Government of Canada / Gouvernement du Canada

SPECIFICATIONS FOR

Rideau Canal
Poonamalie Dam Phase II
Access Development

ISSUED FOR TENDER

Project No. R.066861.200

August 07, 2018

Prepared by:

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PROJECT TITLE: Poonamalie Dam Phase II Access Development

PROJECT NUMBER: R.066861.200

PROJECT DATE: 2018-07-27

Civil Drawing Number	Title
100	Cover Page and Location Plan
101	Site Plan and Section
102	Sections and Geological Data

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 General
.1 These detailed specifications cover requirements for furnishing of labour, materials, tools, equipment, transportation, supervision and quality control necessary to completely perform work, as described by the drawings and specifications.

.2 Work of this Contract comprises general construction of new access road and parking area at Poonamalie Dam on the Rideau Canal Waterway; and further identified as the following:
.1 Mobilization/Demobilization: Activate, mobilize and demobilize contractor`s personnel, general equipment and operating supplies to site.
.2 Permits: Obtaining regulatory permits, certificates of authorization and approvals.
.3 Site preparation: Clear and grub tree and vegetation, strip top soil along the proposed granular road and parking area for site access.
.4 Supply and install new granular access road and parking area as indicated. Maintain and repair any roadway damage associated with the construction.
.5 Supply and install chain link fence and gate as indicated. Repair any construction associated damage on the existing fencing.
.6 Environmental Procedures: provide required procedures to protect archaeological, cultural and environmental resources for duration of project.
.7 Perform general clean-up to the Departmental Representative full satisfaction and approval.

1.2 WORK RESTRICTIONS

.1 The Contractor is to, 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.

.2 No work is allowed in the waterway and within 3 m from the shoreline.

.3 Protect from damage the in-ground and surface utility line, concrete hydro box (pull box), water gauge, snow gauge and power poles, which are in closed proximity to Work as indicated.

1.3 TIME OF COMPLETION

.1 Commence work in accordance with notification of acceptance of offer and complete Work within dates outlined in contract.

.2 Comply with work schedule restrictions.

1.4 ACCESS TO SITE

.1 Project location is part of the Rideau Canal Waterway, on the Rideau River,

in Rideau Lakes Township near Smith Falls.

.2 The project site is along the shoreline of Park Canada's Property, which can be accessed from Salter Lane, Smith Falls, ON.

.3 Make arrangements, obtain required permits, and confine activities to such routes and load limits as authorities having jurisdiction may require.

.4 Access to Work and limits of Work as indicated or as the approved plan.

.5 Clean public roads routinely to remove sediment and debris deposited by construction activities.

.6 Ensure that no debris or sediment enter into the waterway during transportation of material.

.7 Secure all work and storage areas. This includes installing a fence to prevent public access to areas where construction activities occur and where construction materials are stored.

1.5 EXAMINATION OF SITE

.1 One Site visit scheduled during the tender period is to be as indicated in the instructions to tenderers. Confirmation of attendance is to be made through the Departmental Representative. No other visits will be scheduled by the Owner and, should the tenderer wish to visit the site at other times, it would be his responsibility to make the appropriate arrangements.

.2 Investigate and be fully informed as to the character and extent of the work to be performed and the difficulties involved, the facilities available for delivering, handling and placing of materials.

.3 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.

.4 Provide photos of surrounding properties, objects, and structures liable to be damaged or be subject of subsequent claims.

1.6 FEES, PERMITS, AND CERTIFICATES

.1 Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates.

.2 "Historic Canal Regulations" apply to and govern work under this Contract. Regulations may be obtain from Justice Canada's website at: http://laws-lois.justice.gc.ca/eng/regulations/sor-93-220/.

.3 Contractor may not mobilize or begin any work until Parks Canada issues permit under Historic Canals Regulation (SOR93-220 Sections 11, 14 and 15).
.1 Permit will not be issued before following submittals are submitted and accepted:
.1 Environmental Management Plan (EMP).
.2 Health and Safety Plan.
.3 Site Layout Plan.

.4 Changes to project scope of work not assessed under site specific Basic Impact Assessment (BIA) will require review and acceptance by Client Department and may require issuing revised permit.

1.7 MINIMUM STANDARDS

.1 Use new materials and work to at least all applicable minimum standards of: Canadian General Standards Board, Canadian Standards Association, National Building Code of Canada 2015 (NBC), ASTM, applicable Provincial and Municipal codes, and all other national and international applicable standards.

.2 In case of conflict or discrepancy, most stringent requirement will apply.

1.8 ABBREVIATIONS

.1 Abbreviations used are:
.1 ASTM - American Society for Testing and Materials.
.2 ANSI - American National Standards Institute.
.3 CSA - Canadian Standards Association.
.4 NBC - National Building Code of Canada.
.5 CPM - Critical Path Method.
.6 CGSB - Canadian General Standards Board.
.7 OPSS - Ontario Provincial Standard Specifications.
.8 PSPC - Public Services and Procurement Canada, formerly Public Works and Government Services Canada (PWGSC).

1.9 DEFINITIONS

.1 Unless context clearly indicates otherwise, these definitions apply:
.1 River – Rideau River.
.2 Dam – Poonamalie Dam at Lock 32.
.3 Plans - Drawings listed in "List of Drawings".
.4 Specifications - Subject matter listed in the "List of Contents", addenda to specifications, and relative written communications sent by Departmental Representative to Contractor in connection with Work.

1.10 REQUIREMENTS OF REGULATORY AGENCIES

.1 Adhere to local municipality noise by-laws.

.2 Dispose of unwanted materials at location off lands approved by Ontario Ministry of the Environment.

.3 Adhere to National, Provincial and Municipal requirements relating to the safety, health and protection of workers and the environment.

1.11 CLEAN-UP

.1 Clean and tidy premises on daily basis, do not permit accumulation of debris, trash, or garbage. Provide garbage receptacles in work areas.

.2 Remove rubbish, debris, and garbage from construction activities off site.

.3 At completion of Work remove surplus materials, tools, rubbish, and debris, and dispose of them in an approved manner off the property.

1.12 TAXES

.1 Pay all taxes properly levied by law (including Federal, Provincial, and Municipal).

1.13 FIELD QUALITY CONTROL

.1 Carry out work using qualified licenced workers or apprentices in accordance Provincial Act respecting manpower vocational training and qualification.

.2 Permit employees registered in Ontario apprenticeship program to perform specific tasks only if under direct supervision of qualified licenced workers.

.3 Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties.

1.14 TESTING LABORATORY SERVICES

.1 Departmental Representative will appoint and pay for costs of inspection and testing services for quality assurance purposes, unless indicated otherwise.

.2 Provide safe working areas and assist with testing procedures, including provisions for materials or services and co-ordination, as required by testing agency and as authorized by Departmental Representative.

1.15 CUT, PATCH AND MAKE GOOD

.1 Repair, replace, and refinish, to Departmental Representative's approval, existing surfaces and items damaged in connection with Work, at Contractor's expense.

.2 Repaired, replaced, and refinished items to be at least equal to those that existed immediately before damage occurred.

.3 Disturbed lawn areas to be reinstated to the original condition.

1.16 SIGNS

.1 Provide common-use signs related to traffic control, information, instruction, use of equipment, and public safety devices in both official languages or by use of commonly-understood graphic symbols to Departmental Representative's approval.

.2 No advertising permitted on this project.

.3 The Contractor is not allowed to advertise this project on any website or in publications without permission from PSPC.

1.17 CONTRACT DOCUMENTS

.1 Drawings and specifications are complementary, items shown or mentioned in one and not in other are deemed to be included in contract work.

.2 Contractor responsible for printing/duplicating required drawings or specifications for:
.1 Suppliers;
.2 Sub-contractors;
.3 On-Site drawings & specifications;
.4 Project Record drawings.

.3 Maintain at site for Contractor and Departmental Representative, one record copy of:
.1 Contract Drawings.
.2 Specifications.
.3 Amendments.
.4 Change Orders and other modifications to Contract.
.5 Reviewed shop drawings, product data, and samples.

1.18 LAYOUT OF WORK

.1 Contractor responsible for layout and control survey work, and checking plan dimensions against field measurements.

.2 Lay out Work according to elevations and dimensions shown on plans and verified or determined in field.

.3 Notify Departmental Representative immediately of any discrepancies between field measurements and dimensions shown on plans.

.4 Be responsible for rectification of errors resulting from failure to verify dimensions, elevations, and other pertinent data shown on plans.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 Poonamalie Dam vehicular access to the work area is possible from Salter Lane. Refer to drawings.

.2 The work of this Section includes but is not limited to:
.1 Survey with stakes to confirm the location and boundary of proposed site access and staging area.
.2 Clearing, grubbing and stripping to provide site access and staging area.
.3 Maintaining access paths and work/storage areas for duration of work.
.4 Restoring any temporary roads and staging area acceptable to Department Representative at the end of project.

1.2 RELATED WORK

.1 Section 01 35 29 - Health and Safety Requirements.

.2 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

.3 Section 31 11 00 – Clearing and Grubbing.

.4 Section 01 52 00 – Construction Facilities.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

.1 Payment included in Lump Sum Price:
.1 Item No. L3 – Site Access and Staging.
.2 Item No. L5 – Clearing, grubbing, soil stripping and rough grading.

1.4 INFORMATION AND SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - SUBMITTAL PROCEDURES.

.2 Submit Site Layout Plan at least 10 days prior to proposed mobilization date.
.1 Prepare Site Layout Plan indicating proposed layout of construction zones, work areas, staging areas and parking areas.
.2 AutoCAD drawings used for development of Contract Drawings available upon request.

1.5 DELINEATING THE WORK/STORAGE AREA

.1 Provide temporary construction fencing and/or secure gate at entrance to the site to prevent Public access to the work areas at all times during construction.

.2 Take appropriate security precautions to safeguard equipment, tools, and materials on site from vandalism and theft.

.3 Remove temporary fencing and/or temporary gate in it's entirety from the site after work is completed. Make good all damage.

1.6 PARKING

.1 If additional storage and parking area is required, the contractor must submit a plan to the departmental representative. The plan must minimize the destruction of existing trees and other landscape and provide details to make good any disturbed areas at end of project.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 This section covers measurement of work for payment purposes, and scope of work included in pay items in Lump Sum Price Table.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

.1 Lump Sum Price Item – All Work items to be paid as Lump Sum Price and not measured for payment. These items include costs associated to perform work including but not limited to materials, equipment, personnel, overhead, etc.

1.3 APPLICATIONS FOR PAYMENT

.1 Make applications for payment on account as provided in Contract as Work progresses.

.2 Date applications for payment last day of payment period and ensure amount claimed is for value, proportional to amount of Contract, of Work performed and products delivered to place of work at that date.

.3 Submit breakdown of lump sum items, at least 10 days before first application for payment. The proposed Schedule of values for parts of Work completed with respect to the aggregate total amount of the Contract, will be used to facilitate application evaluation of payments.

.4 Support claims for products delivered to place of work but not yet incorporated into Work by such evidence as Departmental Representative may reasonably require to establish value and delivery of products.

1.4 LUMPSUM PRICE ITEMS

.1 The items of work listed below are not intended to be complete, but are provided to give an indication to the Contractor how the Contract Lump Sum Price will be broken down for payment purposes. As such, it is the Contractor's responsibility to ensure that all items of work are covered in the Contract Lump Sum Price.

.2 Items included as Lump Sum Price are:
- .1 Item No. L1 - Mobilization
- .2 Item No. L2 – Demobilization
- .3 Item No. L3 – Site Access and Staging
- .4 Item No. L4 - Environmental Procedures
- .5 Item No. L5 - Clearing, grubbing, soil stripping and rough grading
- .6 Item No. L6 – Site cleaning
- .7 Item No. L7 – Access road and parking
- .8 Item No. L8 – Riprap and Geotextiles
- .9 Item No. L9 – Chain Link Fence and Gate
- .10 Item No. L10 – Tree removal

1.6 LUMP SUM ITEM DESCRIPTION

.1 Item No. L1 - Mobilization
.1 Costs related to activation, mobilizing Contractor's personnel, general equipment, and operating supplies to site. Establishment of storage and general facilities for Contractor's operation at site.

.2 Item No. L2 – Demobilization
.1 Costs for transportation of personnel, materials, equipment, and supplies not required or included in contract from site; including disassembly, removal, and site cleanup of facilities assembled on site specifically for this contract.

.3 Item No. L3 - Site Access and Staging
.1 Item includes cost of planning site layout, work pads for work/storage areas and contractor parking areas.
.2 Include costs for installing and maintaining staging areas, parking and facilities to undertake work and returning disturbed areas to condition found or better at start of work.

.4 Item No. L4 - Environmental Procedures
.1 Item includes control work to provide environmental, waterway and fish habitat protection including but not limited to: implementing mitigation measures from the site-specific Basic Impact Assessment (BIA), preparation of Environmental Management Plan (EMP), installation, routine inspection, maintenance, modifications and removal of environmental protection measures, and other environmental procedures.
.2 Item includes changes made to measures or work procedures as directed by Departmental Representative to ensure environmental, waterway, and fish habitat protection.

.5 Item No. L5 - Clearing, grubbing, soil stripping and rough grading
.1 Item includes costs related to Clearing, grubbing, soil stripping and rough grading and prepare subgrade for compacted granular road.

.6 Item No. L6 - Site Cleaning
.1 Item includes costs related to continuous progressive and final site cleaning, recycling, cleaning of public pathways and roadways.

.7 Item No. L7 – Access road and Parking:
.1 Item includes costs related to granular A and granular B material placed and accepted. This includes but is not limited to surface preparation prior to work.

.8 Item No. L8 – Riprap and Geotextiles:
.1 Item includes costs related to riprap and geotextiles material placed and accepted. This includes but is not limited to, surface preparation prior to work.

.9 Item No. L9 – Chain Link Fence and Gate:
.1 Supply and installation of Chain Link Fence and gate enclosing the access road to be paid at contract lump sum.

.10 Item No. L10 – Tree removal:

.1 Tree removal to be paid at contract lump sum to remove trees as indicated and identified on site.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 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 documents, when possible, in electronic format as pdf files. Forward pdf, MS Project and Autocad dwg through email or alternate electronic file sharing service as directed by Departmental Representative.

.12 Request submittal dates from Departmental Representative for submittals which do not have a clear date requirement.

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 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.

.3 Allow 5 working days for Departmental Representative's review of each submission. Allow 10 workings days for the review of Environmental Management Plan.

.4 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.

.5 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.

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

.7 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 Layout, showing dimensions, including identified field dimensions, and clearances.
.2 Setting details.
.3 Capacities.
.4 Performance characteristics.
.5 Standards.

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

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

.10 Submit 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.

.11 If upon review by Departmental Representative, no errors or omissions are

discovered or if only minor corrections are made, electronic 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.

.12 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
.1 This review shall not mean that PSPC 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.

.13 Submittals include but are not limited to the following:
.1 Notice of Project
.2 Project Schedule
.3 Contract Amount Breakdown
.4 Site Layout and Access Plan
.5 Copies of Orders, Directions, and Reports Issued by Agencies Having Authority
.6 Materials and Equipment Technical Data Sheets
.7 Manufacturer’s Instructions, Product Data and Literature
.8 Photos of Existing Site Conditions
.9 Site Specific Health and Safety and Fire Plan
.10 Incident and Accident Reports
.11 Worksite Health and Safety Inspection Reports
.12 Workplace Safety and Insurance Board Experience Rating Report
.13 Environmental Management Plan
.14 Waste Numbers and Permits
.15 Hazardous Material Disposal Permits and Certificates
.16 Waste Transfer Site Licence and Letter of Acceptance
.17 Backfill Material Testing Reports
.18 As-Built Drawings

1.3 SAMPLES

.1 "Samples" means examples of materials, equipment, quality, finishes, and workmanship.

.2 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.3 If delivering samples to Departmental Representative's business address, courier must be prepaid.

.4 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.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.

.7 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.8 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

.9 Samples to be submitted include but are not limited to:
.1 Backfill Material
.2 Samples of Materials, Equipment, Quality, and Workmanship

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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 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 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.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS)

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
.1 Results of site specific safety hazard assessment.
.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
.3 Measures and controls to be implemented to address identified safety hazards and risks.
.4 Contractor's Safety Communication Plan.
.5 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations.

.3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.

.4 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.

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

.6 Submit records of Contractor's Health and Safety meetings when requested.

.7 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, when requested.

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

.9 Submit copies of incident and accident reports.

.10 Submit 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.

.2 File other required notices in accordance with Acts and Regulations of Province of Ontario.

.3 Submit copies of Notice of Project to Departmental Representative immediately.

.4 Keep copy of Notices of Project and other notices on site at all times.

1.4 SAFETY ASSESSMENT

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

1.5 MEETINGS

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

1.6 REGULATORY REQUIREMENTS

.1 Comply with the Acts and regulations of the Province of Ontario.

.2 Comply with specified standards and regulations to ensure safe operations at site.

1.7 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Poison ivy in existing access trail.
.2 Corroded metals from existing wired fencing and post.
.3 Silica in concrete.

.2 Hazards on-site include but are not limited to:

.1 Working near or under electrical wires.
.2 Working near water.

1.8 GENERAL REQUIREMENTS

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

.2 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.

1.9 COMPLIANCE REQUIREMENTS

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

1.10 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.

1.11 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.

1.12 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 Health and Safety Policy.
.2 Contractor'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 Health and Safety Plan.
.10 Valid certificate of first aider on duty.
.11 WSIB "In Case of Injury At Work" poster.
.12 Location of toilet.

1.13 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 notice 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.

1.14 BLASTING

.1 Blasting or other use of explosives is not permitted on this project.

1.15 WORK STOPPAGE

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

.2 Assign responsibility and obligation to 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.

1.16 FIRE SAFETY REQUIREMENTS

.1 Comply with National Building Code of Canada 2015 (NBC) for fire safety in construction and National Fire Code of Canada 2015 (NFC) for fire prevention, firefighting, and life safety in building in use.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 This Section describes requirements for protection of the environment that apply to Work. These requirements apply to all Sections of this Specification, without limiting the conditions and approvals imposed by statute.

.2 Scope of Work does not anticipate in-water work. Control work to provide effective environmental, waterway, and fish habitat protection. Departmental Representative and Parks Canada Agency (PCA) Environmental Officer will monitor environmental protection measures and will identify whenever such protection is found to be ineffective. Change protective measures or work procedures as directed by Departmental Representative to ensure environmental, waterway, and fish habitat protection.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

.1 There will be no measurement of Archaeological, Cultural and Environmental Procedure.

.2 Item includes environmental protection procedures to be paid in lump sum price:
.1 Item No. L4 - Environmental Procedures.

1.3 REGULATORY REQUIREMENTS

.1 Comply with environmental requirements of Contract Documents, applicable federal, provincial, and local statutes, acts, regulations, and ordinances of Agencies having jurisdiction.

.2 Client Department, Parks Canada Agency, is main Environmental Authority for this project.

.3 Client Department will not issue permit to authorize start of Work, under Historic Canal Regulations, before review and acceptance of Environmental Management Plan.

.4 Comply with and enforce compliance by employees of prescribed environmental mitigation measures outlined in Environmental Management Plan (EMP) and site-specific Basic Impact Assessment (BIA).

.5 Allow Client Department Environmental Authority full access to affected Work area and cooperate to provide reasonable facilities for such access.

.6 Comply with written orders from PCA Environmental Authority to correct deficiencies or implement additional environmental mitigation measures.

.7 Submit copies of environmental written orders to Departmental Representative.

1.4 HERITAGE PROTECTIONS

.1 The Rideau Canal is a National Heritage Site.

.2 Preserve heritage elements of site by executing Work without damage to site features or character defining elements.

.3 Notify Departmental Representative and PCA Environmental Authority immediately if heritage items are damaged.

.4 Employ minimal intervention approach for all Work.

.5 Access roads, staging areas, and work pads require review and approval.

.6 Damage to heritage elements will not be tolerated.

.7 Ensure appropriate supervision work, adequate training for workers, and other necessary precautions to protect existing structures.

.8 Notify Departmental Representative immediately where reasonable concern exists that damage may result from Work.

.9 Contractor may propose alternative work methodologies to be accepted by Departmental Representative and PCA Environmental Authority.

.10 Protect possible archaeological and cultural resources by excavating only to limits indicated.
.1 Excavation beyond indicated limits requires acceptance by Departmental Representative and PCA Environmental Authority.

1.5 RELICS AND ANTIQUITIES

.1 Corner stones and their contents, buried artifacts, remains and evidence of ancient persons and peoples, commemorative plaques and other objects of historic value and worth, remain the property of the Crown. Protect and notify Departmental Representative immediately of discovery of such objects.

.2 Should historic objects be uncovered during the work, stop work immediately and notify Departmental Representative.

.3 Do not resume work until directed by Departmental Representative.

1.6 ARCHAELOGICAL AND CULTURAL REQUIREMENTS AND RESTRAINTS

.1 Site may contain possible cultural and archaeological remnants.

.2 PCA Environmental Authority may monitor and record some or all aspects of excavations, site access routes and disturbances to soil overburden due to equipment and general work operations.

.3 Cease Work immediately in affected work area and notify Departmental Representative if cultural resources, suspected archaeological resources, or character-defining elements are uncovered or damaged during Work.

.4 Do not resume work until directed by Departmental Representative.
.1 Proceed with other work and await further direction for work in affected area from PCA Environmental Authority on how to proceed.

.5 Allow Departmental Representative and PCA Environmental Authority

Representative full access to affected Work area and cooperate to provide reasonable facilities for such access.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Submit Site Specific Environment Management Plan (SSEMP) to Departmental Representative and Client Department, 5 to 10 working days required for each submission review.

.1 In order to allow for the timely commencement of project activities, Environment Management Plan (EMP) can be submitted as separate components as project details become available. The EMP, or its components, will be submitted in writing prior to implementation of project activities and must be accepted by Parks Canada and Departmental Representative.

.2 It is recommended that an environmental professional(s) (EP) prepare the EMP or its component plans incorporating guidance found in PCA's Environmental Standards and Guidelines - Ontario Waterways (2017). The EMP will detail frequency of monitoring and list high-risk construction activities where an environmental professional must be onsite. Monitoring and testing should be adaptable to changing site conditions and will capture any event/incident for the length and scope of that event.

.3 Client Department will outline prescribed mitigation measures during construction start-up meeting.

.4 Environmental Management Plan to present comprehensive overview of known or potential environmental issues to be addressed during construction.

.5 Environmental Management Plan to be prepared in accordance with requirements of Federal, Provincial, and Municipal laws and regulations.

.6 Notify Departmental Representative of proposed changes to project plans or schedules effecting Environmental Management Plan.

.7 Submit amended Environmental Management Plan to address accepted changes for review and acceptance by Client Department.

.8 Contractor to ensure on-site personal are aware of, and comply with prescribed mitigation measures in EMP and BIA.

.3 Environmental Management Plan to include:

.1 Names of Responsible Persons: Persons responsible for ensuring adherence to Environmental Management Plan. Names of Instructors: Names and qualifications of persons responsible for training site personnel. Training Program: Description of environmental protection personnel training program.

.2 Site Layout: Drawings showing locations of proposed material storage areas, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.3 Provide plans and mitigation for the installation and removal of any temporary structures.

.4 Spill Prevention and Control Plan: including location for storage and refueling of all fuel and fuel operated equipment located near waterways. Fuel containers are to have secondary containment, overfill and spill protection. Fueling area is to be contained to address potential spillage. Identify procedures, instructions, and reports to

be used in event of unforeseen spill of regulated substance.

.5 Contaminant Prevention Plan: identifying potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.6 Waste Water Management Plan: identifying methods and procedures for management, treatment and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, concrete displaced water, clean-up water. Waste Management Plan that is to include the following component plans:

.1 Non-Hazardous Solid Waste Disposal Plan: identifying methods and locations for solid waste disposal including clearing debris.

.2 Hazardous Material Handling Plan: describing hazardous waste materials isolation, removal, handling, storage, transportation, disposal, and staff training procedures to be followed prior to start of work.

.3 Waste Reduction Work plan: indicating materials and quantities of material that will be recycled and diverted from landfill.

.4 Names of Waste Handlers: Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.7 Historical, archaeological, cultural resources, biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.8 Vegetation Management, Protection and Replantation Plan.

.1 Vegetation that is to be removed should be outlined and kept to minimum.

.2 Trees that are required to be removed should be clearly identified and justification of removal should be made clear. Tree removal and pruning should be kept to absolute minimum.

.3 Vegetation/trees that are removed shall be replaced or compensated for, and outlined within a revegetation plan.

.9 Wildlife Protection and Management Plan.

.10 Air pollution Control Plan: detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and are contained on project site.

.11 Erosion, Sediment and Dust Control Plan: Plan which identifies type and location of erosion, sediment and dust controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion, sediment and dust control plan, Federal, Provincial, and Municipal laws and regulations.

.4 The EMP will detail frequency of monitoring and list high-risk construction activities where a Third-party Qualified Environmental Professional (TPQEP) must be onsite. The EMP will include a list of key project activities and identify the actual and potential environmental impacts associated with each activity including those described in the BIA. If required, environmental monitoring and water quality monitoring and testing for high-risk events/activities (as outlined within the EMP) shall be conducted by a TPQEP. Monitoring and testing should be adaptable to changing site conditions and will capture any event/incident for the length and scope of that event. Monitoring and testing by a TPQEP may be required for additional events/activities at PCAs discretion.

.5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

1.8 HISTORICAL AND ARCHAEOLOGICAL CONTROL

.1 Provide protection for historical, archaeological, cultural, and biological/vegetation resources in accordance with approved SSEMP.

.2 Accommodate PCA Cultural Resource Management (CRM) representatives' needs for documentation of existing structures after discovery.

.3 Include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative to address situations where such resources not known to be on site are discovered during construction.

.4 Should any archaeological or cultural resource be discovered while excavation, stop work. Contact Departmental Representative for direction prior to continuing work.

1.9 WORK RESTRICTION PERIODS

.1 To avoid impacts to migratory breeding birds, clearing and grubbing of vegetation should be avoided during the period when migratory birds may be nesting. If clearing and grubbing is required during this period, then the area should be cleared of nests by a qualified avian biologist prior to the activity being undertaken.

.2 Removal of woody vegetation will not occur during the breeding bird season from May 1st to August 31st inclusive (see Wildlife Protection and Plant and Tree Protection for further details).

.3 Additional timing restriction for shoreline works may be required for aquatic wildlife /turtle hibernation activities. Areas of impact should be isolated from wildlife access prior to these sensitive time periods.

1.10 FIRES

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

1.11 PLANT AND TREE PROTECTION

.1 Reduce soil displacement and compaction by using heavy machinery in designated areas and on existing vehicle paths.

.2 Avoid using heavy machinery on saturated ground.

.3 Use equipment of low bearing weight and low psi tires wherever possible.

.4 Provide barriers around trees which may be affected by work, including staging areas.
.1 Locate barrier 1 metre beyond Dripline.
.2 Barrier to consist of protective wood framework covered with plastic construction fence material, extending from grade level to a height

of 2 metres.
.3 Maintain barriers in good repair throughout duration Work.
.4 Remove barriers upon completion of Work.
.5 Where these restrictions are not possible, seek acceptance of Departmental Representative for alternative solutions.

.5 Damage to trees due to Contractor's operations:
.1 Broken branches 25 mm or greater in diameter: cut back cleanly at break, or to within 10 mm of their base, if substantial portion of branch is damaged Departmental Representative will direct.
.2 Exposed roots 25 mm or larger: cut back cleanly to soil surface within five calendar days of exposure.
.3 Damaged bark: neatly trim back to uninjured bark, without causing further injury, within five calendar days of damage.

.6 Prune trees close to tree trunk, make shallow undercut first, then follow with top cut. Do not use axe for pruning.

.7 Cut trees at ground level and do not leave pointed stumps.

.8 Pay special attention to fruit bearing shrubs.

.9 Clear vegetation by hand from unstable or erodible banks, where possible avoid using heavy machinery.

.10 Prepare suitable planting plan and erosion and sediment controls for acceptance by Departmental Representative when conducting grubbing.

.11 Use native species for tree planting and ground cover with mulch to prevent erosion and help seeds germinate.
.1 Keep site stabilized if there is less than four weeks remaining in growing season.
.2 Visual site inspections to be conducted in spring and fall for first two growing seasons following planting. If any plantings are found dead or failing, mitigation measures to be implemented to reduce risk of future failure and plants to be replaced and monitored accordingly.

.12 Trees, shrubs and vegetation which are to remain throughout construction should be properly identified and delineated.

.13 Where practical, the branches of the large trees should be trimmed back as the first option rather than cutting the entire tree.

.14 Grubbing should not be conducted unless a suitable planting plan and Erosion and Sediment Controls are in place. Discuss with EA officer for suitable plans.

.15 In larger areas to be cleared attempts should be made to keep trees >15 cm DBH intact and instead remove lower limbs (< 2.5 m high).

.16 Delineate areas to be avoided with flagging tape or temporary fences.

.17 Ensure appropriate handling procedures are followed for noxious weeds such as Giant Hogweed or Wild Parsnip.

.18 Root systems of trees identified to remain should be properly delineated and

fenced off, so as to protect the root systems from being crushed and impacted by machinery

.19 In the event that the installation of root-protectant fencing is not possible or ideal, alternative measures, as approved by PCA, must then be implemented. Such measures must provide a sufficient amount of soil compaction prevention with regards to the highest level of activity to occur within the immediate area of protection.

.20 Native grasses, shrubs, etc. should be planted to match existing species growing on the sites.

.21 Disturbance of vegetation along the shoreline must be limited to what is required.

1.12 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 use waterway beds for borrow material.

.4 Do not release deleterious materials into waterway.

.5 Do not use salt as deicer or sand for traction within 30 m of waterway.

.6 Where ice is safety concern, use environmentally acceptable deicing or traction materials approved by Departmental representative.

.7 Ensure equipment are free of earth material, and excess, lose or leaking fuel, lubricants, coolant and other deleterious material that could enter waterway.

.8 Stockpiles of excavated or fill materials to be stored and stabilized no closer than 30 m from waterway. Runoff from excavated or fill material to be contained from entering waterway.

.1 If 30 m is not possible area should be reviewed by Departmental Representative.

.9 Use biodegradable hydraulic fluids for machinery that will be working around the river.

1.13 AIR QUALITY AND NOISE CONTROL

.1 Minimize noise levels from construction activities by using proper muffling devices, in addition to appropriate timing and location of these activities to reduce or minimize effect of noise on nearby residents, recreationists, and wildlife.

.2 On- site vehicles to have a Drive Clean Emissions Report in accordance with O. Reg. 361/98: Motor Vehicles under the Environmental Protection Act, R.S.O.

.1 Departmental Representative or PCA Environmental Authority may stop a vehicle if they believe vehicle is emitting excessive exhaust smoke

or suspect emission control equipment has been tampered with.

.3 Keep a record of complaints and issues to monitor and mitigate public complaints.
.1 Contractor to address issues that arise.

.4 Comply with Municipal Noise By-Laws.

.5 Notify public of planned activities that may cause disturbances and schedule them to avoid sensitive time periods.

.6 Minimize idling of construction equipment and machinery.

.7 Use well maintained equipment and machinery fitted with fully function emission control systems, mufflers, exhaust baffles, and engine covers.

1.14 HAZARDOUS MATERIALS

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

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

.3 Store Hazardous Materials in secure areas on impermeable pads, provide berms if necessary.

1.15 CLEANING OF CONCRETE EQUIPMENT

.1 Departmental Representative will designate cleaning area for equipment and tools to limit water use and control runoff.

.2 Cleaning area to be no closer than 30 m from waterway to prevent contamination.

.3 Where no safe cleaning area is available, Contractor to provide containment basin for area where equipment to be cleaned.

.4 Alkali water, such as concrete wash water, to be collected, treated and disposed off-site in accordance with federal, provincial, and local authority requirements.

.5 Use only trigger operated spray nozzles for water hoses.

.6 A secondary containment system is required of all on site ASTs as per provincial and federal storage tank requirements: https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/publications/code-practice-storage-tank-systems/part-3.html

1.16 WILDLIFE PROTECTION

.1 Detail procedures for preventing turtle entry and nesting within disturbed projects area in Environmental Management Plan.

.2 Place temporary reptile exclusion fencing around stockpiled material and construction areas that may attract turtle nesting activities.

.3 Reptile exclusion fencing must follow the guidance in the document titled Species at Risk Branch, Best Practices Technical Note, Reptile and Amphibian Fencing, Ver. 1.1, developed by the Ontario Ministry of Natural Resources and Forestry: http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_tx_rptl_amp_fnc_en.pdf

.4 Environment Management Plan to detail procedures for avoiding disturbance to wildlife and nesting birds.

.5 Do not use synthetic plastic erosion control mats or blankets to prevent entrapment hazard for turtles.

.6 Standard sediment fencing on site should not have mesh/netted backing.

.7 Retain the services of a qualified biologist to educate workforce on potential wildlife which could occur in the vicinity of the work area and measures to avoid wildlife.

.8 When possible, complete work during daylight. If nighttime lights are used, they are to be installed so as to illuminate the work area only to minimize impacts to nighttime activities of wildlife.

1.17 INVASIVE SPECIES

.1 Clean mud, dirt, and vegetation off machinery and equipment before entering work site and before leaving work site. Inspect and clean in accordance with Clean Equipment Protocol for Industry: http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf

.2 Submit photo and report to Invading Species Hotline (1-800-563-7711) or online at EDDMapS Ontario, https://www.eddmaps.org/ontario/ and to Departmental Representative and PCA Environmental Authority if an invasive species is suspected.

.3 Conduct site assessment for invasive plant infestations prior to carrying out field activities.

.4 Use weed-free material for erosion control and stabilization ensuring that seed does not potentially contain invasive plants.

.5 Commercially purchased seeds should have a label that states following:

.1 Species.

.2 Purity: no less than 75% and preferably over 85%.

.3 Weed seed content: tag should state no invasive plants are present, only use certified weed-free seed.

.4 Germination of desired seed: germination should not be less 50% for most species with exceptions for some shrubs and forbs.

.6 Move only contaminate-free materials to non-infested areas to prevent spread of invasive plants.

.7 Familiarize workers with invasive species potentially present within work site areas including but not limited to: European Buckthorn, Japanese knotweed, and Zebra mussel.

.8 Properly dispose of any found invasive species to ensure no further propagation.

.9 Preventative and Control Measures, as identified in the Ontario Waterways (2017) document to be incorporated into the EMP and implemented by the Contractor.

1.18 WATER QUALITY

.1 Do not exceed Ontario Drinking Water Quality Guidelines due to project activities.

.2 Place only washed and clean material free of fine particulate matter in or near water where previously planned or authorized.

.3 Snow containing salt or sand may not be dumped or allowed to melt into waterway.

.4 Water quality to be maintained in accordance with Canadian Council of Ministers of the Environment Canadian Water Quality Guidelines for the Protection of Aquatic Life.

.5 Water with pH > 12.5 is treated as a hazardous waste in accordance with Ontario Regulation 347 of the Environmental Protection Act and water must be removed from site.

.6 Stop work in immediate area in the event pH, sedimentation, or turbidity exceed identified thresholds and implement mitigation measures accepted by Departmental Representative.

.7 Store chemicals and materials in dry storage to prevent infiltration of leachate into water table or surface run-off.

1.19 FLOODS, EXTREME WEATHER, AND ICE FORMATION

.1 Design project worksite to withstand variable weather conditions.

.2 Minimize risk of inundation due to wet weather by grading, providing drainage and covering or protecting surfaces.

.3 Stabilize work area against impact of high flow and heavy rainfall events at the end of each workday.

.4 Restrict construction activities and stabilize excavations during wet weather to reduce surface run-off from exposed Work areas.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 CLEANING

.1 Progress Cleaning: Leave Work area clean at end of each day.

.2 Separate and recycle materials that can be recycled.
- .1 Dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner by taking them to special designated waste facility. Do not dump these into waterways, storm or sanitary sewers.
- .2 Ensure emptied containers are sealed and stored safely for disposal.
- .3 Dispose of contaminated material off site to a licensed facility.

.3 Clean areas under contract to condition at least equal to that previously existing and to approval of Departmental Representative.

.4 Store all oils, lubricants, fuels and chemicals in secure areas on impermeable pads; provide berms and secondary containment systems as necessary.

.5 Concrete debris to be placed into watertight container daily, and or more frequently as directed.

.6 Permit no amount of debris, trash, or garbage to accumulate on-site.

.7 Do not bury rubbish on site.

.8 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.9 Waste generated will be disposed according to regulations (i.e. O. Reg 102/94 and O. Reg. 558/00, R.R.O. 1990, 347).

.10 Spills:
- .1 Have environmental emergency response plan in place, spill kit, and other materials readily available on-site to respond quickly if spills occur.
  - .1 Spill kit to be maintained on site.
  - .2 Contractor to ensure adequate additional resources available
- .2 Report spills immediately to Departmental Representative, Client Department, and Ontario Ministry of Environment Spills Action Centre (Telephone No. 1-800-268-6060).
- .3 Secure source of spill to stop flow of spill and isolate area of spill.
- .4 Using appropriate safety precautions, collect liquid or solidify liquid with an inert, noncombustible material, or absorbent pads.
- .5 Clean-up, remove, and dispose of contaminated materials in accordance with MSDS or as directed by Ontario Ministry of Environment.

.6 Be responsible for costs of cleaning up spills by method accepted by Departmental Representative and Client Department.
.7 Submit documentation of remediation techniques and test results.
.8 Provide training to site personnel in the use of the kit.
.9 Spill response materials to be compatible with the type and quantity of materials being handled.

.11 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
.1 temporary structures, used or maintained for purpose of this project must be removed from site after completion of project.

3.2 DISPOSAL OF WASTE MATERIALS

.1 Waste subject to Ontario Environmental Protection Act to be transported with valid "Certificate of Approval for a Waste Management System" to site approved by Ontario Ministry of the Environment to accept that waste.

.2 Obtain and submit Waste Generator Numbers, permits, manifests, and other paperwork necessary to comply in accordance with Section 01 74 20 – Waste Management and Disposal.

.3 Recyclable material and waste to be removed from site in accordance with all Federal, Provincial, and Municipal regulations to licensed disposal facilities in accordance with Section 01 74 20 - WASTE MANAGEMENT AND DISPOSAL and in accordance with regulations (i.e., O. Reg. 102/94 and O. Reg. 558/00, R.R.O. 1990, 347.

.4 Dispose of contaminated excavated materials in designated areas in accordance with approved EMP.

.5 Excavation, filling, pumping, towing, hauling, disposal and dumping operations for excavation will employ such methods and equipment to ensure no loss of materials into waterways.

3.3 EROSION, SEDIMENT AND DUST PROTECTION

.1 Submit Erosion and Sediment Control Plan, prepared by a qualified individual. Submitted as part of Environmental Management Plan. EMP to demonstrate:
.1 Focus primarily on erosion control and sediment control secondary.
.2 Areas to be controlled: including adjacent areas that could be negatively impacted by construction activities.
.3 Drainage areas and patterns based on construction design and site topography.
.4 If required, plan for directing sediment-laden run-off to on-site detention or retention facilities.
.5 Plan for diverting clean storm run-on from site and exposed areas.
.6 Material data sheets for geotextile.
.7 Installation, monitoring, maintenance, and removal procedures.
.8 Installation drawings.
.9 Seam details.
.10 Anchoring details.
.11 Consideration of project schedule in selecting environmental controls.
.12 Consideration of seasonal requirements and plans for design controls and practices for controlling associated erosion and settlement.

.2 Prior to starting work that will create dust or debris, install effective mitigation techniques for erosion, sediment, dust and debris control in accordance with Federal, Provincial and Municipal laws and regulations.
.1 Maintain these protective measures at all times, including during shut down periods.
.2 Choose appropriate controls based on particle size present in sediment.

.3 Provide one meter high sediment fence barrier in areas where, due to activities, sediment or debris may enter the waterway. This includes, but is not limited to, sediment barrier installed around staging and work areas.

.4 Maintain standby supply of pre-fabricated sediment fence barrier, or an equivalent ready-to-install sediment control device.

.5 Maintain effective surface drainage and direct runoff away from work areas and into adequately vegetated areas.

.6 Excavation to cease during periods of heavy rainfall, unless runoff is contained from entering waterway.

.7 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.8 Implement erosion and sediment control measures prior to Work and maintain during Work phase. The following principles should be considered:
.1 Diversions to limit run-off water.
.2 Reduction of erosional forces by surface water velocity reduction.
.3 Reduction of sediment development through sediment collection or anchoring.
.4 Sedimentation of mobilized sediments.
.5 Filtration of sediment carrying flows.
.6 Collection of captured or contained sediments.
.7 Treatment of pH.

.9 Consider particle size present in the sediment to select appropriate control options.

.10 Erosion and sediment controls must be selected to treat particle size present in the native soils and sediments on Work.

.11 Environmental protection measures shall be checked after each extreme weather event. Avoid activities that could lead to erosion during excessively wet weather conditions; monitor forecasts for heavy rainfall watches & warnings.

.12 All disturbed areas of work site shall be stabilized immediately and re-vegetated as soon as conditions allow. All exposed areas should be covered with erosion control blankets or other measures to keep the soil in place and prevent erosion until vegetated in the spring.

.13 Sediment control measures and exclusion fencing must be removed in a way that prevents escape or re-suspension of sediments.

3.4 OPERATION AND MAINTENANCE OF EQUIPMENT

.1 Maintain machinery and equipment to be clean, free of leaks, and in optimal

working condition.
.1 Ensure measures are in place to minimize impact of spills.

.2 Provide and use drip trays under all fuel-powered equipment and machinery to prevent discharge of oil, grease, antifreeze, or other materials into ground or waterways.
.1 Drip trays shall be sized to encompass the perimeter of the machinery/equipment and shall provide ample spacing for refueling activities.

.3 Equipment and heavy machinery to meet or exceed applicable emission requirements.

.4 Operate machinery from stable location.

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

.6 Designate a re-fueling depot with spill management equipment in place.

.7 Vehicle and equipment maintenance and refueling to be conducted over impermeable/absorptive material situated at a designated area that is located at least 30 m away from nearest waterway.
.1 If 30 m is not possible area should be reviewed by Departmental Representative.

.8 Store oils, lubricants, fuels, and chemicals in secure areas on impermeable pads.

.9 There shall be no discharge of chemicals and cleaning agents in or near aquatic habitats; all such substances shall be disposed of at a facility licensed to receive them.

3.5 CONCRETE AND GROUTING ACTIVITIES

.1 Avoid concrete and grouting activities during or immediately after wet weather conditions.

.2 Ensure use of concrete, sealants, and other compounds in accordance with appropriate Product Technical Data Sheet.

.3 Remove dust, debris, unused aggregate, and concrete rubble generated as result of concrete work and dispose off-site ensuring material does not enter waterway. Isolate all work from waterway.

.4 Place concrete and lime-containing debris into watertight container daily, or more frequently as directed.

.5 In event of a release of concrete or grout Notify Departmental Representative, PCA Environmental Authority and Ontario Ministry of Environment Spills Action Center (Tel: 1-800-268-6060).
.1 Clean up and execute remediation immediately in accordance with provincial and federal regulatory requirements and accepted by PCA Environmental Authority.
.2 Install additional sediment barriers as necessary/applicable.
.3 Document remediation, testing, results to be submitted to Departmental

Representative and PCA Environmental Authority.

.6 As concrete leachate is alkaline and highly toxic to fish and other aquatic life, ensure that all works involving the use of concrete, cement, mortars and other Portland cement of lime-containing materials (concrete) will not deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into or about any watercourse. Concrete materials cast in place must remain inside formed structures. Concrete waste water must be removed from site. Refer to ESG-5-C – Concrete Pour Operations and Grouting and strictly follow the defined guidelines.

.7 Provide containment facilities for the wash-down water from concrete delivery trucks, concrete pumping equipment and other tools and equipment.

.8 Dispose of all concrete wash water in a location where it will not enter subsurface drains, water bodies or storm drains.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

.1 Contractor responsible for all Quality Control. Inspection and Quality Assurance by Departmental Representative does not relax Contractor's responsibility to carry out Quality Control.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

.1 No measurement of Quality Control.

.2 Include costs in items of work for which Quality Control is required.

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 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.

.4 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.

1.5 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative 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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 20 01 - Site Access.

.2 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)
.1 CAN/CSA-Z321-[96(R2006)], Signs and Symbols for the Occupational Environment, withdrawn but still available from CSA, CCOHS and Techstreet.

1.3 SUBMITTALS

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

1.4 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced/gated and used by Contractor, office trailer and portable toilet to be used, avenues of ingress/egress to fenced area and details of fence installation.
.1 Provide physical space to host project meeting on site.

.2 Identify areas which have to be graveled with geotextile 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 temporary work after use, except Work to improve and use for dam access and parking.

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, equipment, debris piles, and removable bins outside of pre-approved staging area determined in advance of Work.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.6 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.

1.7 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

.3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.
.1 Clean granular mud mats will be installed at the exits from the project site to prevent tracking of mud onto adjacent roadways. These mats will be maintained to ensure they are clean and functional.
.2 If mud is tracked onto the municipal streets the streets should be cleaned as often as reasonable.

.4 Clean construction runways and taxi areas where used by Contractor's equipment.

1.8 CONSTRUCTION SIGNAGE

.1 No other signs or advertisements, other than warning signs, are permitted on site.

.2 Signs and notices for safety and instruction to be in both official languages. Graphic symbols conform to CAN/CSA-Z321.

.3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.9 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto roadways and restore roadways to original conditions or better.

.3 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.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Progressive cleaning.

.2 Final cleaning.

1.2 RELATED SECTIONS

.1 Section 01 20 01 - Site Access.

.2 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

.1 There will be no measurement for payment for cleaning.

.2 Payment included in Lump Sum Price:
.1 Item No. L6- Site Cleaning

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 PROGRESSIVE CLEANING

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

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

.3 Provide and use clearly marked separate bins for recycling.

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

.5 Remove waste material and debris from site and deposit in waste container at end of each working day. Dispose waste material and debris off site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

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

3.2 FINAL CLEANING

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

.2 Remove waste products and debris and leave Work clean and suitable for occupancy.

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

.4 Sweep and wash clean paved public roadways to condition at least equal to that previously existing and to acceptance of Departmental Representative.

.5 Restore contractor parking, staging and work access paths as specified and to approval of Departmental Representative.

.6 Upon completion remove temporary protection, and surplus materials. Make good defects noted at this stage.

END OF SECTION

PART 1 - GENERAL

1.1 APPROVAL

.1 Incorporate only approved materials into the work or stockpile.

.2 Advise the Departmental Representative of proposed material sources sufficiently in advance of aggregate use, so that samples may be taken and tests may be made.

.3 Materials shall be subject to sampling and testing by the Departmental Representative at all times. Provide the Departmental Representative with ample opportunity to sample any material at any time.

.4 Should a change of source of material be proposed during the work, advise the Departmental Representative sufficiently in advance.

.5 The acceptance of any material shall not preclude its future rejection if it is subsequently found to lack uniformity, or of it fails to conform to the requirements specified, or if its field performance is found to be unsatisfactory.

1.2 RELATED SECTIONS

.1 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

.2 Section 32 11 20 – Granular Base.

.3 Section 32 11 24 – Granular Sub-base.

1.3 MEASUREMENT AND PAYMENT

.1 No separate measurement and payment will be made under this Section. Include costs in items of work for which aggregate is required.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 The specific aggregate requirements shall be as detailed in the material specification for the type of material provided.

.2 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic or other deleterious substances.

.3 Fine aggregate satisfying all requirements of the specification unless otherwise provided therein, shall be one, or a blend of the following:
.1 Natural sand.
.2 Manufactured sand.
.3 Screenings produced in the crushing of quarried rock, boulders or gravel.

.4 Coarse aggregates satisfying all requirements of the specification unless otherwise provided therein, shall be one of the following:
.1 Crushed rock.
.2 Gravel composed of naturally formed particles of stone.

PART 3 - EXECUTION

3.1 HANDLING

.1 Handle and transport aggregates in a manner and with equipment that will avoid segregation and contamination.

3.2 STOCKPILING

.1 Stockpiling sites shall be level, well drained, free of all foreign materials and of adequate bearing capacity to support the weight of the materials to be placed thereon. Stockpiles shall be either far enough apart or separated by substantial dividers to prevent intermingling.

.2 Build stockpiles in layers not exceeding 1.5 m in depth; complete each layer over the entire area of the stockpile before beginning the next layer. Uniformly spot-dump aggregates delivered to the stockpile in trucks and build the stockpile as specified. Coning of the piles or spilling of material over the edges of the pile not permitted. During winter operations keep stockpiles free from buried ice or snow.

3.3 DEFECTIVE MATERIALS

.1 Unless otherwise permitted by the Departmental Representative, remove rejected materials from the site of the work within 48 hours of such rejection.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

.2 Section 31 14 13 – Soil Stripping and Stockpiling.

.3 Section 31 22 13 – Rough Grading.

1.2 MEASUREMENT AND PAYMENT

.1 No separate measurement for payment will be made for clearing and grubbing or close cut clearing. Payment included in Lump Sum Price:
.1 Item No. L5 – Clearing, grubbing, soil stripping and rough grading.

.2 Large tree removal included in Lump Sum price:
.1 Item No. L10 – Tree removal.

1.3 DEFINITIONS

.1 Clearing consists of cutting off trees and brush vegetative growth to not more than a specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.

.2 Close-cut clearing consists of cutting off standing trees, brush, scrub, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.

.3 Grubbing consists of excavation and disposal of stumps and roots to not less than a specified depth below existing ground surface.

.4 Large tree in this project is defined as diameter at breast height (1.4m) of 30cm or more, regardless of species.

1.4 QUALITY ASSURANCE

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

1.5 STORAGE AND PROTECTION

.1 Prevent damage to fencing, trees, natural features, water courses, root systems of trees which are to remain.
.1 Repair any damaged items to approval of Departmental Representative.
.2 Replace any trees designated to remain, if damaged, as directed by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Inspect site and verify with Departmental Representative, items designated to remain.

.2 Survey with stakes to identify the boundary of indicated access road and parking area.

.3 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.

.4 Notify utility authorities before starting clearing and grubbing.

.5 Keep roads and walks free of dirt and debris.

3.2 CLEARING

.1 Clearing includes felling, trimming, and cutting of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within cleared areas.

.2 Clear as indicated on drawings, by cutting at a height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.

.3 Cut off branches and cut down trees overhanging area cleared as directed by Departmental Representative.

.4 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

3.3 CLOSE CUT CLEARING

.1 Close cut clearing to within 100 mm of ground surface.

3.4 GRUBBING

.1 Remove and dispose of roots, matted roots, and designated stumps from indicated grubbing areas.

.2 Grub out stumps and roots to not less than 200 mm below ground surface.

.3 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.

.4 Some area of existing topsoil to be removed as indicated in Section 31 14 13 - Soil Stripping and Stockpiling

3.5 LARGE TREE REMOVAL

.1 Remove large trees as indicated and identified by Departmental Representative

and dispose to approval of Departmental Representative.

.2 Cut timber from trees removed within "Right of Way" into 610-mm long piles for the land owner to collect.

3.6 FINISHED SURFACE

.1 Leave ground surface in condition suitable for immediate grading operations and stripping of topsoil to approval of Departmental Representative.

3.7 CLEANING AND DISPOSAL

.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.

.3 Remove cleared and grubbed materials off site and dispose at approved appropriate area.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

.2 Section 31 11 00 – Clearing and Grubbing.

.3 Section 31 22 13 – Rough Grading.

1.2 MEASUREMENT AND PAYMENT

.1 There shall be no separate measurement for payment for soil stripping and stockpiling or for any rehandling. Payment included in Lump Sum Price:
.1 Item No. L5 – Clearing, grubbing, soil stripping and rough grading.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 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 or composting.

.5 Remove brush from targeted area by non-chemical means and dispose of through alternative disposal or mulching.

.6 Strip topsoil by scraper to depths as indicated on drawings. Avoid mixing topsoil with subsoil.

.7 Stockpile unused topsoil for later use.

.8 Protect stockpiles from contamination and compaction.

.9 On completion, deposit excess soil striped from “Right of Way” to a mutually agreed upon location as requested by land owner.

3.2 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.

3.3 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.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 ASTM International (ASTM)
.1 ASTM D698-12e2, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m3).

1.2 RELATED SECTIONS

.1 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

.2 Section 31 11 00 – Clearing and Grubbing.

.3 Section 31 14 13 – Soil Stripping and Stockpiling.

1.3 MEASUREMENT AND PAYMENT

.1 There shall be no separate measurement for payment for rough grading.

.2 Include costs in items of work for which rough grading is required.
.1 Item No. L5 – Clearing, grubbing, soil stripping and rough grading.

1.4 EXISTING CONDITIONS

.1 Known underground and surface utility lines and buried objects are as indicated.
.1 Do not damage the in-ground utility line, concrete hydro box (pull box), water gauge, snow gauge and power poles in closed proximity to Work as indicated.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Samples:
.1 Submit samples 10 days prior to beginning Rough Grading Work.
.1 Subgrade sample for proctor test to obtain dry density and optimum moisture content for 95% compaction.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Excavated or graded material existing on site suitable to use as fill for grading work if required.

PART 3 - EXECUTION

3.1 STRIPPING OF TOPSOIL

.1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Departmental Representative.

.2 Commence topsoil stripping of areas as indicated after area has been cleared of brush and removed from site.

.3 Strip topsoil to depths as indicated.

.4 Stockpile height not to exceed 2 m.

.5 Dispose of unused topsoil off site.

3.2 GRADING

.1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.

.2 Compact filled and disturbed areas to maximum dry density to ASTM D698, as follows:
.1 95% under granular areas.

.3 Do not disturb soil within branch spread of trees or shrubs to remain.

3.3 CLEANING

.1 Progress Cleaning: Leave Work area clean at end of each day.

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

3.4 PROTECTION

.1 Protect existing fencing, trees, natural features, and underground utility lines which are to remain. If damaged, restore to original or better condition unless directed otherwise.

.2 Maintain access roads to prevent accumulation of construction related debris on roads.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 31 37 10 – Rip-rap.

1.2 MEASUREMENT AND PAYMENT

.1 No separate measurement for payment will be made for Geotextiles. Payment included in lump sum price:
  .1 Item No. L8 – Riprap and Geotextiles.

1.3 REFERENCES

.1 Ontario Provincial Standard Specifications (OPSS)
  .1 OPSS 1860 - April 2018, Material Specification for Geotextiles.

1.4 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 geotextile.

.3 Samples:
  .1 Submit following samples 10 days prior to beginning Work.
    .1 Minimum length of 300 mm x 300 mm of geotextile.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 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 geotextiles from direct sunlight and UV rays.
  .3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIAL

.1 For Rip-Rap installation (per OPSS 511) Class II non-woven geotextile according to OPSS 1860, Filtration opening size (FOS) of 75-150µm.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously

installed under other Sections are acceptable for geotextile material installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position.

.2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.

.3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.

.4 Overlap each successive strip of geotextile 1000 mm over previously laid strip.

.5 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.

.6 After installation, cover with overlying layer within 4 hours of placement.

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

.8 Place riprap in accordance with Section 31 37 10.

3.3 CLEANING

.1 Progress Cleaning: Leave Work area clean at end of each day.

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

3.4 PROTECTION

.1 Vehicular traffic not permitted directly on geotextile.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 32 19.01 - Geotextiles.

1.2 MEASUREMENT PROCEDURES

.1 There shall be no separate measurement for payment for riprap.

.2 Work covered by this section will be paid for under payment items included in lump sum Table:
.1 Item No. L8 – Riprap and Geotextiles.

.3 Placement, hauling, compaction and all other items associated are considered included in the lump sum price and will not be measured separately for payment.

1.3 REFERENCES

.1 Ontario Provincial Standard Specifications (OPSS)
.1 OPSS 511- November 2013, Construction Specification for Rip-rap, Rock Protection, and Granular sheeting.
.2 OPSS 1004- November 2012, Material Specification for Aggregates- Miscellaneous.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Submit documentation to show proposed riprap meet requirements.

PART 2 - PRODUCTS

2.1 STONE

.1 Hard, dense, durable quarry stone, free from seams, cracks or other structural defects.

.2 Gradation requirement: to OPSS 1004, R-50 Rip-rap.

2.3 GEOTEXTILE FILTER

.1 Geotextile: in accordance with Section 31 32 19.01.

PART 3 - EXECUTION

3.1 PLACING

.1 Where rip-rap is to be placed on slopes, excavate trench at toe of slope to dimensions as indicated.

.2 Fine grade area to be rip-rapped to uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.

.3 Place geotextile on prepared surface in accordance with Section 31 32 19.01 and as indicated. Avoid puncturing geotextile. Vehicular traffic over geotextile not permitted.

.4 Place rip-rap to thickness and details as indicated.

.5 Place stones in manner approved by Departmental Representative to secure surface and create a stable mass. Place larger stones at bottom of slopes.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 05 18 - Aggregates General

.2 Section 32 11 24 - Granular Sub-base

1.2 MEASUREMENT AND PAYMENT

.1 There shall be no separate measurement for payment for granular base course.

.2 Work covered by this section will be paid for under payment items included in lump sum price:
.1 Item No. L7 – Access road and Parking.

.2 Placement, hauling, compaction and all other items associated are considered included in the lump sum price and will not be measured separately for payment.

1.3 REFERENCES

.1 ASTM International
.1 ASTM C131/C131M-14, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
.2 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.2 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation
.1 OPSS.PROV 1004 November 2012, Ontario Provincial Standard Specification, Material Specification for Aggregates - Miscellaneous.
.2 OPSS.PROV 1010 April 2013, Ontario Provincial Standard Specification, Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Submit laboratory test results and other documentation to show proposed material meet requirements.
.1 Submit maximum dry density and optimum moisture content.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular A: to OPSS.PROV 1010, April 2013.

PART 3 - EXECUTION

3.1 PLACING

.1 Place granular base after sub-base surface is inspected and approved in writing by Departmental Representative.

.2 Construct granular base to depth and grade in areas indicated.

.3 Ensure no frozen material is placed.

.4 Place on a clean surface, properly shaped and compacted and free from snow or ice.

.5 Place material using methods which do not lead to segregation or degradation of aggregate.

.6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.

.7 Remove and replace that portion of layer in which material becomes segregated during spreading.

3.2 COMPACTING

.1 Ensure compaction equipment is capable of obtaining required material densities.

.2 Compact each layer to minimum 100% Standard Proctor Density.

.3 Add water as required to maintain material at or near optimum moisture content while compacting.

3.3 FINISHING

.1 Finish compacted surface to within 12 mm of established grade as indicated by a 3 m straightedge placed in any direction

.2 Correct surface irregularities greater than 12 mm by loosening the surface and adding or removing material until surface is within specified tolerance.

3.4 PROTECTION

.1 Maintain finished base in condition conforming to this Section until end of project and acceptance by Departmental Representative.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 05 18 - Aggregates General

.2 Section 32 11 20 - Granular Base

1.2 MEASUREMENT AND PAYMENT

.1 There shall be no separate measurement for payment for granular sub-base course.

.2 Work covered by this section will be paid for under payment items included in lump sum price:
.1 Item No. L7 – Access road and Parking.

.3 Placement, hauling, compaction and all other items associated are considered included in the lump sum price and will not be measured separately for payment.

1.3 REFERENCES

.1 ASTM International
.1 ASTM C131/C131M-14, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
.2 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.2 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation
.1 OPSS.PROV 1004 November 2012, Ontario Provincial Standard Specification, Material Specification for Aggregates - Miscellaneous.
.2 OPSS.PROV 1010 April 2013, Ontario Provincial Standard Specification, Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Submit laboratory test results and other documentation to show proposed material meet requirements.
.1 Submit maximum dry density and optimum moisture content.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular B: to OPSS.PROV 1010, April 2013.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of the soil are acceptable for granular sub-base installation in accordance with manufacturer's written instructions.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

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

3.2 PLACING

.1 Place granular sub-base after soil is inspected and approved by Departmental Representative.

.2 Construct granular 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.

.5 Place granular sub-base materials using methods which do not lead to segregation or degradation.

.6 Place material to full width in uniform layers not exceeding 450 mm compacted thickness.

.7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.8 Remove and replace portion of layer in which material has become segregated during spreading.

3.3 COMPACTING

.1 Compaction equipment to be capable of obtaining required material densities.

.2 Compact each layer to minimum 100% Standard Proctor Density.

.3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.

.4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.

.5 Add water as required to maintain material at or near optimum moisture content while compacting.

3.4 FINISHING

.1 Finish compacted surface to within 12 mm of established grade as indicated by a 3 m straightedge placed in any direction

.2 Correct irregularities greater than 12 mm by loosening the surface and adding or removing material until surface is within specified tolerance.

3.5 PROTECTION

.1 Maintain finished sub-base in condition conforming to this Section until succeeding base is constructed.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Archaeological, Cultural and Environmental Procedures.

1.2 REFERENCES

.1 Ontario Provincial Standard Specifications (OPSS) and Drawings (OPSD)
  .1 OPSS 1541, November 2010, Material Specification for Chain Link Fence Components.
  .2 OPSD 972.102, November 2012, Fence, Chain-Link, Component – Gate.
  .3 OPSD 972.130, November 2005, Fence, Chain-Link, Installation – Roadway.
  .4 OPSD 972.132, November 2012 Fence, Chain-Link, Details and Table.

.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-138.1, Fabric for Chain Link Fence.
  .2 CAN/CGSB-138.2, Steel Framework for Chain Link Fence.
  .3 CAN/CGSB-138.3, Installation of Chain Link Fence.
  .4 CAN/CGSB-138.4, Gates for Chain Link Fence.

.3 Canadian Standards Association (CSA International)
  .1 CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/ Methods of Test and Standard Practices for Concrete.

1.3 MEASUREMENT AND PAYMENT

.1 There shall be no separate measurement for payment for chain link fence and gate.

.2 Work covered by this section will be paid for under payment items included in Lump Sum Table:
  .1 Item No. L9 – Chain Link Fence and Gate

1.4 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 fences, gates and all manufactured materials to be used on site.

.3 Submit Shop Drawings to indicate:
  .1 Fence profile, sizes, connections, attachments, footings, anchorage size and type of fasteners and accessories.
  .2 Gate sizes, footings, connections, attachments and accessories.
  .3 Submit drawings showing formwork and falsework design to CSA A23.1/A23.2 as required.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

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

.3 Storage and Handling Requirements:
.1 Store materials in accordance with manufacturer's recommendations.
.2 Store and protect fence and gate materials from damage.
.3 Replace defective or damaged materials with new.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Ensure emptied containers are sealed and stored safely.

.3 Divert unused concrete materials from landfill to approved facility, as reviewed by Departmental Representative.

.4 Divert unused metal and wiring materials from landfill to metal recycling facility as reviewed by Departmental Representative.

.5 Provide appropriate area on job site where concrete equipment can be safely washed.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Chain-link fence fabric: to CAN/CGSB-138.1.
.1 Fabric Type 1, Class A, Style 2- Medium.
.2 Height of fabric: 1.8 m.

.2 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Line posts to be 60.3 mm outside diameter (OD), terminal posts to be 88.9 mm OD, top rails and braces to be 42.9 mm OD as indicated on OPSD 972.130.

.3 Bottom tension wire: to CAN/CGSB-138.1, galvanized steel wire, 5 mm diameter minimum.

.4 Gates: to CAN/CGSB-138.4 and OPSD 972.102, Style 2 double swing, 1.8m high, galvanized steel pipe, standard weight 42.9 mm OD pipe for outside frame, 31.8 mm OD pipe for interior bracing
.1 Fasten fence fabric to gate with twisted selvage at top.
.2 Furnish swing gates with galvanized malleable iron hinges, latch and latch catch with provision for padlock which can be attached and operated from either side of installed gate.
.3 Furnish double swing gates with chain hook to hold gates open and centre rest with foot bolt for closed position.

.5 Fittings and hardware: to CAN/CGSB-138.2, galvanized steel malleable ductile cast iron.
.1 Tension bar bands: 5 x 20 mm minimum galvanized steel.
.2 Post caps: to provide waterproof fit, to fasten securely over posts and to carry top rail.

.3 Turnbuckles: to be drop forged.

.6 Concrete mixes and materials for Fence post footings in native soils: in accordance with CAN/CSA-A23.1/A23.2.
.1 Nominal coarse aggregate size: 14-20mm.
.2 Compressive strength: 20 MPa minimum at 28 days.
.3 Class of exposure: F-1.
.4 Water to cement ratio: 0.45
.5 Air Content%: 5-8%.

2.2 FINISHES

.1 Galvanizing:
.1 For chain link fabric: to CAN/CGSB-138.1 Grade 2.
.2 For pipe: 550 g/m2 minimum to ASTM A90.
.3 For other fittings: to ASTM A123/A123M, minimum Coating Grade 85, minimum 600 g/m2.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections are acceptable for fence and gate installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.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 Grading: Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts.
.1 Provide clearance between bottom of fence and ground surface of 30 mm to 50 mm.

3.3 ERECTION OF FENCE

.1 Erect fence along lines as indicated and to CAN/CGSB-138.3.

.2 All posts shall be installed plumb and to the depth specified in OPSD – 972.130 “Detail A Footing in Earth” as per footing type determined by anchoring base material and location.

.3 Space line posts maximum 3 m apart, measured parallel to ground surface.

.4 Fence Post anchoring:
.1 Place concrete in post holes then embed posts into holes to depths as indicated in OPSD - 972.130.
.2 Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.5 Do not install fence fabric until appropriate cure times have been met for anchoring materials used to reach 75% of their total strength or minimum of 5 days.

.6 Install brace between end and gate posts and nearest line post.

.7 Install caps, top rail and bottom tension wire, stretch tightly and fasten securely to end, and gate posts.

.8 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, and gate posts, with tension bar secured to post with tension bands spaced at 400 mm intervals.

.9 Secure fabric to top rail, line posts and bottom tension wire with tie wires. Give tie wires minimum two twists.

3.4 INSTALLATION OF GATES

.1 Install gates in locations as indicated and to OPSD 972.132.

.2 Level ground between gate posts and set gate bottom approximately 40 - 75 mm above ground surface.

3.5 CLEANING

.1 Progress Cleaning: Leave Work area clean at end of each day.

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

.1 Clean and trim areas disturbed by operations. Dispose of surplus excavated material.

END OF SECTION