during installation process.

Part 2 APPROVED HELICAL PILE/ANCHOR MANUFACTURER

- 2.1 Approved manufacturer of the helical piles/anchors is Chance Civil Construction, 210 North Allen Street, Centralia MO, 65240, Phone (573) 682-8414, Fax (573) 682-8660, Email: civilconstruction@hps.hubbell.com.
- 2.2 A request to substitute any other manufactured helical product must be submitted to the Parks Canada Agency's (PCA) representative for review not less than seven (7) calendar days prior to the tender closing date. If a substitution of helical pile/anchor material is not approved in writing from the Parks Canada Agency's (PCA) representative prior to closing that manufactured helical product cannot be included in the final tender submission. Inclusion of a non-approved helical manufacturer may result in tender disqualification. The request must include all the following information to be considered:
- .1 Documentation of at least five (5) years of production experience manufacturing helical piles,
 - .2 Documentation that the manufacturer's helical piles have been used successfully in at least five engineered construction projects within the last three years,
 - .3 Documentation that the helical pile/anchor manufacturer has a current Evaluation Report completed by Canadian Construction Materials Center (CCMC),
 - .4 Certificate that the helical pile/anchor components shall be manufactured by a facility whose quality systems comply with ISO (International Organization of Standards) 9001 requirements, and
 - .5 Documentation that the helical pile/anchor components shall be hot-dipped galvanized in accordance with ASTM A153
 - .6 Design drawings sealed by a professional engineer of Ontario stating the proposed helical pile and associated geotechnical resistance factor. It is recommended that the geotechnical resistance factor be taken from the most recent version of the Canadian Foundation Engineering manual.
 - .7 Documentation that all materials meet the requirements specified elsewhere within the contract documents.

HELICAL PILE DEEP FOUNDATION

2.3 Helical Pile/Anchor Installer Qualifications

- .1 Installation shall be completed by a contractor who is certified by the pile manufacturer to install the material.

Part 3 SUBMITTALS

- 3.1 In accordance with the General Conditions of the Contract and Division 1 Submittal Procedures Section.
- 3.2 One (1) set of site specific shop drawings sealed by a registered Professional Engineer in the province of Ontario. Shop drawings shall include:
 - .1 Helical Pile/Anchor number, location, and pattern by assigned identification number
 - .2 Helical Pile/Anchor design load
 - .3 Assumed geotechnical resistance factor
 - .4 Type and Size of Helical Pile/Anchor shaft
 - .5 Helical configuration (number and diameter of helical plates)
 - .6 Minimum effective torque requirement
 - .7 Grout column diameter and length
 - .8 Connection details

HELICAL PILE DEEP FOUNDATION

- 3.3 Calibration reports for installation equipment utilized on the project. The calibration tests shall have been completed within one year of the date submitted.
- 3.4 The Contractor shall submit plans for pre-production test(s) for the helical piles/anchors to the Parks Canada Agency (PCA) and the Department Representative or designate for review and acceptance prior to beginning load tests, as specified elsewhere within this specification. The purpose of the test is to determine the load versus displacement response of the helical pile/anchor in general conformance with ASTM D1143 Quick Test Method and provide an estimation of ultimate capacity.
- 3.5 After completion of the test(s) piles/anchors the Contractor shall submit the results to the Parks Canada Agency (PCA) and the Department Representative or designate for approval to begin production helical pile/anchor installation.
- 3.6 After completion of the installation of the helical piles/anchors, the Contractor shall provide the Parks Canada Agency (PCA) and the Department Representative or designate with a report of all helical piles/anchors installed on the project certifying the ultimate load capacity of the piles/anchors installed, sealed by a Professional Engineer registered in the province of Ontario.

Part 4 MATERIALS**4.1 Helical Piles**

- .1 SS175 1-3/4"(44 mm); SS200 2"(51 mm); SS225 2-1/4"(57 mm) Material: Hot rolled Round-Cornered-Square (RCS) solid steel bars meeting the dimensional and workmanship requirements of ASTM A29. The bar is a High Strength Low Alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size. Torque strength rating: SS175 = 11,000 ft-lb (14,900 N-m); SS200 = 16,000 ft-lb (21,700 N-m); SS225 = 21,000 ft-lb (28,475 N-m); Minimum yield strength = 90 ksi (621 MPa).

4.2 Custom Support Brackets

- .1 Custom support brackets to be designed and fabricated for support and connection of the boardwalk framing to the helical pier section, refer to contract drawings. Bracket is to be welded to the helical pier pipe section and fabricated such that steel boardwalk framing may be bolted securely to it and transfer loads to the helical pier. Brackets to be hot-dipped galvanized to ASTM A-153 and fabricated from minimum 6.4mm thick hot rolled steel.

4.3 Corrosion Protection

- .1 All helical pile shafts and helices shall be hot-dipped galvanized in accordance with ASTM A153 after fabrication.

4.4 Grouting Material

- .1 Cement for Helical Pulldown Micropile grout shall be Type G Portland cement conforming to CSA A3000 Cementitious Material Compendium.

HELICAL PILE DEEP FOUNDATION

- .2 Water for mixing grout shall be potable, clean and free from impurities, which may be detrimental to grout or steel. Potable water shall be available in quantities sufficient to mix grout and for equipment clean-up.
- .3 Sand fillers may be used in the grout mix as an extender with large diameter grout columns, subject to the approval of the engineer. Use fine sand only. Medium or coarse sand not be permitted. Small diameter grout columns shall not include aggregate.

Part 5 EXAMINATION AND ACCEPTANCE OF SITE CONDITIONS

- 5.1 General Contractor shall inspect, accept and certify in writing to the helical pile/anchor subcontractor that site conditions meet specifications for the following items prior to installation of the helical piles/anchors;
 - .1 Verify sub-grade preparation and elevations conform to the specified requirement.
 - .2 Verify location, alignment, and elevations of helical piles/anchors.
 - .3 Verify location, alignment, and elevations of any services within work area.
 - .4 The General Contractor shall verify that all helical piles/anchors may be installed in accordance with all pertinent codes and regulations regarding such items as underground obstructions, right-of-way limitations, utilities, etc.
 - .5 In the event of a discrepancy, the General Contractor shall notify the Parks Canada Agency (PCA). The General Contractor shall not proceed with helical pile/anchor installation in areas of discrepancies until said discrepancies have been resolved. All costs associated with unresolved discrepancies shall be the responsibility of the Parks Canada Agency (PCA).
 - .6 Do not proceed with installation of helical piles/anchors until sub-grade soil conditions are corrected by the General Contractor.

Part 6 INSTALLATION

- 6.1 A torque indicator shall be used during helical pile/anchor installation. The torque indicator can be an integral part of the installation equipment or externally mounted in-line with the installation tooling. Torque indicators shall meet requirements set forth by helical pile/anchor manufacturer.
- 6.2 If the helical pile/anchor is refused or deflected by a subsurface obstruction, the installation shall be terminated and the pile removed. The obstruction shall be removed, if feasible, and the helical pile/anchor re-installed. If the obstruction cannot be removed, the helical pile/anchor shall be installed at an adjacent location, subject to review and acceptance of the Parks Canada Agency (PCA).
- 6.3 If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to proper positioning of the last plain extension section relative to the final elevation, the contractor may remove the last plain extension and replace it with a shorter length extension. If it is not feasible to remove the last plain extension, the

HELICAL PILE DEEP FOUNDATION

Contractor may cut said extension shaft to the correct elevation. The Contractor shall not reverse (back-out) the helical pile/anchor to facilitate extension removal.

- 6.4 The Contractor shall record the torque values for each individual helical pile/anchor at 300mm (1 foot) increments during installation. These records shall be available to the Parks Canada Agency (PCA) at their request.

Part 7 PRE-PRODUCTION LOAD TEST

- 7.1 Perform 2 load test(s) in compression. All load tests shall be completed according to ASTM D1143 Quick Test Method.
- .1 Tested helical piles shall not exceed 25 mm of total movement when loaded to ULS capacity, and no more than 40 mm total movement when loaded to ultimate resistance capacity.

Part 8 FIELD QUALITY CONTROL

- 8.1 Centerline of helical pile/anchor shall not be more than 75 mm (3 inches) from indicated plan location.
- 8.2 Helical pile/anchor plumbness shall be within 2° of design alignment
- 8.3 Top elevation of helical pile/anchor shall be within ±50mm (2 inches) of the design vertical elevation.

END OF SPECIFICATION

TREE AND SHRUB PRESERVATION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 32 93 43.01 - Tree Pruning
Section 31 11 00 - Clearing and Grubbing

1.2 REFERENCES

- .1 Definitions:
 - .1 Mycorrhiza: association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.
- .2 Reference Standards:
 - .1 ASTM International
 - .1 ASTM A1064/A1064M-13, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
 - .2 CSA Group
 - .1 CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
 - .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .2 Fertilizers Act (R.S. 1985, c. F-10).
 - .3 Fertilizers Regulations (C.R.C., c. 666).
 - .4 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
 - .4 Health Canada - Pest Management Regulatory Agency (PMRA)
 - .1 National Standard for Pesticide Education, Training and Certification in Canada (1995).
 - .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Scheduling:
 - .1 Obtain approval from Departmental Representative or Designate of schedule indicating beginning of Work.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for tree and shrub preservation materials and include product characteristics, performance criteria, physical size, finish and limitations.

TREE AND SHRUB PRESERVATION

- .2 Submit monthly written reports on maintenance during warranty period, to Departmental Representative or Designate identifying:
 - .1 Maintenance work carried out.
 - .2 Development and condition of plant material.
 - .3 Preventative or corrective measures required which are outside Contractor's responsibility.
- .3 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

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 Store and protect tree and shrub preservation materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.6 MAINTENANCE DURING WARRANTY PERIOD

- .1 From time of acceptance by Departmental Representative or Designate to end of warranty period, perform following maintenance operations.
 - .1 Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion.
 - .2 Apply pesticides in accordance with National Standard for Pesticide Education, Training and Certification in Canada, Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from Departmental Representative or Designate prior to application.
 - .3 Apply fertilizer in early spring at manufacturer's suggested rate.
 - .4 Remove dead, broken or hazardous branches from plant material and dispose of debris offsite.

Part 2 Products**2.1 MATERIALS**

- .1 Fill:
 - .1 Type (A): clean, natural river sand and gravel material, free from silt, clay, loam, friable or soluble materials and organic matter.

TREE AND SHRUB PRESERVATION

- .2 Type (B): excavated soil, free from roots, rocks larger than 75 mm, building debris, and toxic ingredients (salt, oil, etc). Excavated material shall be approved by Departmental Representative or Designate before use as fill.
- .2 Coarse washed stones: 35-75 mm diameter clean round hard stone.
- .3 Draintile: 100 mm diameter corrugated HDPE perforated tubing complete with snap couplings. Fill vents with 20 mm clear stone.
- .4 Peatmoss:
 - .1 Derived from partially decomposed species of Sphagnum Mosses.
 - .2 Elastic and homogeneous.
 - .3 Free of wood and deleterious material which could prohibit growth.
 - .4 Shredded minimum particle size: 5 mm.
- .5 Fertilizer:
 - .1 To Canada Fertilizer Act and Fertilizers Regulations.
 - .2 Complete, commercial, slow release with 35% of nitrogen content in water-insoluble form.
- .6 Anti-desiccant: commercial, wax-like emulsion.
- .7 Filter Cloth:
 - .1 Type 1: 100 % non-woven needle punched polyester, 2.75 mm thick, 240 g/m² mass.
 - .2 Type 2: biodegradable burlap.
- .8 Cedar posts: 150 DIA x 2400 mm length, steel T-bars 2400 mm length.
- .9 Welded wire fabric (WWF): 100 x 100 mm.

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 tree and shrub preservation installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative or Designate.
 - .2 Inform Departmental Representative or Designate of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative or Designate.

3.2 IDENTIFICATION AND PROTECTION

- .1 Identify plants and limits of root systems to be preserved as approved by Departmental Representative or Designate.

TREE AND SHRUB PRESERVATION

- .2 Protect plant and root systems from damage, compaction and contamination resulting from construction as approved by Departmental Representative or Designate.
- .3 Ensure no pruning is done inside drip line. If pruning inside drip line is required consult an arborist or Canadian Certified Horticultural Technician (CCHT) as approved by Departmental Representative or Designate.

3.3 ROOT CURTAIN SYSTEM

- .1 Identify limits for required construction excavation as approved by Departmental Representative or Designate.
- .2 Prior to construction excavation, dig trench minimum 500 mm wide x 1500 mm deep, along perimeter of excavation limits.
- .3 Prune exposed roots cleanly at side of trench nearest plants to be preserved. Pruned ends to point obliquely downwards.
- .4 Install wooden posts and welded wire fabric against construction edge of trench.
- .5 Securely attach Type 2 filter fabric on plant side of wire mesh.
- .6 Prepare homogeneous mixture of fertilizer, parent material and organic matter.
 - .1 Add organic matter to mixture to achieve 7-9% organic matter content by weight.
 - .2 Incorporate with mixture grade 2:12:8 ratio fertilizer (dry) at rate of 1.5 kg/m³.
- .7 Backfill with homogeneous mixture between curtain wall and plants to be preserved in layers not exceeding 150 mm in depth. Compact each layer to 85% Standard Proctor Density.
- .8 Protect root curtain from damage during construction operations.
- .9 Water plants and root curtain sufficiently during construction to maintain optimum soil moisture condition until backfill operations are complete.
- .10 Remove root curtain during backfill operations.

3.4 AIR LAYERING SYSTEM

- .1 Using manual methods, carefully remove turf, plants, leaves, and organic matter in area of root system, dispose of plant matter offsite and slightly loosen topsoil surface. Avoid damage to root system.
- .2 Lay horizontal system of perforated [recycled content] drain pipe on surface of existing grade.
 - .1 Slope drain tile minimum 2% for drainage away from trunk of tree.
 - .2 Connect system with general site drainage system or drain to low point on site.
- .3 Install plastic vent pipes vertically over joints in horizontal pipe system or where indicated. Top of vent pipe to be 20 mm above finished grade of fill. Keep top of vent pipe covered during construction.
- .4 Cover joints with Type 1 filter fabric and place coarse washed stone around joints and vertical pipes to secure their position.
- .5 Construct drywell around trunk of tree.

TREE AND SHRUB PRESERVATION

- .1 Ensure open ends of horizontal pipe system and vertical vent pipes are left exposed for air circulation to root system.
- .2 Protect openings from blockage during construction.
- .3 Install protective caps on exposed horizontal openings.
- .6 Place 200 mm depth of coarse washed stone on surface of original ground and horizontal pipe system to limits.
- .7 Place Type 1 filter fabric over surface of granular layer.
- .8 Place Type A fill over filter fabric to required depth without disturbing or damaging drain pipe system. Avoid damage to filter fabric.
- .9 Complete topsoil and sodding and/or finished paving over area of sub-surface system within 1 week of placing fill.
- .10 Remove temporary protective covering from vent pipe openings. Install protective caps flush with finished grade.

3.5 TRENCHING AND TUNNELING FOR UNDERGROUND SERVICES

- .1 Centre line location and limits of trench/tunnel excavation to be approved by Departmental Representative or Designate prior to excavation. Tunnel excavation to extend 2000 mm from edge of trunk on either side.
- .2 Excavate manually within zone of root system. Do not sever roots greater than 40 mm diameter except at greater than 500 mm below existing grade. Protect roots, and cut roots cleanly with sharp disinfected tools.
- .3 Excavate tunnel under centre of tree trunk using methods and equipment approved by Departmental Representative or Designate.
- .4 Minimum acceptable depth to top of tunnel: 1000 mm.
- .5 Backfill for tunnel and trench to 85% Standard Proctor Density. Avoid damage to trunk and roots of tree.
- .6 Complete tunnelling and backfilling at tree within 2 weeks of beginning Work.

3.6 LOWERING GRADE AROUND EXISTING TREE

- .1 Begin Work in accordance with schedule approved by Departmental Representative or Designate.
- .2 Cut slope not less than 500]mm from tree trunk to new grade level.
- .3 Excavate to depths as indicated. Protect from damage root zone which is to remain.
- .4 When severing roots at excavation level, cut roots with sharp tools.
- .5 Cultivate excavated surface manually to 15 mm depth.
- .6 Prepare homogeneous soil mixture consisting by volume of:
 - .1 60% excavated soil cleaned of roots, plant matter, stones, debris.
 - .2 25% coarse, clean sterile sand.
 - .3 15% organic matter.
 - .4 Grade 2:12:8 fertilizer at rate of 1.5 kg/m³.

TREE AND SHRUB PRESERVATION

- .7 Place soil mixture over area of excavation to finished grade level. Compact to 85% Standard Proctor Density.
- .8 Water entire root zone to optimum soil moisture level.
- .9 Install surface cover of seeding in accordance with Section 32 92 19.16 - Hydraulic Seeding.

3.7 PRUNING

- .1 Prune in accordance with Section 32 93 43.01 - Tree Pruning.
- .2 Prune crown to compensate for root loss while maintaining general form and character of plant. Dispose of debris offsite.

3.8 ANTI-DESICCANT

- .1 Apply anti-desiccant to foliage where applicable and as directed by [Departmental Representative or Designate.

3.9 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

ROADWAY DUST CONTROL

Approved: 2010-12-31

Part 1 General**1.1 PRICE AND PAYMENT PROCEDURES**

- .1 Measurement and Payment:
- .2 Measure application of calcium chloride in litres applied.
- .3 No extra compensation will be paid for calcium chloride ordered and applied on Saturdays, Sundays or holidays.

1.2 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.
 - .1 Supply calcium chloride in quantities and at times as directed by Departmental Representative or Designate.
 - .2 Deliver calcium chloride to site in moisture-proof bags. Indicate name of manufacturer, name of product, net weight or mass, and percentage of calcium chloride guaranteed by manufacturer.
- .3 Storage and Handling Requirements:
 - .1 Store bags of calcium chloride in weather-proof enclosures.

Part 2 Products**2.1 MATERIALS**

- .1 Calcium chloride, Type I: to CAN/CGSB-15.1, 35% aqueous solution.

Part 3 Execution**3.1 PREPARATION**

- .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.

3.2 APPLICATION

- .1 Apply calcium chloride with equipment approved by Departmental Representative or Designate at rate of 1.3 L/m² for liquid when directed by Departmental Representative or Designate.

ROADWAY DUST CONTROL

- .2 Apply aqueous calcium chloride with distributors equipped with means of shut-off and with spray system to ensure uniform application.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

EXTERIOR SITE FURNISHINGS

- Part 1 General**
- 1.1 RELATED REQUIREMENTS**
- .1 Section 32 16 15 - Concrete Walks, Curbs, and Gutters
- 1.2 REFERENCES**
- .1 CSA International
- .1 CAN/CSA-Z809-08, Sustainable Forest Management.
- .2 Forest Stewardship Council (FSC)
- .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .3 Sustainable Forestry Initiative (SFI)
- .1 SFI-2010-2014 Standard.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS**
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for furniture and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
- .1 Submit shop drawings indicating dimensions, sizes, assembly, anchorage and installation details for each furnishing specified.
- .4 Sustainable Design Submittals:
- 1.4 QUALITY ASSURANCE**
- .1 Sustainable Standards Certification:
- .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.
- 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 Store and protect furnishings from nicks, scratches, and blemishes.

EXTERIOR SITE FURNISHINGS

- .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan.

Part 2 Execution**2.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for exterior site furnishing installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative or Designate.
 - .2 Inform Departmental Representative or Designate of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative or Designate.

2.2 PREPARATION

- .1 Locate and protect utility lines.
- .2 Notify and acquire written acknowledgment from utility authorities before beginning installation Work

2.3 INSTALLATION

- .1 Assemble furnishings in accordance with manufacturer's written recommendations.
- .2 Install furnishing, true, plumb, anchored as indicated by Departmental Representative or Designate.
- .3 Touch-up damaged finishes to approval of Departmental Representative or Designate.

2.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

2.5 PROTECTION

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

EXTERIOR SITE FURNISHINGS

- .2 Repair damage to adjacent materials caused by site furnishings installation.

END OF SECTION

PRESERVATION OF WATER COURSES AND WETLANDS

Part 1 General**1.1 ENVIRONMENTAL REQUIREMENTS**

- .1 Operation of construction equipment in water is prohibited.
- .2 Use borrow material from watercourse beds only after receipt of written approval from Departmental Representative or Designate.
- .3 Design and construct temporary crossings to minimize environmental impact to wetland.
- .4 Constructing temporary crossings of watercourses where spawning beds are indicated is prohibited.
- .5 Dumping excavated fill, waste material, or debris in watercourse or wetland is prohibited.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 EXISTING CONDITIONS**

- .1 Maintain existing flow pattern in natural watercourse systems.
- .2 In natural systems maintain existing riffle pool and step pool patterns.
- .3 In wetland systems, maintain existing hydrological conditions.

3.2 SITE CLEARING AND PLANT PROTECTION

- .1 Reference the Parks Canada Agency (PCA) BIA (Basic Impact Analysis) entitled Marsh Boardwalk Area Renewal Phase 1 BIA final 2018-1-24.
- .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 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.
- .3 Minimize disturbance to vegetated buffer zones and protect trees and plants on site and adjacent properties where indicated.

PRESERVATION OF WATER COURSES AND WETLANDS

- .4 Wrap trees and shrubs adjacent to construction work, storage areas and trucking lanes in burlap.
- .5 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .6 Leave cuttings from trees and other vegetation on site as brush piles to allow for natural degradation.
 - .1 Secure large piles with degradable materials to prevent interference with watercourse.
- .7 Remove only trees that may offer future blockage problems as instructed by Departmental Representative or Designate.
- .8 Leave roots mass and stumps in place.
- .9 Maintain temporary erosion and pollution control features installed under this contract.

3.3 DRAINAGE

- .1 Pumping water containing suspended materials into watercourse is prohibited.
- .2 Establish rock chute spillways to accommodate safe surface water entry to watercourse as directed by Departmental Representative or Designate.
- .3 Install drop pipe inlet system as directed by Departmental Representative or Designate.

3.4 SITE RESTORATION

- .1 Establish vegetated buffer zones with suitable vegetation to minimum 3 m along edge of watercourse banks as determined by Departmental Representative or Designate.
- .2 Plant vegetation natural to area, suitable for application without requirement for fertilizers, pesticides and other chemicals.

END OF SECTION