

Specifications

Parks Canada Bruce Peninsula National Park

Project: Emmett Lake Road Resurfacing

September 2015

Prepared by:
DARRYL M. ROBINS CONSULTING INC.
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Miller Lake, Ontario
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Project No. M14044

Division 1 General Requirements

01 11 00	Summary of Work
01 29 00	Payment Procedures
01 29 83	Payment Procedures for Testing Laboratory Services
01 31 00	Project Management and Coordination
01 33 00	Submittal Procedures
01 35 00.06	Special Procedures for Traffic Control
01 35 29.6	Health and Safety and Emergency Response Procedures
01 35 43	Environmental Procedures
01 45 00	Quality Control
01 52 00	Construction Facilities
01 56 00	Temporary Barriers and Enclosures
01 61 00	Common Product Requirements
01 71 00	Examination and Preparation
01 74 00	Cleaning and Waste Management
01 74 19	Construction/Demolition Waste Management and Disposal
01 78 00	Closeout Submittals

Division 2 Site Work

02 41 13	Selective Site Demolition
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Division 10 Specialties

10 14 53	Traffic Signage
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Division 31 Earthwork

31 22 00	Grading
31 22 16.13	Roadway Subgrade Reshaping
31 23 00	Excavation and Fill
31 23 19	Dewatering
31 32 25	Erosion and Sedimentation Control

Division 32 Exterior Improvements

32 11 01 Granular Base

Division 33 Utilities

33 42 13 Pipe Culverts

Division 1

General Requirements

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01 61 00	Common Product Requirements
01 71 00	Examination and Preparation
01 74 00	Cleaning and Waste Management
01 74 19	Construction/Demolition Waste Management and Disposal
01 78 00	Closeout Submittals

Part 1 General

1.1 SECTION INCLUDES

- .1 Title and description of work.
- .2 Work by others.
- .3 Work sequence.
- .4 Contractor use of premises.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work covered by this Contract is for the re-surfacing of Emmett Lake Road from Highway 6 to Halfway Log Dump Parking Lot:
 - Placement of 200mm of Granular 'A' for the road surface;
 - Provision of safer side slopes (The ideal slope is 3H:1V);
 - Replacement of culverts including the provision of new animal guards; and
 - Provision of New Signs.

Please refer to the drawings.

1.3 WORK BY OTHERS

- .1 The following are specifically excluded from this Contract:
 - .1 The supply and installation of furnishings are not part of this contract unless specifically noted in the documents.

1.4 LOCATION OF THE SITE

- .1 The Project Site is located on Emmett Lake Road in the Bruce Peninsula National Park
- .2 The Bruce Peninsula National Park is located on the east side of the Bruce Peninsula, south of Tobermory, Ontario which is accessed off Highway 6.

1.5 SITE ACCESS

- .1 The site can only be accessed from land.

1.6 WORK SEQUENCE

- .1 Construct work in stages to accommodate Owner's Seasonal operation.
- .2 Emmett Lake Road shall be completed by December 11, 2015.
- .3 The Contractor may not perform the work required for this Contract during holiday weekends.

- .4 The construction schedule must be submitted by the Contractor and approved by the Departmental Representative (DMRC).
- .5 No construction will be permitted during November 2 – 8, 2015 to allow for hunting season for First Nations. Adequate access shall be provided on Emmett Lake road on November 2 – 8, 2015.

1.7 CONTRACTOR USE OF PREMISES

- .1 Contractor has unrestricted use of the construction site until Substantial Performance.
- .2 Contractor shall limit use of premises for Work, to allow:
 - .1 Partial owner occupancy.
 - .2 Work by other contractors.
- .3 Coordinate use of the premises under direction of Departmental Representative (Parks Canada).
- .4 Obtain and pay for use of additional storage or work areas needed for operation under this Contract.
- .5 Departmental Representative (Parks Canada) will occupy premises during the entire construction period for the execution of normal operations.
- .6 Disturbed areas shall be reinstated to existing condition or better.
- .7 Contractor shall maintain access on Emmett Lake Road for Parks Canada Staff and First Nations.

1.8 REFERENCES AND CODES

- .1 National Building Code of Canada (NBC) 2010 including all amendments up to closing date.
- .2 Ontario Provincial Standard Specifications (OPSS) including all amendments up to the closing date.
- .3 Perform work in accordance with National Building Code of Canada (NBC) and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .4 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.9 BUILDING SMOKING ENVIRONMENT

- .1 Smoking is prohibited in all workplaces within Parks Canada buildings.
- .2 Although smoking is not permitted in hazardous areas, care must still be exercised in the use of smoking materials in non-restricted areas.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS & DOCUMENTS

- .1 Section 01 29 83 Payment Procedures for Laboratory Testing
- .2 Section 01 33 00 Project Management and Coordination
- .3 Section 01 78 00 Closeout Submittals
- .4 Section 01 79 00 Demonstration & Training
- .5 Government of Canada's Supply Manual
- .6 Government of Canada's Standard Acquisition Clauses and Conditions (SACC) Manual

1.2 SECTION INCLUDES

- .1 This section specifies the administrative and procedural requirements governing the following:
 - .1 Payment
 - .2 Schedule of Values
 - .3 Application for Payment
 - .4 Holdback

1.3 PAYMENT

- .1 Method of Payment
 - .1 The supply of materials, labour tools, equipment, protection, transportation, customs, administrative costs, profits, financing, etc. as necessary to perform the work of this contract are included with the items listed on the tender form, unless otherwise indicated.
 - .2 Costs associated with work for Division 1 and mobilization & demobilization, shall be included in the costs for the items identified on the tender form.
 - .3 All items in this contract to be paid by the costs included in the unit price table.
 - .4 The Unit Price Items presented on the bid form are:
 - .1 Mobilization / Demobilization: The lump sum price bid for this item shall include all costs to move equipment to and from the site, the costs for the protection of existing works, for the installation and removal of the protective barriers for environmentally sensitive areas and to complete all the work associated with Division 1.
 - .2 Supply, Install, Maintain and Remove the Silt Fence: The unit price bid for this item shall include all costs to supply, install, maintain, remove and dispose the silt fence. Measurement and payment of the silt fence is based on the length of the silt fence installed. 50% of the cost (of the total length installed) will be paid following the installation. The payment of final

- 50% will be available when the silt fence has been removed (and maintained). This is a provisional item.
- .3 Supply, Install, Maintain and Remove the Turbidity Curtain: The unit price bid for this item shall include all costs to supply, install, maintain, remove and dispose of the turbidity curtains. Measurement and payment of the turbidity curtain is based on the length of the turbidity curtain installed. 50% of the cost (of the total length installed) will be paid following the installation. The payment of final 50% will be available when the silt fence has been removed (and maintained). This is a provisional item.
- .4 Supply, Install, Maintain and Remove the Meter Bags for the Cofferd Dam: The unit price bid for this item shall include all costs to supply, install, maintain and remove the filled meter bags for the purposes of installing a coffer dam. Measurement and payment of the meter bags (for the coffer dam) is per meter bag used. 50% of the cost (based on the number of meter bags used) will be paid following the installation. The payment of final 50% will be available when the meter bags have been removed (and maintained). This is a provisional item.
- .5 Remove & Replace Existing Culverts: Measurement and payment of replaced culvert shall be based on the length of the new culvert installed. The price includes without limitation, removing and replacing the culvert, installation, supply and install animal guards, removal of debris blocking culverts, disposal and transportation, including bedding, cover and frost treatment.
- .6 Extend Existing Culverts: Measurement and payment of the extended culvert shall be based on the length of the extended culvert installed. The price includes without limitation, installing the new culvert onto the existing including joints, installation, removal of debris, disposal and transportation, including bedding, cover and frost treatment.
- .7 Install Animal Guards on existing culverts: Measurement and payment for the installation of animal guards shall be per guard installed. The price includes without limitation, installing the guard on the culvert including all hardware and the removal of debris to access the culvert inlet and outlets.
- .8 Grade the Existing Road: Payment for the grading of the roadway shall be per the total length of the roadworks to eliminate the existing pot holes and ruts in the road before the placement of new granular materials.
- .9 Supply, Place & Compact 200mm of Granular 'A': Payment for the placement of Granular 'A' shall be per cubic meter. Tickets will be collected by the Departmental Representative on a daily basis. Field measurement and records will also be used to verify quantities.

.10 Supply & Install Traffic Signage & Delineators: Payment for the supply and installation of Signage and Delineators shall be per sign or delineator installed.

.5 Erosion and Sediment Control items are provisional. Payment will only be provided for items installed, maintained and removed. Requirements for erosion and sedimentation control measure will vary depending on the field conditions.

1.4 SCHEDULE OF VALUES

- .1 Submit the initial Schedule of Values to the Departmental Representative (DMRC) at least two (2) weeks before the initial Application for Payment.
- .2 The Schedule of Values shall be broken down by Division or Specification or per the Tender Form. Use the Summary of Divisions and Specifications (Table of Contents) as a guide to determine the organization of the division names and numbers. The Schedule of Values shall be in a format acceptable to the Departmental Representative (DMRC).
- .3 For each Division:
 - .1 For all work completed by the General Contractor, provide a line item description of the work, the dollar amount allocated and the actual amount expended.
 - .2 For each subcontract, provide an itemized listing of the subcontractor name, description of work and the contract amount.
- .4 Changes in the cost allocation shall be approved in writing by the Departmental Representative (DMRC). Any approved changes shall be explicitly noted on the Schedule of Values. Include a copy of the Owner's written approval for such changes in the Application for Payment.
- .5 Provide a separate line item for each Change Order to the Contract. Do not allocate cost of change orders to the breakdown of the original contract.
- .6 The allocation of costs in the Schedule of Values must be approved by the Departmental Representative (DMRC) before an application for payment is made.

1.5 APPLICATION FOR PAYMENT

- .1 Submit Applications for Payment on a Monthly basis.
- .2 Submit the Schedule of Values to the Departmental Representative (DMRC) to confirm the values and quantities before the Application for Payment.
- .3 Submit the confirmed Schedule of Values, the Invoice, Work Safety and Insurance Board (WSIB) Clearance Certificate, a Statutory Declaration of Accounts Paid (as applicable) and PWGSC-TPSGC 1111 Claim for Progress Payment to apply for payments.

1.6 RELEASE OF HOLDBACK

- .1 Following the expiry of the 45 day period of the publication of the Certificate of Substantial Performance, the 5% Statutory Holdback may be released to the Contractor.

1.7 FINAL APPLICATION FOR PAYMENT

- .1 The Contractor shall complete all the requirements of Section 01 78 00 Closeout Submittals and Section 01 79 00 Demonstration and Training before submitting the final application for payment.
- .2 All noted outstanding work and deficiencies shall be rectified prior to applying for the final payment.

END OF SECTION

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

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by the Departmental Representative are specified under various sections.

1.2 APPOINTMENT AND PAYMENT

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

1.3 CONTRACTORS RESPONSIBILITIES

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

END OF SECTION

Part 1 General**1.1 PROJECT MEETINGS**

- .1 The Departmental Representative (DMRC) will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.2 ON-SITE DOCUMENTS

- .1 Maintain at job site, one copy each of the following:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed shop drawings.
 - .5 Change orders.
 - .6 Other modifications to Contract.
 - .7 Field test reports.
 - .8 Copy of approved work schedule.
 - .9 Manufacturer's installation and application instructions.

1.3 SCHEDULES

- .1 Contractor to submit a construction progress schedule to the Departmental Representative (DMRC) within 10 working days of the Contract award and at least 10 working days prior to the submission of the first progress claim. The construction progress schedule must show anticipated progress stages and final completion of the work within the time periods required by the Contract documents.
- .2 During progress of Work revise and resubmit as directed by the Departmental Representative (DMRC).

1.4 CLOSEOUT PROCEDURES

- .1 Notify the Departmental Representative (DMRC) when Work is considered ready for Substantial Performance.
- .2 Accompany the Departmental Representative (DMRC & Parks Canada) on preliminary inspection to determine items listed for completion or correction.
- .3 Comply with the Departmental Representative's (DMRC) instructions for correction of items of Work listed in executed Certificate of Substantial Performance and for access to Owner-occupied areas.
- .4 Notify the Departmental Representative (DMRC) of completion of items of Work determined in the Departmental Representative's final inspection.

1.5 PAYMENTS / SCHEDULE OF VALUES

- .1 The Contractor shall submit a Schedule of Values to the Departmental Representative (DMRC) at least two (2) weeks prior to the first application for payment. Submit the Schedule of Values as per Section 01 29 00 Payment Procedures.
- .2 The Application for Payment shall conform to Section 01 29 00 Payment Procedures.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Shop drawings and product data.
- .2 Samples.

1.2 ADMINISTRATIVE

- .1 Submit to the Departmental Representative (DMRC) submittals listed for review. Submit with reasonable promptness and in orderly sequence so as not to cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to the Departmental Representative (DMRC). This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated 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 shall be considered rejected.
- .6 Notify the Departmental Representative (DMRC), 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 coordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by the Departmental Representative's (DMRC) review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Departmental Representative's (DMRC) review.
- .10 Keep one reviewed copy of each submission on site.

1.3 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 article or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which

- adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow 10 working days for the Departmental Representative's (DMRC) review of each submission.
 - .4 Adjustments made on shop drawings by Reviewer are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Departmental Representative (DMRC) prior to proceeding with Work.
 - .5 Make changes in shop drawings as the Departmental Representative (DMRC) may require, consistent with Contract Documents. When resubmitting, notify the Departmental Representative (DMRC) in writing of any revisions other than those requested.
 - .6 Delete information not applicable to project.
 - .7 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .8 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.

- .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
-
- .9 Submit minimum of 7 prints of shop drawings for each requirement requested in specification Sections and as the Departmental Representative (DMRC) may reasonably request with the understanding the Departmental Representative (DMRC) will retain 3 copies of the reviewed submission
 - .10 Submit minimum of 7 copies of product data sheets or brochures for requirements requested in specification Sections and as requested by the Departmental Representative (DMRC) where shop drawings will not be prepared due to standardized manufacture of product, with the understanding the Departmental Representative (DMRC) will retain 3 copies of the reviewed submission.
 - .11 Supplement standard information to provide details applicable to project.
 - .12 If upon review by the Departmental Representative (DMRC), no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
 - .13 The review of shop drawings by the Departmental Representative (DMRC) is for sole purpose of ascertaining conformance with the general concept. This review shall not mean that the Departmental Representative (DMRC) approves detail design inherent in shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generally the 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 coordination of Work of all sub-trades.
 - .14 After the Departmental Representative's (DMRC) review, distribute copies.

1.4 **SAMPLES**

- .1 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Notify the Departmental Representative (DMRC) in writing at time of submission of deviations in samples from requirements of Contract Documents.

- .3 Where colour, pattern or texture is criterion, submit full range of samples.
- .4 Adjustments made on samples by the Departmental Representative (DMRC) are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Departmental Representative (DMRC) prior to proceeding with Work.
- .5 Make changes in samples which the Departmental Representative (DMRC) may require, consistent with Contract Documents.
- .6 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 – Quality Control.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

- .1 This Specification includes the general description of the “TRAFFIC CONTROL” and the requirements of that plan. This specification applies to the furnishing of all labor, equipment, and materials and in performing all operations in connection with the “TRAFFIC CONTROL” in accordance with the plans and these specifications.

1.2 SUBMITTALS

- .1 The Contractor shall submit a “Traffic Control Plan” prior to commencing construction. All plans must be in accordance with the latest version of the Ministry of Transportation’s Book 7: Ontario Traffic Manual – Temporary Conditions. No plan may be implemented until approved by the Departmental Representative.
- .2 The Contractor shall submit an updated “Traffic Control Plan” upon request of the Departmental Representative (DMRC).

Part 2 Products

Not Applicable

Part 3 Execution

3.1 CONSTRUCTION METHODS

- .1 The “Traffic Control Plan” and the installation of all devices should be continuously reviewed and updated to reflect the current stage of construction. The inspector may review minor changes; the Departmental Representative (DMRC) shall review major changes. The construction foreman shall provide the current “Traffic Control Plan” to the inspector upon request on the site at any time during the construction of the project.
- .2 The Contractor shall provide a minimum of 24 hours notification for any lane closures.
- .3 The Traffic Controls shall be implemented in conformance to the Ministry of Transportation’s Book 7: Ontario Traffic Manual – Temporary Condition. The Contractor shall provide a minimum of two (2) flagmen to direct vehicles for all lane closures.
- .4 Maintain access to property including overhead clearances for use by emergency response vehicles.

- .5 Maintain and protect traffic on affected roads during construction period except, as otherwise specifically directed by the Departmental Representative (Parks Canada & DMRC).
- .6 Provide measures for protection and diversion of traffic including provision of flagpersons, erection of barricades, erection of warning and directional signage.
- .7 Access to Emmett Lake Road can be restricted to only allow access to Parks Canada Staff and First Nations during construction. Notification shall be provided to the Departmental Representative (Parks Canada & DMRC) for the restricted access to Emmett Lake Road. Install 'Closed Road – Local Traffic Accepted sign' at the intersection of Emmett Lake Road and Highway No. 6.

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS)
- .3 Province of Ontario
 - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. [latest version].

1.2 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to the Departmental Representative (DMRC) weekly for information and record purposes only.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS – Material Safety Data Sheets.
- .7 The Departmental Representative (DMRC) will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to the Departmental Representative (DMRC) within 5 days after receipt of comments from the Departmental Representative (DMRC).
- .8 The 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.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and

submit additional certifications for any new site personnel to the Departmental Representative (DMRC).

- .10 On-site contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.1 FILING OF NOTICE

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

1.4 SAFETY ASSESMENT

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

1.5 MEETINGS

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

1.6 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 (DMRC) may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.7 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.8 PROJECT / SITE CONDITIONS

- .1 Work at the site may involve contact with:
 - .1 Poison Ivy
 - .2 Silica (sand & aggregate)
 - .3 Massassauga Rattlesnakes
 - .4 Black Bears

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Health and Safety Act and Regulations for Construction Projects, R.S.O.
- .2 Comply with Occupational Health and Safety Regulations, 1996.
- .3 Comply with Canada Labour Code, Canada Occupational Health and Safety Regulations.

1.10 UNFORSEEN HAZARDS

- .1 When unforeseen peculiar safety-related factor, hazard or condition occurs during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction, and advise Departmental Representative (DMRC) verbally and in writing.

1.11 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - .1 Have minimum 2 year's site-related working experience specific to activities associated with this project.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to, and be under direction of, site supervisor.

1.12 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 having jurisdiction, and in consultation with the Departmental Representative (DMRC).

1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by the Departmental Representative (DMRC).
- .2 Provide the Departmental Representative (DMRC) with written report of action taken to correct non-compliance of health and safety issues identified.

- .3 The Departmental Representative (DMRC) may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 WORK STOPPAGE

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

1.15 EMERGENCY PROCEDURES

- .1 In the event of an emergency:
 - .1 Provide first aid as required.
 - .2 Notify the Departmental Representative
 - .3 Call 911, if required.
 - .4 Prepare the area for the arrival of emergency vehicles, ensure a clear pathway and roadway.
 - .5 Advise other workers about the situation and the potential for existing dangers. Stop work in the area (as applicable).
 - .6 Designate a person to direct emergency personnel to the site of the emergency.

END OF SECTION

Part 1 General

1.1 FIRES

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

1.2 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site unless approved by the Departmental Representative (DMRC).
- .2 Do not dispose of waste or volatile materials such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.3 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees, plants and environmental sensitive features on site and adjacent properties where indicated. Work shall be completed in a manner to prevent any damage to trees that are to be retained.
- .2 Minimize stripping of topsoil and vegetation.
- .3 Restrict tree removal to areas indicated or designated by the Departmental Representative.

1.5 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways without the appropriate sedimentation and pollution control measures in place.
- .2 Do not use waterway beds for borrow material without the Departmental Representative's approval.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .7 Do not blast under water or within 100m of indicated spawning beds.

1.6 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract. Sediment control features need to be inspected daily. Deficiencies must be rectified immediately.
- 2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .5 Fuel all machinery ensuring no spills or leakage. Ensure spill containment equipment is used. Spill kits must be available on site. Spills shall be reported immediately to the Departmental Representative (DMRC & Parks Canada), Ontario Spills Action Center (1-800-268-6060) to Environment Canada (613-239-6065) and to Parks Canada Dispatch (519 596-2702).
- .6 Refuelling hand equipment shall be completed on hard surfaces and a minimum of 50m from water bodies.
- .7 Use parking area for fuelling all large / heavy machinery and project staging
- .8 Equipment shall be maintained in good working order and free of leaks. Equipment and heavy machinery used shall meet or exceed all applicable emission requirements.
- .9 Ensure spill containment equipment is available on site.
- .10 Prevent any and all hydrocarbons from entering the ground.
- .11 Minimize noise levels from construction activities by using proper muffling devices, in addition to appropriate timing and location of these activities to reduce minimize the effect of noise on nearby residents, recreationists and wildlife.

1.7 WILDLIFE PROTECTION

- .1 Eastern Massassauga Rattlesnake, Northern Ribbon Snake, Eastern Milksnake and Snapping Turtle are species at risk and cannot be harmed. If they are found on site, please contact the Departmental Representative (Parks Canada) to relocate them away from the site (50m). Work shall be delayed until the wildlife has been relocated.
- .2 Turtles should not be harmed, and should be carefully relocated to a wetland area.
- .3 No work shall be undertaken from May to August during the migratory bird nesting windows.
- .4 Report any wildlife mortality during construction to the Departmental Representative (Parks Canada).

1.8 MITIGATIVE MEASURES

- .1 Use clean fill (freshly crushed) to mitigate the introduction of invasive plants.

- .2 Pressure wash equipment, including heavy assets prior to deployment to work in area to remove invasive seeds.
- .3 Clean the construction site daily, with a complete site cleanup upon project completion.
- .4 Use designated turn around areas for large / heavy equipment. Ensure heavy machinery is not parked or driven on sensitive habitats.

1.9 SUBMITTALS

- .1 One (1) week prior to commencing construction activities or the delivery of materials to the site, provide an Environmental Protection Plan for the review and approval of the Departmental Representative (DMRC & Parks Canada). The Environmental Protection Plan shall include a comprehensive overview of known or potential environmental issues to be addressed during construction. The Environmental Protection Plan shall be in conformance with the Basic Impact Analysis prepared by Parks Canada.
- .2 Address the topics at a level of detail relative with the environmental issue and required construction tasks.
- .3 The following shall be included in the Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to the Environmental Protection Plan.
 - .2 Names and qualifications of persons who are responsible for the training of the site personnel.
 - .3 Erosion & Sediment Control Plan identifying the type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to ensure that control measures are in compliance with the erosion and sediment control plan.
 - .4 Drawings showing locations of excavations, embankments for haul roads, material storage areas, structures, stockpiles, including methods to control run off and contain material on site.
 - .5 Traffic Control Plans including measures to reduce erosion of temporary road beds by construction traffic, especially during wet weather. Plans shall include measures to minimize the mud transported onto paved public roads by vehicles or run off.
 - .6 Work Area plans showing proposed construction activities including areas of limited use and non-use. Plans shall identify methods for protection of features to be preserved within the work areas.
 - .7 Spill Control Plan including procedures, instructions and reports to be used in the event of unforeseen spill of regulated substances.
 - .8 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

- .9 Air pollution control plan detailing provisions to ensure that dust, debris, materials and trash are contained on the site.
- .10 Contaminant Prevention Plan identifying potentially hazardous substances to be used on the job site; intended actions to prevent the introduction of hazardous substances into the air, water or ground; and detailing provisions for compliance with Federal, Provincial and Municipal laws and regulations for the storage and handling of these materials.

1.10 NOTIFICATION

- .1 The Departmental Representative (DMRC) will notify the Contractor in writing of any observed non compliance with the Environmental Protection Plan, Federal, Provincial or Municipal Environmental laws or regulations, and permits.
- .2 After the receipt of such notification, the Contractor shall inform the Departmental Representative (DMRC) of the proposed corrective action and take such action for approval of the Departmental Representative (DMRC).
- .3 The Departmental Representative will issue a stop work order until satisfactory corrective action has been taken.
- .4 No time extension will be granted or no equitable adjustments allowed to the Contractor for such suspensions.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Inspection and testing.
- .2 Tests and mix designs.
- .3 Mock-ups.
- .4 Mill tests.
- .5 Equipment and system adjust and balance.

1.2 INSPECTION

- .1 Allow the Departmental Representative (Parks Canada) access to Work. If part of Work is in preparation at location 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 the Departmental Representative (DMRC & Parks Canada) 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 The Departmental Representative (DMRC) may order any part of Work to be examined if Work is suspected to be not in accordance with Contact Documents.

1.3 INDEPENENT INSPECTION AGENCIES

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

1.4 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, offsite manufacturing and fabrication plants.
- .2 Cooperate to provide reasonable facilities for such access.

1.5 PROCEDURES

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

1.6 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 the Departmental Representative (DMRC) 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 the opinion of the Departmental Representative (DMRC & Parks Canada) it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by the Departmental Representative (DMRC & Parks Canada).

1.7 REPORTS

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

1.8 TESTS AND MIX DESIGNS

- .1 Furnish mix results and test designs as may be requested.
- .2 The costs of test and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by the Departmental Representative (DMRC) and may be authorized as recoverable.

1.9 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all sections required to provide mock-ups.
- .2 Construct in all locations acceptable to the Departmental Representative (DMRC).
- .3 Prepare mock-ups for the Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, the Departmental Representative will assist in preparing a schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.10 MILL TESTS

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

END OF SECTION

Part 1

General

1.1 SECTION INCLUDES

- .1 Construction aids.
- .2 Office and sheds.
- .3 Parking.
- .4 Project identification.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-Z321 Signs and Symbols for the Occupational Environment

1.3 INSTALLATION AND REMOVAL

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 SHORING AND BRACING

- .1 Contractor is responsible for the design, supply, installation and maintenance of any shoring, bracing or similar type systems required during the execution of the Work. Coordinate use with the Departmental Representative (Parks Canada).
- .2 Provide certification of any such shoring, bracing or similar type systems as directed by the Departmental Representative (DMRC) or as required by the Ministry of Labour, Ontario.

1.7 SITE STORAGE/LOADING

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

1.8 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 Build or maintain temporary roads where indicated or directed by the Departmental Representative (Parks Canada & DMRC) and provide snow removal during period of Work.
- .4 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads.

1.9 FIRST AID

- .1 Provide a clearly marked and fully stocked first-aid case in a readily available location.

1.10 EQUIPMENT, TOOL AND MATERIAL STORAGE

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

1.11 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 clean and premises in sanitary condition.

1.12 CONSTRUCTION SIGNAGE

- .1 Direct requests for approval to erect a Contractor signboard to the Departmental Representative (Parks Canada).
- .2 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN3-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 the Departmental Representative (DMRC or Parks Canada).

1.13 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material no in construction facilities.

END OF SECTION

Part 1**General****1.1 SECTION INCLUDES**

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

1.2 INSTALLATION AND REMOVAL

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

1.3 HOARDING

- .1 Erect temporary site enclosure using new 1.2m high snow fence wired to rolled steel "T" bar fence posts spaced at 2.4m on center, as required. Provide one lockable truck gate. Maintain fence in good repair. Requirement may be eliminated with the direction of the Departmental Representative (DMRC) subject to site conditions.
- .2 Provide barriers around trees, plants, environmentally sensitive features designated to remain. Protect from damage by equipment and construction procedures, as required.

1.4 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations.
- .2 Provide as required by governing authorities.

1.5 ACCESS TO SITE

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .2 The Contractor is responsible for snow removal to access the site through the winter.

1.6 PUBLIC TRAFFIC FLOW

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

1.7 FIRE ROUTES

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

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.9 RELICS AND ANTIQUITIES

- .1 Protect relics, antiquities, items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets and similar objects found during course of Work.
- .2 Give immediate notice to the Departmental Representative (DMRC) and await the Departmental Representative's written instructions before proceeding with Work in this area.
- .3 Relics, antiquities and items of historical and scientific interest remain her Majesty's property.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

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

1.2 QUALITY

- .1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality, (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with the Departmental Representative (DMRC) based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

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

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and restore products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

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

1.5 TRANSPORTATION

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

1.6 MANUFACTURERS INSTRUCTIONS

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

1.7 QUALITY OF WORK

- .1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify the Departmental Representative (DMRC) if required Work is such as to make it impractical to produce required results.

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

1.8 COORDINATION

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

1.9 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner

1.10 PROTECTION OF WORK IN PROGRESS

- .1 Adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, as directed by Departmental Representative (DMRC), at no increase in Contract Price or Contract Time.

1.11 EXISTING UTILITIES

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

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Existing Survey Control Points

1.2 SURVEY REFERENCE POINTS

- .1 Existing base vertical control points shall be provided.
- .2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .3 Make no changes or relocations without prior written notice to the Departmental Representative (DMRC).
- .4 Report to the Departmental Representative (DMRC) when the reference point is lost or destroyed, or requires relocation because of necessary changes in grade or locations.
- .5 Surveyor is required to replace control points.

1.3 LAYOUT

- .1 Temporary benchmarks are supplied on the drawings for layout.
- .2 Before proceeding to lay out the work, verify layout information shown on the drawings. If discrepancies are discovered, notify the engineer promptly.
- .3 Establish lines and levels and layout.
- .4 Stake for grading.
- .5 Accuracy of layout shall be within 2.5cm (vertical).

1.4 EXISTING SERVICES

- .1 Before commencing work, verify the location of existing services in the area of work and notify the Departmental Representative (DMRC) of any findings.
 - .1 Structural integrity of any element of Project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance or safety of any operational element.
 - .4 Visual qualities of sight-exposed elements.

1.3 RECORDS

- .1 Maintain a complete accurate log of the control and survey work as it progresses.
- .2 On completion of major site improvements, prepare a survey showing dimensions, locations, angles and elevations of work.

- .3 Record locations of maintained, re-routed and abandoned services lines.

1.4 **SUBSURFACE CONDITIONS**

- .1 Promptly notify the Consultant in writing if the subsurface conditions at the site, differs from those indicated in the Contract Documents.
- .2 After a prompt investigation, if the Departmental Representative (DMRC) determines that the subsurface conditions do differ from Contract Documents, instructions will be issued for changes in work.

END OF SECTION

Part 1

General

1.1 SECTION INCLUDES

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

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice as required and store in designated areas.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use clearly marked separate bins for recycling.
- .7 Remove debris daily to a designated Landfill Site. The work site must be left clean and tidy upon completion, to the satisfaction of the Departmental Representative.
- .8 Contractors shall adhere to landfill site restrictions and specified dumping areas.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by the Departmental Representative or other Contractors.
- .5 Separate materials for reuse and recycling.
- .6 Sweep and wash clean paved areas.

END OF SECTION

Part 1 General**1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meetings with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.
- .2 PWGSC's Waste Management Goal is 75 percent of total project waste to be diverted from landfill sites. Provide Departmental Representative documentation that waste management, recycling, reuse of recyclable and reusable materials have been extensively practised.
- .3 Accomplish maximum control of solid construction waste.
- .4 Preserve environment and prevent pollution and environment damage.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 Submittal Procedures
- .2 Section 01 74 11 Cleaning

1.3 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Cost/Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.
- .3 Demolition Waste Audit (DWA): relates to actual waste generated from project.
- .4 Inert Fill: inert waste – exclusively asphalt and concrete.
- .5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

- .2 Returning reusable items including pallets or unused products to vendors.
- .10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .11 Separate Condition: refers to waste sorted into individual types.
- .12 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .13 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.
- .14 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .15 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WR W is based on information acquired from W A (Schedule A).

1.4 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
 - .1 Material Source Separation Plan (MSSP).

1.5 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Submit 2 copies of Materials Source Separation Program (MSSP) description
- .3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project.
 - .1 Failure to submit could result in holdback of final payment.
 - .2 Provide receipts, scale tickets and waybills and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed off.
 - .3 For each material reused, sold or recycled from project, include amount in tonnes and the destination.
 - .4 For each material landfilled or incinerated from project, include amount in tonnes of material and identity of landfill, incinerator or transfer station.

1.6 WASTE AUDIT (W A)

- .1 W A is not applicable for this project.

1.7 WASTE REDUCTION WORKPLAN (WRW)

- .1 WRW is not applicable for this project.

1.8 DEMOLITION WASTE AUDIT (DWA)

- .1 DWA is not applicable for this project

1.9 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

- .1 CRAW is not applicable for this project.

1.10 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 MSSP is not applicable for this project.

1.11 WASTE PROCESSING SITES

- .1 Name: St. Edmunds Landfill, Municipality of Northern Bruce Peninsula.

- .1 Contact Name: Troy Cameron.
- .2 Telephone: 519-793-3522 ext. 232
- .3 Fax: 519-793-3823

1.12 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
 - .2 Unless specified otherwise, materials for removal become Contractor's property.
 - .3 Protect, stockpile, store and catalogue salvaged items.
 - .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
 - .5 Protect structural components not removed for demolition from movement or damage.
 - .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
 - .7 Protect surface drainage from damage and blockage.
 - .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
- .1 On-site source separation is recommended.

- .2 Remove co-mingled materials to off-site processing facility for separation.
- .3 Provide waybills for separated materials.
- .9 Protective masks / respirators and gloves should be worn when handling asbestos and mould as per Regulation 278/05.

1.13 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage generated.
 - .4 Tonnage reused or recycled.
 - .5 Reused or recycled waste destination.
- .4 Remove materials from deconstruction as deconstruction/disassembly work progresses.
- .5 Disposal of asbestos shall conform to Ontario Regulation 278/05.

1.14 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises

1.15 SCHEDULING

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

Part 2 Products

2.1 NOT USED

- .1 Not used

Part 3 Execution

3.1 APPLICATION

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

3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas .

3.3 DIVERSION OF MATERIALS

- .1 Separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas.
 - .2 Provide instruction on disposal practices.
- .2 On-site sale of salvaged, recovered, reusable or recyclable materials is not permitted.

3.4 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY**FOR THE ENVIRONMENT**

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

Ontario	Ministry of Environment and Energy, 135 St. Clair Avenue West Toronto, ON M4V 1P5	<u>General Inquiries</u> 416-323-4321 800-565-4923	<u>Fax</u> 416-323-4682
	Environment Canada Toronto, ON	416-734-4494	

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 As-built, samples and specifications.
- .2 Equipment and systems.
- .3 Product data, materials and finishes, and related information.
- .4 Operation and maintenance data.
- .5 Spare parts, special tools and maintenance materials.
- .6 Warranties and bonds.
- .7 Final site survey.

1.2 SUBMISSION

- .1 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective and of same quality and manufacture as products provided in Work.
- .2 If requested, furnish evidence as to type, source and quality of products provided.
- .3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.3 FORMAT

- .1 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .2 Provide scaled CAD files in dwg. and PDF format.

1.4 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for the Departmental Representative (DMRC) one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data and samples.
 - .6 Field Test Records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.

- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by the Departmental Representative (DMRC).

1.5 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of opaque drawings provided by the Departmental Representative (DMRC).
- .2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .4 Submit following drawings:
 - .1 Record changes in red. Mark on one set of prints and at completion of project prior to final inspection, neatly transfer as-built records to second set of white prints using fine red marker. Neatly print lettering and numbers in size to match original. Lines may be drawn free-hand but shall be neat and accurate. Annotate "AS-BUILT RECORD" in each drawing title block. Also, circle on List of Drawings each title and number of drawings marked with as-built records.
 - .2 At least 2 weeks prior to scheduled commission activities, submit one copy of the DRAFT "As-built" Project Record Documents for the Departmental

Representative's (DMRC) review and use during the commission activities. After the completion of the commissioning activities, the Departmental Representative (DMRC) will return to the Contractor the DRAFT copy, with review comments, for revision. Prior to the issuance of the Final Certificate of Completion, and within 10 working days after the issuance of the Interim Certificate of Completion, submit 2 copies of the FINAL "As-built" Project Record Documents.

- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by addenda and Change Orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications and sections.

1.6 **FINAL SURVEY**

- .1 Final site to confirm that the elevations and locations of completed work are in conformance, on non-conformance with the Contract Documents will be conducted by the Departmental Representative (DMRC).

1.7 **STORAGE, HANDLING AND PROTECTION**

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

1.9 **WARRANTIES AND BONDS**

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier and manufacturer with name, address and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers and manufacturers within ten days after completion of the applicable item of work.
- .4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined (DMRC).
- .5 Verify that documents are in proper form, contain full information and are notarized.

- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

END OF SECTION

Division 2

Site Work

02 41 13 Selective Site Demolition

Part 1 General

1.1 RELATED SECTION

- .1 Section 01 33 00 Submittal Procedures
- .2 Section 01 74 21 Construction/Demolition Waste Management And Disposal.
- .3 Section 01 35 43 Environmental Procedures.
- .4 Section 01 35 29.06 Health and Safety Requirements.
- .5 Section 31 23 00 Excavation and Fill.

1.2 MEASUREMENT PROCEDURES

- .1 Removal of all items noted on the drawing shall be by tendered unit price.
- .2 Payment for salvage, stockpiling, disposal, excavating, backfilling and restoration will be included in above removal items.

1.3 REFERENCES

- .1 Canadian Council of Ministers of the Environment (CCME).
 - .1 PN 1326, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- .2 Department of Justice Canada (Jus).
 - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37
 - .2 Canadian Environmental Protection Act, 1999 (CEPA), c. 33.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS)
- .4 Transport Canada (TC).
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34.

1.4 DEFINITIONS

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

1.5 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit DWA 2 weeks before any site demolition clearing.

1.6 QUALITY ASSURANCE

- .1 Arrange for site visit with Departmental Representative (DMRC) to examine existing site conditions adjacent to removals work, prior to start of Work.
- .2 Health and Safety.
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 – Health and Safety Requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Perform Work in accordance with Section 01 35 43 – Environmental Procedures.

.2 Storage and Protection.

- .1 Protect in accordance with Section 31 23 00 – Excavation and Fill.
- .2 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Departmental Representative (Parks Canada) and at no cost to Parks Canada.
- .3 Remove and store materials to be salvaged, in manner to prevent damage.
- .4 Store and protect in accordance with requirements for maximum preservation of material.
- .5 Handle salvaged materials as new materials.

.3 Waste Management and Disposal.

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Divert excess materials from landfill to site approved by Departmental Representative (DMRC).

1.8 SITE CONDITIONS

.1 Site Environmental Requirements.

- .1 Perform work in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Ensure that selective removals work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution .
- .3 Do not dispose of waste of volatile materials including but not limited to, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses .
 - .1 Ensure proper disposal procedures are maintained throughout the project.
- .4 Do not pump water containing suspended materials into watercourses.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances as directed by Departmental Representative (DMRC).
- .6 Protect trees, plants and foliage on site and adjacent properties where indicated, by careful construction operations. Please refer to the Environmental Assessment (Basic Impact Assessment) for more details.
- .7 Vegetation clearing should be completed outside the months of May, June, July and August due to the migratory bird nesting windows.

Part 2 Products

2.1 EQUIPMENT

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

Part 3 Execution

3.1 PREPARATION

- .1 Inspect site with Departmental Representative (DMRC & Parks Canada) and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

3.2 REMOVAL OPERATIONS

- .1 Remove items as indicated.
- .2 Do not disturb items designated to remain in place.
- .3 Excavate at least 150 mm below pipe invert, when removing pipes under existing or future pavement area.
- .4 Remove trees in designated area prior to construction (by others).
 - .1 Obtain written approval of Departmental Representative (Parks Canada) prior to removal of trees not designated.
- .6 Dispose of trees offsite or trees may be chipped in a designated area on Parks Canada property (by others). Coordinate with the Departmental Representative (Parks Canada).
- .8 Disposal of Material.
 - .1 Dispose of materials at an offsite location.
- .9 Backfill.
 - .1 Backfill in areas as indicated and in accordance with Section 31 23 00 - Excavation and Fill.

3.3 STOCKPILING

- .1 Identify stockpiles, indicating material type and quantity.
- .2 Locate stockpiled materials convenient for use in new construction to eliminate double handling wherever possible.

- .3 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.
- .4 Silt fence to be placed around all areas of stockpiled fill or topsoil if left in place for more than one week.

3.4 REMOVAL FROM SITE

- .1 Remove stockpiled material as directed by Departmental Representative (DMRC), when it interferes with operations of project. No additional payment will be made for removing stockpile.
- .2 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.

3.5 RESTORATION

- .1 Unless the area is to be reconstructed, restore areas and existing works outside areas of demolition to conditions that existed prior to beginning of Work and match condition of adjacent, undisturbed areas.
- .2 Use soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.6 CLEANING

- .1 Remove debris, trim surfaces and leave work site clean, upon completion of Work .
- .2 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

END OF SECTION

Division 10

Specialties

10 14 53 Traffic Signage

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 Submittal Procedures.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM A276- Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
 - .2 ASTM B209M- Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .3 ASTM B210M- Specification for Aluminum-Alloy Drawn Seamless Tubes.
 - .4 ASTM B211M- Specification for Aluminum and Aluminum-Alloy Bar, Rods and Wire.
- .2 Canadian Standards Association (CSA)
 - .1 CAN/CSA-G40.21- Structural Quality Steels.
 - .2 CSA O121- Douglas Fir Plywood.
 - .3 CSA W47.2- Certification of Companies for Fusion Welding of Aluminum.
- .3 Canadian General Standards Board (CGSB)
 - .1 CGSB1-GP-12c- Standard Paint Colours:
 - .2 CAN/CGSB-1.28- Alkyd, Exterior House Paint.
 - .3 CAN/CGSB-1.59- Alkyd, Exterior Gloss Enamel.
 - .4 CAN/CGSB-1.99- Exterior and Marine Phenolic Resin Varnish.
 - .5 CAN/CGSB-1.104- Semigloss Alkyd Air Drying and Baking Enamel.
 - .6 CAN/CGSB-1.132- Zinc Chromate Primer, Low Moisture Sensitivity.
 - .7 CGSB 31-GP-3M- Corrosion Preventive Compound, Cold Application, Soft Film.
 - .8 CGSB 31-GP-101Ma- Chemical Conversion Films for Aluminum and Aluminum Alloys.
 - .9 CGSB 62-GP-11M- Marking Material, Retroreflective, Enclosed Lens, Adhesive Backing.

1.3 DESIGN REQUIREMENTS

- .1 Sign supports to be capable of withstanding summation of following loads:

- .1 Wind load in any direction of 0.60kPa on signboards and 0.60kPa on sign supports and appurtenances.
 - .2 Dead load of signboards, sign supports and appurtenances.
 - .3 Ice load of 0.25kPa on one face of signboards and around surface of all structural members and appurtenances.
- .2 Structural deflections and vibration in accordance with American Association of State Highway and Transportation Officials (AASHTO), "Specifications for the Design and Construction of Structural Supports for Highway Signs".

1.4 SUBMITTALS

- .1 Submit shop drawing for new sign boards.

Part 2 Products

2.1 MATERIALS

- .1 Sign supports.
 - .1 Timber posts
 - .1 Sawn timber posts:
 - .1 Species: White cedar.
 - .2 Type: natural, not painted.
 - .3 Grade: No. 1.
 - .4 Dimensions 100mm x 100mm unless otherwise noted.
 - .2 Fasteners: bolts, nuts, washers and other hardware for roadside signs to be cast aluminum alloy, or galvanized steel.
 - .2 Metal Posts
 - .1 Heavy Duty galvanized metal posts
 - .2 To MTO standard
 - .3 Fasteners: bolts, nuts, washers and other hardware for roadside signs to be cast aluminum alloy, or galvanized steel
 - .3 Signboards
 - .1 The list of required signs to be supplied by the Contractor are as follows:

- .1 "Narrow Road – Rue étroite" Sign
 - Size – 90 x 90 cm
 - Colour: Background – Yellow Reflective
Legend & Border – Black
 - Made of 2MM rustproof aluminum, engineer grade reflective, 150 m visibility
- .2 "Shoulder Drop off" Symbol Sign (W8-17)
 - Size – 60 x 60 cm
 - Colour: Background – Yellow Reflective
Legend & Border – Black
 - Made of 2MM rustproof aluminum, engineer grade reflective, 150 m visibility
- .3 "Narrow Road with Steep Banks - Rue étroite avec pente raide" Sign
 - Size – 120 x 120 cm
 - Colour: Background – Yellow Reflective
Legend & Border – Black
 - Made of 2MM rustproof aluminum, engineer grade reflective, 150 m visibility
- .4 125mm Diamond Aluminum Delineators
 - Colour: White Reflective
 - Shape: 125mm (H) Diamond
- .2 Plywood to CSA 0121, 19mm thick overlaid douglas fir, medium density, overlaid one side only with fibre or plastic sheet surfacing material as applicable.
- .3 Aluminum sheet: to ASTM B209M, precut to required dimensions. Thickness to be 1.6mm for signboards up to 750mm wide. Thickness to be 2.1mm for signboards 750-1200mm wide. Use 1.0mm thickness for refurbishing existing sign panels.
- .4 Aluminum extrusions: to ASTM B211M, 150mm or 300mm panels suitable for bolting together.
- .5 T-shape stiffeners for signboards: to ASTM B210M.
- .6 Connecting straps and brackets: to ASTM B209M.
- .7 Aluminum materials: to ASTM B209M.
- .8 Xylene thinner: to CAN/CGSB-1.94.
- .9 Chemical conversion coating for aluminum: to CGSB 31-GP-101Ma.
- .10 Primer for aluminum: to CAN/CGSB-1.132.
- .11 Finish paint: to CAN/CGSB-1.59.

- .12 Silk screen ink:
 - .1 Transparent or opaque colours: to CGSB 1-GP-12c, and as indicated.
- .13 Reflective sheeting and tape: to CGSB 62-GP-11M. Adhesive, class of reflectivity and colour as indicated.
- .14 Transparent tape: flexible, smooth-surfaced, moisture resistant tape with pressure sensitive adhesive.

2.2 FABRICATION

- .1 Supports
 - .1 Connect aluminum support members by welding in accordance with CSA W47.2. Work to be performed by Canadian Welding Bureau qualified members only. Flame cutting of members not permitted.
 - .2 Welds to be of same strength as adjacent member or casting.
 - .3 Remove sharp edges and burrs.
 - .4 Drive to required depth without damage to posts.
 - .5 If rock or concrete is encountered, drill hole to required depth and set post in sand.
 - .6 In finished concrete surfaces, backfill with concrete or grout. Protect from adverse conditions until cured.
- .2 Signboards.
 - .1 Aluminum blanks:
 - .1 Degrease, etch and bonderize with chemical conversion coating.
 - .2 Clean surfaces with xylene thinner. Dry.
 - .3 For non-reflective signs, spray face with one coat vinyl pretreatment coating and two finish coats of required colour.
 - .4 For aluminum signboards that are to be painted before installation, spray and bake face of signboards with two coats of enamel in accordance with CAN/CGSB-1.104.
 - .2 Reflective background sheeting and lettering
 - .1 Cut and apply in accordance with manufacturer's instructions.

- .2 Apply adhesive coated material with heat lamp vacuum applicator or by squeeze roll application method. Apply pressure sensitive material with roller or squeegee.
 - .3 Edge wrap sheeting on each extrusion prior to bolting extrusions. Match pieces of sheeting from different rolls for each signboard to ensure uniform appearance and brilliance by day and night.
 - .4 Reflective signboard faces may be prepared using silk screen transparent ink.
 - .5 Non-reflective lettering and symbols: cut from vinyl film as specified in CGSB 62-GP-9M, or paint using required colour of finish paint or silk screen transparent ink.
 - .6 Clean signboards completely and apply transparent tape over top edge and extending 25mm minimum down back and front of signboard.
- .3 Sign identification.
- .1 Apply sign number and date of installation with 25mm high stencil painted black letters on lower left back face of each signboard.

Part 3 Execution

3.1 INSTALLATION

- .1 Sign bridge.
 - .1 Erect sign bridge as indicated. Permissible tolerance: 12mm maximum departure from vertical.
- .2 Sign support.
 - .1 Erect supports as indicated. Permissible tolerance: 50mm maximum departure from vertical for direct buried supports. Where separate concrete footings have been placed, erect posts with base plates resting on leveling nuts and restrained with nuts and washers. Permissible tolerance: 12mm maximum departure from vertical.
 - .2 Coat underside of base plate with corrosion protective paint before installation. Connect shoe base to shaft with inside and outside fillet welds.
 - .3 Close open aluminum tubes and posts with aluminum cap. Cut oblong holes in shoe bases to drain condensation. Install aluminum bolt cover on each base plate restraining nut.

- .4 Erect posts plumb and square to details as indicated.
 - .5 Join truss sections with wrought aluminum flanges welded to chords with inside and outside fillet welds. Build in camber to truss and monotube bridge supports to allow for deflection due to dead load of sign support, signboards, appurtenances; and an additional 1:300 camber.
- .3 Signboard
- .1 Fasten signboards to supporting posts and brackets as indicated.
 - .2 Use T-shape aluminum stiffeners to join portions of sign panel on site. Cover face of T-stiffener with material identical to face of sign panel.

3.2 PROTECTION

- .1 Place temporary covering on signboards where indicated. Covering to be capable of withstanding rain, snow and wind and be non-injurious to signboard. Replace deteriorated covering and remove covers as directed by Departmental Representative (DMRC).

3.3 CORRECTING DEFECTS

- .1 Correct defects, identified by Departmental Representative (DMRC), in sign message, consistency of reflectivity, colour or illumination. Correct angle of signboard and adjust luminaire aiming angle for optimum performance during night conditions to approval of Departmental Representative (DMRC).

END OF SECTION

Division 31

Earthwork

31 22 00	Grading
31 22 16.13	Roadway Subgrade Reshaping
31 23 00	Excavation and Fill
31 23 19	Dewatering
31 32 25	Erosion and Sedimentation Control

Part 1 General

1.1 REFERENCES

- .1 ASTM D698-91, Test Method for Laboratory Compaction Characteristics of Soil Using
Standard Effort (600kN-m/m³).

1.2 PROTECTION

- .1 Protect existing trees, landscaping, natural features, buildings, pavement,
surface or underground utility lines which are to remain. If damaged, restore to
original condition unless directed otherwise.
- .2 Maintain access roads to prevent accumulation of mud on roads.

Part 2 Products

2.1 MATERIALS

- .1 Refer to Section 32 10 01 for Granular Base
- .2 Provide clean fill as required to provide safe side slopes.

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.
- .2 Commence topsoil stripping after area has been cleared and grubbed and debris removed
from site
 - .1 Strip all areas of excavation and construction as directed by the Departmental
Representative.
- .3 Strip topsoil to depths shown on the drawings or as directed by the Departmental
Representative (DMRC). Avoid mixing topsoil with subsoil.
- .4 Stockpile in locations as directed by the Departmental Representative. Stockpile height
not to exceed 2m.
- .5 Dispose of unused topsoil as directed by the Departmental Representative (Parks
Canada).
- .6 Protect stockpiles from contamination and compaction.

3.2 SITE PREPARATION

- .1 Store removed material in location on Site as determined by the Departmental Representative and as noted in Section 01 74 11 – Cleaning.
- .2 Strip lot base material to depth of native founding material. Avoid mixing granular base material with native soils to remain.
- .3 Dispose of unused topsoil as directed by the Departmental Representative off site.
- .4 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by the Departmental Representative.

3.3 GRADING

- .1 Rough grade to levels, profiles and contours allowing for surface treatment as indicated.
- .2 Prior to placing fill over existing ground, scarify surface to depth of 150mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .3 Compact filled and disturbed areas to Standard Proctor Density to ASTM D698, as follows:
 - .1 90% under boulevard.
 - .2 98% under paved areas, shoulders and trail.
- .5 Do not disturb soil within branch spread of trees or shrubs to remain.

3.4 TESTING

- .1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by ULC.
- .2 Costs of tests will be paid by the Departmental Representative.

3.5 SURPLUS MATERIAL

- .1 Remove surplus material and material unsuitable for fill, grading or landscaping off site as directed by the Departmental Representative (Parks Canada).

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 74 21 Construction/Demolition Waste Management and Disposal
- .2 Section 32 11 16 Granular Subbase

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM D698-00a, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m³).

1.3 DEFINITIONS

- .1 Reshaping subgrade, scarifying, pulverizing, blading, reshaping and recompacting existing subgrade surface.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 Construction/Demolition Waste Management and Disposal.
- .2 Divert excess materials from landfill to site approved by Departmental Representative.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 SCARIFYING AND RESHAPING

- .1 Scarify subgrade to full width as directed by Departmental Representative and to minimum depth of 50mm.
- .2 Blade and trim material to elevation and cross section dimensions as indicated on the Drawings and as directed by Departmental Representative.
- .3 Where a deficiency of the material exists, add and blend additional subgrade material as directed by Departmental Representative.
- .4 Re-use excess material in areas of material deficiency as directed by Departmental Representative.

3.2 COMPACTING

- .1 Compact to density not less than 98% Standard Proctor Maximum Dry Density in accordance with ASTM D698.
- .2 Shape and roll alternately to obtain smooth, even and uniformly compacted subgrade surface.
- .3 Apply water as necessary during compaction to obtain specified density.
- .4 If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected to value not greater than 2% moisture above optimum value for compaction in accordance with ASTM D698.

3.3 SITE TOLERANCES

- .1 Reshaped compacted surface to be within plus or minus 20mm of elevation as indicated.

3.4 PROTECTION

- .1 Maintain reshaped surface in condition conforming to this section until succeeding material is applied or until Departmental Representative acceptance.

3.5 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- .1 Section 31 22 00 Grading.
- .2 Section 32 10 01 Granular Base.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
- .2 ASTM C 117 - Test Method for Material Finer Than 0.075mm (No.200) Sieve in Mineral Aggregates by Washing.
- .3 ASTM C 136 - Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .4 ASTM D 422 - Test Method for Particle Size Analysis of Soils.
- .5 ASTM D 698 - Test Method for Laboratory Compaction of Soil Using Effort (12,400 ft-lbf/ft³)(600 kN-m/m³).
- .6 ASTM D 1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2,700kN-m/m³).
- .7 ASTM D 4318-95 - Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils. Canadian Standards Association (CSA).
- .8 CAN/CGSB-8.2-88 - Sieves, Testing, Woven Wire, Metric. Canadian Standards Association (CSA).

1.3 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
 - .1 Rock: Any solid material in excess of 0.25m³ and which cannot be removed by means of duty mechanical excavating equipment having a 0.95 to 1.15m³ bucket. Frozen material is not classified as rock.
 - .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
- .3 Waste material: excavated material unsuitable for use in work or surplus to requirements.
- .4 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of work.
- .5 Unsuitable materials:

- .1 Weak and compressible materials under excavated areas.
- .2 Frost susceptible materials under excavated areas.
- .3 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D 4318, and gradation within limits specified when tested to ASTM D 422 and ASTM C136; Sieve sizes to CAN/CGSB-8.1.
 - .2 Table:

Sieve Designation	% Passing
2.00m	100
0.10mm	45-100
0.02mm	10-80
0.005mm	0-45

- .3 Coarse grained soils containing more than 20% by mass passing 0.075mm sieve.

1.4 PROTECTION OF EXISTING FEATURES

- .1 Existing buried utilities and structures:
 - .1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .2 Prior to commencing excavation work, notify applicable owner or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Owners or authorities having jurisdiction to clearly mark such locations to prevent disturbance during work.
 - .3 Confirm locations of buried utilities by careful test excavations.
 - .4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
 - .5 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before re-routing.
 - .6 Record location of maintained, re-routed and abandoned underground lines.
- .2 Existing building and surface features:
 - .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail

tracks, pavement, survey bench marks and monuments which may be affected by work.

- .2 Protect existing building and service features from damage while work is in progress. In event of damage, immediately make repair to approval of Departmental Representative.
- .3 Where required for excavation, cut roots or branches as approved by Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Granular A (OPSS 1010)
 - .1 Crushed, pit run or screened stone, gravel or sand consisting of hard durable particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
 - .2 Gradations to be within limits specified when tested to ASTM C 136-84a and ASTM C 117-87. Sieve sizes as shown.

Sieve Designation	% Passing
26.5mm	100
19mm	85-100
13.2mm	65-90
9.5mm	50-73
4.75mm	35-55
1.18mm	15-40
0.300mm	5-22
0.150mm	-
0.075mm	2-8

- .3 Plasticity Index ASTM D4318-84 0.
- .4 Los Angeles Abrasion ASTM C 131-81 (1987) Gradation "A" Max. % loss by weight: 60.
- .5 Crushed particles: at least 50% of particles by mass within each of following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C 136-84a.

Passing	Retained On
26.5mm	19mm

19mm	4.75mm
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- .6 Petrographic Number MTO LS 609 Maximum 250.
- .7 Soaked CBR: AASHTO T193-72 when compacted to 100% of AASHTO T180-74 Method D, Min 80 for use under Portland cement concrete and Min 100 for use under asphalt concrete.

- .2 Granular B, Type I or Type II (OPSS 1010)
 - .1 Crushed, pit run or screened stone. Gravel or sand consisting of hard durable particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
 - .2 Gradations to be within limits specified when tested to ASTM C136-84a and ASTM C117-87. Sieve sizes as shown:

Sieve Designation	% Passing	% Passing
	Type 1	Type 2
150mm	100	100
26.5mm	50-100	50-100
4.75mm	20-100	20-55
1.18mm	10-100	10-40
0.300mm	2-65	5-22
0.075mm	0-8	0-10

- .3 Plasticity Index ASTM D4318-84 0.
- .4 Crushed particles: at least 100% of particles by mass within each of the following sieve designation ranges to have at least 1 freshly fractured face for Type 2. Not applicable for Type 1. Material to be divided into ranges using methods of ASTM C136-84a.

Passing	Retained On
26.5mm	4.75mm

- .5 Petrographic Number MTO LS 609 Maximum 250.
- .6 Particles smaller than 0.02mm AASHTO T88-78 Maximum 3%.
- .7 Soaked CBR AASHTO T193-72 Min 40 when compacted to 100% of AASHTO T180-74 Method D.

- .3 Earth fill: to OPSS 212 and following requirement:
 - .1 Borrowed earth shall be free from organic material and foreign objects.
- .4 Clear stone: 19mm, fractured, limestone from approved quarry site. No fines.

Part 3 Execution

3.1 SITE PREPARATION

- .1 Remove obstructions, ice and snow from surfaces to be excavated within limits indicated.
- .2 Cut work area neatly along limits of proposed excavation in order that surface may break evenly and cleanly in accordance with other Sections.

3.2 STOCKPILING

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

3.3 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while work is in progress.
- .2 Protect open excavations against flooding and damage due to surface run-off.
- .3 Dispose of water in a manner not detrimental to public and private property, or any portion of work completed or under construction.
- .4 Dewatering if required is to be included in the lump sum price.

3.4 EXCAVATION

- .1 Advise the Departmental Representative at least 7 days in advance of excavation operations for initial cross sections to be taken at trenches.
- .2 Excavate to lines, grades, elevations and dimensions as indicated.
- .3 Remove obstructions encountered during excavation in accordance with other sections and the drawings.
- .4 Excavation must not interfere with normal 45° splay of bearing from bottom of any footing.
- .5 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with large sharp axe or saw.
- .6 For trench excavation, unless otherwise authorized by the Departmental Representative in writing, do not excavate more than 30m of trench in advance of installation operations and do not leave open more than 15m at end of day's operation.

- .7 Dispose of surplus and unsuitable excavated material off site.
- .8 Do not obstruct flow of surface drainage or water courses.
- .9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .10 Notify the Departmental Representative when bottom of excavation is reached. Soil compaction testing will be performed by the Departmental Representative during excavation to determine location and depth required for stepped footings.
- .11 Obtain the Departmental Representative's approval of completed excavation.
- .12 Remove unsuitable material from trench bottom to extent and depth as directed by the Departmental Representative.
- .13 Correct unauthorized over-excavation as follows:
 - .1 Fill under bearing surfaces and footings with fill concrete.
 - .2 Fill under other areas with Fill Type 2 compacted to 98% corrected maximum dry density.
- .14 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete fill to approval of the Departmental Representative.

3.5 BEDDING AND SURROUND OF UNDERGROUND SERVICES

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

3.6 BACKFILLING

- .1 Do not proceed with backfilling operations until the Departmental Representative has inspected and approved installations.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Backfill material to be as indicated. Do not use material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfill around installations.
 - .1 Do not backfill around or cover cast-in-place concrete within 24 hours after placing of concrete.

3.7 RESTORATION

- .1 Upon completion of work, remove waste materials and debris, trim slopes and correct defects as directed by the Departmental Representative.
- .2 Reinstate adjacent pavement, sidewalks and lawns to elevation which existed before excavation or as shown on the drawings.
- .3 Clean and reinstate areas affected by work as directed by the Departmental Representative.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

This section specifies performance of dewatering required to lower and control ground water table levels and hydrostatic pressures to permit excavation, backfill, and construction to be performed in the dry. Control of surface water shall be considered as part of the work under this specification.

1.2 REQUIREMENT

- .1 The dewatering system shall be of sufficient size and capacity necessary to lower and maintain ground water table to an elevation at least 300mm below the lowest subgrade or bottom of pipe trench and to allow material to be excavated, piles to be driven, and concrete placed, in a reasonably dry condition. Materials to be removed shall be sufficiently dry to permit excavation to grades shown and to stabilize excavation slopes where sheeting is not required. Operate dewatering system continuously until backfill work has been completed.
- .2 Reduce hydrostatic head below any excavation to the extent that water level in the construction area is a minimum of 300mm below prevailing excavation surface.
- .3 Prevent loss of fines, seepage, boils, quick conditions or softening of foundation strata.
- .4 Maintain stability of sides and bottom of excavation.
- .5 Construction operations are performed in the dry.
- .6 Control of surface and subsurface water is part of dewatering requirements. Maintain adequate control so that:
 1. The stability of excavated and constructed slopes are not adversely affected by saturated soil, including water entering prepared subbase and subgrades where underlying materials are not free draining or are subject to swelling or freeze-thaw action.
 2. Erosion is controlled.
 3. Flooding of excavations or damage to structures does not occur.
 4. Surface water drains away from excavations.
 5. Excavations are protected from becoming wet from surface water, or insure excavations are dry before additional work is undertaken.
- .7 Permitting Requirements: The contractor shall comply with and obtain the required permits where the work is performed.

1.3 SUBMITTALS

- .1 Submit drawings and data showing the method to be employed in dewatering excavated areas 30 days before commencement of excavation.
- .2 Material shall include: location, depth and size of wellpoints, headers, sumps, ditches, size and location of discharge lines, capacities of pumps and standby units, and detailed description of dewatering methods to be employed to convey the water from site to adequate disposal.
- .3 Include a written report outlining control procedures to be adopted if dewatering problem arises.
- .4 Capacities of pumps, prime movers, and standby equipment.
- .5 Design calculations proving adequacy of system and selected equipment. The dewatering system shall be designed using accepted and professional methods of design and engineering consistent with the best modern practice. The dewatering system shall include the deep wells, wellpoints, and other equipment, appurtenances, and related earthwork necessary to perform the function.
- .6 Detailed description of dewatering procedure and maintenance method.
- .7 Materials submitted shall be in a format acceptable for inclusion in required permit applications to any and all regulatory agencies for which permits for discharge water from the dewatering system are required due to the discharge reaching regulated bodies of water.
- .8 All required permits.

Part 2 Products (Not Applicable)

Part 3 Execution

3.1 INSTALLATION

- .1 Install a dewatering system to lower and control ground surface water in order to permit excavation, construction of structure, and placement of backfill materials to be performed under dry conditions. Make the dewatering system adequate to pre-drain the water-bearing strata above and below the bottom of structure foundations, utilities and other excavations.
- .2 In addition, reduce hydrostatic pressure head in water-bearing strata below structure foundations, utility lines, and other excavations, to extent that water levels in construction area are a minimum of 300mm below prevailing excavation surface at all times.

3.2 OPERATION

- .1 Prior to any excavation below the ground water table, place system into operation to lower water table as required and operate it continuously 24 hours a day, 7 days a week until

utilities and structures have been satisfactorily constructed, which includes the placement of backfill materials and dewatering is no longer required.

- .2 Place an adequate weight of backfill material to prevent buoyancy prior to discontinuing operation of the system.

3.3 **WATER DISPOSAL**

- .1 Dispose of water removed from the excavations in such a manner as:
 1. Will not endanger portions of work under construction or completed.
 2. Will cause no inconvenience to Parks Canada or to others working near site.
 3. Will comply with the stipulations of required permits for disposal of water.
 4. Will Control Runoff: The Contractor shall be responsible for control of runoff in all work areas including but not limited to: excavations, access roads, parking areas, laydown, and staging areas. The Contractor shall provide, operate, and maintain all ditches, basins, sumps, culverts, site grading, and pumping facilities to divert, collect, and remove all water from the work areas. All water shall be removed from the immediate work areas and shall be disposed of in accordance with applicable permits.
 - .5 Sedimentation Control measures shall be in place.
- .2 Excavation Dewatering:
 1. The Contractor shall be responsible for providing all facilities required to divert, collect, control, and remove water from all construction work areas and excavations.
 2. Drainage features shall have sufficient capacity to avoid flooding of work areas.
 3. Drainage features shall be so arranged and altered as required to avoid degradation of the final excavated surface(s).
 4. The Contractor shall utilize all necessary erosion and sediment control measures as described herein to avoid construction related degradation of the natural water quality.
- .3 Dewatering equipment shall be provided to remove and dispose of all surface and ground water entering excavations, trenches, or other parts of the work during construction. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.

3.4 STANDBY EQUIPMENT

Provide complete standby equipment, installed and available for immediate operation, as may be required to adequately maintain de-watering on a continuous basis and in the event that all or any part of the system may become inadequate or fail.

3.5 CORRECTIVE ACTION

If dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system (loosening of the foundation strata, or instability of slopes, or damage to foundations or structures), perform work necessary for reinstatement of foundation soil and damaged structure or damages to work in place resulting from such inadequacy or failure by Contractor, at no additional cost to Parks Canada.

3.6 DAMAGES

Immediately repair damages to adjacent facilities caused by dewatering operations.

3.7 REMOVAL

Ensure compliance with all conditions of regulating permits and provide such information to the Departmental Representative (DMRC). Obtain written approval from the Departmental Representative (DMRC) before discontinuing operation of dewatering system.

END OF SECTION

Part 1 General

1.1 OBJECTIVES

- .1 Prevent the loss of soil from construction site resulting from stormwater runoff, wind erosion and construction activities.
- .2 Prevent the sedimentation of storm ditches and receiving waters.
- .3 Prevent air pollution caused by dust and particulate matter.

1.2 DESCRIPTION OF WORK

- .1 Implement the Erosion and Sedimentation Control (ESC) measures shown on the project drawings and described in these specifications.
- .2 Install ESC products in accordance with manufacturer instructions and the prescribed installation procedures.
- .3 Inspect ESC measures on a weekly basis and following all significant storm events. If deficiencies are found, make repairs within 24 hours of detection.

Part 2 Products

- .1 The Sedimentation Control fence shall be a pervious sheet of polypropylene, nylon, polyester, polyethylene or equivalent and have the following characteristics:
 - .1 Filtering Efficiency: 75%-85% (minimum)
 - .2 Tensile Strength at 20% Standard Strength: 0.54 kg/mm (max)
Elongation Extra Strength: 0.89 kg/mm
 - .3 Slurry Flow Rate: 15.0 L/m²/min (min)
- 2. Turbidity Curtain shall be a geotextile material (polypropylene) with the following characteristics:
 - .1 Grab Tensile: 1000 N
 - .2 Grab Elongation: 45-105 N
 - .3 Tear Resistance: 425 N
 - .4 Apparent Opening Size (A.O.S): 0.15mm
- .3 Cofferdam shall be comprised of a high strength geotextile material. Standard of Acceptance: Terrafix Meter Bags or an approved equivalent.

Part 3 Execution

3.1 PROCEDURES

.1 Stabilization Practices

.1 Preservation of Natural Vegetation

- .1 Establish construction boundaries to limit site disturbance to 1.8m beyond proposed roadway.
- .2 Stakes shall be used to indicate limits of construction, grading and disturbance. Trees shall be clearly marked to be preserved and protected from the ground disturbances around the base.

.2 Structural Practices

.1 Silt Fence

- .1 Construct posts with filter fabric media to remove sediment from stormwater volumes flowing through the fence.
- .2 The lower edge of the fence is to be vertically trenched and covered by backfill.

.2 Turbidity Curtain

- .1 Install Turbidity Curtain to protect wetlands from sedimentation, when working in the wetlands.
- .2 Turbidity Curtain shall be installed to OPSD 219.26 and to the manufacturer's instructions.

3.2 INSPECTIONS AND MAINTENANCE

- .1 Inspect all control measures daily (unless otherwise noted) and following any significant storm (13mm of precipitation or greater). Complete the inspection log for each inspection, and keep in an accessible location on site until all corrective measures have been documented. Submit each completed log to the Owner's Representative for review.
- .2 Maintain all measures in good working order. If a repair is necessary, initiate within 24 hours of report.
- .3 Silt Fence: Silt fence to be inspected for depth of sediment, tears, loose fabric attachment at fence posts, channel erosion beneath fence, sagging or collapse, and to ensure the fence posts are firmly in the ground. Built-up sediment is to be removed from silt fence when it has reached 1/3 the height of the fence. Repair such that fence is in original installation condition.

3.3 REMOVAL OF PRODUCTS

- .1 ESC measures shall not be removed and shall be fully inspected and maintained until directed by the Departmental Representative (Parks Canada).

END OF SECTION

Division 32

Exterior Improvements

32 11 01 Granular Base

Part 1 General

1.1 PRODUCTS

- .1 Contractor to supply and install granular base material.

1.2 RELATED

- .1 Section 31 22 00 Grading.
- .2 Section 31 23 00 Excavation and Fill.

1.3 REFERENCES

- .1 ASTM C 136, Methods for Sieve Analysis of Coarse Aggregates.
- .2 ASTM D 698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft²) (600kN-m/m²).
- .3 CAN/CGSB-8.2-M, Sieves Testing, Woven Wire, Metric.

1.4 DELIVERY STORAGE

- .1 Deliver and stockpile aggregates in accordance with Section 01 61 00 – Common Product Requirements Stockpile minimum 50% of total aggregate required prior to commencing operation.

1.5 SAMPLES

- .1 Provide the Departmental Representative (DMRC) with two litre samples of each type of proposed Granular material in accordance with the submission requirements of Section 01 33 00.

1.6 QUANTITIES

- .1 The quantity for Granular 'A' was calculated assuming that the materials are compacted in place.
- .2 The topography / existing roadway conditions vary significantly along the road. Section 1+300 was used to estimate the quantity of granular 'A' required.
- .3 The contractor shall verify the quantities.

Part 2 Products

2.1 MATERIALS

- .1 Granular base:
 - .1 Crushed stone or gravel. Fill Type 1 Granular 'A' to OPSS 1010.

- .2 Granular 'A' shall be freshly crushed to mitigate the introduction of invasive plants.
- .3 Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117.
- .4 Table:

Sieve Designation	%Passing
150mm	
100mm	
75mm	
50mm	
37.5mm	
26.5mm	100%
19mm	85-100%
13.2mm	65-90%
9.5mm	50-73%
4.75mm	35-55%
1.18mm	15-40%
0.300mm	5-22%
0.150mm	
0.075mm	2-8%

Part 3 Execution

3.1 SEQUENCE OF OPERATION

- .1 Place granular base after sub-base surface is inspected and by the Departmental Representative (DMRC), as applicable.
- .2 Placing:
 - .1 Construct granular base to depth and grade in areas indicated.
 - .2 Ensure no frozen material is placed.
 - .3 Place material only on clean unfrozen surface, free from snow and ice.
 - .4 Place material using methods which do not lead to segregation or degradation of aggregate.
 - .5 Place material to full width in uniform layers not exceeding 150mm compacted thickness.
 - .6 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.3 Compaction Equipment:

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compacting:
 - .1 Compact to density not less than 98% Standard Proctor.
 - .2 Shape and roll alternately to obtain smooth, even and compacted base.
 - .3 Apply water as necessary during compacting to obtain density.
 - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by the Departmental Representative (DMRC).

3.2 SITE TOLERANCES

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

3.3 PROTECTION

- .1 Maintain finished base in condition conforming to this section until succeeding material is applied or until acceptance by the Departmental Representative (DMRC).

END OF SECTION

Division 33

Utilities

33 42 13 Pipe Culverts

Part 1 General

1.1 SECTION INCLUDES

- .1 Materials and installation for pipe culverts.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 Submittal Procedures
- .2 Section 01 74 21 Construction/Demolition Waste Management Disposal
- .3 Section 01 78 00 Closeout Submittals
- .4 Section 02 31 50 Excavating, Trenching and Backfilling

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88 Sieves, Testing, Woven Wire, Inch Series
 - .2 CAN/CGSB-8.2-M88 Sieves, Testing, Woven Wire, Metric

1.4 SUBMITTALS

- .1 Inform Departmental Representative (DMRC) of proposed source of bedding materials and provide access for sampling at least 4 weeks prior to commencing work.
- .2 Submit manufacturer's test data and certification that pipe materials meet requirements of this section at least 4 weeks prior to beginning work. Include manufacturer's drawings, information and shop drawings where pertinent.
- .3 Pipe certification to be on pipe.
- .4 Provide shop drawings of the animal guards.

1.5 DELIVERY, STORAGE AND HANDLING

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

Part 2 Products

2.1 CORRUGATED STEEL PIPE

- .1 Corrugated steel pipe: to CSA-G401.
- .2 Aluminized Type 2 Hel-Cor.
- .3 Water-tight cut-off collars: as indicated.
- .4 200mm diameter shall be 14 Gauge (2mm) or match existing for extensions.
- .5 450 – 900mm diameter shall be 14 Gauge (2mm)

2.2 PIPE BEDDING AND SURROUND MATERIAL

- .1 Granular material to Section 32 10 01 – Granular Base and following requirements:
 - .1 Crushed or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
 - .3 Table:

Sieve Designation	% Passing Stone/Gravel	Gravel/Sand
200mm	-	-
75mm	-	-
50mm	-	-
38.1mm	-	-
25mm	100	-
19mm	-	-
12.5mm	65-90	100
9.5mm	-	-
4.75mm	35.55	80-100
2.00mm	-	50-90
0.425mm	10.25	10-50
0.180mm	-	-
0.075mm	0.8	0-10

- .2 Concrete mixes and materials required for bedding cradles, encasement, supports, thrust blocks to Section 03 05 10 – Cast-in-Place Concrete.

2.3 BACKFILL MATERIAL

- .1 As indicated.

2.4 ANIMAL GUARDS

- .1 Animal Guards shall be Agri Drain Rat Guards or an approved equivalent:
 - .1 Zinc dichromate plated band-type rat guard that resists corrosion.
 - .2 Minimum space between bars shall be 25mm.
 - .3 Minimum size of bars shall be 6.25mm.

Part 3 Execution

3.1 TRENCHING

- .1 Do trenching work in accordance with Section 31 23 00 – Excavation and Fill.
- .2 Trench alignment and depth require Departmental Representative's (DMRC) approval prior to placing bedding material and pipe.

3.2 GRANULAR BEDDING

- .1 Place 200mm depth of granular bedding material in uniform layers not exceeding 150mm compacted thickness.
- .2 Do not place material in frozen condition.
- .3 Shape bed true to grade to provide continuous uniform bearing surface for pipe.
- .4 Shape transverse depressions in bedding as required to suit joints.
- .5 Compact each layer full width of bed to at least 95% of corrected maximum dry density 95% maximum density to ASTM D698.
- .6 Fill authorized or unauthorized excavation below design elevation of bottom of specified bedding in accordance with Section 31 23 00– Excavation and Fill with compacted bedding material.

3.3 LAYING CORRUGATED STEEL PIPE CULVERTS

- .1 Commence pipe placing at downstream end.
- .2 Ensure bottom of pipe is in contact with shaped bed or compacted fill throughout its length.
- .3 Lay pipe with outside circumferential laps facing upstream and longitudinal laps or seams at side or quarter points.
- .4 Lay paved invert or partially lined pipe with longitudinal centre line of paved segment coinciding with flow line.
- .5 Do not allow water to flow through pipes during construction except as permitted by the Departmental Representative (DMRC).

3.4 JOINTS: CORRUGATED STEEL CULVERTS

- .1 Corrugated steel pipe:

- .1 Match corrugations or indentations of coupler with pipe sections before tightening.
- .2 Tap couplers firmly as they are being tightened, to take up slack and ensure snug fit.
- .3 Insert and tighten bolts.
- .4 Repair spots where damage has occurred to spelter coating by applying two coats of asphalt paint approved by Departmental Representative (DMRC) or two coats of zinc rich paint.

3.5 **BACKFILLING**

- .1 Backfill around and over culverts as indicated or as directed by Departmental Representative (DMRC).
- .2 Place granular backfill material, approved by Departmental Representative (DMRC), in 150 mm layers to full width, alternately on each side of culvert, so as not to displace it laterally or vertically.
- .3 Compact each layer to 95% corrected maximum dry density maximum density to ASTM D698 taking special care to obtain required density under haunches.
- .4 Protect installed culvert with minimum 600mm cover of compacted fill before heavy equipment is permitted to cross. During construction, width of fill, at its top, to be at least twice diameter or span of pipe and with slopes not steeper than 1:2.
- .5 Place backfill in unfrozen condition.

END OF SECTION