

Parks Canada Agency



**Robinsons Island Road
Conversion to AT Trail**



Issued for Tender

June 2023
Project No. 30041363

Robinsons Island Road Conversion to AT Trail

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1 Description of Work .1

The work will be carried out on the Robinsons Island Access Road within the P.E.I. National Park, from the West end of the existing road back towards Brackley Beach approximately 3,500 metres.

Full depth asphalt removals will be carried out on the road and a new 3 metre Active Transportation (AT) Trail with a granular surface will be built on the existing road bed after asphalt removal.

Asphalt millings will be transported to and placed on selected roadways and parking areas. Remainder of milling material, if any, will be stockpiled at the identified PEI National Park Location.

Disturbed areas will be reinstated with top soil and seed.

.2 The work of this contract includes the provision of all materials, labour, equipment, and ancillaries, all as necessary for the completion of the work as indicated on the drawings and as described in the specifications and notes. Work on this project consists generally of, but not limited to, the following:

.1 Removal of all rail cable, signage, guardrail, and other items identified for removal on drawings.

.2 Milling asphalt where indicated.

.3 Stockpiling of materials indicated.

.4 Constructing active transportation trail.

.5 Placing and compacting asphalt millings where indicated.

.6 Supply, install and remove all environmental protection measures required.

.7 Supply all necessary temporary safety signs and traffic/pedestrian control.

.8 All other labour, materials and work necessary to complete the project to the Department Representative's full satisfaction.

.3 All work to be carried out in accordance with applicable federal and provincial regulations for those agencies having jurisdiction for the work. The work is subject to the National Park Act and Regulations, Canadian Environmental Protection Act, and the PEI Occupational and Safety Act and Regulations.

.4 The Contractor is advised that other construction

work may be being performed at several different locations throughout the PEI National Park by others during the time frame of this contract.

- .5 Maintain work during construction. Undertake continuous and effective maintenance work day by day, with adequate equipment and forces so that the work is continuously kept in a condition satisfactory to Department Representatives.

2 Familiarization With Site

- .1 Before submitting a bid, it is recommended that bidders visit the site to review and verify the form, nature and extent of the work, materials needed, the means of access and the temporary facilities required to perform the Work.
- .2 Obtain prior permission from the Departmental Representative before carrying out such site inspection.

3 Codes And Standards

- .1 Perform work in accordance with the National Building Code of Canada (Latest Edition) and any other code of provincial or local application, including all amendments up to bid closing date, provided that in any case of conflict or discrepancy, the more stringent requirement shall apply.
- .2 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

4 Interpretation of Documents

- .1 Supplementary to the Order of Precedence article of the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

5 Term Engineer

- .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Department Representative as defined in the General Conditions of the Contract.

6 Setting Out the Work

- .1 The Contractor is responsible for setting out the

work and maintaining horizontal and vertical control for the project.

- 7 Cost Breakdown .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Required forms will be provided for application of progress payment.
- .2 List items of work numerically following the same division/section number system of the specification manual and thereafter sub-divide into major work components and building systems as directed by Departmental Representative.
- .3 Upon approval, cost breakdown will be used as basis for progress payment.
- 8 Measurement For Payment .1 Notify Departmental Representative sufficiently in advance of operations to permit required measurements for payment.
- 9 Maintenance of Work During Construction .1 Maintain work during construction. Undertake continuous and effective maintenance work day by day, with adequate equipment and forces so that the site is continuously kept in a condition satisfactory to Department Representative.
- 10 Codes .1 Perform work in accordance with National Parks Act, Code of Practice of the Department of Labour, as it pertains to the Temporary Workplace Traffic Control Manual (PEI Department of Transportation & Infrastructure) and any other code of federal, provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 Materials and workmanship must conform to or exceed applicable standards of Canadian General Standards Board (CGSB), Canadian Standards Association (CSA), American Society for Testing and Materials (ASTM) and other standards organizations.
- .3 Conform to latest revision of any referenced standard as re-affirmed or revised to date of specification. Standards or codes not dated shall be deemed editions

in force on date of tender advertisement.

11 Work Within Park .1
Boundaries

The project is within a national park and it is essential that lands remain as undisturbed as possible. The Contractor will be expected to use standards and methods beyond those for normal construction in order to protect the environment and ensure the aesthetics of the work. Contract limits shall be strictly adhered to and every precaution shall be taken to minimize environmental damage and disruption to vegetation, wildlife habitat, and structures or existing services, both on construction and storage sites.

.1 If any damage occurs during construction, the Contractor is responsible to bear the expense to immediately restore such damaged areas to the satisfaction of the Department Representative.

.2 If Contractor fails to repair damage to the satisfaction of the Department Representative, the Department Representative may complete repairs at the Contractor's expense.

.3 The Contractor shall ensure that contracted work meets the standards outlined in the contract specification and drawings.

.4 The Contractor shall ensure that no damage will be done to underground utilities.

.5 All sources of aggregate and topsoil must be submitted to the Department Representative for approval at least two weeks prior to the start of any work.

.6 The Contractor is responsible to follow the Provincial requirements regarding the following:

.1 Pit and Quarry Guidelines

.2 Environmental Construction Practice specifications

.7 The Contractor will make arrangements with authorities or owners of private properties for quarrying and transporting materials and machinery over their properties and be responsible for obtaining and paying of fees.

12 Documents Required .1

Maintain at job site, one copy each of following:

.1 Contract drawings.

.2 Specifications.

.3 Addenda.

.4 Reviewed drawings.

.5 Change orders.

.6 Other modifications to Contract.

.7 Copy of approved work schedule.

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- 13 Site Conditions .1 The Contractor will be responsible to visit the roadway and review existing site conditions.
- 14 Department Representative .1 Department Representatives can be contacted at:
- Parks Canada
2 Palmers Lane, P.O. Box 1268
Charlottetown, PEI C1A 5V6
Telephone: (902) 672-6350 Facsimile: (902) 672-6370
- 15 Work Schedule .1 Provide to the Department Representative in writing and within five (5) working days after Contract award, a detailed construction schedule and traffic control plan. The schedule shall show proposed work to be undertaken and anticipated completion dates for each phase of the Work.
- .2 After receiving the Contractor's plan and prior to start of construction, a meeting involving Contractor, Department Representative and Parks Canada will be held at a place and time to be determined by the Department Representative. This meeting will review implications of the contract, design, schedule of work, methods of construction, environment protection methods and traffic control.
- .3 Interim reviews of work progress based on work schedule will be conducted as decided by Department Representative and schedule updated by Contractor in conjunction with and to approval of Department Representative.
- .4 No work will begin until the pre-construction meeting is held.
- .5 Following the pre-construction meeting and approval of the schedule and traffic control plan, the work will be so scheduled to meet the time restraints and have the project completed on time.
- 16 Sanitary Services .1 The Contractor shall provide and maintain sanitary facilities for the use of workers at locations specified by the Department Representative. Provision of sanitary facilities shall meet requirements of provincial government and municipal

statutes and authorities.

17 Contractor's Use of Site

- .1 Use of site: for execution of work within roadway and those areas specified by the Department Representative.
- .2 The Department Representative will specify the areas for work and storage.

18 Project Meetings

- .1 Contractor will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

19 Existing Services

- .1 Carry out work at times directed by authorities having jurisdiction, with minimum of disturbance to pedestrian and vehicular traffic.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Department Representative of findings.
- .3 Submit schedule to and obtain approval from Department Representative for any shut down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 Where unknown services are encountered, immediately advise Department Representative and confirm findings in writing.
- .5 Record locations of maintained, re routed and abandoned service lines.
- .6 Ensure that at least one lane of traffic is maintained at construction sites at all times.
- .7 Ensure pedestrian and other traffic is not unduly impeded, interrupted or endangered by execution or existence of work or plant.
- .8 Maintain existing signs not scheduled for removal at all times. When it is necessary to temporarily remove a sign, it shall be dismantled and re-established on a temporary post or stand set back from construction area. The work is considered to

be incidental and no separate payment will be made for maintaining or moving signs.

- 20 Additional Drawings .1 Department Representative may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.
- 21 Relics, Antiques and Wildlife Habitat .1 Protect relics, antiquities, wildlife habitat, items of historical or scientific interest such as cornerstones and contents, animal nesting sites, commemorative plaques, inscribed tablets, and similar objects found during course of work.
- .2 Give immediate notice to Department Representative and await Department Representative's written instructions before proceeding with work in this area.
- .3 Relics, antiquities and items of historical or scientific interest remain her Majesty's property.
- 22 National Park Act .1 For projects within boundaries of National Park, perform work in accordance with National Parks Act.
- 23 Measurement of Quantities .1 Linear: Items which are measured by metre or kilometre, such as pavement markings will be measured along centreline of installation unless otherwise shown on plans.
- .2 Area:
.1 Longitudinal and transverse measurements for areas to be measured horizontally.
.2 Longitudinal and transverse measurements for such items as topsoil and seeding to be made on actual flat or sloped surface seeded or sodded.
- .3 Volume:
.1 In computing volumes of excavation, average end area method will be used unless otherwise directed by Department Representative in writing.
.2 Term: Litre shall mean 1000 mL or L.
.3 All volume measurements refer to in place

measure unless specified elsewhere in specification.

- .4 Mass:
 - .1 Term "tonne" shall mean 1000 kg.
 - .2 Materials which are specified for measurement by mass shall be weighed on scales approved by and at locations designated by Department Representative. Units used to haul material being paid for by mass shall bear legible identification numbers plainly visible to scale person as it approaches and leaves scale-house.
- .5 Time:
 - .1 Unless otherwise provided for elsewhere or by written authority of Department Representative, hourly rental of equipment will be measured in actual working time and necessary travelling time of equipment within limits of project at an all-inclusive rate. Equip each unit of mobile equipment with an approved device to register hours of operation. Devices which only measure hours of running of motor will not be accepted.

24 Permits/
Authorities

- .1 The Contractor shall obtain, and pay for, permits from authorities as required for all operations and construction. He shall also comply with all pertinent regulations of all authorities having jurisdiction over the work. The Contractor shall provide copies of all permits to the Owner prior to starting the work. The Contractor shall be responsible for obtaining all applicable permits, inspections and approvals required and shall pay all changes in connection therewith.

25 Equipment Rental
Rates

- .1 Upon written request, the Contractor will supply the Department Representative with a list of the rental equipment to be used on work beyond the scope of bid items. Equipment rental rates will be in accordance with current rates published by the PEI Department of Transportation and Infrastructure Renewal.

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- 1 Submittals .1 Upon acceptance of bid and prior to commencement of work, submit to Departmental Representative the following work management documents:
- .1 Work Schedule as specified herein.
 - .2 Shop Drawing Submittal Schedule specified in section 01 33 00.
 - .3 Environmental Plan specified in section 01 35 44.
 - .4 Health and Safety Plan specified in section 01 35 28.
 - .5 Dust Control Plan specified in section 01 50 00.
- 2 Work Schedule .1 Upon acceptance of bid submit:
- .1 Preliminary work schedule within five (5) calendar days of contract award.
 - .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.
 - .3 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
 - .4 Work schedule content to include as a minimum the following:
 - .1 Bar (GANTT) Charts, indicating all work activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
 - .2 Written narrative on key elements of work illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.
 - .3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
 - .5 Work schedule must take into consideration and reflect the work phasing.
 - .6 Schedule work in cooperation with the Departmental Representative.

- .7 Completed schedule shall be approved by Departmental Representative. When approved, take necessary measures to complete work within scheduled time. Do not change schedule without Departmental Representative's approval.
- .8 Ensure that all subtrades and subcontractors are made aware of the work restraints and operational restrictions specified.
- .9 Schedule Updates:
 - .1 Submit when requested by Departmental Representative
 - .2 Provide information and pertinent details explaining reasons for necessary changes to implementation plan.
 - .3 Identify problem areas, anticipated delays, impact on schedule and proposed corrective measures to be taken.
- .10 Departmental Representative will make interim reviews and evaluate progress of work based on approved schedule. Frequency of such reviews will be as decided by Departmental Representative. Address and take corrective measures on items identified by reviews and as directed by Departmental Representative. Update schedule accordingly.
- .11 In every instance, change or deviation from the Work Schedule, no matter how minimal the risk or impact on safety or inconvenience to tenant or public might appear, will be subject to prior review and approval by the Departmental Representative.

3 Project Meetings

- .1 Schedule and administer project meetings, held on a bi-weekly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work or particular situation.
- .2 Prepare agenda for meetings.
- .3 Notify participants by e-mail 4 days in advance of an unscheduled meeting date.
 - .1 Ensure attendance of all subcontractors.
 - .2 Departmental Representative will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Departmental Representative.

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- .5 Preside at meetings and record minutes.
 - .1 Indicate significant proceedings and decisions. Identify action items by parties.
 - .2 Distribute to participants by e-mail or by facsimile within 3 calendar days after each meeting.
 - .3 Make revisions as directed by Departmental Representative.

1 Measurement .1 All measurement shall be along a horizontal plane unless otherwise indicated.

2 Pay Items .1 **Division 01 General Requirements:**

Contract Overhead:

- .1 Unit of Measurement: Lump Sum (L.S.)
- .2 Method of Measurement: Payment to be made on a percentage completion basis.
- .3 This item includes, but not limited to: Site Office, Traffic Control, Erosion and Sedimentation Control, Relocation of Existing Services and Mobilization.

Type 1 Silt Fence:

- .1 Unit of Measurement: Linear Metre (M)
- .2 Method of Measurement: payment to be made on a per m of silt fence installed.
- .3 This item includes: the supply, installation, maintenance and removal of type 1 silt fence to the satisfaction of the departmental representative and as required on site through the environmental protection permit and plan.

Pedestrian Sand Fencing:

- .1 Unit of Measurement: Linear Metre (M)
- .2 Method of Measurement: payment to be made on a per m of sand fence installed.
- .3 This item includes: the supply and installation of sand fence to the satisfaction of the departmental representative.

.2 **Division 02 - Existing Conditions:**

Asphalt Milling and Transportation:

- .1 Unit of Measurement: Square Metre (M2)
- .2 Method of Measurement: payment to be made on a M2 basis of asphalt milled and transported from the site.
- .3 This item includes: the full depth removal of all asphalt located within the project limits including all equipment and trucking to remove any obstructions in order remove the asphalt in its entirety.

Miscellaneous Removals and Disposal:

- .1 Unit of Measurement: Lump Sum (L.S.)
- .2 Method of Measurement: payment to be made on a percentage of completion basis.
- .3 This item includes: the removal and disposal of Signs and posts, Cable Railings, Guiderail and Guiderail Posts and any incidental work within the contract limits.

Miscellaneous Removals and Turnover to PCA:

- .1 Unit of Measurement: Lump Sum (L.S.)
- .2 Method of Measurement: payment to be made on a percentage of completion basis.
- .3 This item includes: the removal and turnover to PCA of precast parking curbs and any incidental work within the contract limits including delivery to the location selected by PCA.

Reposition Existing Shoreline Protection:

- .1 Unit of Measurement: Lump Sum (L.S.)
- .2 Method of Measurement: payment to be made on a percentage of completion basis.
- .3 This item includes: the relocation of existing shoreline protection to protect the existing banks to the satisfaction of the departmental representative.

.3 Division 31 - Earthwork:

Road and Trail Construction:

- .1 Unit of Measurement: Square Metre (M2)
- .2 Method of Measurement: payment to be made on M2 basis of trail completed.
- .3 This item includes: all necessary materials and equipment to construct the granular AT trail including: fine grading and compaction of the base materials, supply and placement and compaction of crusher fines as indicated in the contract documents.

.4 Division 32 - Exterior Improvements

Placement of Reclaimed Asphalt Pavement (RAP):

- .1 Unit of Measurement: Square Metre (M2)
- .2 Method of Measurement: payment to be made on M2 basis of RAP placed.
- .3 This item includes: all necessary materials and equipment to place RAP on specified locations including: fine grading and compaction of the base materials, transportation, placement and compaction of RAP material as indicated in the contract documents.

Topsoil New AT Trail:

- .1 Unit of Measurement: Square Metre (M2)
- .2 Method of Measurement: payment to be made on M2 basis of topsoil placed.
- .3 This item includes: all necessary materials and equipment to place topsoil on specified locations including: supply and placement of topsoil as described in the contract documents.

Hydroseeding New AT Trail:

- .1 Unit of Measurement: Square Metre (M2)
- .2 Method of Measurement: payment to be made on M2 basis of hydroseed placed.
- .3 This item includes: all necessary materials and equipment to hydroseed all disturbed surfaces along the new AT trail.

- .5 **All and any items not specifically included in the Measurement for Payment and Pay Item List are considered incidental to the work and are to be included in the tendered price for related work.**

1 Submittal General Requirements

- .1 Submit to Departmental Representative for review requested submittals specified in various sections of the specifications including shop drawings, samples, permits, compliance certificates, test reports, work management plans and other data required as part of the work.
- .2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
- .3 Do not proceed with work until relevant submissions have been reviewed.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units, provide soft converted values.
- .6 Review submittals prior to submission. Ensure that necessary requirements have been determined and verified and that each submittal has been checked and coordinated with requirements of Work and Contract Documents.
 - .1 Submittals not stamped, signed, dated and identified as to specific project will be returned unexamined by Departmental Representative and considered rejected.
- .7 Confirm field measurements and affected adjacent Work are coordinated.
- .8 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .9 Contractor's responsibility for errors, omissions or deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .10 Submittal format: paper originals, or alternatively clear and fully legible photocopies of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental

Representative. Poorly printed non-legible photocopies or facsimiles will not be accepted and be returned for resubmission.

- .11 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, identify in writing of any revisions other than those requested.
- .12 Keep one reviewed copy of each submittal document on site for duration of Work.

2 Shop Drawings and
Product Data

- .1 The term "shop drawings" means fabrication drawings, erection drawings, diagrams, illustrations, schedules, performance charts, technical product data, brochures, specifications, test reports installation instructions and other data which are to be provided by Contractor to illustrate compliance with specified materials and details of a portion of work.

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- 1 Submittals .1 Submit to Departmental Representative copies of the following documents, including updates:
- .1 Site Specific Health and Safety Plan.
 - .2 Site specific Traffic Control Plan
 - .3 Name and qualifications of person to be retained full time as H&S Co-ordinator.
- 2 Compliance Requirements .1 Comply with the Occupational Health and Safety Act for the Province of Prince Edward Island, and the Occupational Health and Safety Act Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code Part II, and the Canada Occupational Safety and Health Regulations made under Part II of the Canada Labour Code.
- .3 Observe and enforce construction safety measures required by:
- .1 National Building Code of Canada;
 - .2 Provincial Worker's Compensation Board;
 - .3 Municipal statutes and ordinances.
- .4 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
- .5 A copy of the Canada Labour Code Part II may be obtained by contacting:
- Canadian Government Publishing
Public Works & Government Services Canada
Ottawa, Ontario, K1A 0S9
Tel: (819) 956-4800 (1-800-635-7943)
Publication No. L31-85/2000 E or F)
- .6 Maintain Workers Compensation Coverage for duration of Contract. Submit Letter of Good Standing to Departmental Representative upon request.
- 3 Responsibility .1 Be responsible for health and safety of persons on site, of property and for protection of persons and public circulating adjacent to work operations to extent that they may be affected by conduct of the Work.

- .2 Enforce compliance by all workers, sub-contractors and other persons granted access to work site with safety requirements of Contract Documents, applicable Federal, Provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- 4 Site Control and Access
- .1 Control work site and entry points to construction areas.
- .1 Delineate and isolate construction areas from other areas of site Facility by use of appropriate means.
- .2 Post notices and signage at entry points and at other strategic locations identifying entrance onto site to be restricted to authorized persons only.
- .3 Signage must be professionally made, bilingual in both official languages or display internationally understood graphic symbols.
- .2 Approve and grant access to site only to workers and authorized persons.
- .1 Immediately stop non-authorized persons from circulating in construction areas and remove from site.
- .2 Provide site safety orientation to all persons before granting access. Advise of site conditions, hazards and mandatory safety rules to be observed on site.
- .3 Secure site at night time to extent required to protect against unauthorized entry.
- .4 Ensure persons granted access to site wear appropriate personal protective equipment (PPE) suitable to work and site conditions.
- .1 Provide such PPE to authorized persons who require access to perform inspections or other approved purposes.
- 5 Traffic Direction and Control
- .1 When carrying out work on streets, roads or highways, prepare and submit a traffic control plan. Provide competent trained traffic control personnel, automatic lights or both, or such other methods as maybe required by the responsible authority.

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- 6 Protection .1 Carry out work placing emphasis on health and safety of the Public, Facility personnel, construction workers and protection of the environment.
- .2 Erect safety barricades, lights and signage on site to effectively delineate work areas, protect pedestrian and vehicular traffic around and adjacent to work and to create a safe working environment.
- .3 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.
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- 7 Filing Of Notice .1 File Notice of Project and other Notices with Provincial authorities prior to commencement of Work.
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- 8 Permits .1 Post on site permits, licenses, compliance certificates specified in section 01 10 10.
- .2 Where particular permit or compliance certificate cannot be obtained at the required stage of work, notify Departmental Representative in writing and obtain his/her approval to proceed before carrying out that portion of work.
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- 9 Hazard Assessments .1 Conduct site specific health and safety hazard assessment before commencing project and during course of the work. Identify risks and hazards resulting from site conditions, weather conditions and work operations.
- .1 Also, conduct assessment when the scope of work has been changed by Change Order and when potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety Representative.
- .2 Record results in writing and address in Health and Safety Plan.
- .3 Keep copy of all assessments on site.

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- 10 Project/Site Condition
- .1 The following are known or potential project related health, environmental and safety hazards at site which must be properly managed if encountered during course of work:
 - .1 Existing hazardous products are:
 - .1 Petroleum products and fuels for equipment.
 - .2 Above list shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work. Include above items into hazard assessment process.
 - .3 Obtain from Departmental Representative, copy of MSDS Data sheets for existing hazardous products stored on site or used by Facility personnel.
- 11 Safety Supervision and Inspections
- .1 Designate one person to be present on site at all times, responsible for supervising health and safety of the Work.
 - .1 Person to be competent in Occupational Health and Construction Safety as defined in the Provincial Occupational Health and Safety Act.
 - .2 Assign responsibility, obligation and authority to such designated person to stop work as deemed necessary for reasons of health and safety.
 - .3 Conduct regularly scheduled informal safety inspections of work site on a minimum bi-weekly basis.
 - .1 Note deficiencies and remedial action taken in a log book or diary.
 - .4 Keep inspection reports on site.
- 12 Training
- .1 Ensure that all workers and other persons granted access to site are competently trained and knowledgeable on:
 - .1 Safe use of tools and equipment.
 - .2 How to wear and use personal protective equipment (PPE).
 - .3 Safe work practices and procedures to be followed in carrying out work.
 - .4 Site conditions and minimum safety rules to be observed on site, as given at site orientation session.

13 Minimum Site
Safety Rules

- .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, the following safety rules shall be considered minimum requirements to be obeyed by all persons granted site access:
- .1 Wear personnel protective equipment (PPE) appropriate to function and task on site; the minimum requirements being hard hat, safety footwear and eye protection.
 - .2 Immediately report unsafe activity or condition at site, near-miss accident, injury and damage.
 - .3 Maintain site in tidy condition.
 - .4 Obey warning signs and safety tags.
- .2 Brief workers on site safety rules and on disciplinary measures to be taken by Departmental Representative for violation or non compliance of such rules. Post rules on site.

14 Accident Reporting

- .1 Investigate and report the following incidents and accidents:
- .1 Those as required by Provincial Occupational Safety and Health Act and Regulations.
 - .2 Injury requiring medical aid as defined in the Canadian Dictionary of Safety Terms-1987, published by the Canadian Society of Safety Engineers (C.S.S.E) as follows:
 - .1 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
 - .2 Property damage in excess of \$5000.00,
 - .3 Interruption to Facility operations with potential loss to a Federal Dept. in excess of \$5000.00,
 - .4 Those which require notification to Workers Compensation Board or other regulatory agencies as stipulated by applicable law or regulations.
- .2 Send written report to Departmental Representative for all above cases.

15 Tools and
Equipment Safety

- .1 Routinely check and maintain tools, equipment and machinery for safe operation.
- .2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.
- .3 Tag and immediately remove from site items found faulty or defective.

16 Hazardous Products

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS 2015).
- .2 Keep SDS data sheets for all products delivered to site. Post on site. Submit copy to Departmental Representative upon receipt.

17 Confined Spaces

- .1 Carry out work in confined spaces in compliance with:
 - .1 Provincial Occupational Safety and Health Regulations and;
 - .2 Canada Occupational Safety and Health Regulations (COSH) made under the Canada Labour Code - Part II.
- .2 Conduct hazard assessment and address in Safety Plan before entering confined space.

18 Posting of
Documents

- .1 Post on site safety documentation as stipulated by Authorities having jurisdiction and as specified herein. Place in a common visible location.

19 Site Records

- .1 Maintain on site a copy of all health and safety documentation and reports specified to be produced as part of the work and received from authorities having jurisdiction.
- .2 Upon request, make available to Departmental Representative and to other authorized safety representative for review. Provide copy when directed by Departmental Representative.

1 References

- .1 WHMIS 2015: Workplace Hazardous Materials Information System, Health Canada.
- .2 Transportation of Dangerous Goods Act. Transport Canada, updated 2019-08-28.
- .3 MBCA: Migratory Birds Convention Act, Environment Canada, 1994, Updated 2017-12-12

2 Definitions

- .1 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .2 Wetlands: land where the water table is at, near or above the surface or which is saturated for a long enough period to promote such features as wet-altered soils and water tolerant vegetation. Wetlands include organic wetlands or "peatlands," and mineral wetlands or mineral soil areas that are influenced by excess water but produce little or no peat
- .3 Watercourse: refers to the bed and shore of a river, stream, lake, creek, pond, marsh, estuary or salt-water body that contains water for at least part of each year.
- .4 Alien species: refers to a species or subspecies introduced outside its normal distribution whose establishment and spread threaten ecosystems, habitats or species with economic or environmental harm.
- .5 Buffer zone: a vegetated land that protects watercourses from adjacent land uses. It refers to the land adjacent to watercourses, such as streams, rivers, lakes, ponds, oceans, and wetlands, including the floodplain and the transitional lands between the watercourse and the drier upland areas.

3 Transportation

- .1 Transport hazardous materials and hazardous waste in compliance with Federal Transportation of Dangerous Goods Act.
- .2 Do not overload trucks when hauling material. Secure

contents against spillage.

- .3 Maintain trucks clean and free of mud, dirt and other foreign matter.
- .4 Avoid potential release of contents and of any foreign matter onto highways, roads and access routes used for the Work.
- .5 Before commencement of work, advise the Departmental Representative of the existing roads and temporary routes proposed to be used to access work areas and to haul material to and from the site, including roads to any borrow pits or disposal area for excavated site materials.

4 Hazardous Material Handling

- .1 Handle and store hazardous materials on site in accordance with WHMIS procedures and requirements.
- .2 Store all hazardous liquids in location and manner to prevent their spillage into the environment.
- .3 Maintain written inventory of all hazardous materials kept on site. List product name, quantity and storage date.
- .4 Keep MSDS data sheets (SDS) on site for all items.

5 Petroleum, Oil and Lubricants

- .1 Comply with Federal and Provincial laws, regulations, codes, and guidelines for the storage of fuel and petroleum products on site.
- .2 No fuel or petroleum products shall be stored on site. Do not fuel or lubricate equipment within a 30 metre buffer zone of water courses. Obtain approval from Departmental Representative of acceptable location on site for fuel storage and equipment service.
- .3 Do not dump petroleum products or any other deleterious substances on ground or in the water.
- .4 Be diligent and take all necessary precautions to avoid spills and contaminate the soil and water (both surface and subsurface) when handling petroleum products on site and during fueling and servicing of vehicles and equipment.

- .5 Maintain on site appropriate emergency spill response equipment consisting of at least one 250-litre (55 gallon) overpack spill kit for containment and cleanup of spills.
- .6 Maintain vehicles and equipment in good working order to prevent leaks on site.
- .7 In the event of a petroleum spill, immediately notify the Departmental Representative. Perform clean-up in accordance with all regulations and procedures stipulated by authority having jurisdiction.

6 Disposal of Wastes

- .1 Do not bury rubbish, demolition debris and waste materials on site.
- .2 Do not dispose of hazardous waste, volatile materials (such as mineral spirits, paints, thinners etc.) and petroleum products into waterways, storm or sanitary sewers or in waste landfill sites.
- .3 Dispose of materials in accordance with applicable federal and provincial laws, regulations, codes and guidelines.
- .4 Any construction, contaminated soil or demolition debris will be disposed of in a Provincially approved manner.

7 Vegetation

- .1 Work should be scheduled to avoid periods of heavy precipitation. Short-term erosion and sediment control measures (i.e. silt fence, straw bales, temporary matting, geotextile filter fabric) must be installed to prevent runoff from entering any adjacent waterway. These structures will remain in place until natural vegetation has been established.
- .2 Fill material used in construction must be clean and non-toxic (free from fuel, oil, grease and/or contaminants) and free from invasive plant species.
- .3 Any exposed soil area must be minimized by limiting the area that is exposed at one time and by limiting the time that any one area is exposed. Exposed soil should be replanted to ensure soil stabilization.

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- .4 Avoid disturbance of vegetation and natural features where possible. All work is to be confined to the site limits delineated and/or directed by the Departmental Representative.
- .5 Restore disturbed areas as close as possible to natural conditions. Grade and contour soil to match adjacent natural contours.
- .6 No cutting of vegetation will take place between May 15th and August 31.
- .7 No staging of materials/equipment will take place on any environmentally sensitive areas, beaches or dunes. All staging area sites, if required, will be determined by the Departmental Representative.
- .8 If materials of potential historical or cultural interest are encountered, work will cease at that location and the Departmental Representative will be notified.
- 8 Socioeconomic restrictions
- .1 Abide by municipal and provincial regulations for any restrictions on work.
- 9 Water Quality
- .1 Maintenance of equipment must be carried out on a regular basis.
- .2 The construction material must be clean and non-toxic (free of fuel, oil, grease, and/or any contaminants).
- .3 Follow any sediment and erosion control plan and an emergency response plan provided by the Departmental Representative.
- 10 Bird and Bird Habitat
- .1 Become knowledgeable with abide by the Migratory Birds Convention Act (MBCA) in regards to the protection of migratory birds, their eggs, nests and their young encountered on site and in the vicinity.
- .2 Minimize disturbance to all birds on site and adjacent areas during the entire course of the Work.
- .3 Do not approach concentrations of seabirds, waterfowl and shorebirds when anchoring equipment, accessing wharves or ferrying supplies.

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- .4 Do not use beaches, dunes and other natural previously undisturbed areas of the site to conduct work.
 - .5 Should nests of migratory birds in wetlands be encountered during work, immediately notify Departmental Representative for directives to be followed.
 - .1 Do not disturb nest site and neighbouring vegetation until nesting is completed.
 - .2 Minimize work immediately adjacent to such areas until nesting is completed.
 - .3 Protect these areas by following recommendations of Canadian Wildlife Service.
 - .6 Ensure that food scraps and garbage are not left at the work site.
- 11 Fish and Fish Habitat
- .1 Be aware of the risk for contamination of the fish habitat at the site as a result of alien species being introduced in the water therefore no equipment will be immersed into the water of a watercourse.
- 12 Air Quality
- .1 Keep airborne dust and dirt resulting from the work on site to an absolute minimum.
 - .2 Apply dust control measures to roads, parking lots and work areas.
 - .3 Spray surfaces with water or other environmentally approved product. Use purposely suited equipment or machinery and apply in sufficient quantity and frequency to provide effective result and continued dust control during the entire course of the work.
 - .4 Do not use oil or any other petroleum products for dust control.
 - .5 All construction equipment must be fitted with standard and well-maintained noise suppression devices. Construction activities must respect appropriate time restriction and use smaller, less disturbing equipment where possible.
- 13 Fires
- .1 Fires and burning of rubbish on site is not permitted.

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| <u>1 Site Access and Parking</u> | .1 | The Departmental Representative will designate Contractor's access to project site as well as parking facilities for equipment and workers. |
| | .2 | The Contractor is advised that while parking facilities for his workers and subcontractors will be on property, such parking facilities may be remote from the actual site of the work. In any case, follow all instructions from the Departmental Representative in regards to parking facilities. |
| | .3 | Parking facilities at site are limited and cannot be used by Contractor. Make arrangements elsewhere for Contractor's vehicles including those of subcontractors and workers. |
| | .4 | Maintain existing access roads and parking areas at site, where used by Contractor, for duration of contract.
.1 Keep clean and free of mud and dirt by washing on a regular basis.
.2 Provide snow removal in areas located within construction site or enclosed by work.
.3 Make good and repair damage resulting from Contractor's use of existing roads, asphalted areas and lawns on site. |
| <u>2 Contractor's Site Office</u> | .1 | Be responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Departmental Representative. |
| <u>3 Material Storage</u> | .1 | Material storage space on site is limited Coordinate delivery to minimize storage period on site before being needed for incorporation into work. |
| <u>4 Construction Signs and Notices</u> | .1 | Contractor or subcontractor advertisement signboards are not permitted on site. |
| | .2 | Safety and Instruction Signs and Notices:
.1 Signs and notices for safety and instruction shall be in both official languages or commonly understood graphic symbols conforming to CAN3-Z321-96 (R2006). |

- .3 Maintenance and Disposal of Site Signs:
 - .1 Maintain approved signs and notices in good condition for duration of project and dispose of off site on completion of project or earlier if directed by Departmental Representative.

- 5 Removal of Temporary Facilities .1 Remove temporary facilities from site when directed by Departmental Representative.

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS .1 Road/Trail Construction - Section 31 24 13

1.2 MEASUREMENT AND PAYMENT .1 Removal of existing asphalt pavement will be measured in SQUARE METRES (M²) regardless of depth removed.
.2 Payment under this item will include operations involved in removing, hauling and stockpiling designated pavement.

PART 2 - PRODUCTS

2.1 EQUIPMENT .1 Use cold milling, planning, or grinding equipment with automatic grade controls capable of operating from stringline, and capable of removing part of pavement surface to depths or grades indicated.

PART 3 - EXECUTION

3.1 PREPARATION .1 Temporary Erosion and Sedimentation Control:
.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to the Provincial Environmental Protection Plan.
.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
.2 Prior to beginning removal operation, inspect and confirm with Departmental Representative areas, depths and lines of asphalt pavement to be removed.

- .3 Protection: protect existing pavement not designated for removal, light units and structures from damage. In event of damage, immediately replace or make repairs to approval of Departmental Representative at no additional cost.

3.2 REMOVAL

- .1 Remove existing asphalt pavement to lines and grades as indicated on the contract drawings and as directed by Departmental Representative in field.
- .2 Screen all recycled asphalt pavement (RAP) so that it passes a 50mm sieve.
- .3 Use equipment and methods of removal and hauling which do not damage or disturb underlying surfaces.
- .4 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel, or other materials.
- .5 Maintain positive drainage throughout the construction process through maintaining existing cross slopes and contours.
- .6 Suppress dust generated by removal process.

PART 1 - GENERAL

- 1.1 Work Included .1 This Section specifies requirements for performing all operations necessary to complete all stripping, stockpiling and placement of topsoil, cold planing (milling) road excavation, grading, fine grading, and supply and placement of granular materials, required to bring the road and trail to the elevations shown on Drawings.
- 1.2 Related Work .1 Asphalt Pavement Removal - Section 02 41 13.14
.2 Granular and RAP Surface - Section 32 11 23
- 1.3 Definitions .1 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
.2 Waste material: material unsuitable for use in embankment or surplus to requirements.
.3 Borrow material: material obtained from areas off site required for construction of embankments or for other portions of work.
.4 Embankment: material derived from usable excavation and placed above original ground or stripped surface up to subgrade elevation.
.5 Pavement structure: combination of layers of unbound or stabilized sub-base, base, and asphalt or concrete surfacing.
.6 Subgrade elevation: elevation immediately below pavement structure.
.7 Geogrid: Soil stabilization sheeting required for construction of road embankments over soft sub-grades such as peat.

1.4 Traffic Provisions .1 Provide and maintain roadways, walkways and detours, for vehicular and pedestrian traffic, and access to fire hydrants, alarms and emergency telephones.

1.5 Protection .1 Prevent damage to fencing, trees, natural features, bench marks, existing pavement, or surface or underground utility lines which are to remain. Make good any damage.

.2 The native till is susceptible to softening and loss of strength if exposed to excess precipitation. Make good any corrections at no additional cost to the contract.

PART 2 - PRODUCTS

2.1 Materials .1 Materials to approval of Departmental Representative.

.2 Material used for embankment not to contain organic matter, frozen lumps, weeds, sod, roots, logs, stumps, boulders larger than 150 mm or any other unsuitable material.

.3 Topsoil shall be as per DOTIR requirements Division 204 and/or 212.

.4 Obtain approval of excavated or graded material used as fill for grading work. Protect approved material from contamination. Cut material can be used as fill in the roadway construction subgrade provided specified compaction can be achieved.

PART 3 - EXECUTION

3.1 Compaction Equipment .1 Compaction equipment must be capable of obtaining required densities in materials on project.

3.2 Water Distributors .1 Apply water with equipment capable of uniform distribution.

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- 3.3 General .1 Carry out grading operations involving the till subgrade during dry periods only.
- .2 Direct surface water away from exposed areas.
- .3 Roll and grade the surface of graded areas at the end of each day's activities to prevent infiltration of water.
- 3.4 Vegetative Matter/Topsoil .1 Strip and stockpile vegetative matter/topsoil suitable for placement in the works, dispose of unsuitable materials, such as trees, brush, stumps and fill or muck. Use stripped/stockpiled material for reinstatement of all disturbed areas and remove surplus material from the site. Supply shortfall from own sources.
- 3.5 Cold Planing (Milling) .1 Mill existing asphalt that is to be removed and stock pile off site of specified location and/or place on existing roads or parking areas as indicated.
- 3.6 Excavations .1 Minimize disturbance/removal of topsoil and rootmat.
- .2 Excavate in all kinds of materials encountered and make own computations of amounts and nature of excavation required.
- .3 Maintain crowns and cross slopes to provide good surface drainage.
- .4 Construct ditches to profiles indicated.
- 3.7 Subgrade, Sub-base and Embankments .1 Do not place material which is frozen or place material on frozen surfaces.
- .2 Maintain a crowned surface during construction to ensure ready run-off of surface water. Bring up low areas to the required sub grade level cut material or with structural fill compacted to at least 98% of Standard Proctor density.
- .3 Prior to placement of the sub base, proof roll the sub-grade surface with a loaded tandem. Remove and replace materials exceeding the maximum allowable

deformation of 13 mm with cut material or structural fill. Have a geotechnical engineer present during proof rolling to confirm conditions.

- .4 Compact roadway sub-base and base materials to a density of not less than 100% Standard Proctor density.
- .5 Shape and compact entire roadbed to within 25 mm of design elevations but not uniformly high or low. Before and after placing sub base, provide a table of cross section elevations at 15 M intervals and at beginning of vertical curves, end of vertical curves and at low/high point stations, showing the design and as constructed elevations, demonstrating that the specified tolerance has been achieved and that the road is not uniformly high or low.
- .6 Bring moisture content of soil to level required to achieve specified compaction. Add water or aerate as required.
- .7 Place granular material to compact thickness as indicated.
- .8 Place and compact in two even layers to compacted thickness indicated. Compact to a density of 100% Standard Proctor Density.
- .9 Fine grade granular material to be within 12 mm of specified grade, but not uniformly high or low.

3.8 Finishing and Tolerances

- .1 Notwithstanding the acceptable tolerance, work specified elsewhere may require more precise grading to ensure successful achievement of the work (i.e. pavements).
- .2 Do scarifying, grading, compacting or other methods of work as necessary to provide thoroughly compacted roadbed shaped to grades and cross sections as indicated or as directed.
- .3 Finish edges and slopes of common material to neat condition, true to line and grade.
 - .1 Remove isolated boulders exposed in cut slopes and fill resulting cavities.
 - .2 Hand finish slopes that cannot be finished satisfactorily by machine.

3.9 Maintenance .1 Maintain finished surfaces in condition conforming
to this section until acceptance.

PART 1 - GENERAL

- 1.1 RELATED WORK
- .1 Asphalt Pavement Removal - Section 02 41 13.14
 - .2 Road/Trail Construction - Section 31 24 13
- 1.2 REFERENCES
- .1 ASTM C117-90, Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-89, Test Method for Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-92, Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D698-91, Test Methods for Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 2.49 kg Rammer and 304.8 mm Drop.
 - .5 ASTM D4318-84, Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
 - .6 CAN/CGSB-8.2-M88 (R10/3), Sieves Testing, Woven Wire, Metric.
 - .7 ASTM D1557-91, Test Methods for Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 4.54 kg Rammer and 457 mm Drop.
 - .8 ASTM D1883-87, Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .9 ASTM D2922-91, Standard Test Method for Density of Soil and Soil Aggregate in Place by Nuclear Methods.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Crusher fines: hard, durable, crushed fine product, free from clay, organics and other deleterious matter graded 9.5 mm minus with binder fines. Source material with a reddish grey to reddish brown color.
 - .2 Reclaimed Asphalt Pavement (RAP): Material to meet PEI DTI General provisions and contract specifications for highway construction Division

704, cold plane, stockpile, and replace RAP.

PART 3 - EXECUTION

3.1 INSPECTION OF UNDERLYING SUB-BASE

- .1 Place granular surface after surface is inspected and approved by Departmental Representative.
- .2 Underlying material to be compacted to 100% of Standard Proctor Density to ASTM D698

3.2 PLACING

- .1 Ensure no frozen material is used in placing.
- .2 Place material only on clean unfrozen surface, properly shaped and compacted and free from snow and ice.
- .3 Place aggregate in uniform layers not exceeding 150 mm compacted thickness or as directed by the Consultant.
- .4 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .5 Remove and replace that portion of layer in which material becomes segregated during spreading.

3.3 COMPACTION EQUIPMENT

- .1 Vibratory compaction equipment must be used and capable of obtaining required densities on aggregates on project.

3.4 COMPACTING

- .1 Compact to density not less than 100% corrected maximum dry density.
- .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
- .3 Apply water as necessary during compacting of granular to obtain specified density. If aggregate is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.
- .4 In areas not accessible to rolling equipment, compact to specified density with vibratory mechanical tampers approved by Departmental Representative.

.5 Density will be determined according to ASTM D2922.

3.5 FINISH

.1 Finished granular surface and RAP to be within plus or minus 12 mm of established grade and cross section but not uniformly high or low.

.2 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.6 MAINTENANCE

.1 Maintain finished base in condition conforming to this section until acceptance by Consultant.

PART 1 - GENERAL

- 1.1 Scope of Work .1 This section specifies topsoil (if required), topsoil amendments, the scarifying of topsoil, the preparation of existing grades, the placement of topsoil, and finish grading.
- 1.2 Related Sections .1 Section 01 35 44 - Environmental Protection
- .2 Section 31 24 13 - Road/Trail Construction
- 1.3 Quality Assurance .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.
- 1.4 Testing .1 All soil and sand used in this project shall be tested for compliance with texture specification by a laboratory designated by the owner. Soil sampling, testing and analysis to be in accordance with Provincial regulations and standards. Contractor will arrange and pay for cost of tests.
- 1.5 Waste Management
and Disposal .1 Separate and recycle waste materials.
- .2 Divert unused soil amendments from landfill to official hazardous material collections site approved by Local Authorities.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 Topsoil

- .1 Topsoil for this project to consist of topsoil stripped from site and imported topsoil to be supplied by the Contractor. Imported topsoil must be from a site that has been pre-approved by the Owner.
- .2 Topsoil: mixture of mineral particulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth, free of debris, weeds, invasive species, foreign objects, toxic materials and stones and roots greater than 20 mm length.
- .3 Soil texture: sandy loam, based on The Canadian System of Soil Classification, to the following particle distribution and gradation:

<u>Particle Type</u>	<u>Distribution by volume</u>	<u>Acceptable Range</u>
very coarse sand	10%	10% or less
coarse & medium sand	45%	42-47%
fine sand	15%	13-17%
very fine sand	10%	8-12%
clay	20%	18-23%

<u>Particle Type</u>	<u>Gradation</u>
very coarse sand	2.0-1.0 mm
coarse sand	1.0-0.5 mm
medium sand	0.5-0.25 mm
fine sand	0.25-0.15 mm
very fine sand	0.15-0.106 mm
clay	less than 0.06 mm

- .4 Organic matter: 4-20% by dry weight volume, well decomposed and stable. Organic material measuring 20 mm will not exceed 2% by volume.
- .5 pH range: 6.0-7.0
- .6 Consistency: friable when moist.
- .7 Fertility: major soil nutrients present in following ratios:
 - .1 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil
 - .2 Phosphorus (P): 10 to 20 micrograms of phosphate per gram of topsoil.

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.3 Potassium (K): 80 to 120 micrograms of potash per gram of topsoil.

.4 Calcium, magnesium, sulphur and/or establishment of intended vegetation.

2.2 Source Quality Control

.1 Advise Department Representative of sources of topsoil to be utilized with sufficient lead time for testing.

.2 Contractor is responsible for amendments to supply topsoil as specified.

PART 3 - EXECUTION

3.1 Stripping of Topsoil

.1 Commence topsoil stripping of areas after all wood, brush and grasses have been removed from site.

.2 Strip and pulverize topsoil to depths as indicated. Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.

.3 Stockpile in locations as directed by Department Representative. Stockpile height not to exceed 2 m.

.4 Unused topsoil is to remain on site.

.5 Protect stockpiles from contamination and compaction.

3.2 Preparation of Existing Grade

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

.2 Grade soil to match adjacent grades.

.3 Remove debris and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes more than 75 mm above surface. Dispose of removed material off site.

.4 Cultivate entire area which is to receive topsoil to minimum depth of 150 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

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- 3.3 Placing and Spreading of Topsoil/Planting Soil
- .1 Place topsoil after Department Representative has accepted subgrade.
 - .2 Spread topsoil in uniform layers not exceeding 150 mm.
 - .3 Spread topsoil/planting soil to following minimum depths after settlement.
 - .1 150 mm for seeded areas.
 - .2 500 mm for shrub/tree beds.
 - .4 Manually spread topsoil/planting soil around trees, shrubs and obstacles.
- 3.4 Soil Amendments
- .1 For planting areas: apply and thoroughly mix soil amendments into full specified depth of topsoil at following rates recommended by soil analyses.
- 3.5 Finish Grading
- .1 Grade to match existing adjacent areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.
 - .2 Consolidate topsoil to required bulk density using equipment approved by Department Representative. Leave surfaces smooth, uniform and firm against deep footprinting.
- 3.6 Acceptance
- .1 Department Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.
- 3.7 Surplus Material
- .1 Dispose of surplus materials off site.
- 3.8 Cleaning
- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
 - .2 Clean all exposed rock and boulder surfaces to approval of Department Representative.