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Number: R.080100.001		2019-08-09

PROJECT TITLE Big Creek National Wildlife Area
 Visitor's Experience Improvements
 Port Rowan, Ontario

PROJECT NUMBER R.080100.001

PROJECT DATE 2019-08-09

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PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Title and description of Work.
- .2 Contract Method.
- .3 Contractor use of premises.
- .4 Alterations to existing site.

1.2 PRECEDENCE

- .1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises general construction of VISITOR'S EXPERIENCE IMPROVEMENTS, BIG CREEK NATIONAL WILDLIFE AREA, located at Port Rowan, Ontario.

1.4 CONTRACT METHOD

- .1 Construct work under lump sum contract.

1.5 COST BREAKDOWN

- .1 Within 48 hours of notification of acceptance of bid furnish a cost breakdown by Section aggregating contract price.
- .2 Show separately cost of equipment purchased exempt from Ontario Retail Sales Tax under your Ontario Sales Tax Licence number.
- .3 Within 48 hours of acceptance of bid submit a list of subcontractors.

1.6 WORK BY OTHERS

- .1 The Contractor shall for the purpose of the Ontario Occupational Health and Safety Act and Regulations for Construction Projects, and for the duration of the Work of the Contract:
 - .1 Assume the role of Constructor in accordance with the Authority Having Jurisdictions.

1.7 WORK SEQUENCE

- .1 Maintain fire access/control.

1.8 CONTRACTOR USE OF PREMISES

- .1 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

PART 1 - GENERAL

1.1 MINIMUM STANDARDS

- .1 Execute work to meet or exceed:
 - .1 National Building Code of Canada 2015, National Fire Code of Canada 2015, Ontario Building Code 2012 and any other code of provincial or local application, including all amendments up to project date, provided that in any case of conflict or discrepancy, the more stringent requirements shall apply as directed by the Departmental Representative.
 - .2 Rules and regulations of authorities having jurisdiction.
 - .3 Treasury Board of Canada Secretariat, Fire Protection Standard, April 1, 2010.
 - .4 Observe and enforce construction safety measures required by National Building Code 2015, Division B, Part 8 Safety Measures at Construction and Demolition Sites, Occupational Health and Safety Act and Regulations for Construction Projects, Revised Statutes of Ontario 1990, Chapter O.1 as amended, O. Reg. 213/91 as amended by O. Reg. 631/94, O. Reg. 143/99, O. Reg. 571/99, O. Reg. 145/00, O. Reg. 527/00, R.R.O. 1990, Reg. 834, O. Reg. 278/05 (Asbestos), Workplace Safety and Insurance Board and municipal statutes and authorities.
 - .5 Environmental Protection Act, O. Reg. 102/94 and O. Reg. 103/94.
 - .6 Comply with CSA B651-12(R2017), Accessible Design for the Built Environment, unless specified otherwise. In any case of conflict or discrepancy between the building codes and CSA B651, the requirements of CSA B651 shall apply.

1.2 TAXES

- .1 Pay applicable Federal, Provincial and Municipal taxes.

1.3 EXAMINATION

- .1 Before submitting tender, examine existing conditions and determine conditions affecting work.
- .2 Obtain all information which may be necessary for proper execution of Contract.

1.4 SITE

- .1 Confine work, including temporary structures, plant, equipment and materials to established limits of site.
- .2 Locate temporary buildings, roads, walks, drainage facilities, services as directed and maintain in clean and orderly manner.
- .3 The dykes cannot support the weight of a concrete truck or full sized dump truck.

1.5 DOCUMENTS

- .1 Keep on site one copy of contract documents and reviewed shop drawings.

1.6 MEASUREMENT PROCEDURES

- .1 Items measured for payment are in metric (SI) units.
- .2 Submit supporting documents in metric units. Perform all necessary conversions required.

1.7 ADDITIONAL DRAWINGS

- .1 Departmental Representative may furnish additional drawings to clarify work.
- .2 Such drawings become part of Contract Documents.

1.8 SCHEDULING OF WORK

- .1 On award of contract submit with tender bar chart construction schedule for work, indicating anticipated progress stages within time of completion.
- .2 When schedule has been reviewed by the Departmental Representative take necessary measures to complete work within scheduled time. Do not change schedule without notifying Departmental Representative.

1.9 FIRES AND TEMPORARY HEATERS

- .1 Only fires for temporary heaters are permitted on site.
- .2 Maintain temperature required to prevent frost damage to work.

1.10 DATUM

- .1 Elevations shown on Drawings are expressed in metres relative to chart datum.

PART 1 - GENERAL

1.1 ACCESS AND EGRESS

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

1.2 USE OF SITE AND FACILITIES

- .1 The site will be closed to the public during construction.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Closures: Protect work temporarily until permanent enclosures are completed.
 - .1 The existing Wildlife Protection Fencing, vehicle access gate and pedestrian access gate must remain in place until the new Wildlife Protection Fencing, vehicle gate and pedestrian gate have been fully constructed to avoid wildlife escape from the facility.
 - .2 Wildlife Protection Fencing must be removed and replaced efficiently to avoid wildlife escape from the facility.
 - .3 Wildlife Protection Fencing construction to be coordinated with the Departmental Representative prior to carrying out the work.

1.3 EXISTING SERVICES

- .1 Notify, Departmental Representative utility companies of intended interruption of services and obtain required permission.
- .2 Construct barriers in accordance with Section 01 56 00.

1.4 SPECIAL REQUIREMENTS

- .1 Carry out noise generating Work in compliance with local noise restriction bylaws.
- .2 Submit schedule in accordance with Construction Progress Schedule - Bar (GANTT) Chart.
- .3 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic security regulations and the Canada Wildlife Act.
- .4 Keep within limits of work and avenues of ingress and egress.

- .5 Ingress and egress of Contractor vehicles at site is limited to parking area except for equipment necessary to be moved into the wildlife area which shall be under the direction of the Department Representative.

1.5 BUILDING SMOKING ENVIRONMENT

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

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.
- .4 Preside at meetings.
- .5 The Contractor shall record minutes of meetings. Minutes shall be circulated to attending parties and affected parties not in attendance.
- .6 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, 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 Construction Progress Schedule
 - .3 Schedule of submission of shop drawings, samples, Submit submittals in accordance with Section 01 33 00.
 - .4 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.
 - .5 Site security in accordance with Section 01 56 00.
 - .7 Health and safety in accordance with Section 01 35 29.
 - .8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, administrative requirements.
 - .9 Record drawings and specifications in accordance with Sections 01 33 00 and 01 78 00.
 - .10 Maintenance manuals in accordance with Section 01 78 00.
 - .11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00.
 - .12 Monthly progress claims, administrative procedures, photographs, hold backs.

- .13 Appointment of inspection and testing agencies or firms.
- .14 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work and 2 weeks prior to project completion, schedule progress meetings bi-weekly.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative 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 5 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 effect on construction schedule and on completion date.
 - .12 Other business.

PART 2 - PRODUCTS

- 2.1 NOT USED
- .1 Not Used.

PART 3 - EXECUTION

- 3.1 NOT USED
- .1 Not Used.

PART 1 - GENERAL

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative 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, and samples 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. 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, 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's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.
- .11 Submit number of hard copies specified for each type and format of submittal and also submit in electronic format as pdf files. Forward pdf, NMSEdit Professional spp, MS Word, MS Excel, MS Project and AutoCAD dwg files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario of Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 5 working days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions shall 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 Performance characteristics.
 - .5 Standards.
 - .6 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.

- .10 Submit three hard copies and one electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit three hard copies and one electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit three hard copies and one electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .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 three hard copies and one electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .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 three hard copies and one electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .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 three hard copies and one electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit three hard copies and one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.

- .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, 3 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.
- .21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
- .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 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's business address.
- .3 Notify Departmental Representative 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 are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative 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 Workplace Safety and Insurance Board Experience Report.

1.5 FEES, PERMITS AND CERTIFICATES

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates and permits required.
- .3 Furnish certificates and permits.
- .4 Contractor to apply/obtain a Canada Wildlife Act Permit from Environment and Climate Change Canada (ECCC).

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Standards Association (CSA): Canada
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 National Building Code 2015 (NBC):
 - .1 NBC 2015, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
- .3 National Fire Code 2015 (NFC):
 - .1 NFC 2015, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.
- .4 Province of Ontario:
 - .1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
 - .2 O. Reg. 490/09, Designated Substances.
 - .3 Workplace Safety and Insurance Act, 1997.
 - .4 Municipal statutes and authorities.
- .5 Treasury Board of Canada Secretariat (TBS):
 - .1 Treasury Board, Fire Protection Standard April 1, 2010
www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316§ion=text.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.
- .2 Submit site-specific Health and Safety Plan: Within 5 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Measures and controls to be implemented to address identified safety hazards and risks.
- .3 Provide a Fire Safety Plan, specific to the work location, in accordance with NBC, Division B, Article 8.1.1.1.3 prior to commencement of work. The plan shall be coordinated with, and integrated into, the existing Emergency Procedures and Evacuation Plan in place at the site. Departmental Representative will provide Emergency Procedures and Evacuation Plan. Deliver two copies of the Fire Safety Plan to the Departmental Representative not later than 14 days before commencing work.

- .4 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Coordinate plan with existing Emergency Response requirements and procedures provided by Departmental Representative.
- .5 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 2 working days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 2 working days after receipt of comments from Departmental Representative.
- .6 Departmental Representative'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.
- .7 Submit names of personnel and alternates responsible for site safety and health.
- .8 Submit records of Contractor's Health and Safety meetings when requested.
- .9 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative daily.
- .10 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.
- .11 Submit copies of incident and accident reports.
- .12 Submit Material Safety Data Sheets (MSDS).
- .13 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.

1.3 FILING OF NOTICE

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

1.4 WORK PERMIT

- .1 Obtain building permits related to project prior to commencement of Work.

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.7 REGULATORY REQUIREMENTS

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

1.8 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Silica in concrete.
- .2 Work Area adjacent to a water body.

1.9 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 may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.
- .3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.

1.10 COMPLIANCE REQUIREMENTS

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

1.11 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act and Regulations for Construction Projects for the Province of Ontario.

1.12 UNFORSEEN HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.
- .2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.13 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.
 - .1 Contractor's Safety Policy.
 - .2 Constructor's Name.
 - .3 Notice of Project.
 - .4 Ministry of Labour Orders and reports.
 - .5 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
 - .6 Address and phone number of nearest Ministry of Labour office.
 - .7 Material Safety Data Sheets.
 - .8 Written Emergency Response Plan.
 - .9 Site Specific Safety Plan.
 - .10 Valid certificate of first aider on duty.
 - .11 WSIB "In Case of Injury at Work" poster.
 - .12 Location of toilet and cleanup facilities.

1.14 CORRECTION OF NON-COMPLIANCE

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

1.15 BLASTING

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

1.16 POWDER ACTUATED DEVICES

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

1.17 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
- .2 Assign responsibility and obligation to Competent Supervisor to stop or start Work when, at Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

PART 1 - GENERAL

1.1 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.2 REFERENCES

- .1 Canada Wildlife Act
- .2 Species at Risk Act
- .3 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
 - .2 EPA General Construction Permit (GCP) 2012.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for geosynthetic products and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS.
- .3 Before commencing construction activities or delivery of materials to site, the contractor shall:
 - .1 Apply for Canada Wildlife Act Permit from Environment and Climate Change Canada (ECCC); and,
 - .2 Prepare and submit Environmental Protection Plan for review and approval by Departmental Representative.
- .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

- .6 Include in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations and EPA 832/R-92-005, Chapter 3.
 - .6 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
 - .7 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
 - .8 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .9 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
 - .10 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
 - .11 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

1.4 FUEL STORAGE

- .1 Storage of fuels on the site must comply with applicable Federal, Provincial, and Municipal requirements.

1.5 FIRES

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

1.6 DRAINAGE

- .1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, EPA 832/R-92-005, Chapter 3, US EPA General Construction Permit.
- .2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.
- .3 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .4 Ensure pumped water into waterways or drainage systems is free of suspended materials.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.7 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Minimize stripping of topsoil and vegetation.

1.8 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Waterways to be kept free of excavated fill, waste material and debris.
- .3 Do not skid logs or construction materials across waterways.
- .4 Avoid indicated spawning beds when constructing temporary crossings of waterways.

1.9 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.10 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Take action only after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted, or equitable adjustments allowed to Contractor for such suspensions.

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 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 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
- .3 Ensure public waterways remain free of waste and volatile materials disposal.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.

- .5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Tests and mix designs.

1.3 INSPECTION

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

1.4 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work, above and beyond those required of the Contractor. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.5 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.6 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.7 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 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, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative may deduct from Contract Amount difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.8 REPORTS

- .1 Submit 4 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to Subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.9 TESTS AND MIX DESIGNS

- .1 Furnish test results and concrete mix design.
- .2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Departmental Representative and may be authorized as recoverable.

1.11 MILL TESTS

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

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Temporary utilities.

1.2 RELATED SECTIONS

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

1.3 REFERENCES

- .1 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 833-R-06-004, May 2007, Developing Your Stormwater Pollution Prevention Plan - A Guide for Construction Sites.

1.4 SUBMITTALS

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

1.5 INSTALLATION AND REMOVAL

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

1.6 DEWATERING

- .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.7 WATER SUPPLY

- .1 Provide supply of water for construction use.

1.8 FIRE PROTECTION

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

3.1 NOT USED

.1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Construction aids.
- .2 Office and sheds.
- .3 Parking.

1.2 SUBMITTALS

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

1.2 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 graveled 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.

1.4 HOISTING

- .1 Provide, operate and maintain hoists/cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.
- .2 Hoists/cranes shall be operated by qualified operator.

1.5 SITE STORAGE/LOADING

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

1.6 CONSTRUCTION PARKING

- .1 Parking on site will be restricted. Departmental Representative may allow limited use of parking, if available. Contractor will make arrangements as required.
- .2 Provide and maintain adequate access to project site.

- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and repair any damage resulting from Contractors' use of roads.
- .4 Clean construction roads and parking areas where used by Contractor's equipment.

1.7 OFFICES

- .1 Departmental Representative will provide meeting room space for bi-weekly construction progress meetings.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in a 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 a manner to cause least interference with work activities.

1.9 SANITARY FACILITIES

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

1.10 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.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

- .8 Dust control: adequate to ensure safe operation at all times.

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.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Barriers.
- .2 Environmental Controls.
- .3 Traffic Controls.
- .4 Fire Routes.

1.2 RELATED SECTIONS

- .1 Section 01 51 00 - Temporary Utilities.
- .2 Section 01 52 00 - Construction Facilities.

1.3 INSTALLATION AND REMOVAL

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

1.4 HOARDING

- .1 Erect temporary site enclosure using modular freestanding fencing: galvanized, minimum 1.8 m high, chain link or welded steel mesh, pipe rail. Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys. Maintain fence in good repair.
- .2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

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 the 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.
- .2 Be responsible for damage incurred.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Product quality, availability, storage, handling, protection, and transportation.
- .2 Manufacturer's instructions.
- .3 Quality of Work, coordination and fastenings.
- .4 Existing facilities.

1.2 RELATED SECTIONS

- .1 Section 01 45 00 - Quality Control.

1.3 REFERENCES

- .1 Within text of specifications, reference may be made to reference standards.
- .2 Conform to these standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 The cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .5 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.
- .6 OPSS Ontario Provincial Standard Specifications and OPSD Ontario Provincial Standard Drawings quoted in these specifications are available online at <http://www.raqsb.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage>.

1.4 QUALITY

- .1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of Products provided.
- .2 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.

- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.5 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Amount or Contract Time.

1.6 METRIC SIZED MATERIALS

- .1 SI metric units of measurement are used exclusively on the drawings and in the specifications for this project.
- .2 The Contractor is required to provide metric products in the sizes called for in the Contract Documents except where a valid claim can be made that a particular product is not available on the Canadian market.
- .3 Claims for exemptions from use of metric sized products shall be in writing and fully substantiated with supportive documentation. Promptly submit application to Departmental Representative for consideration and ruling. Non-metric sized products may not be used unless Contractor's application has been approved in writing by the Departmental Representative.
- .4 Difficulties caused by the Contractor's lack of planning and effort to obtain modular metric sized products which are available on the Canadian market will not be considered sufficient reasons for claiming that they cannot be provided.
- .5 Claims for additional costs due to provision of specified modular metric sized products will not be considered.

1.7 STORAGE, HANDLING AND PROTECTION

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

1.8 TRANSPORTATION

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

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

1.10 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 Departmental Representative 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 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, whose decision is final.

1.11 CO-ORDINATION

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

1.12 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate 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.

1.13 LOCATION OF FIXTURES

- .1 Consider location of fixtures, signs, fence and benches indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

1.14 FASTENINGS

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

- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.15 FASTENINGS - Material

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Fence Board Wood to Wood Fasteners: #10 x 2.5" Stainless steel screws (304) or similar product approved by the Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 The Contractor may require the services of a field engineering survey company to support construction related activity and layout.

1.2 REFERENCES

- .1 Departmental Representatives identification of existing survey control points and property limits.

1.3 QUALIFICATIONS OF SURVEYOR

- .1 Surveyor acceptable to Departmental Representative.

1.4 SURVEY REFERENCE POINTS

- .1 Existing base 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 Departmental Representative.
- .4 Report to Departmental Representative 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.

1.5 SURVEY REQUIREMENTS

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

1.6 EXISTING SERVICES

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

1.7 LOCATION OF FIXTURES

- .1 Location of fixtures, signs, fence c/w gates and benches indicated or specified are to be considered as approximate.
- .2 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.8 RECORDS

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

1.9 SUBMITTALS

- .1 Submit name and address of Surveyor to Departmental Representative.
- .2 On request of Departmental Representative, submit documentation to verify accuracy of field engineering work.

1.10 SUBSURFACE CONDITIONS

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

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00.
- .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 Departmental Representative 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 Departmental Representative 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.

1.3 PREPARATION

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

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.

- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Submit proposed materials, finishes and installation method for patching to Departmental Representative for approval, prior to patching.
- .11 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 20.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Progressive cleaning.
- .2 Final cleaning.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Departmental Representative or other Contractors.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Provide on-site containers for collection of waste materials and debris.
- .4 Provide and use clearly marked separate bins for recycling. Refer to Section 01 74 20.
- .5 Remove waste material and debris from site and deposit in waste container at end of each working day.
- .6 Dispose of waste materials and debris off site.
- .7 Store volatile waste in covered metal containers and remove from premises at end of each working day.
- .8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others and leave Work clean and suitable for occupancy.
- .3 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Departmental Representative or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

- .6 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .7 Remove dirt and other disfiguration from exterior surfaces.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 CONSTRUCTION & DEMOLITION WASTE

- .1 Carefully deconstruct and source separate materials/equipment and divert, from D&C waste destined for landfill to maximum extent possible. Target for this project is 50% diversion from landfill. Reuse, recycle, compost, anaerobic digest or sell material for reuse except where indicated otherwise. On site sales are not permitted.
- .2 Source separate waste and maintain waste audits in accordance with the Environmental Protection Act, Ontario Regulation 102/94 and Ontario Regulation 103/94.
 - .1 Provide facilities for collection, handling and storage of source separated wastes.
 - .2 Source separate the following waste:
 - .1 Brick and Portland cement concrete.
 - .2 Corrugated cardboard.
 - .3 Wood, not including painted or treated wood or laminated wood.
 - .4 Gypsum board, unpainted.
 - .5 Steel.
- .3 Submit a waste reduction workplan indicating the materials and quantities of material that will be recycled and diverted from landfill.
 - .1 Indicate how material being removed from the site will be reused, recycled, composted or anaerobically digested.
- .4 Submit proof that all waste is being disposed of at a licensed land fill site or waste transfer site. A copy of the disposal/waste transfer site's license and a letter verifying that said landfill site will accept the waste must be supplied to Departmental Representative prior to removal of waste from the demolition site.

1.2 WASTE PROCESSING SITES

- .1 Province of: Ontario.
 - .1 Ministry of Environment Conservation and Parks, Client Services and Permissions Branch, 135 St. Clair Avenue West, 1st Floor, Toronto, ON, M4V 1P5.
 - .2 Telephone: 800-565-4923 or 416-323-4321.
 - .3 Fax: 416-323-4682.
- .2 Recycling Council of Ontario: 55 University Ave #1500, Toronto, ON M5J 2H7.
 - .1 Telephone: 416-657-2797 or 1-888-501-9637.
 - .2 Fax: 416-960-8053.
 - .3 Email: rco@rco.on.ca.
 - .4 Internet: <http://www.rco.on.ca/>.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Government Chief Responsibility for the Environment.

Province Address

Ontario Ministry of Environment Conservation and Parks,
Client Services and Permissions Branch,
135 St. Clair Avenue West, 1st Floor,
Toronto, ON, M4V 1P5

General Enquiries

1-800-461-6290

or in Toronto 416-314-8001

PART 1 - GENERAL

1.1 INSPECTION AND DECLARATION

- .1 Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .2 Completion: submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested and are fully operational.
 - .4 Operation of systems have been demonstrated to Departmental Representative.
 - .5 Work is complete and ready for final inspection.
- .3 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

1.2 CLEANING

- .1 In accordance with Section 01 74 11.
- .2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 20.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 As-built, samples, and specifications.
- .2 Product data, materials and finishes, and related information.
- .3 Operation and maintenance data.
- .4 Warranties and bonds.
- .5 Final site survey.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 77 00 - Closeout Procedures

1.3 SUBMISSION

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection, with Departmental Representative's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 If requested, furnish evidence as to type, source and quality of products provided.
- .5 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .6 Pay costs of transportation.

1.4 FORMAT

- .1 Organize data in the form of an 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. 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.

- .5 Arrange content by work type under Section numbers and sequence of Table of Contents.
- .6 Text: Manufacturer's printed data, or typewritten data.
- .7 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .8 Provide 1:1 scaled CAD files in dwg format. Forward pdf, NMSEdit Professional spp, MS Word, MS Excel, MS Project and AutoCAD dwg files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.5 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project;
 - .1 Date of submission;
 - .2 Names, addresses, and telephone numbers of 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 clearly 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.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00.

1.6 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Amendments and addenda.
 - .4 Change Orders and other modifications to the 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. Provide files, racks, and secure storage.

- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.
- .6 Turn one set, paper copy and electronic copy, of AS-BUILT drawings and specifications over to Departmental Representative on completion of work. Submit files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.
- .7 If project is completed without significant deviations from Contract drawings and specifications submit to Departmental Representative one set of drawings and specifications marked "AS-BUILT".

1.7 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: legibly 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: legibly 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 Amendments and change orders.

- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

1.8 MATERIALS AND FINISHES

- .1 Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .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 STORAGE, HANDLING AND PROTECTION

- .1 Store materials in a 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 to satisfaction of Departmental Representative.

1.10 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- .4 Except for items put into use with Departmental Representatives permission, leave date of beginning of time of warranty until the Date of Certificate of Substantial Performance is determined.

- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA):
 - .1 CSA G40.20-13/G40.21-13(R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-14(R2019), Design of Steel Structures.
 - .4 CSA W47.1-09(R2014), Certification of Companies for Fusion Welding of Steel.
 - .5 CSA W59-18, Welded Steel Construction (Metal Arc Welding).

1.2 DESIGN REQUIREMENTS

- .1 Design gates, gate supports and anchorage, sign foundations and bench foundations.

1.3 SUBMITTALS

- .1 Submit shop drawings and product data of each item.
 - .1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories.
 - .2 Each shop drawing submission shall bear signature and stamp of qualified professional engineer registered or licensed in province of Ontario.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Steel: to CSA G40.20/G40.21, Grade 300W, minimum 30% recycled content.
- .2 Hollow Structural Sections (HSS): to CSA G40.20/G40.21, Grade 350W, Class H, minimum 30% recycled content.
- .3 Galvanizing: hot dip, un-passivated, to CSA G164-18, Coating Grade 85, minimum 600 g/m².
- .4 Zinc rich primer for galvanized surfaces: zinc rich, Ecologo certified.
- .5 Grout: non-shrink, non-metallic, flowable, 24 h, 15 MPa, pullout strength 7.9 MPa.

2.2 FABRICATION

- .1 Fit joints in true planes and securely fasten.
- .2 Weld to CSA W59. File or grind welds smooth and flush with adjoining surface. Companies to be certified under Division 01 or 2.1 of CSA W47.1 for fusion welding of steel structures.
- .3 Shop assemble work.
- .4 Galvanize after fabrication.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Supply other sections with templates, instructions and built-in items.
- .2 Install work straight, plumb and level to a tolerance of 1:600.
- .3 Provide required reinforcing and anchorage.
- .4 Touch-up burnt, scratched or chipped primer.

3.2 GATES, GATE FOUNDATIONS, SIGN FOUNDATIONS AND BENCH FOUNDATIONS

- .1 Supply concrete section with steel gates, posts, plates and anchors of sizes as indicated.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Ontario Provincial Standard Specification (OPSS)
 - .1 OPSS.PROV 1010 April 2013, Ontario Provincial Standard Specification, Material Specification for Aggregates - Base, Subbase, Select Subgrade and Backfill Material.

1.2 MEASUREMENT

- .1 Aggregate materials to be paid per Metric Tonne.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Aggregate Material: OPSS.PROV 1010:
 - .1 Granular A, maximum size aggregate 19mm.
 - .2 Granular B, Type II, maximum size aggregate 37.5mm.

PART 3 - EXECUTION

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .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.
- .3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .5 Restrict public access to temporary or permanently abandoned stockpiles by means acceptable to Departmental Representative.

PART 1 - GENERAL

1.1 REFERENCES

- .1 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 833-R-06-004, May 2007, Developing Your Stormwater Pollution Prevention Plan - A Guide for Construction Sites.

1.2 MEASUREMENT

- .1 Soil Stripping to be paid per cubic metre.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

- .1 Not Used.

3.2 STRIPPING OF TOPSOIL

- .1 Ensure that procedures are conducted in accordance with applicable Provincial and Municipal requirements.
- .2 Remove topsoil before any 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 directed by Departmental Representative. Avoid mixing topsoil with subsoil.
- .7 Pile topsoil by mechanical hoe in berms in locations as directed by Departmental Representative. Stockpile height not to exceed 2.5 - 3 m.
- .8 Dispose of unused topsoil at an approved disposal site.
- .9 Protect stockpiles from contamination and compaction.

- .10 Cover Stockpiles with tarps during rain or when rain is expected. Stockpiled or exposed soils must be closed off from the ground up to prevent turtle access (and possible nesting). Closure structures must be inspected regularly by the contractor.
- .11 Topsoil that has been piled for long term storage will be covered with trefoil or grass to maintain agricultural potential of soil.

3.3 PREPARATION OF GRADE

- .1 Verify that grades are correct. If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Departmental Representative.
 - .1 Grade area only when soil is dry to lessen soil compaction.
 - .2 Grade soil with scrapers 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 has accepted subgrade.
- .2 During dry conditions spread topsoil by mechanical hoe in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.
- .3 Establish traffic patterns for equipment that will prevent driving on topsoil after it has been spread to avoid compaction.
- .4 Cultivate the soil following spreading procedures.

3.5 CLEANING

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

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 31 05 16: Aggregate Material.

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.
 - .2 Following limits:
 - .1 Width for trench excavation as indicated.
 - .2 Width for excavation for structures to be bounded by vertical planes up to 500 mm outside of and parallel to neat lines of footings as indicated.
 - .3 Where design elevation is less than 300 mm below original rock surface, depth will be considered to be 300 mm below original rock surface.
- .2 Sheeting and bracing left in place on direction of Departmental Representative will be measured in square metres of surface area of plane surface of sheeting.
- .3 Shoring, bracing and de-watering of excavation will not be measured separately for payment.
- .4 Payment shall be for excavation only. Payment for excavation shall include the cost of backfilling.
- .5 Placing and spreading of topsoil will be measured for payment in cubic metres calculated from cross sections taken in area of excavation from original location. If double handling of topsoil is directed by Departmental Representative, stockpiling and later placing, then quantities will be measured twice; on excavation from original location and on excavation from stockpile.

1.3 REFERENCES

- .1 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .2 ASTM D422-63(2007)e2, Standard Test Method for Particle-Size Analysis of Soils.

- .3 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
- .4 ASTM D4318-17e1, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .5 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
- .6 OPSS.PROV 1010 April 2013, Ontario Provincial Standard Specification, Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.

1.4 DEFINITIONS

- .1 Unclassified excavation: excavation of deposits of whatever character encountered in work.
- .2 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
- .3 Waste material: excavated material unsuitable for use in work or surplus to requirements.
- .4 Borrow material: material obtained from locations outside area to be graded and required for construction of fill areas or for other portions of work.
- .5 Unsuitable materials:
 - .1 Weak and compressible materials under excavated areas.
 - .2 Frost susceptible materials under excavated areas.
 - .3 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136/C136M: Sieve sizes to CAN/CGSB-8.1.

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45-100
0.02 mm	10-80
0.005 mm	0-45
 - .2 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.
- .6 Unshrinkable fill: very weak mixture of Portland cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.5 SAMPLES

- .1 Inform Departmental Representative at least 2 weeks prior to commencing work, of proposed source of fill materials and provide access for sampling.

1.6 PROTECTION OF EXISTING FEATURES

- .1 Existing buried utilities and structures:
 - .1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .2 Prior to commencing excavation work, notify applicable Departmental Representative or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Departmental Representative or authorities having jurisdiction to clearly mark such locations to prevent disturbance during work.
 - .3 Confirm locations of buried utilities by careful test excavations.
 - .4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
- .2 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 to approval of Departmental Representative.
 - .3 Where required for excavation, cut roots or branches as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Type 1 fill: to OPSS.PROV 1010, for Granular "A" aggregate. Maximum size 19.0 mm.
- .2 Type 2 fill: to OPSS.PROV 1010, for Granular "B" Type 2 aggregate. Maximum size 37.5 mm.
- .3 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.
- .4 Crushed rock screenings: As per 32 15 40.

PART 3 - EXECUTION

3.1 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.2 STRIPPING OF TOPSOIL

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

3.3 STOCKPILING

- .1 Stockpile fill materials in areas designated by Departmental Representative. Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.

3.4 SHORING, BRACING

- .1 Construct temporary works to depths, heights and locations as indicated.
- .2 During backfill operation:
 - .1 Unless otherwise as indicated or as 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 an elevation at least 500 mm above toe of sheeting.
- .3 Upon completion of substructure construction:
 - .1 Remove shoring and bracing.
 - .2 Remove excess materials from site

3.5 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while work is in progress.
- .2 Submit for Departmental Representative's approval details of proposed dewatering or heave prevention methods, such as sump pumping
- .3 Protect open excavations against flooding and damage due to surface run-off.

- .4 Dispose of water in a manner not detrimental to public and private property, or any portion of work completed or under construction.

3.6 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.
- .3 Remove concrete, granular, sod and other obstructions encountered during excavation in accordance with Section 01 74 20.
- .4 Excavation must not interfere with normal 45° splay of bearing from bottom of any footing.
- .5 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .6 Dispose of surplus and unsuitable excavated material off site.
- .7 Do not obstruct flow of surface drainage or natural watercourses.
- .8 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .9 Notify Departmental Representative when bottom of excavation is reached.
- .10 Obtain Departmental Representative's approval of completed excavation.
- .11 Remove unsuitable material from trench bottom to extent and depth as directed by Departmental Representative.
- .12 Correct unauthorized over-excavation as follows:
 - .1 Fill under other areas with Type 2 fill compacted to not less than 95% of Standard Proctor Density to ASTM D698.
- .13 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.
- .14 Install geotextiles in accordance with plans

3.7 BEDDING AND SURROUND OF UNDERGROUND SERVICES

- .1 Place and compact granular material for bedding and surround of underground services as indicated.
- .2 Place bedding and surround material in unfrozen condition.

3.8 BACKFILLING

- .1 Vibratory compaction equipment shall only be used when authorized by Departmental Representative
- .2 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.
- .3 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .4 Do not use backfill material which is frozen or contains ice, snow or debris.
- .5 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .6 Backfill around installations.
 - .1 Do not backfill around or over cast-in-place concrete within 24 h after placing of concrete.
 - .2 Place layers simultaneously on both sides of installed work to equalize loading.

3.9 RESTORATION

- .1 Upon completion of work, remove waste materials and debris, and correct defects as directed by Departmental Representative.
- .2 Replace topsoil as directed by Departmental Representative.
- .3 Clean and reinstate areas affected by work as directed by Departmental Representative.

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C233/C233M-18, Standard Test Method for Air-Entraining Admixtures for Concrete.
- .2 Canadian Standards Association (CSA)
 - .1 CSA A23.1-19/A23.2-19, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CSA A3001-18, Cementitious Materials Compendium.
 - .3 CSA G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement.
- .3 Ontario Provincial Standard Specifications (OPSS)
 - .1 OPSS.PROV 1010, April 2013, Ontario Provincial Standard Specification, Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Concrete:
 - .1 Cement: to CSA A3001, Type GU.
 - .2 Compressive strength: 32 MPa at 28 days.
 - .3 Exposure class: C-2 to CSA A23.1/A23.2.
 - .4 Aggregate: 20 mm maximum size to CSA A23.1/A23.2.
 - .5 Slump: 80 mm at time of deposit, +/-10 mm.
 - .6 Air content: 6%.
 - .7 Admixtures: air entraining to ASTM C233/C223M. Calcium chloride or compounds containing calcium chloride not permitted.
 - .8 Water: potable.
 - .9 Reinforcing bars: to CSA G30.18, Grade 400, deformed.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Concrete:
 - .1 Do concrete work to CSA A23.1-14/A23.2-14.
- .2 Grouting:
 - .1 Grout under base plates using procedures in accordance with the manufacturer's recommendations that result in 100 percent contact over grouted area.

PART 1 - GENERAL

1.1 MEASUREMENT AND PAYMENT

- .1 Measure granular sub-base in tonnes.

1.2 REFERENCE

- .1 OPSS.PROV 1010 April 2013, Ontario Provincial Standard Specification, Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.
- .2 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .3 ASTM D422-63(2007)e2, Standard Test Method for Particle-Size Analysis of Soils.
- .4 ASTM D698-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
- .5 ASTM D1557-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
- .6 ASTM D4318-10e1, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

PART 2 - PRODUCT.

- .1 Aggregate Material: OPSS.PROV 1010:
 - .1 Granular B, Type II, maximum size aggregate 37.5mm

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PLACING

- .1 Place granular sub-base after subgrade is inspected and approved by Departmental Representative.
- .2 Construct granular B, type II sub-base to depth and grade in areas indicated.
- .3 Ensure no frozen material is placed.
- .4 Place material only on clean unfrozen surface, free from snow or ice.

3.3 COMPACTION

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density of not less than 98% maximum dry density in accordance with ASTM D698 and ASTM D1557.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .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.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 SITE TOLERANCES

- .1 Finished sub-base surface to be within 25 mm of elevation as indicated but not uniformly high or low.

3.6 PROTECTION

- .1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by Departmental Representative.

PART 1 - GENERAL

1.1 MEASUREMENT AND PAYMENT

- .1 Measure granular sub-base in tonnes.
- .2 Measure granular base in tonnes.
- .3 Measure granular surface in tonnes.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C117-17, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .4 ASTM D4318-17, Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Ontario Provincial Standard Specification (OPSS)
 - .1 OPSS.PROV 1010 April 2013, Ontario Provincial Standard Specification, Material Specification for Aggregates - Base, Subbase, Select Subgrade and Backfill Material.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit submittals in accordance with Section 01 33 00.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions.
- .2 Store crushed stone as and where directed by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Granular base: Granular A in accordance with OPSD.PROV 1010 and following requirements:
 - .1 Crushed stone or gravel: hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
 - .2 Gradations: as per OPSS.PROV 1010
 - .4 Liquid limit: ASTM D4318 maximum 25.
 - .5 Plasticity index: ASTM D4318 maximum 6.

- .2 Granular Surface:
- .1 Screenings: hard, durable, crushed stone particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
 - .2 Gradations: within limits specified when tested to ASTM C136/C136M and ASTM C117.

Sieve Designation Désignation des t	% Passing
9.5 mm	100
4.75 mm	50-100
2.00 mm	30-65
0.425 mm	10-30
0.075 mm	5-10

- .3 Edging, including cedar edging as detailed on Drawing L5.1
- .4 Geotextile Blanket as indicated on Drawing L5.1 and S1.0

PART 3 - EXECUTION

3.1 SUBGRADE

- .1 Ensure subgrade preparation conforms to levels and compaction required, to allow for installation of granular base.

3.2 GEOTEXTILE FILTER

- .1 Install geotextile filter as indicated on drawings.

3.3 EDGING

- .1 Install edging true to grade, in location, layout as indicated on drawings.

3.4 GRANULAR SURFACE

- .1 Place granular surface to compacted thickness as indicated on drawings.
- .2 Place material in uniform layers not to exceed 100mm compacted thickness.
 - .1 Compact layer to 100% Standard Density in accordance with ASTM D698.

3.5 FIELD QUALITY CONTROL

- .1 Inspection and testing of crushed stone paving: carried out by designated testing laboratory.
- .2 Costs of tests: paid by Departmental Representative.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .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.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

- .1 Prevent damage to landscaping, trees, fences, roads and adjacent property.
 - .1 Repair damages incurred.

PART 1 - GENERAL

1.1 PRICE AND PAYMENT PROCEDURES

- .1 Measure Supply and application of water for dust control in litres.
- .2 No extra compensation will be paid for water ordered and applied on Saturdays, Sundays or holidays.

1.2 REFERENCES

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Water: in accordance with Departmental Representative's approval.

PART 3 - EXECUTION

3.1 APPLICATION

- .1 Apply water with distributors equipped with means of shut-off and with spray system to ensure uniform application.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .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.

PART 1 - GENERAL

1.1 REFERENCES

- .1 CAN/CGSB-1.145-M90, Solvent Based Pigmented Stain.
- .2 CAN/CSA-O80-Series-15, Wood Preservation.
- .3 CAN/CSA-Z809-16, Sustainable Forest Management.
- .4 NLGA - National Lumber Grades Authority, Standard Grading Rules for Canadian Lumber, GR-2017.
- .5 OPSS.PROV 1010 April 2013, Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.
- .6 AWPA P5-15, Standard for Waterborne Preservatives.

PART 2 - PRODUCTS

2.1 MATERIAL

- .1 Wood: First preference, Ontario White Cedar; second preference, Canadian red cedar to National Lumber Grades Authority, Standard Grading Rules for Canadian Lumber, rough sawn air-dried, CAN/CSA-Z809, Sustainable Forestry Initiative (SFI) or Forestry Stewardship Council (FSC) certified.
 - .1 Boards: 210a. "SELECT FENCING", Select Boards.
 - .2 Posts: 211a. "FOUNDATION", Foundation Lumber.
 - .3 Horizontals: 203c. "C" CEDAR INDUSTRIAL CLEARS.
- .2 Wood posts to be 102mm x 102mm by 1.828m in length.
- .2 Granular material: to OPSS.PROV 1010, Granular B.
- .3 Concrete: as per notation on contract drawing S1.0.
- .4 Fence Board Wood to Wood Fasteners: #10 x 2.5" Stainless steel screws (304) or similar product approved by the Departmental Representative.
- .5 Fence Board Wood to Steel Fasteners: Hardened M5 x 150mm tamper-proof countersink head stainless steel bolt, tamper proof nuts or similar product approved by the Departmental Representative, installed per manufacturers' instructions.
- .6 Stain: Ontario white Cedar, no stain required; Canadian Red Cedar, no stain.
- .7 Aquaculture Netting Material: Polyethylene Mesh, Colour Black, Aperture size: 2.1mm x 2.1mm, Thickness: 1.5mm, PMSF: 40.8 kg/92.90m2.
- .8 Gate Sweep to be heavy duty aluminum and vinyl or similar material, approved by the Departmental Representative.

- .9 Gate Latches to be Heavy Duty Municipal of Industrial Grade, as approved by the Departmental Representative.
- .10 Steel Gate Posts and Gate Framing as per notation shown on drawing S1.0.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Lay out fence and post location.
- .2 Remove and dispose of trees, shrubs, boulders, stumps, timber and debris along fence line.
- .3 Excavate post holes 1.53m deep and approximately 1.5m on-centre and remove excavated materials from site.
- .4 Fence posts to be set in a poured-in-place concrete pier. The concrete pier shall be 1.53m deep. The fence post to be extend into the concrete pier 915 mm. Refer to contract drawings L5.1 and S1.0 for details.
- .5 Set posts in place plumb and in alignment to a tolerance of 6 mm in 2 m.
- .6 Backfill post holes with filled with poured-in-place concrete as noted above and as detail on contract drawings L5.1 and S1.0.
- .7 Aquaculture Netting must be installed from top of fence and buried 300 mm into the ground along full length of fence as detailed on contract drawing L5.1.
- .8 Secure horizontals wood fence-board to posts using one nail at each post.
- .9 Provide Shop Drawings for Steel Gates, Hinges, and Posts as per 01 33 00.
- .10 Steel Gate Posts, Hinges, Gate, and Gate Hardware to be installed as per details and notation shown on drawing S1.0 and as per approved Shop Drawings.
- .11 Secure horizontal wood fence boards to steel gate frame using one screw at each steel frame point of contact.
- .12 Timber surface on gates to be flush with timber surface of fence
- .13 Gate sweep to fit tightly against concrete foundation surface.
- .14 Gate sweep should extend 0.05m below gate and seal gate against concrete foundation when closed. Coordinate work with the Departmental Representative.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Supply and installation of exterior site furnishings, including benches and new signage.

1.2 REFERENCES

- .1 ASTM
 - .1 ASTM A242 / A242M - 13(2018), Standard Specification for High-Strength Low-Alloy Structural Steel.
 - .2 ASTM A895 - 89(2017), Standard Specification for Free-Machining Stainless Steel Plate, Sheet, and Strip.
- .2 Canadian Standards Association (CSA)
 - .1 CSA W59-13, Welded Steel Construction (Metal Arc Welding) (Imperial Version).
- .3 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - [March 1998].
- .4 Society for Protective Coatings
 - .1 SP 6/NACE No. 3, Commercial Blast Cleaning
- .5 National Lumber Grading Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber GR 2017
- .6 CSA International
 - .1 CSA B651-12(R2017), Accessible Design for the Built Environment.
 - .2 CAN/CSA-Z809-16, Sustainable Forest Management.
- .7 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2015, FSC Principles and Criteria for Forest Stewardship.
- .8 Sustainable Forestry Initiative (SFI)
 - .1 SFI-2015-2019 Standard.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 Submittal Procedures.
- .2 Submit shop drawings in accordance with Section 01 33 00 Submittal Procedures.
- .3 Accurately describe and or show on drawings and diagrams the dimensions, sizes, assembly, anchorage and installation details for each furnishing specified.

- .4 Product Data:
 - .1 Before work begins, submit manufacturer's instructions, printed product literature and data sheets for each type of exterior site furnishing and include product characteristics, performance criteria, physical size, finish, compliance with CSA B651] and limitations.
- .5 Shop Drawings:
 - .1 Submit shop drawings indicating dimensions, sizes, assembly, anchorage and installation details for each furnishing specified.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit maintenance data for care and cleaning of site furnishings for incorporation into manual specified in Section 01 78 00 Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Sustainable Standards Certification:
 - .1 Wood Certification: Only use wood products certified by FSC.
 - .2 Submit manufacturer's Chain-of-Custody Certificate number for CAN/CSA-Z809 or FSC or SFI certified wood
- .2 Welding Certification in accordance with CSA W47.2.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 and 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 exterior site furnishings 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 and packaging materials as specified in the Construction/ Demolition, Waste Management and Disposal Section 01 74 20.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Reduction Work Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Departmental Representative.
- .6 Unused paint or coating material must be disposed of at an official hazardous material collections site as approved by Engineer.
- .7 Fold up metal banding, flatten and place in designated area for recycling.
- .8 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in any other location where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 BENCHES

- .1 Materials:
 - .1 Seat: Dressed lumber, Douglas fir, S4S, S-DRY graded and stamped in accordance with the following standards:
 - .1 CSA 0141
 - .2 NLGA Standard Grading Rules for Canadian Lumber
 - .3 AWI/AWMAC/WI AWS Premium Grade, Moisture content as specified.
 - .4 CAN/CSA-Z809, SFI or Forest Stewardship Council (FSC) Certified.
 - .2 Supports (Legs): Weathering steel plate, to ASTM A242, Type 1, same as the signs.
- .2 Bench Dimensions:
 - .1 Refer to contract drawings W2.0 and S1.1.
- .3 Finishes:
 - .1 Timber Seat: Smooth finish. Edges eased. No splinters.
 - .2 Weathered Steel supports (Legs): natural weathered steel finish.
 - .3 Metal Fixings: Stainless steel, to ASTM-A269-10, Type 304, mill finish
- .4 Shop Drawings:
 - .1 Supply shop drawings for all bench details for approval by the Department Representative before manufacture and installation.
- .5 Installation:
 - .1 Surface mounted onto concrete pad with M10 bolts or anchors through holes in leg supports.

- .6 Cleaning and Maintenance:
 - .1 Timber parts: With clear water and soft brush or cloth. Do not use high pressure cleaner or similar.

2.2 SIGNAGE PANELS

- .1 Materials:
 - .1 Natural weathered steel PLATE, to ASTM A242, Type 1.
 - .2 Stainless steel, to ASTM A269-10, Type 304, mill finish.
 - .3 Flexible cast vinyl overlaminate:
 - .1 Non-shrinking
 - .2 Clear, luster finish
 - .3 Suitable for exterior application
 - .4 Service temperature: -54°C to +107°C
 - .5 Compatible with direct-to-media printing
 - .4 Below-grade waterproof membrane:
 - .1 One layer self-adhesive membrane composed of SBS modified bitumen and tri-laminated polyethylene.
 - .2 Thickness: 1.5mm.
 - .3 Under-face: Silicone release film.
 - .4 Top face: Tri-laminate woven polyethylene.
 - .5 Tensile strength: 15.4 kN/m.
 - .6 Ultimate elongation: 25%.
 - .7 Tear resistance: 400N.
 - .8 Lap adhesion: 2000N/m.
 - .9 Water absorption: 0.1% max.
 - .10 Peel resistance: 3500 N/m.
 - .11 Water vapour permeance 0.49 ng/Pa*s*m2.
 - .12 Crack cycling at -32, 100 cycles: Unaffected.
 - .13 Resistance to hydraulic head: 114 m min.
 - .5 Polyurethane paint: to MPI EXT 5.6B.

2.2 SIGN GRAPHICS

- .1 Direct-to-media printing on painted metal panels.
- .2 Cast vinyl overlaminate anti-graffiti, mat finish.

2.3 SIGNAGE CUT-OUT LETTERS

- .1 Cut letters and graphics from weathering steel plate.
- .2 Avenir Next typeface, upper and lower case; sizes and thicknesses as indicated. Make corners square cut.

2.4 SIGNAGE FABRICATION

- .1 Fabricate components in accordance with details, specifications and shop drawings.
- .2 Build units square, true, accurate to size, free from visual or performance defects.
- .3 Accurately fit and securely join sections to obtain tight, closed joints.
- .4 Allow for thermal movement without distortion of components.
- .5 Exposed fasteners permitted only where indicated. Anchor painted sign panel to support structures by welded stainless steel studs on reverse side of panel, and stainless steel nuts. Spacing and size of anchors to suit design loads. Isolate sign panel from support panel with rubber-impregnated fabric washers.
- .6 Anchor timber bench seating surfaces to weathered steel bases with exposed, recessed, stainless steel carriage bolts
- .7 Do steel welding to CSA W59. Finish exposed welds flush and smooth. Ease edges of steel plates to remove sharp corners.
- .8 Apply bituminous paint to weathering steel below grade.
- .9 Manufacturer's nameplates on sign surface locations visible in completed work not acceptable.

2.5 SIGNAGE FINISHES

- .1 Sandblast stainless steel to SSPC SP 6.
- .2 Spray apply paint to stainless steel sign panels in accordance MPI System EXT 5.6B.
- .3 Apply waterproof membrane to weathering steel below grade.
- .4 Apply overlaminate to entire face of sign panels.

2.6 SIGN TRANSPORTATIONS AND INSTALLATION

- .1 General Contractor shall allow in his price bid for transportation of all sign panels from premises of specialist sign contractor to the site and install all signage on site per the contract documents.

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 exterior site furnishing installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

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

3.3 INSTALLATION

- .1 Assemble furnishings in accordance with manufacturer's written recommendations.
- .2 Erect and secure signs plumb and level at elevations and at locations as directed by Departmental Representative.
- .3 Comply with sign manufacturer's installation instructions and approved shop drawings.
- .4 Mechanical attachment:
 - .1 To concrete or stone use epoxy anchored threaded rods as indicated, as appropriate for stresses involved.
- .5 Benches shall be installed level and anchored securely per the contract drawings and approved shop drawings.
- .3 Touch-up damaged finishes to approval of Departmental Representative.
- .4 Construct Foundations as per drawing L5.1 and S1.0

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .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.
- .3 Leave signs clean. Remove debris from interior of sign boxes.

- .4 Touch up any damaged finishes.
- .5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

PART 1 - GENERAL

1.1 SUMMARY

- .1 Includes stripping of native topsoil, stockpiling, supply of imported growing medium, soil amendments, grade preparation, growing medium installation and finish grading.

1.2 RELATED SECTIONS

- .1 Section 32 92 29 Sodding

1.3 PAYMENT PROCEDURES

- .1 Testing of topsoil: The Contractor shall arrange and pay for cost of soil tests.
- .2 Number of tests: Two.
- .3 Soil testing to be carried out by a certified soil testing laboratory approved by the Departmental Representative;
- .4 Soil test to confirm percentages of material that make up the soil and include a recommendation for any soil amendment to ensure healthy vigorous establishment the proposed planting/ vegetation.

1.4 REFERENCES

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Canadian Council of Ministers of the Environment
 - .1 PN1340-2005, Guidelines for Compost Quality.
- .3 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 833-R-06-004, May 2007, Developing Your Stormwater Pollution Prevention Plan - A Guide for Construction Sites.
- .4 Canadian Nursery Landscape Association (CNLA)
 - .1 Canadian Standards for Nursery Stock, 8th Edition, 2006.

1.5 DEFINITIONS

- .1 Compost:
 - .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
 - .2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss on Ignition (LOI) test.
 - .3 Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 35) and contain no toxic or growth inhibiting contaminants.
 - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category A.

1.6 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Submit erosion and sedimentation control plan.
- .3 Quality control submittals:
 - .1 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in PART 2 - SOURCE QUALITY CONTROL.
 - .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.7 QUALITY ASSURANCE

- .1 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 31 19, and 01 45 00.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 20.
- .2 Divert unused soil amendments from landfill to official hazardous material collections site approved by Departmental Representative.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

1.9 PRODUCT HANDLING

- .1 All material to be handled and adequately protected to prevent damage.
- .2 Stockpile materials in bulk form on hard surfaces where possible. Provide additional protection for storage under a roof or tarpaulins for bulk forms of peat moss and existing topsoil that will be re-used.
- .3 Take all precautions to prevent contamination of basic materials from wind-blown soil particles, weed seeds and from insects. Contamination of the materials may result in their rejection for use.
- .4 Store fertilizer and chemical ingredients in the manufacturer's original containers and in line with the manufacturers' storage instructions.
- .5 The Contractor shall provide appropriate invoices detailing fertilizers purchased for the project and/or empty bags to demonstrate compliance with the soil management practices recommended in the soil analysis report or approval of the Departmental Representative.

1.9 STORAGE OF GROWING MEDIUMS

- .1 Growing mediums shall mean:
 - .1 Existing top soil for re-use
 - .2 Imported top soil
 - .3 Soil Amendments
- .2 Store growing medium in a dry area and protected from contamination, damage and the elements.

1.10 INSPECTION

- .1 Notify Departmental Representative at least 48hrs before placement for inspection of material.

PART 2 - PRODUCTS

2.1 TOPSOIL

- .1 Existing Topsoil as surface for Sodded Areas: mixture of particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth.
 - .1 Soil texture based on The Canadian System of Soil Classification, to consist of 20 to 70% sand, minimum 7% clay, and contain 10 to 25% organic matter by weight.
 - .2 Contain no toxic elements or growth inhibiting materials.
 - .3 Finished surface free from:
 - .1 Debris and stones over 25 mm diameter.
 - .2 Course vegetative material, 10 mm diameter and 50 mm length, occupying more than 2% of soil volume.
 - .4 Amend existing topsoil if it does not conform to the above specification.
 - .5 Consistence: friable when moist.

2.2 SOIL AMENDMENTS

- .1 Fertilizer:
 - .1 Fertility: major soil nutrients present in following amounts:
 - .2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
 - .3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.
 - .4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.
 - .5 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
 - .6 Ph value: 6.0-7.5.
- .2 Sand:
 - .1 Washed coarse silica sand, medium to course textured.

- .3 Commercial Compost
 - .1 Commercial Compost Category A in accordance with CCME PN1340. Provide sample and analysis report for proposed compost if required, for review and approval of the Departmental Representative. Approved samples shall be standard throughout.
- .4 Fertilizer: industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

2.3 SOURCE QUALITY CONTROL

- .1 Advise Departmental Representative of sources of imported topsoil and imported manufactured topsoil to be utilized with sufficient lead time for testing. Provide soil tests for review and approval by Departmental Representative.
- .2 Contractor is responsible for amendments to supply topsoil as specified.
- .3 Soil testing by recognized testing facility for:
 - .1 pH (acidity/alkalinity measurement).
 - .2 For soil pH values more acidic than 6.0, confirm the amount and type of lime required to achieve pH of 6.5.
 - .3 level of water soluble salts.
 - .4 % of sand + % of fines (Silt and Clay)+ % Organic Matter = 100%
 - .5 Total carbon to total nitrogen ratio (C/N)
 - .6 Total nitrogen (%)
 - .7 Available phosphorus, potassium, calcium and magnesium.
 - .8 % of original sample dry weight being gravel
- .4 The soil analysis report shall include:
 - .1 Reasons for any rejection of any soil submitted.
 - .2 Required additives to amend the soil such as sand, organic matter, fertilizers and lime to achieve adequate growing conditions.
- .5 Contractor is responsible for the addition of required additives to re-used existing top soil on site as specified by topsoil testing laboratory. Soils that cannot be improved to meet the standard via addition of organic matter, sand, and/or fertilizers will be rejected as detailed in the soil analysis report.
- .6 The Departmental Representative will pay for all testing and analysis reports. Contractor to ensure all submitted analysis reports are dated and have the project name clearly indicated on the analysis. Prior to the commencement of any work the soil analysis reports must be forwarded to the Departmental Representative for approval. Failure to follow the required procedures may result in the removal of soils from the site at the Contractors expense.
- .7 Testing of topsoil will be carried out by testing laboratory designate by Departmental Representative.
 - .1 Soil sampling, testing and analysis to be in accordance with Provincial standards.

PART 3 - EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to approval of Departmental Representative 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 that complies with EPA 833-R-06-004 or requirements of authorities having jurisdiction, whichever is more stringent.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls as directed by the Departmental Representative following acceptance of the work and restore and stabilize areas disturbed during removal.

3.2 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as directed by Departmental Representative after areas have been cleared of vegetation.
- .2 Strip topsoil to depths necessary to achieve proposed final grades and proposed vegetation as shown on the contract drawings.
 - .1 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- .3 Stockpile in locations as directed by Departmental Representative.
 - .1 Stockpile height not to exceed 2.5 m to 3 m.
- .4 Disposal of unused topsoil is to be in an environmentally responsible manner as directed by Departmental Representative but not used as landfill and not to be used as fill.
- .5 Protect stockpiles from contamination and compaction.

3.3 PREPARATION OF EXISTING GRADE

- .1 Verify that grades are correct.
 - .1 If discrepancies are apparent, notify Departmental Representative and do not commence work until instructed by Departmental Representative.
- .2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage. No pooling or ponding of water will be accepted.
- .3 Remove debris, roots, branches, stones in excess of 25 mm diameter and other deleterious materials.
 - .1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.
 - .2 Remove debris which protrudes more than 75 mm above surface.
 - .3 Dispose of removed material off site.

- .4 Cultivate entire area which is to receive sod to minimum depth of 100 mm per Section 32 92 16.
- .5 Cultivate entire area which is to receive additional topsoil to minimum depth of 100 mm.
 - .1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.4 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

- .1 Place topsoil after Departmental Representative has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 150 mm.
- .3 For sodded areas keep topsoil 15 mm below finished grade after settlement.
- .4 Spread topsoil to following minimum depths after settlement.
 - .1 150 mm for seeded areas.
 - .2 150 mm for sodded areas.
 - .3 500 mm for shrub beds.
- .5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.5 SOIL AMENDMENTS

- .1 Apply and thoroughly mix soil amendments into topsoil at rates specified in the soil testing report:

3.6 FINISH GRADING

- .1 Grade to finished elevations indicated on the Contract Drawings after settlement.
- .2 Grade to eliminate rough spots and low areas and ensure positive drainage.
 - .1 Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.
 - .1 Leave surfaces smooth, uniform and firm against deep foot-printing.

3.7 ACCEPTANCE

- .1 Topsoil placement, depth, finish grading to approval of Departmental Representative prior to commencement of sodding.

3.8 SURPLUS MATERIAL

- .1 Dispose of materials except topsoil not required where directed by Departmental Representative.

3.9 CLEANING

- .1 Proceed in accordance with Section 01 74 11.

- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers, and ensure public areas of site are free from soil surplus.

PART 1 - GENERAL

1.1 EXECUTION

1. Stabilize soil and other material storage piles against wind/rainfall erosion
2. Minimize excessive dust (no chemical based dust suppressant - use only water)
3. Avoid idling vehicles/machinery/equipment
4. Any grading required will need to be completed following the project specifications and kept to a minimum in sensitive areas
5. Reduce soil compaction by restricting large machinery to the designated staging area
6. A project-specific Erosion and Sediment Control Plan must be developed and implemented based on specifications contained in contracting documents by the contractor to minimize the potential for loss of site soils to adjacent waterways. The plan must be approved by the Departmental Representative.
7. Spill response kit is kept to be on-site. Immediately contain and clean up any spills. Report spill to the Ontario Spills Action Centre (1-800-268-6060) and Environment and Climate Change Canada
8. Ensure hazardous substances (including fuel) are handled and applied in a manner to prevent release to the environment. All deleterious substances should be stored, mixed, and transferred on impermeable pads within a defined staging area to prevent water/soil contamination at least 30 m from water bodies
9. The operating, refueling, and maintenance of machinery/equipment and the handling and storage of toxic materials (i.e. oils, lubricants, fuels, and paints) will be carried out in such a way as to avoid contamination of soils and water
10. All compounds used for this project shall be utilized and stored according to the manufacturers' Product Technical Data Sheets
11. Recyclable materials and all waste debris shall be removed from the work area and disposed of off-site, in accordance with all federal, municipal, and provincial regulations to appropriate disposal facilities licensed to receive them. Waste will be removed at a minimum weekly from the site.
12. Exclusion fencing or new wildlife fencing must be in place prior to the removal of the existing wildlife fencing to ensure wildlife does not venture onto the road/parking lot.
13. Environment and Climate Change Canada staff and contractors will be diligent in monitoring for SAR/wildlife prior to, during, and after any work activities. Pre-work surveys will check for turtles and their nest and snake activity
14. Contractors are to be briefed on the appearance and potential presence of these SARA species.
15. If individuals are encountered during project activities, stop work, and allow the individuals to flee the area before commencing work.

16. Stockpiled or exposed soils must be closed off from the ground up to prevent turtle access (and possible nesting). Closure structures must be inspected regularly by the contractor.
17. If individuals and/or nests of turtles are encountered, work must halt while Environment and Climate Change Canada is consulted as to how to address the nest
18. Equipment left overnight or on-site for long periods of time must be checked before startup for any snakes that may have found their way into the equipment.
19. When possible, wildlife will be given the opportunity to escape the work site to the surrounding forest or elsewhere to seek new shelter. If any wildlife is discovered that cannot escape quickly enough, then all work in the immediate areas will cease until Environment and Climate Change Canada staff is consulted.
20. All machinery/equipment will be clean prior to use, in order to avoid the introduction of invasive, alien species into the park
21. Any vegetation species targeted for protection (outside of construction area so that it can be avoided), or removal (within area to be destroyed) will be marked using pink flagging tape
22. Workers will stay in the work areas as much as possible while conducting the decommissioning and construction to reduce overall damage to the surrounding vegetation, trampling, and ground compaction (stay in footprint)
23. Contractor will access work areas via established pathways (i.e., concrete, pavement, or gravel surfaces). If established pathways are not present, construction equipment will travel and work on established landscaped areas only and not disturb natural areas.
24. If any vegetation must be removed, Environment and Climate Change Canada must be contacted prior to removal to ensure there is no harm to migratory birds.
25. Trees and vegetation removal will be minimized to the extent necessary.
26. Protect existing trees by excluding any earth work within tree drip lines.
27. All work sites are to be restored to original or better conditions according to landscaping design.
28. If archaeological resources are uncovered during the project, then Environment and Climate Change Canada staff will be immediately notified and work will halt until further direction.
29. All work will abide by conditions set forth in the Canada Wildlife Act permit issued by Environment and Climate Change Canada.
30. All work will be done in accordance with applicable by-laws regarding noise.
31. Concrete curing water will not be directly released to the aquatic environment.
32. Concrete curing water will not be allowed to migrate to the aquatic environment.