

Specifications

Northwest River Bridge Landscape Restoration

Parks Canada Agency

PROJECT NO. 1311

July 2017



The symbols “A”, “L”, “S”, “E” and related professional seals (stamps) and signatures, are used to indicate the specifications for which licenced professional consultants are responsible. Refer to Section 00 01 10 – Table of Contents for the assignment of the symbols to specifications. Drawings shall be issued under the licence and name of each discipline, bound separately.

Landscape Architect “L”

Seal

END OF SECTION

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1.0	SUMMARY OF WORK	
.1	The project involves various site, demolition, landscaping and construction works at the Northwest River Bridge of Terra Nova National Park, Newfoundland and Labrador.	
1.1	WORK RESTRICTIONS	
.1	Access and Egress:	
.1	Design, construct, and maintain temporary "access to" and "egress from" work areas, in accordance with Occupational Health and Safety and National Building Code of Canada, 2010, requirements.	
.2	Water Supply:	
.1	No source of water is available for landscape maintenance or grow-in on site.	

- .3 Preservation of Property:
 - .1 If directed by the Departmental Representative, a start-up meeting will be held on site involving the Contractor and sub-contractors. The meeting shall be to ensure key construction personnel are aware of the environmental concerns, laws, rules and regulations in Terra Nova National Park.
 - .2 All park regulations, relevant federal and provincial acts, regulations, guidelines and codes of good practice will apply to all work and activities associated with this project.
 - .3 The Work shall be performed in a manner that will not have a significant environmental impact on Terra Nova National Park and its natural resources, including but not limited to flora, fauna or natural objects, or pose a danger to public health and public safety.
 - .4 Equipment and machinery selection for the preservation of biospheres at National Parks: equipment and machinery shall be minimally invasive in size, vibration potential, and weight. When feasible for the task, use light duty construction equipment, such as mini-excavator, skid steers, portable hand-held equipment, single axle truck cranes ($\leq 19,000$ GVW), and similar light weight equipment options.
 - .5 Do not use equipment or vehicles that impose loads in excess of the load capacity of asphalt roads and parking areas. If load capacity of existing roads and parking lots is not available or is otherwise uncertain, assume that they have been designed as low-volume roads and parking lots and not for heavy use and heavy loads.
 - .6 Areas adjacent to designated work areas may be sensitive ecosystems that can be easily damaged and harmed; in order to limit risk of damaging adjacent Park property and sensitive ecosystems, restrict work, workers and equipment, including staging and storage areas, to designated work areas.
 - .1 Do not permit equipment to stray from work locations, and only extend work to adjacent areas as minimally necessary to complete the Work, and only as permitted in writing by Departmental Representative; submit workplans and work layout drawings to Departmental Representative for review and approval.
- .4 The Terra Nova National Park of Newfoundland and Labrador is of national significance. Damage to the site is not permitted, and all damage shall be repaired and restored to original or better condition at the direction and sole approval of the Departmental Representative. Reparations, if required, shall be at the sole expense of the Contractor.
- .5 Smoking Restrictions: smoking or use of electronic cigarettes not permitted.
- .6 Hot Work:
 - .1 During and for 1-hour after any activity with potential to produce ignition sources or excess heat, ensure the attendance of trained fire watch personnel to monitor, investigate and respond to conditions.
 - .2 Submit hot works policy and procedure manual to Departmental Representative.

- .3 Take precautions to prevent fires. Provide and maintain temporary fire protection equipment of a type appropriate to the hazard anticipated in accordance with authorities having jurisdiction, governing codes, regulations, and ordinances. Every worker who may be required to use fire extinguishing equipment shall be trained in its use.

1.2 MEASUREMENT FOR PAYMENT

- .1 Payment for the Work of this Contract, all Divisions, shall be on a lump sum basis as tendered, which shall be full compensation for all supervision, labour, materials and equipment necessary to complete the Work, including all subsidiary and incidental items thereto for which separate payment is not elsewhere provided.

1.3 PAYMENT PROCEDURES FOR TESTING

- .1 Related Requirements Specified Elsewhere:
 - .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various technical specification sections (a.k.a., Sections).
- .2 Appointment and Payment:
 - .1 Departmental Representative will appoint and pay for services of testing laboratory, except 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 Departmental Representative.
 - .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.
- .3 Contractor's Responsibilities
 - .1 Provide labour, equipment, and facilities to:
 - .1 Provide access to Work for inspection and testing.
 - .2 Facilitate inspections and tests.
 - .3 Make good Work disturbed by inspection and test.
 - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
 - .2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
 - .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

1.4 PROJECT MEETINGS

- .1 Preconstruction Meeting:
 - .1 Within two weeks after award of Contract, hold a ½-day meeting to discuss construction strategies and procedure.
 - .2 Departmental Representative, Contractor, major Trade Contractors, suppliers listed in bid form, field inspectors and supervisors shall be in attendance.
 - .3 Coordinate time and location of meeting and notify parties concerned minimum 5 days before meeting.
 - .4 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with CONSTRUCTION SCHEDULE.
 - .3 Schedule of submission of shop drawings, samples, colour chips.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with CONSTRUCTION FACILITIES.
 - .5 Delivery schedule of specified equipment.
 - .6 Site safety and security in accordance with TEMPORARY BARRIERS AND ENCLOSURES.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .8 Departmental Representative-provided products and salvaged items as indicated on drawings.
 - .9 As-built drawings.
 - .10 Maintenance manuals in accordance with CLOSEOUT SUBMITTALS.
 - .11 Take-over procedures, acceptance, warranties in accordance with Closeout Submittals.
 - .12 Monthly progress claims, administrative procedures, holdbacks.
 - .13 Appointment of inspection and testing agencies or firms.
 - .14 Insurances, transcript of policies.
- .2 Progress Meetings:
 - .1 Progress meetings shall be held every 2 weeks.
 - .1 To the extent feasible, schedule mock-up reviews and site construction reviews to coincide with progress meeting days.
 - .2 Prepare as many mock-ups for a single review visit as practical.
 - .3 Coordinate mock-up reviews to the extent possible with reviews of pre-foundation pour, and other elements of construction requiring review before being covered or other construction proceeding. Refer to individual sections for review requirements.
 - .2 Contractor, major Trade Contractors involved in the project, and Departmental Representative shall be in attendance.

- .3 Notify parties minimum 5 days prior to meetings.
- .4 Contractor shall record minutes of meetings and circulate to attending parties and affected parties not in attendance within 5 working days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems that impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for effect on construction schedule and on completion date.
 - .12 Other business.

1.5 CONSTRUCTION SCHEDULE

- .1 Definitions:
 - .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
 - .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Preferably, derive Bar Chart using commercially available computerized project management software.
 - .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
 - .4 Construction Work Week: define schedule calendar working days as part of Bar (GANTT) Chart submission.
 - .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
 - .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
 - .7 Milestone: significant event in project, usually completion of major deliverable.
 - .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

- .9 Project Planning, Monitoring, and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.
- .2 Requirements:
 - .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
 - .2 Plan to complete Work in accordance with prescribed milestones and period.
 - .3 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Substantial Performance and Final Completion as defined times of completion are required.
- .3 Submittals:
 - .1 Provide submittals in accordance with SUBMITTAL PROCEDURES.
 - .2 Submit to Departmental Representative within 15 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring, and reporting of project progress.
- .4 Project Schedule:
 - .1 Develop detailed Project Schedule derived from the Contract Documents.
 - .2 Ensure detailed Project Schedule includes Phases and milestones that reflect the work breakdown structure (WBS) for each Phase, along with the logical progression of the Work by trade jurisdiction.
 - .3 Submit WBS for review and approval to Departmental Representative within 15 days of Award of Contract.
- .5 Project Schedule Reporting:
 - .1 Update Project Schedule every two weeks reflecting activity changes and completions, as well as activities in progress.
 - .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays, and impact with possible mitigation.
- .6 Project Meetings:
 - .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
 - .2 Weather related delays with their remedial measures will be discussed and negotiated.

1.6 SUBMITTAL PROCEDURES

- .1 Administrative:
 - .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
 - .2 Do not proceed with Work affected by submittal until review is complete.

- .3 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract. Submittals not stamped, signed, dated, and identified as to specific project will be returned without being examined and considered rejected.
- .4 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract stating reasons for deviations.
- .5 Verify field measurements and affected adjacent Work are coordinated.
- .6 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .7 Contractor's responsibility for deviations in submission from requirements of Contract is not relieved by Departmental Representative review.
- .2 Shop Drawings and Product Data:
 - .1 The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided by Contractor to illustrate details of a portion of Work.
 - .2 As may be required in specification Sections, submit shop drawings bearing stamp and signature of qualified professional engineer registered and licensed in Province of Newfoundland and Labrador, Canada.
 - .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .4 Allow 7 working days for Departmental Representative's review of each submission.
 - .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
 - .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
 - .7 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Specification sections and indication of partial or complete submittal for stated section
 - .5 Other pertinent data.
 - .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:

- .1 Subcontractor.
- .2 Supplier.
- .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract.
- .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 Single line and schematic diagrams.
 - .9 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested, except where hand drawn copies are produced or colours have to be chosen or confirmed, in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system, or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic copies of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.

- .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards, and safety precautions.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, 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.
- .20 The review of shop drawings is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that the Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.
 - .3 Certificates and Transcripts:
 - .1 Immediately after award of Contract, submit Workers' Compensation Board status.
 - .2 Submit transcription of insurance immediately after award of Contract.

1.7 EMERGENCY CONTACT INFORMATION

- .1 In the event of an emergency, call #911.
- .2 North Entrance:
 - .1 **Emergency related requirements: Call the National Park's dispatch service at 1-877-852-3100** (this number will get you through to a dispatch service that provides contact with police, fire, ambulance - just about anything you need).
 - .2 For direct contact with various emergency services, use these numbers:

- .1 RCMP Local Detachment (Glovertown): (709) 533-2828, 1-800-709-7267.
- .2 Ambulance: Delaneys Ambulance Service (Glovertown): (709) 533-2111.
- .3 Fire: Glovertown fire department: (709) 533-1111 or (709) 533-7878 (Cell).
- .4 Hospital: James Paton Memorial Hospital (Gander): (709) 651-2500.
- .5 Local medical clinic, Glovertown: (709) 533-2372/2374.
- .3 Environmental issues such as fuel spills, problem wildlife, etc. call the Terra Nova NP Resource Conservation Staff at (709) 533-6090 or (709) 533-2801.
- .4 If any questions re the park operations (highway snow clearing, site specific info, etc.) call Tyson Simmonds (Tech. Services Officer) at (709) 533-3136.
- .3 South Entrance:
 - .1 **Emergency related requirements: Call the National Park's dispatch service at 1-877-852-3100** (this number will get you through to a dispatch service that provides contact with police, fire, ambulance - just about anything you need).
 - .2 For direct contact with various emergency services, use these numbers:
 - .1 RCMP Local Detachment (Clareville): (709) 466-3211, 1-800-709-7267. (Glovertown detachment could also be called if required).
 - .2 Ambulance: Fewer's Ambulance Service (Clareville): (709) 466 9911.
 - .3 Fire: Port Blandford fire department: (709) 543-2600 or (709) 427-7999 (Cell).
 - .4 Hospital: Dr. G.B. Cross Memorial Hospital (Clareville): (709) 466-3411.
 - .3 Environmental issues such as fuel spills, problem wildlife, etc. call the Terra Nova NP Resource Conservation Staff at (709) 533-6090 or (709) 533-2801.

1.8 HEALTH AND SAFETY

- .1 References:
 - .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
 - .1 Material Safety Data Sheets (MSDS).
 - .2 Province of Newfoundland and Labrador:
 - .1 Occupational Health and Safety Act and regulations, Workers Compensation Act and regulations, Workplace Hazardous Materials Information System Regulations.
- .2 Health and Safety Plan:
 - .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
 - .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified.
 - .3 On-site Contingency and Emergency Response Plan as specified below.

- .4 On-site Communication Plan as specified below.
- .3 On-site Contingency and Emergency Response Plan shall include:
 - .1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency.
 - .2 Evacuation Plan: prior to entering the Work Site confirm escape routes, marshalling areas, and location of fire fighting equipment.
 - .3 Emergency Contacts: name and telephone number of officials from:
 - .1 Departmental Representative.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
 - .4 Harmonize Plan with Park's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name of PCA and Park Management contacts.
- .4 On-site Communication Plan:
 - .1 Procedures for sharing of work related safety information to Subcontractors, including emergency and evacuation measures.
 - .2 List of critical work activities to be communicated with Park Manager that have a risk of endangering health and safety of Park users.
- .5 Address all activities of the Work including those of subcontractors and suppliers.
- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever a new subcontractor or supplier arrives at Work Site.
- .7 Departmental Representative will respond in writing where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.
- .8 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
- .9 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .10 Submit copies of incident and accident reports.
- .11 Submit WHMIS MSDS - Material Safety Data Sheets.
- .3 Filing of Notice:
 - .1 File Notification of Construction Project with Provincial authorities prior to beginning of Work.
- .4 Meetings:
 - .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .5 Regulatory Requirements:
 - .1 Do Work in accordance with REGULATORY REQUIREMENTS.
- .6 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, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .7 Province of Newfoundland and Labrador Compliance Requirements:
 - .1 Comply with Occupational Health and Safety Act and regulations, Workers Compensation Act and regulations, Workplace Hazardous Materials Information System Regulations.
- .8 Unforeseen Hazards:
 - .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.
- .9 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 site-related working experience specific to activities.
 - .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 trained 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.
- .10 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 Departmental Representative.
- .11 Correction of Non-Compliance:
 - .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
 - .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
 - .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.
- .12 Powder Actuated Devices:
 - .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .13 Work Stoppage:

- .1 Give precedence to the health and safety of the public, anyone visiting or working at worksite, and wildlife, and protection of the environment over cost and schedule considerations for Work.

1.9 ENVIRONMENTAL REQUIREMENTS

- .1 Environmental Requirements: refer to specification Section 01 35 43.

1.10 REGULATORY REQUIREMENTS

- .1 Parks Canada:

- .1 Work shall comply with or exceed the requirements of the following:
 - .1 Canada National Parks Act (S.C. 2000, c. 32), current edition to August 15, 2016.
 - .2 National Parks Building Regulations (C.R.C., c. 1114).

- .2 References and Codes:

- .1 Work shall comply with or exceed the requirements of the National Building Code of Canada, 2010, and Amendments up to bid closing date, NL Department of Transportation and Works Specifications Book (2011) and Amendments, NL Department of Transportation and Works Traffic Manual (2014) and Amendments, and other codes of federal, provincial or local application provided that in case of conflict or discrepancy the more stringent requirements apply. Conflicts or discrepancies shall be resolved at the sole and final discretion of the Departmental Representative.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes, and referenced documents.

- .3 Regions and Municipalities:

- .1 The work shall comply with or exceed the requirements of by-laws and ordinances of the jurisdiction of the project and the direction of authorities having jurisdiction as determined by the Departmental Representative.

1.11 QUALITY CONTROL

- .1 Definitions:

- .1 Corrective Action: Steps that are taken to remove the causes of an existing non-conformity or undesirable situation. The corrective action process is designed to prevent the recurrence of non-conformities or undesirable situations. It tries to make sure that existing non-conformities and situations do not happen again. It tries to prevent recurrence by eliminating causes.
- .2 Hold Point: A mandatory verification point beyond which a Work Process cannot proceed without authorization by Departmental Representative. Hold Points may be nominated by Departmental Representative. The issuance of a Non-Conformance or Corrective Action report by Departmental Representative automatically creates a Hold Point for the Work Processes affected.

- .3 Non-Conformance: When one or more characteristics of an installation fail to meet specified requirements, it is referred to as Non-conformance. When an installation deviates from specified requirements, it fails to conform. Non-conformance must be identified and rectified.
- .2 Inspection:
 - .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
 - .2 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by Departmental Representative instructions, or law of Place of Work.
 - .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections, or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
 - .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.
- .3 Independent Inspection Agencies:
 - .1 Independent Inspection/Testing Agencies will be selected by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
 - .2 Provide equipment required for executing inspection and testing by appointed agencies.
 - .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
 - .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative, Pay costs for retesting and re-inspection.
- .4 Access to Work:
 - .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
 - .2 Cooperate to provide reasonable facilities for such access.
- .5 Procedures:
 - .1 Notify appropriate agency in advance of requirement for tests, in order that attendance arrangements can be made.
 - .2 Submit samples or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
 - .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

- .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 Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
 - .2 Make good other Contractor's work damaged by such removals or replacements promptly.
 - .3 If, in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.
- .7 Reports:
 - .1 Submit electronic copies of inspection and test reports to Departmental Representative.
 - .2 Provide copies to subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.
- .8 Tests and Mix Designs:
 - .1 Furnish test results and mix designs as requested.
 - .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.
- .9 Mock-Ups:
 - .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
 - .2 Construct in locations acceptable to Departmental Representative or as specified in specific Section.
 - .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
 - .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension because of such default will be allowed.
 - .5 If requested, Departmental Representative will assist in preparing schedule, fixing dates for preparation.
 - .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
 - .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.
- .10 Mill Tests:
 - .1 Submit mill test certificates as requested or required of specification Sections.
- .11 Equipment and Systems:

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

1.12 TEMPORARY UTILITIES

- .1 References:
 - .1 National Building Code of Canada 2010
 - .1 Part 8 Safety Measures and Construction and Demolition Sites.
 - .2 National Fire Code of Canada 2010
 - .1 Part 5 Hazardous Processes and Operations.
 - .3 Canadian Standards Association (CSA International)
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 Installation and Removal:
 - .1 Provide temporary utilities controls in order to execute work expeditiously.
 - .2 Remove from site all such work after use.
- .3 Water Supply:
 - .1 Provide continuous supply of potable water for construction use.
 - .2 Pay for utility charges at prevailing rates.
 - .3 Arrange for connection with appropriate utility company and pay costs for installation, maintenance, and removal.
- .4 Temporary Heating and Ventilation:
 - .1 Provide and pay for temporary heating required during construction period, including attendance, maintenance and fuel.
 - .2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
 - .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
 - .4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.
 - .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .7 Permanent heating system of building, not to be used unless authorized in writing by the Departmental Representative. Be responsible for damage to heating system if use is permitted.
- .8 On completion of Work for which permanent heating system is used, replace filters and replace bearing. Thoroughly clean permanent equipment used during construction.
- .9 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Departmental Representative.
- .10 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.
- .5 Temporary Power and Light:
 - .1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools and equipment as required.
 - .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
 - .3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Departmental Representative.
 - .4 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.
 - .5 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.
- .6 Temporary Communication Facilities:
 - .1 Provide and pay for temporary telephone, fax, and data hook up lines and equipment as required.
- .7 Fire Protection:
 - .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

1.13 CONSTRUCTION FACILITIES

- .1 Scaffolding:
 - .1 Scaffolding: to CAN/CSA S269.2-M87 (R2003) - Access Scaffolding for Construction Purposes.
 - .2 Provide and maintain scaffolding, ramps, ladders, platforms, and temporary stairs.
- .2 Hoisting:
 - .1 Provide, operate, and maintain hoists required for moving of materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
 - .2 Hoists to be operated by qualified operator.
- .3 Site Storage/Loading:
 - .1 Confine work and operations of employees by Contract Documents. Do not encumber premises with products.
 - .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.
- .4 Construction Parking:
 - .1 Parking will be permitted on site.
 - .2 Provide and maintain adequate access to project site.
- .5 Security:
 - .1 The Contractor is responsible for the security and safety of the site and building for the duration of the Contract.
 - .2 Provide fencing and additional security as deemed necessary.
- .6 Offices:
 - .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
 - .2 Provide marked and fully stocked first-aid case in a readily available location.
 - .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.
 - .4 The area of Work is available at Contractor's option for project administrative use.
- .7 Equipment, Tool and Materials Storage:
 - .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment, and materials.
 - .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

- .8 Sanitary Facilities:
 - .1 Provide temporary sanitary facilities for work force in accordance with governing regulations and ordinances.
 - .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.
 - .3 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Departmental Representative.
- .9 Protection and Maintenance of Traffic:
 - .1 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
 - .2 Protect travelling public from damage to person and property.
 - .3 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
 - .4 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
 - .5 Dust control: adequate to ensure safe operation at all times.
 - .6 Provide snow removal during period of Work.
- .10 Clean-up:
 - .1 Remove construction debris, waste materials, packaging material from work site daily.
 - .2 Clean dirt or mud tracked onto paved or surfaced roadways.
 - .3 Store materials resulting from demolition activities that are salvageable.
 - .4 Stack stored new or salvaged material not in construction facilities.

1.14 TEMPORARY BARRIERS AND ENCLOSURES

- .1 Installation and Removal:
 - .1 Provide temporary controls in order to execute Work expeditiously.
 - .2 Remove from site all such work after use.
- .2 Weather Enclosures:
 - .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
 - .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
 - .3 Design enclosures to withstand wind pressure and snow loading.
- .3 Dust Tight Screens:
 - .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
 - .2 Maintain and relocate protection until such work is complete.

- .4 Access to Site:
 - .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .5 Fire Routes and Exits:
 - .1 Maintain access to property including overhead clearances for use by emergency response vehicles.
- .6 Protection of Off-Site and Public Property:
 - .1 Protect surrounding private and public property from damage during performance of Work.
 - .2 Be responsible for damage incurred.
- .7 Protection of Building Finishes:
 - .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
 - .2 Provide necessary screens, covers, and hoardings.
 - .3 Be responsible for damage incurred due to lack of or improper protection.

1.15 COMMON PRODUCT REQUIREMENTS

- .1 References:
 - .1 Within text of each specifications section, reference may be made to reference standards.
 - .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
 - .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested or to receive test data.
 - .4 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .2 Quality:
 - .1 Products, materials, equipment, and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source, and quality of products provided.
 - .2 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 disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.
- .3 Availability:
 - .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be reviewed for possible authorization in ample time to prevent delay in performance of Work.
 - .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.
- .4 Storage, Handling and Protection:
 - .1 Handle and store products in manner to prevent damage, adulteration, deterioration, and soiling and in accordance with manufacturer's instructions when applicable.
 - .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
 - .3 Store products subject to damage from weather in weatherproof enclosures.
 - .4 Store cementitious products clear of earth or concrete floors, and away from walls.
 - .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
 - .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
 - .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
 - .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
 - .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over nameplates.
- .5 Transportation:
 - .1 Pay costs of transportation of products required in performance of Work.

- .6 Manufacturer's Instructions:
 - .1 Unless otherwise indicated in the specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
 - .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions.
- .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 Departmental Representative if required Work is such as to make it impractical to produce required results.
 - .2 Do not employ anyone unskilled in his or her required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
 - .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.
- .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.
- .9 Concealment:
 - .1 In finished areas, conceal pipes, ducts and wiring in floors, walls, and ceilings, except where indicated otherwise.
 - .2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.
- .10 Remedial Work:
 - .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
 - .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.
- .11 Location of Fixtures:
 - .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
 - .2 Inform Departmental Representative of conflicting installation. Install as directed.
- .12 Fasteners:
 - .1 Fasteners used for exterior applications or at the exterior shell of buildings shall be SAE No. 304 stainless steel.
 - .2 Provide metal fastenings and accessories in same texture, colour, and finish as adjacent materials, unless indicated otherwise.

- .3 Prevent electrolytic action between dissimilar metals and materials.
 - .4 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
 - .5 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
 - .6 Keep exposed fastenings to a minimum, space evenly and install neatly.
 - .7 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
- .13 Fasteners – Equipment:
- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
 - .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use SAE No. 304 stainless steel for exterior areas.
 - .3 Bolts may not project more than one diameter beyond nuts.
 - .4 Use plain type washers on equipment, sheet metal, and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.
- .14 Protection of Work in Progress:
- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.
- .15 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.
 - .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.

1.16 PRODUCT OPTIONS AND SUBSTITUTIONS

- .1 Definitions:
- .1 Acceptable Materials: The term Acceptable Materials is used to specify products by trade name, manufacturer, catalogue number, model number, or similar reference, and is used within the Project Manual as follows:
 - .1 Acceptable Materials listings are based on Departmental Representative's determination that materials meet specified requirements and opinion of applicability to the project requirements.
 - .2 Acceptable Materials listings are deemed to establish the minimum standard of acceptance that Departmental Representative will consider appropriate for the Work.
 - .3 Any product listed in the Acceptable Materials listing may be used to establish the Bid Price, unless an Addendum is issued adding additional Acceptable Materials.

- .2 Basis-of-Design: The term Basis-of-Design is used to specify a specific material name, manufacturer, catalogue number, model number, or similar reference and is used as follows:
 - .1 Basis-of-Design Materials are used to establish Departmental Representative's minimum criteria for a product based on performance, material properties, appearance, and configuration.
 - .2 Use the Basis-of-Design Material to establish the Bid Price, unless an Addendum is issued adding additional Acceptable Materials.
 - .3 Non-proprietary specification means a specification that includes descriptive, reference standard, or performance requirements, or any combination thereof, but does not include proprietary names of products or manufacturers.
 - .4 Substitution means a proposal from a Contractor to provide a product, material, or item of equipment not specified in the Contract documents but functionally equivalent and readily exchangeable to a specified item, for consideration by Departmental Representative.
- .2 Submittals:
- .1 Submit complete data substantiating compliance of a product with requirements of Contract Documents. Include the following:
 - .1 Product identification, including manufacturer's name and address.
 - .2 Manufacturer's literature providing product description, applicable reference standards, and performance and test data.
 - .3 Samples, as applicable.
 - .4 Name and address of projects on which product has been used and date of each installation.
 - .5 For substitutions and requests for changes to accepted products, include in addition to the above, the following:
 - .1 Written verification that the substitute products can be obtained, meet the performance required for the project, and meet requirements of the National Building Code of Canada, 2010.
 - .2 Itemized comparison of substitution with named product(s). List significant variations.
 - .3 Designation of availability of maintenance services and sources of replacement materials.
- .3 Product Options:
- .1 For products specified by non-proprietary specification:
 - .1 Select any product, assembly, or material that meets or exceeds the specified standards for products specified only by referenced standards and performance criteria.
 - .2 Acceptable Materials: Select any named product, assembly, or material contained in the listing of Acceptable Materials, unless an addendum is issued indicating acceptance of additional Acceptable Materials.
 - .3 Basis-of-Design: Use the named product contained in the Basis-of-Design Material listing, unless an addendum is issued indicating acceptance of additional Acceptable Materials.

- .4 Substitutions:
 - .1 Contractor will assemble requests for substitutions requested by subcontractors and submit to Departmental Representative for review.
 - .2 Departmental Representative will review proposed substitute products for acceptability only when submitted by Contractor; Departmental Representative will not review requests submitted independently by subcontractors.
 - .3 No substitutions will be permitted without Departmental Representative's written acceptance; Contractor will be required to remove products and replace with specified materials or provide a credit to the value of the contract at Departmental Representative's discretion where substitutions are found in the Work that have not been formally accepted by Departmental Representative.
 - .4 Departmental Representative is not obliged to accept any Proposed Substitution offered by Contractor, and reserves the right to dismiss any item with no further explanation.
 - .5 Substitute Products: Where substitute products are permitted, unnamed products may be accepted by Departmental Representative, subject to the following:
 - .1 Substitute products shall be the same type as, be capable of performing the same functions as, and meet or exceed the standards of quality and performance of the named product(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.
 - .6 Substitute Manufacturers: Where substitute manufacturers are permitted, unnamed manufacturers may be accepted by Departmental Representative, subject to the following:
 - .1 Substitute manufacturers shall have capabilities comparable to those of the named manufacturer(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.
 - .7 In making a proposal for substitution, the Contractor represents:
 - .1 That they have personally investigated the proposal and (unless the proposal explicitly states otherwise) determined that it performs in a similar way or is superior to the product or method specified.
 - .2 That the same guaranty will be furnished as for the originally specified product or construction method.
 - .3 That they will coordinate installation of the accepted substitute into the Work, making such changes in the Work as may be required to accommodate the change.
 - .4 That they will bear costs and waives claims for additional compensation for costs and time that subsequently become apparent arising out of the substitution.

1.17 EXAMINATION AND PREPARATION

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

- .2 Location of Equipment and Fixtures:
 - .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
 - .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
 - .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
 - .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.
- .3 Records:
 - .1 Record locations of maintained, re-routed and abandoned service lines.
- .4 Submittals:
 - .1 Submit name and address of Surveyor to Departmental Representative.
 - .2 On request of Departmental Representative, submit documentation to verify accuracy of field engineering work.
 - .3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.
- .5 Subsurface Conditions:
 - .1 Promptly notify Departmental Representative in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
 - .2 After prompt investigation, should Departmental Representative determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

1.18 EXECUTION

- .1 Submittals:
 - .1 Submit written request in advance of cutting or alteration that affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Departmental Representative or separate contractor.
 - .6 Tenants of occupied portions of building.
 - .2 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.

- .6 Effect on Work of Departmental Representative or separate contractor or tenants.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time the Work will be executed.
- .2 Materials:
- .1 Required for original installation.
 - .2 Change in Materials: Submit request for substitution in accordance with Submittal Procedures.
- .3 Preparation:
- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
 - .2 After uncovering, inspect conditions affecting performance of Work.
 - .3 Beginning of cutting or patching means acceptance of existing conditions.
 - .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
 - .5 Provide protection from elements for areas that are to be exposed by uncovering work; maintain excavations free of water.
- .4 Execution:
- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
 - .2 Fit several parts together, to integrate with other Work.
 - .3 Uncover Work to install ill-timed Work.
 - .4 Remove and replace defective and non-conforming Work.
 - .5 Remove samples of installed Work for testing.
 - .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
 - .7 Execute Work by methods to avoid damage to other Work, and that will provide proper surfaces to receive patching and finishing.
 - .8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
 - .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
 - .10 Restore work with new products in accordance with requirements of Contract Documents.
 - .11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
 - .12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
 - .13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
 - .14 Conceal pipes, ducts and wiring in floor, wall, and ceiling construction of finished areas except where indicated otherwise.

1.19 CLEANING

- .1 Project Cleanliness:
 - .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Departmental Representative or other Contractors.
 - .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
 - .3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
 - .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .5 Provide on-site containers for collection of waste materials and debris.
 - .6 Provide and use marked separate bins for recycling. Refer to WASTE MANAGEMENT AND DISPOSAL.
 - .7 Dispose of waste materials and debris off site.
 - .8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
 - .9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
 - .10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
 - .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
 - .12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .2 Final Cleaning:
 - .1 Clean work prior to final review by Departmental Representative.
 - .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
 - .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
 - .4 Prior to final review remove surplus products, tools, construction machinery and equipment.
 - .5 Remove waste products and debris including that caused by Departmental Representative or other Contractors.
 - .6 Remove waste materials from site in accordance with WASTE MANAGEMENT AND DISPOSAL.
 - .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .8 Remove stains, spots, marks, and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and horizontal hard surfaces.

- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Inspect finishes, fitments, and equipment and ensure specified workmanship and operation.
- .11 Broom clean and wash exterior walks, steps, and surfaces; rake clean other surfaces of grounds.
- .12 Remove dirt and other disfiguration from exterior surfaces.
- .13 Sweep and wash clean paved areas.
- .14 Clean drainage systems.
- .15 Remove debris and surplus materials from accessible concealed spaces.

1.20 WASTE MANAGEMENT AND DISPOSAL

- .1 Waste Management Goals:
 - .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss Waste Management Plan and Goals.
 - .2 Waste Management Goal is to divert 75% construction and demolition materials considered recyclable from landfill sites, and reduce jobsite waste in compliance with Canadian Construction Association CCA 81 - 2001: A Best Practices Guide to Solid Waste Reduction.
 - .3 Accomplish maximum control of solid construction and demolition waste.
 - .4 Preserve environment and prevent pollution and environment damage.
- .2 Definitions:
 - .1 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
 - .2 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
 - .3 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.
 - .4 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Returning reusable items including pallets or unused products to vendors.
 - .5 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
 - .6 Separate Condition: refers to waste sorted into individual types.
 - .7 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .3 Materials Source Separation Program (MSSP):
 - .1 Prepare MSSP and have ready for use prior to project start-up.
 - .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.
 - .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
 - .4 Provide containers to deposit reusable and recyclable materials.

- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas that minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
 - .1 Transport to approved and authorized recycling facility.
 - .2 Ship materials to site operating under Certificate of Approval.
 - .3 Materials must be immediately separated into required categories for reuse or recycling.
- .4 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, mechanical and electrical from damage and blockage.
 - .8 Separate and store materials produced during dismantling of structures in designated areas.
 - .9 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.
- .5 Disposal of Waste:
 - .1 All demolition and construction waste shall be disposed of in a legal manner off-site, and outside of Park boundaries and property.
 - .2 Do not bury rubbish or waste materials.
 - .3 Burning rubbish and construction waste materials is not permitted on site.
 - .4 Do not dispose of waste, volatile materials, mineral spirits, oil, and paint thinner into waterways, storm, or sanitary sewers.
 - .5 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Reused or recycled waste destination.
 - .6 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

1.21 CLOSEOUT PROCEDURES

- .1 Inspection and Declaration:
 - .1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Departmental Representative's Field Review.
 - .3 Departmental Representative's Field Review: Departmental Representative and Contractor will perform review of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
 - .2 Completion: submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
 - .4 Certificates required by Boiler Inspection Branch, Fire Commissioner, and Utility companies have been submitted.
 - .5 Operation of systems have been demonstrated to Departmental Representative's personnel.
 - .6 Work is complete and ready for final inspection.
 - .3 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative complete outstanding items and request re-inspection.
 - .4 Declaration of Certificate of Substantial Performance: when Departmental Representative consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance.
 - .5 Commencement of Lien and Warranty Periods: date of Departmental Representative's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
 - .6 Final Payment: when Departmental Representative consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
 - .7 Payment of Holdback: after issuance of certificate of Substantial Performance, submit an application for payment of holdback amount.
- .2 Cleaning:
 - .1 In accordance with CLEANING.
 - .2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with WASTE MANAGEMENT AND DISPOSAL.

1.22 CLOSEOUT SUBMITTALS

- .1 Submittals in accordance with SUBMITTAL PROCEDURES:
 - .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
 - .2 Copy will be returned after final inspection, with Departmental Representative's comments.
 - .3 Revise content of documents as required prior to final submittal.
 - .4 Two weeks prior to Substantial Performance, submit to the Departmental Representative, two final copies and one digital version of Operating and Maintenance manuals in English.
 - .5 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.
 - .6 Furnish evidence, if requested, for type, source and quality of products provided.
 - .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
 - .8 Pay costs of transportation.
 - .9 Submit `redline` marked up construction drawings to the Departmental Representative within 30 days of Substantial Performance and prior to Final Completion.
- .2 Operations and Maintenance Manual Format:
 - .1 Organize data as instructional manual.
 - .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
 - .3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
 - .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
 - .5 Arrange content by systems, process flow, under Section numbers and sequence of Table of Contents.
 - .6 Provide tabbed flyleaf for each separate product and system, with typed description of product and major component parts of equipment.
 - .7 Text: manufacturer's printed data, or typewritten data.
 - .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
 - .9 Provide 1:1 scaled CAD files in dwg format on CD.
- .3 Contents – Each Volume:
 - .1 Table of Contents: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.

- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
 - .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
 - .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
 - .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- .4 As-Built Drawings and Samples:
 - .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
 - .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
 - .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
 - .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
 - .5 Keep record documents and samples available for inspection by Departmental Representative.
- .5 Recording Actual Site Conditions:
 - .1 Record information on set of drawings, and in copy of Project Manual, provided by Departmental Representative.
 - .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
 - .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
 - .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

- .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
- .4 Field changes of dimension and detail.
- .5 Changes made by change orders.
- .6 Details not on original Contract Drawings.
- .7 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.
- .6 Materials and Finishes:
 - .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
 - .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .3 Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .4 Additional Requirements: as specified in individual specifications sections.
- .7 Maintenance Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site, location as directed; place and store.
 - .4 Receive and catalogue items. Submit inventory listing to Departmental Representative. Include approved listings in Operating and Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .8 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site, location as directed; place and store.
 - .4 Receive and catalogue items. Submit inventory listing to Departmental Representative. Include approved listings in Operating and Maintenance Manual.
- .9 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 Departmental Representative.
- .10 Warranties and Bonds:
- .1 Develop warranty management plan to contain information relevant to Warranties.
 - .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
 - .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
 - .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
 - .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
 - .6 Assemble approved information in binder and submit upon acceptance of work. Organize binder as follows:
 - .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 applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
 - .7 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.
 - .8 Conduct joint 4-month and 9-month warranty inspection, measured from time of acceptance, by Departmental Representative.
 - .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, pumps, motors, transformers.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:

- .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
- .4 Contractor's plans for attendance at 4-month and 9-month post-construction warranty inspections.
 - .5 Procedure and status of tagging of equipment covered by extended warranties.
 - .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in a timely manner to oral or written notification of required construction warranty repair work.
 - .11 Written verification will follow oral instructions. Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.
- .11 Pre-Warranty Conference:
 - .1 Meet with Departmental Representative to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by Departmental Representative.
 - .2 Departmental Representative will establish communication procedures for:
 - .1 Notification of construction warranty defects.
 - .2 Determine priorities for type of defect.
 - .3 Determine reasonable time for response.
 - .3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

END OF SECTION

1.01 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including roads, trails or finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.02 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to Park and provide for personnel and vehicle access.
- .3 Contractor shall make provisions for temporary sanitary facilities for use by Contractor's personnel. Keep facilities clean at all times throughout the Work.
- .4 Closures: protect work temporarily until permanent enclosures are completed.
- .5 Terra Nova Park is of national significance. Damage to the site and facilities is not permitted, and all damage shall be repaired and restored to original condition at the direction and sole approval of the Departmental Representative. Reparations, if required, shall be at the sole expense of the Contractor. Work of Contract is permitted.

1.03 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, staff, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.04 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 72 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions outside of Hours of Operation and after normal working hours of staff, or as approved by Departmental Representative.
- .3 Provide for personnel, pedestrian and vehicular traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.05 SPECIAL REQUIREMENTS

- .1 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .2 Ensure Contractor's personnel employed on site become familiar with and obey regulations, including safety, fire, traffic and security regulations.

- .3 Keep within limits of work and avenues of ingress and egress.
- .4 Ingress and egress of Contractor vehicles at site is limited to existing roadways.

1.06 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

1.07 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .2 Protect travelling public from damage to person and property.
- .3 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .4 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .5 Construct access and haul roads necessary.
- .6 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .8 Dust control: adequate to ensure safe operation at all times.
- .9 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.
- .10 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .11 Provide snow removal during period of Work.
- .12 Remove, upon completion of work, haul roads designated by Departmental Representative.

END OF SECTION

1.01 GENERAL REQUIREMENTS

- .1 The Form of Tender includes one lump sum priced item and several unit priced items.
- .2 The total tendered price shall be the sum of the lump sum item plus the amounts calculated from the unit priced items based on the approximate quantities identified for each of the unit priced items.
- .3 The Contractor in submitting their Tender for the project understand that they will only be entitled to payment under the unit priced items when prior written authorization has been received from the Departmental Representative for utilization and then only to the extent of the work authorized by the Departmental Representative.
- .4 Additional instructions for measurement and/or payment for items of the work may be contained in specific sections of the Technical Specifications. In the case of a conflict between the instructions for measurement and payment contained in this section with that of any other section, the requirement of this section shall apply.
- .5 The submitted tender prices will be inclusive of all costs for the complete supply and installation of all materials, labour and equipment required to complete the work. No separate payment will be made for any testing, inspections and approvals required by Contractor.
- .6 All measurement shall be along a horizontal plane unless otherwise indicated.

1.02 LUMP SUM ITEMS

- .1 No separate measurement for payment shall be made for any work completed under Lump Sum Items per Lump Sum Table.
- .2 The work of the lump sum item shall include all other works which are required for completion of the project exclusive of those covered by the unit priced items.
- .3 All and any items not specifically included in the unit price items are considered incidental to the work and are to be included in the lump sum portion of the work.

1.03 UNIT PRICE ITEMS

- .1 Clearing & Grubbing in contract boundary
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: horizontal area.
 - .3 This item includes: clearing and disposal of all vegetation, including trees (standing and felled), shrub vegetation and underbrush, within the parking lot and pavilion sites, the intersection upgrades and ditching areas as indicated on the drawings, or as directed by Departmental Representative. Stripping of topsoil layer on road widening areas is incidental to the work.
- .2 Tree Protection fence
 - .1 Unit of measurement: linear meter (m).
 - .2 Method of Measurement: slope measure along top of fence

- .3 This item includes: Supply and installation of tree protection fencing as indicated on the drawings, or as directed by Departmental Representative in the field. Also includes removal at conclusion of project.

- .3 Topsoil stripping and stockpiling on site or off-site
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: horizontal area.
 - .3 This item includes: The unit price will be full compensation for material, equipment, and work required for stripping and stockpiling of existing topsoil for use on site (not including area of clearing & grubbing, not including trails) as indicated on the drawings, or as directed by Departmental Representative in the field.

- .4 Removal of excess fill off-site
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: horizontal area.
 - .3 This item includes: The unit price will be full compensation for material, equipment, and work required for removal & off-site disposal of excess clean fill material as indicated on the drawings, or as directed by Departmental Representative in the field.

- .5 Rough Grading
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: slope measure.
 - .3 This item includes: preparing the sub-grade for all pavement surfaces including concrete and asphalt to depth indicated to an even consistency and compaction as indicated on the drawings, or as directed by Departmental Representative in the field.

- .6 Fine Grading
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: slope measure.
 - .3 This item includes: preparing the sub-grade prior to placement of granulars for all pavement surfaces including concrete and asphalt to depth indicated to an even consistency and compaction as indicated on the drawings, or as directed by Departmental Representative in the field.

- .7 Check Dams
 - .1 Unit of measure: linear meter (m).
 - .2 Method of measurement: along centreline of check dam
 - .3 This item includes: supply and installation of rock check dams complete environmental protection, clear stone, and reinstatement as specified and as indicated on the drawings, or as directed by Departmental Representative in the field.

- .8 Landscape boulders
 - .1 Unit of measurement: each (ea).
 - .2 Method of Measurement: number of units installed
 - .3 This item includes: Supply and install of landscape boulders, base granulars, all other materials indicated on the drawings, or as directed by Departmental Representative in the field.

- .9 Tree Snags
 - .1 Unit of measurement: each (ea).
 - .2 Method of Measurement: number of units installed

- .3 This item includes: Supply and install of 300mm dia min x 4m long tree snags, and all other materials indicated on the drawings, or as directed by Departmental Representative in the field.

- .10 600mm wide rock swale
 - .1 Unit of measure: linear meter (m).
 - .2 Method of measurement: along centreline of swale
 - .3 This item includes: excavation and removal & disposal of excess material, environmental protection, supply and install of geotextile, clear stone, and side reinstatement with sod as indicated on the drawings, or as directed by Departmental Representative in the field.

- .11 Stacked rock retaining wall at trails
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: square meter face measured from grade
 - .3 This item includes: Supply and install of locally sourced stone retaining wall, including geotextile, backfill material as indicated on the drawings, or as directed by Departmental Representative in the field.

- .12 100mm topsoil (reuse topsoil stockpiled from removal; import from local source as required)
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: slope measure of surface area.
 - .3 This item includes: Supply and install of topsoil to specified depths after settlement as indicated on the drawings, or as directed by Departmental Representative in the field.

- .13 Hydroseed
 - .1 Unit of measurement: square meter (m²).
 - .2 Method of Measurement: slope measure of surface area.
 - .3 This item includes: supply and install of, topsoil, hydroseed mix, mulch, erosion control agent, water and fertilizer as specified and maintenance.

- .14 Tree planting
 - .1 Unit of measurement: each (ea).
 - .2 Method of Measurement: number of units installed
 - .3 This item includes: supply and install of tree, planting mixture, mulch, lime and fertilizer, tree supports and accessories and maintenance as specified and as indicated on the drawings, or as directed by Departmental Representative in the field.

- .15 Shrub planting, including soil and all accessories
 - .1 Unit of measurement: each (ea).
 - .2 Method of Measurement: number of units installed
 - .3 This item includes: supply and install of shrub, planting mixture, mulch, and maintenance as specified and as indicated on the drawings, or as directed by Departmental Representative in the field.

- .16 Herbaceous planting
 - .1 Unit of measurement: each (ea).
 - .2 Method of Measurement: number of units installed
 - .3 This item includes: supply and install of herbaceous shrub, planting mixture, mulch, and maintenance as specified and as indicated on the drawings, or as directed by Departmental Representative in the field.

- .17 8" corrugated steel culverts under trail
 - .1 Unit of measurement: linear meters (m).
 - .2 Method of Measurement: along centreline of pipe
 - .3 This item includes: supply and install of corrugated steel culverts under trail, as directed by the Departmental Representative.

- .18 Removal of single tree, including stump
 - .1 Unit of measurement: each (ea).
 - .2 Method of Measurement: number of units removed
 - .3 This item includes: removal and disposal of single tree, including stump as directed by Departmental Representative.

- .19 Import additional topsoil to site (from local source, per specifications)
 - .1 Unit of measurement: cubic meters (m³).
 - .2 Method of Measurement: average end area method for volume.
 - .3 This item includes: supply and placement of topsoil from a local source per the specifications or as directed by the Departmental Representative.

- .20 Import Wetland Mulch to site (from local source, per specifications)
 - .1 Unit of measurement: cubic meters (m³).
 - .2 Method of Measurement: average end area method for volume.
 - .3 This item includes: supply and placement of wetland mulch from a local source per the specifications or as directed by the Departmental Representative.

- .21 Imported fill from local source (premium borrow)
 - .1 Unit of measurement: cubic meters (m³).
 - .2 Method of Measurement: average end area method for volume.
 - .3 This item includes: supply and placement of fill from a local source per the specifications or as directed by the Departmental Representative.

- .22 Remove excess topsoil / bog material / forest duff off-site (to Big Brook Quarry, Terra Nova)
 - .1 Unit of measurement: cubic meters (m³).
 - .2 Method of Measurement: average end area method for volume.
 - .3 This item includes: removal and disposal of excess topsoil / bog material / forest duff off-site at Big Brook Quarry, Terra Nova, as directed by the Departmental Representative.

- .23 Slope Harrowing
 - .1 Unit of measurement: Square meters (m²).
 - .2 Method of Measurement: slope measure of surface area.
 - .3 This item includes: selective harrowing of exposed slopes as directed by the Departmental Representative.

1.01 APPOINTMENT AND PAYMENT

- .1 Departmental Representative will appoint and pay for services of testing laboratory, except 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 supervision of Departmental Representative.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.02 CONTRACTOR'S RESPONSIBILITIES

- .1 Provide labour, equipment and facilities to:
 - .1 Provide access to Work for inspection and testing.
 - .2 Facilitate inspections and tests.
 - .3 Make good Work disturbed by inspection and test.
- .2 Notify Departmental Representative 72 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

END OF SECTION

1.01 ADMINISTRATIVE

- .1 Schedule and administer bi-weekly project meetings throughout the progress of the work at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance, and Departmental Representative whether in attendance or absent.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.02 PRECONSTRUCTION MEETING

- .1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives of Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 7 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Delivery schedule of specified equipment in accordance with Section 01 14 00.
 - .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .8 Owner provided products.
 - .9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

- .11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .12 Monthly progress claims, administrative procedures, photographs, hold backs.
- .13 Appointment of inspection and testing agencies or firms.
- .14 Insurances, transcript of policies.

1.03 PROGRESS MEETINGS

- .1 During course of Work and 2 weeks prior to project completion, schedule progress meetings biweekly.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Notify parties minimum three days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three days after meeting.
- .5 Agenda to include the followingⁱ:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

ⁱ If particular areas of concern are to be discussed at the meeting, Contractor shall request a walkthrough with all parties attending the meeting to review the areas of concern prior to the meeting.

END OF SECTION

1.01 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: to be provided by the contractor, typically 10 days on and 4 days off. Define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.02 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately [10] working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

- .3 Submit Project Schedule to Departmental Representative within 7 working days of receipt of acceptance of Master Plan.

1.04 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 7 working days.
- .3 Revise impractical schedule and resubmit within 7 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.05 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - 1. Award.
 - 2. Shop Drawings, Samples.
 - 3. Permits.
 - 4. Mobilization.
 - 5. Structure Demolition and related site works.
 - 6. Excavation.
 - 7. Rough grading
 - 8. Finished Grading
 - 9. Snags and Boulder placement
 - 10. Seeding
 - 11. Transplanting
 - 12. Planting
 - 13. Wetland planting
 - 14. Supplied equipment long delivery items.

1.06 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.07 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

END OF SECTION

1.01 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

1.02 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Newfoundland and Labrador, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 7 working days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in triplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit electronic copy in PDF format (one password protected and one editable version) of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit electronic copy in PDF format (one password protected and one editable version) of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copy in PDF format (one password protected and one editable version) of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.

- .13 Submit electronic in PDF format (one password protected and one editable version) of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic in PDF format (one password protected and one editable version) of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic in PDF format (one password protected and one editable version) of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit one hard copy and two electronic copies in PDF format (one password protected and one editable version) of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.03 SAMPLES

- .1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.

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

1.04 MOCK-UPS

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

1.05 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in Tagged Image File Format 6.0 (TIFF 6.0), fine resolution with progress statement and as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 4 locations.
 - .1 Viewpoints and their location as determined by Departmental Representative.
- .4 Frequency of photographic documentation: weekly or as otherwise directed by Departmental Representative.
 - .1 Upon completion of: demolition and selective demolition, excavation, foundation, framing and services before concealment, of Work, and as directed by Departmental Representative.

END OF SECTION

1.01 GENERAL PROTECTION

- .1 Work shall comply with or exceed the requirements of the following:
 - .1 Canada National Parks Act (S.C. 2000, c. 32), including amendments up to tender closing date.
 - .2 National Parks Building Regulations (C.R.C., c. 1114).

1.02 PRESERVATION OF PROPERTY

- .1 At direction of Departmental Representative, a start up meeting will be held on site involving the Contractor and primary sub-contractors. The meeting shall be to ensure primary construction personnel are aware of the environmental concerns, laws, rules and regulations pertaining to Terra Nova National Park.
- .2 All site regulations, relevant federal and provincial acts, regulations, guidelines and codes of good practice apply to all Work and activities associated with this project.
- .3 The Work shall be performed in a manner that will not have a significant environmental impact on Terra Nova National Park property and its natural resources, including but not limited to flora, fauna or natural objects, or pose a danger to health and safety.
- .4 Do not use equipment or vehicles that impose loads in excess of the load capacity of site roads and parking areas. If load capacity of existing roads and parking lots is not available or is otherwise uncertain, assume that they have been designed as low-volume roads and parking lots and not for heavy use and heavy loads.
- .5 Areas adjacent to designated work areas may be sensitive ecosystems or historically significant that can be easily damaged and harmed; in order to limit risk of damaging adjacent Park property and sensitive ecosystems or historically designated elements, restrict work, workers and equipment, including staging and storage areas, to designated work areas.
 - .1 Do not permit equipment to stray from work locations, and only extend work to adjacent areas as minimally necessary to complete the Work, and only as authorized by Departmental Representative; submit workplans and work layout drawings to Departmental Representative for review and approval.

1.03 HOT WORK

- .1 During and for 1-hour after any activity with potential to produce ignition sources or excess heat, ensure the attendance of trained fire-watch personnel to monitor, investigate and respond to conditions.
- .2 Submit hot works policy and procedure manual to Departmental Representative prior to commencing Work at site.
- .3 Take precautions to prevent fires. Provide and maintain temporary fire protection equipment of a type appropriate to the hazard anticipated in accordance with authorities having jurisdiction, governing Codes, Regulations, and Ordinances. Every worker who may be required to use fire extinguishing equipment shall be trained in its proper use.

END OF SECTION

1.01 REFERENCE STANDARDS

- .1 Province of Newfoundland & Labrador:
 - .1 Occupational Health and Safety Act (RSNL1990 CHAPTER O-3) and Regulations.
 - .2 Department of Transportation and Works Traffic Control Manual (2014)

1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 working 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 three copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction at each Progress Meeting.
- .4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors. Notify Departmental Representative immediately of any inspections.
- .5 Submit copies of incident and accident reports. Notify Departmental Representative immediately of any incidents or accidents.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets for Products and materials to be incorporated into the Work.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 working days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 working days after receipt of comments from Departmental Representative.
- .8 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 Departmental Representative.
- .10 On-site Contingency and Emergency Response Plan: in consultation with Departmental Representative, address standard operating procedures to be implemented during emergency situations.

1.03 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.04 SAFETY ASSESSMENT

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

1.05 MEETINGS

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

1.06 REGULATORY REQUIREMENTS

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

1.07 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 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.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with the following:
 - .1 Province of Newfoundland & Labrador:
 - .1 Occupational Health and Safety Act (RSNL1990 CHAPTER O-3) and Regulations.

1.10 UNFORESEEN HAZARDS

- .1 When an unforeseen or peculiar safety-related factor, hazard, or condition occurs during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Province of Newfoundland & Labrador, and advise Departmental Representative verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work competent and authorized representative as Health and Safety Coordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to the Work of Contract.
 - .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 of Newfoundland & Labrador, and in consultation with Departmental Representative.

1.13 CORRECTION OF NON-COMPLIANCE

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

1.14 BLASTING

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

1.15 POWDER ACTUATED DEVICES

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

1.16 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.

END OF SECTION

1.01 REFERENCE STANDARDS

- .1 Canada National Parks Act (S.C. 2000, c. 32), including amendments up to tender closing date.
- .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
- .3 Basic Impact Analysis (Parks Canada) – refer to Appendix A, this specification

1.02 DEFINITIONS

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

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
- .3 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .4 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .5 Include in Environmental Protection Plan:
 - .1 Name of person responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Name and qualifications of person responsible for manifesting hazardous waste to be removed from site.
 - .3 Name and qualifications of person responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations and EPA 832/R-92-005, Chapter 3.
 - .6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
 - .7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
 - .8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

- .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .13 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

1.04 FIRES

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

1.05 DRAINAGE

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

1.06 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

- .4 Minimize stripping of topsoil and vegetation unless indicated on drawings.
- .5 Restrict tree removal to areas indicated or designated by Departmental Representative.

1.07 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Do not use waterway beds for borrow material.
- .3 Waterways to be kept free of excavated fill, waste material and debris.
- .4 Design and construct measures to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.

1.08 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where directed by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .5 Immediately report any environmental emergency, such as a spill of a contaminant for example, to Environment and Climate Change Canada, Maritimes Regional Office Canadian Coast Guard, Fisheries and Oceans Canada; contact number: 902-426-6030 or 1-800-565-1633.
- .6 Remove temporary erosion and pollution control measures prior to project completion unless directed otherwise by Departmental Representative.

1.9 NOTIFICATION

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

END OF SECTION

1.01 REFERENCES AND CODES

- .1 Perform Work in accordance with the CONSOLIDATED NEWFOUNDLAND AND LABRADOR REGULATION 1140/96, Buildings Accessibility Regulations under the Buildings Accessibility Act (O.C. 96-865), and National Building Code of Canada 2010 (NBC), including amendments up to tender closing date, and other codes and by-laws of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.02 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative.

1.03 NATIONAL PARKS ACT

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

END OF SECTION

1.01 DEFINITIONS

- .1 Corrective Action: Steps that are taken to remove the causes of an existing non-conformity or undesirable situation. The corrective action process is designed to prevent the recurrence of non-conformities or undesirable situations. It tries to make sure that existing non-conformities and situations do not happen again. It tries to prevent recurrence by eliminating causes.
- .2 Hold Point: A mandatory verification point beyond which a Work Process cannot proceed without authorization by Departmental Representative. Hold Points may be nominated by Departmental Representative at sole and own discretion. The issuance of a Non-Conformance or Corrective Action report by Departmental Representative automatically creates a Hold Point for the Work Processes affected.
- .3 Non-Conformance: When one or more characteristics of an installation fail to meet specified requirements, it is referred to as Non-conformance. When an installation deviates from specified requirements, it fails to conform. Non-conformance must be identified and rectified.

1.02 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by Departmental Representative instructions, or law of Place of Work. Identify and confirm Hold Points in consultation with Departmental Representative for each technical specification section. Prepare and submit for review and approval detailed list of Hold Points, organized by specification section number, to Departmental Representative 7 working days prior to commencement of Work on site.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections, or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.03 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be selected by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative, Pay costs for retesting and re-inspection.

1.04 ACCESS TO WORK

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

1.05 PROCEDURES

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

1.06 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If, in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.07 REPORTS

- .1 Submit electronic copy in PDF format (one password protected and one editable version) of inspection and test reports to Departmental Representative.
- .2 Provide printed or electronic copies to subcontractor of work being inspected or tested, or manufacturer or fabricator of material being inspected or tested, as the case may be.

1.08 TESTS AND MIX DESIGNS

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

1.09 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Departmental Representative and as specified in specific Section.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .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 EQUIPMENT AND SYSTEMS

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

END OF SECTION

1.01 REFERENCE STANDARDS

- .1 Canada National Parks Act (S.C. 2000, c. 32), including amendments up to tender closing date.
- .2 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
- .3 Basic Impact Analysis (Parks Canada) – refer to Appendix A, this specification

1.02 INSTALLATION AND REMOVAL

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

1.03 DEWATERING

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

1.04 WATER SUPPLY

- .1 Provide continuous supply of potable water for construction use.
- .2 Pay for utility charges at prevailing rates.
- .3 Arrange for connection with appropriate utility company and pay costs for installation, maintenance, and removal.

1.05 TEMPORARY POWER AND LIGHT

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

1.06 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, fax, data hook up, lines and equipment as necessary for own use.

1.07 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.
- .3 Refer to Basic Impact Analysis – Appendix A

1.08 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 31 19 - Project Meetings.
- .2 Section 01 51 00 - Temporary Utilities

1.02 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-1994, Stipulated Price Contract.
- .2 Public Works Government Services Canada (PSPC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.05 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 Clean roadway areas where used by Contractor's equipment.

1.06 OFFICES

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

1.07 SANITARY FACILITIES

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

in sanitary condition.

1.08 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.

1.09 CLEAN-UP

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

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

1.01 INSTALLATION AND REMOVAL

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

1.02 PERIMETER SITE FENCING

- .1 Erect temporary heavy-duty HDPE orange or red plastic snow fencing at along the edge of the Northwest River to alert construction crews to keep away from the river. Also, install safety fencing along the golf cart path in limit of contract to provide a barrier to accidental entry to unsafe areas under construction. Fencing shall meet or exceed the following minimum requirements:
 - .1 Heavy-duty snow fence with mesh size of 100 mm x 40 mm.
 - .2 Tensile strength: ≥ 500 Joules.
 - .3 1.2 metres in height.
- .2 Install fencing wired to rolled steel “T” bar fence posts spaced at no greater than 3 metres on centre. Provide lockable truck gates as required for suitable access to meet project schedule, minimum 1 lockable gate. Maintain fence in good repair. Conduct regular inspections as required.
- .3 Wire construction warning signs to fence at regular intervals so that signage is clearly visible at any point along the fence line. Signage must include one sign marked “No Trespassing – Construction Personnel Only” and one marked with the required personal safety equipment (e.g., “Hard Hats and Safety Footwear Must be Worn Beyond This Point.”)
- .3 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures

1.03 ACCESS TO SITE

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

1.05 FIRE ROUTES

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

1.07 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.

1.08 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.

END OF SECTION

1.01 REFERENCE STANDARDS

- .1 Departmental Representative's identification of existing survey control points and property limits.

1.02 QUALIFICATIONS OF SURVEYOR

- .1 Contractor shall have qualified registered land surveyor, registered in Province of Newfoundland & Labrador and a member in good standing of The Association of Newfoundland & Labrador Land Surveyors, provide precision surveying services as required.

1.03 EXAMINATION

- .1 Before setting out the Work, have surveyor:
 - .1 Locate, confirm and protect monuments, benchmarks and control points.
 - .2 Verify existing property lines, other lines, grades, levels, surface features, dimensions against data on legal survey documents obtained for these purposes by Contractor.
 - .3 Report missing benchmarks, control points, discrepancies and missing surface features to Departmental Representative.
 - .4 Report monuments, benchmarks and control points that require relocation due to necessary changes in grades or due to positioning of structure(s).
 - .5 Make no changes to monuments, benchmarks and control points without the approval of Departmental Representative.

1.04 SURVEY REQUIREMENTS

- .1 Examine, preserve and protect the geodetic benchmark(s) and control points established by Departmental Representative. A lost or displaced geodetic benchmark or control point shall be re-established by an Land Surveyor licenced in Newfoundland & Labrador at the Contractor's expense. Accept responsibility for setting out the Work.
- .2 On receipt of approval, provide missing monuments, benchmarks and control points and replace damaged benchmarks and control points.
- .3 On receipt of approval, relocate monuments, benchmarks, and control points that require relocation due to necessary changes in grades or due to positioning of structure(s).
- .4 Establish at least four additional permanent benchmarks on the Site, referenced to the established benchmarks.
- .5 Establish and maintain other temporary benchmarks and control points as required, set in suitable locations.
- .6 Provide and maintain monuments, bench marks, batter-boards and similar items necessary to preserve lines and levels necessary for setting out of all parts of the Work.
- .7 Accurately set out the Work from levels and lines. Where the Work of this Contract is dependent upon grades and elevations of existing structures or facilities, such grades or elevations shall take precedence over those determined by reference to established elevations.
- .8 Stake for grading, filling, gravel roads and landscaping features.
- .9 Establish pipe invert elevations.

- .10 Establish lines and levels for civil, mechanical and electrical work and for buried services, including piping.

1.05 EXISTING SERVICES

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

1.06 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

1.07 ACTION AND INFORMATIONAL SUBMITTALS

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

1.08 SUBSURFACE CONDITIONS

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

END OF SECTION

1.01 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Departmental Representative or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.02 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.03 PREPARATION

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

1.04 EXECUTION

- .1 Execute cutting, fitting, and patching, including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.

- .5 Remove samples of installed Work for testing when required by Specifications.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

END OF SECTION

1.01 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only, and remove from site when snow accumulation exceeds boundaries of designated areas.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers approved by Departmental Representative for collection of waste materials and debris.
- .6 Dispose of waste materials and debris off site in accordance with federal, provincial and local requirements and regulations.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.02 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.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

END OF SECTION

1.01 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Certificates required by authorities having jurisdiction: submitted.
 - .4 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

1.02 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1.01 ADMINISTRATIVE REQUIREMENTS

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

1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to one final hard copy and 2 final PDF copies (one password protected and one editable) of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.03 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.

- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD or DVD, and flash drive.

1.04 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.05 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.06 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt fine-tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos for site records.

1.07 FINAL SURVEY

- .1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 56 00 - Temporary Barriers and Enclosures
- .2 Section 01 35 29.06 - Health and Safety Requirements

1.02 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment:
 - .1 Measurement for supply and installation of signboards will be based on individual unit.
 - .2 Measurement for supply, installation and painting of sign supports will be based on each complete sign installation.

1.03 REFERENCE STANDARDS

- .1 American Association of State Highway and Transportation Officials (AASHTO)
 - .1 Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, (5th Edition).
- .2 ASTM International
 - .1 ASTM A 123/A 123M-[09], Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A 276-[10], Standard Specification for Stainless Steel Bars and Shapes.
 - .3 ASTM B 209M-[10], Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric].
 - .4 ASTM B 210M-[05], Standard Specification for Aluminum-Alloy Drawn Seamless Tubes [Metric].
 - .5 ASTM B 211M-[03], Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod and Wire [Metric].
- .3 Canadian General Standards Board (CGSB)
 - .1 CGSB 62-GP-11M-[78], Marking Material, Retroreflective, Enclosed Lens, Adhesive Backing and Amendment.
- .5 CSA International
 - .1 CSA G40.20/G40.21-[04(R2009)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA O80 Series-[08], Wood Preservation.
 - .3 CSA O121-[08], Douglas Fir Plywood.
 - .4 CSA W47.2-[11], Certification of Companies for Fusion Welding of Aluminum.
 - .5 CAN/CSA-Z809-[08], Sustainable Forest Management.
- .6 Newfoundland and Labrador
 - .1 Department of Transportation and Works Traffic Control Manual, 2014

1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for traffic signage, including product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Newfoundland, Labrador, Canada.
 - .2 Indicate items as follows:
 - .1 All temporary construction sign types and locations.

1.05 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 DESIGN CRITERIA

- .1 Structural deflections and vibration in accordance with American Association of State Highway and Transportation Officials (AASHTO), "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals".

2.02 MATERIALS

- .1 Sign supports:
 - .1 As per NFLD Traffic Control Manual
- .2 Signboards:
 - .1 As per NFLD Traffic Control Manual

2.03 FABRICATION

- .1 As per NFLD Traffic Control Manual

3 EXECUTION

3.01 INSTALLATION

- .1 Erect in location and to standards outlined in the NFLD Traffic Control Manual

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 31 14 13 - Soil Stripping and Stockpiling

1.02 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM D 698-[07e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft²) (600kN-m/m²).
- .2 Department of Transportation and Infrastructure Standard Specifications for Highway Construction January 2015
 - .1 DTI 201 Production of Highway Aggregates.
 - .2 Item 601 Random Riprap
- .3 Canada Green Building Council. "Sustainable Sites Prerequisite 1: Erosion and Sedimentation Control". Leadership in Energy and Environmental Design Reference Package for New Construction and Major Renovations (LEED® Canada-NC) Version 1.0.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

2 PRODUCTS

2.01 MATERIALS

- .1 Geotextile Materials
 - .1 Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, manufactured from polyolefin or polyester and having elongation less than 50% in accordance with AASHTO M288 and as follows:
 - 1. Survivability: Class 2.
 - 2. Apparent Opening Size: 0.250 mm sieve, maximum in accordance with ASTM D4751.
 - 3. Permittivity: 0.02 per second, minimum in accordance with ASTM D4491.
 - 4. UV Stability: 50% after 500 hours' exposure in accordance with ASTM D4355.

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions:
 - .1 Before commencing work verify locations of buried services on and adjacent to site.
- .2 Evaluation and Assessment:
 - .1 Before commencing work, conduct, with Parks Canada Representative, condition survey of existing structures, trees and plants, lawns, fencing, service poles, wires, retaining walls and paving, survey bench marks and monuments which may be affected by work.

3.02 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Use 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.
 - .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 Protection of in-place conditions:
 - .1 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
 - .2 Protect buried culverts and gabion walls as shown on plans
 - .3 Protect golf cart paths and golf course features
- .3 Removal:
 - .1 Remove obsolete buried stormwater pipes.

3.03 EXCAVATION

- .1 Shore and brace excavations, protect slopes and banks and perform work in accordance with Provincial regulations.
- .2 No blasting will be permitted within the work area. If bedrock is encountered notify departmental representative and leave in place unless it impacts drainage.
- .3 Topsoil stripping:
 - .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
 - .2 Strip tainted topsoil (creosote leached) to depths of 150mm in areas indicated on the plan and remove from the site in an approved disposal facility. Avoid impacts to tree roots and replace tainted topsoil with clean topsoil taken from the site to a

- depth originally extracted.
- .3 Strip topsoil from road areas to be used to replace tainted topsoil in areas indicated on the plans. Where grade changes are required, use existing excavated materials from onsite.
- .4 Do not import foreign topsoil or fill unless source is approved from departmental representative.
- .4 Notify Departmental Representative when excavations have reached required sub-grade.

3.04 SITE QUALITY CONTROL

- .1 All soil and backfill removal work near the golf cart underpass retaining wall to be inspected and approved by a Departmental Representative.

3.05 GRADING

- .1 Grade to ensure that water will drain as shown on the grading plan. Elevations shown on plan were developed using LIDAR imagery and not survey information. Contractor to report major discrepancies that would impact pricing in the bidding stage. Contractor will not be eligible for extras relating to discrepancies in topography shown on plans.

3.06 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Dispose of cleared and grubbed material off site daily
 - .2 Keep Highway 1 free of mud and debris daily to reduce silt runoff.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 00 99 –Earthworks for Minor Works.

1.2 REFERENCE STANDARDS

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities:
Developing Pollution Prevention Plans and Best Management Practices.

1.3 DEFINITIONS

- .1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.
- .2 Close-cut clearing consists of cutting off standing trees, brush, scrub, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.
- .3 Clearing isolated trees consists of cutting off to not more than specified height above ground of designated trees, and disposing of felled trees and debris.
- .4 Underbrush clearing consists of removal from treed areas of undergrowth, deadwood, and trees smaller than 50 mm trunk diameter and disposing of fallen timber and surface debris.
- .5 Grubbing consists of excavation and disposal of stumps and roots boulders and rock fragments of specified size to not less than specified depth below existing ground surface.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide required information in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for polyurethane foam sprayed insulation and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Samples:
 - .1 Submit 3 samples of each material listed below for approval prior to delivery of materials to project site.
- .4 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Provide manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Comply with recommended WHMIS MSDS procedures and personal protection equipment.

1.6 STORAGE AND PROTECTION

- .1 Prevent damage to features to remain; for example, fencing, trees, shrubs, landscaping, natural features, bench marks, existing buildings, existing pavement, utility lines, site appurtenances, water courses, and root systems of trees which are to remain.
- .2 Repair damaged items to approval of Departmental Representative.
- .3 Replace trees designated to remain, if damaged, as directed by Departmental Representative.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Consider felled timber from which saw logs, pulpwood, posts, poles, ties, or fuel wood can be produced as saleable timber.
 - .1 Trim limbs and tops, and saw into saleable lengths.
 - .2 Stockpile adjacent to site.

Part 2 Products

2.1 MATERIALS

- .1 Soil Material for Fill:
 - .1 Excavated soil material: free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, deleterious, or objectionable materials.
 - .2 Remove and store soil material for reuse.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 PREPARATION

- .1 Inspect site and verify with Departmental Representative, items designated to remain.
- .2 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
- .3 Notify Departmental Representative immediately of damage to or when unknown existing utility lines are encountered.
- .4 When utility lines which are to be removed are encountered within area of operations, notify Departmental Representative in ample time to minimize interruption of service.
- .5 Notify utility authorities before starting clearing and grubbing.
- .6 Keep roads and golf cart paths free of dirt and debris.

3.3 APPLICATION

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

3.4 CLEARING

- .1 All cutting must be saw cut. Mechanical mulching heads are prohibited.
- .2 Clearing includes felling, trimming, and cutting of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within cleared areas.
- .3 Clear as indicated or directed by Departmental Representative by cutting at height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.
- .4 Cut off branches overhanging area cleared as directed by Departmental Representative.
- .5 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

3.5 CLOSE CUT CLEARING

- .1 Close cut clearing to ground level.
- .2 Perform close cut clearing by hand.
- .3 Cut off branches overhanging area cleared as directed by Departmental Representative.
- .4 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

3.6 ISOLATED TREES

- .1 Cut off isolated trees as indicated or directed by Departmental Representative at height of not more than 300 mm above ground surface.
- .2 Grub out isolated tree stumps.
- .3 Prune individual trees as indicated.

- .4 Trim trees designated to be left standing within cleared areas of dead branches 4 cm or more in diameter; and trim branches to heights as indicated.
- .5 Cut limbs and branches to be trimmed close to bole of tree or main branches.

3.7 UNDERBRUSH CLEARING

- .1 Clear underbrush from areas as indicated at ground level.

3.8 GRUBBING

- .1 Remove and dispose of roots larger than 7.5 cm in diameter, matted roots, and designated stumps from indicated grubbing areas.
- .2 Grub out stumps and roots to not less than 200 mm below ground surface.
- .3 Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension, but less than 0.25 m².
- .4 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.

3.9 REMOVAL AND DISPOSAL

- .1 Remove cleared and grubbed materials off site to disposal area designated by Departmental Representative.
- .2 Cut timber greater than 125 mm diameter to approved lengths and stockpile as indicated. Stockpiled timber becomes property of Departmental Representative.
- .3 Dispose of cleared and grubbed materials by methods approved by authority having jurisdiction and Departmental Representative.
- .4 Bury to approval of Departmental Representative by:
 - .1 Consolidating.
 - .2 Covering with minimum 500 mm of mineral soil.
 - .3 Finishing surface.
- .5 Chip or mulch and stockpile cleared and grubbed vegetative material on site as directed by Departmental Representative.
- .6 Remove diseased trees identified by Departmental Representative and dispose of this material to approval of Departmental Representative.
- .7 The Contractor is responsible for monitoring all cut creosote treated wood chips and sawdust until it is properly disposed of as determined by Departmental Representative.

3.10 FINISHED SURFACE

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

3.11 CLEANING

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

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 00 99 – Earthworks for Minor Works.
- .2 Section 31 22 13 – Rough Grading.
- .3 Section 01 74 11 – Cleaning

1.2 REFERENCE STANDARDS

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

Part 2 Products

2.1 TOPSOIL

- .1 Topsoil shall remain property of the Owner.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 STRIPPING OF TOPSOIL

- .1 Ensure that procedures are conducted in accordance with applicable federal, provincial and local requirements.
- .2 Remove topsoil before construction procedures commence to avoid compaction of topsoil.
- .3 Handle topsoil only when it is dry and warm.
- .4 Remove vegetation from targeted areas by non-chemical means and dispose of stripped vegetation by alternative disposal.
- .5 Remove brush from targeted area by non-chemical means and dispose of through alternative disposal.
- .6 Strip topsoil to be reused to depths as indicated or as directed by Departmental Representative without compromising any existing trees.

- .7 Avoid mixing topsoil with subsoil.
- .8 Pile topsoil berms in locations that are not excessively sloped and do not pose a hazard for soil erosion. Prevent topsoil from entering ditches or migrating from the work site
- .9 Stockpile height not to exceed 3 m.
- .10 Dispose of unused topsoil on-site with direction from the Owner.
- .11 Protect stockpiles from contamination and compaction.
- .12 Cover topsoil that has been piled for long term storage, with trefoil or grass to maintain agricultural potential of soil.
- .13 All unused topsoil to be disposed of site at end of the project.

3.3 STRIPPING OF WETLAND MULCH

- .1 Donor wetland mulch contains the seed stock for native wetland plants in the park. Several areas have been proposed for wetland mulch donor sites as shown on the plans. Ensure that wetland mulch removal procedures are conducted in accordance with applicable federal, provincial and local requirements.
- .2 Confirm with departmental representative the area and extent to be the source for wetland mulch. Ensure stormwater management protocols are followed to minimize erosion and sedimentation from the source site.
- .3 Remove black organic wetland mulch without mixing native subsoil. Recommended depth is 300m.
- .4 Do not stockpile wetland mulch for more than 2 weeks and ensure soil is kept moist from the time of removal to the time of installation.
- .5 Remove brush from source area by non-chemical means and dispose of through alternative disposal.
- .6 Pile Wetland mulch berms in locations that are not excessively sloped and do not pose a hazard for soil erosion. Prevent mulch from entering ditches or migrating from the work site.
- .7 Stockpile height not to exceed 3 m.
- .8 Dispose of unused mulch on-site with direction from the Owner.
- .9 Protect stockpiles from contamination and compaction.

3.4 PREPARATION OF GRADE

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

3.5 PLACING OF TOPSOIL & WETLAND MULCH

- .1 Place topsoil only after Departmental Representative has accepted subgrade.
- .2 Spread topsoil during dry conditions in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.
- .3 Spread wetland mulch to depths and grades indicated on the drawings. Keep mulch moist while grading.
- .4 Establish traffic patterns for equipment to prevent driving on topsoil and new wetlands after it has been spread to avoid compaction.
- .5 Cultivate soil following spreading procedure.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 31 00 99 – Earthworks for minor Works.
- .2 Section 31 11 00 – Clearing and grubbing.
- .3 Section 31 14 13 – Soil Stripping and Stockpiling.

1.02 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM D 698-[07e1], Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m ü).
- .2 Underwriters' Laboratories of Canada (ULC)

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 EXISTING CONDITIONS

- .1 Known underground and surface utility lines and buried objects are as indicated on site plan.

2 PRODUCTS

2.01 MATERIALS

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

3 EXECUTION

3.01 EXAMINATION

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

3.02 STRIPPING OF TOPSOIL

- .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Departmental Representative.
- .2 Strip topsoil to depths as directed by Departmental Representative. Rototill weeds and grasses and retain as topsoil on site. Avoid mixing topsoil with subsoil.
- .3 Stockpile in flat well drained locations within the contract limit. Stockpile height not to exceed 2 m.
- .4 Dispose of unused topsoil to location as directed by Departmental Representative within the park.

3.03 GRADING

- .1 Rough grade to levels, profiles, and contours as indicated on grading plan.
- .2 Grade ditches and swales to depth as indicated.
- .3 Prior to placing fill over existing ground, scarify surface to depth of 300 mm minimum before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .4 Compact filled and disturbed areas to corrected maximum dry density to ASTM D 698, as follows:
 - .1 85% in all graded areas.
- .5 Do not disturb soil within branch spread of trees or shrubs to remain unless indicated on the drawings.

3.04 CLEANING

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

3.05 PROTECTION

- .1 Protect existing trees, landscaping, natural features, bench marks, and culverts which are to remain as directed by Departmental Representative. If damaged, restore to original or better condition unless directed otherwise.
- .2 Maintain access roads to prevent accumulation of construction related debris on roads.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 31 00 99 Earthworks for Minor Works
- .2 Section 31 22 13 Rough Grading

1.02 MEASUREMENT AND PAYMENT

- .1 Measure geotextiles in square metres of surface covered by material. No allowance will be made for seams and overlaps.

1.03 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A 123/A 123M-[09], Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM D 4491-[99a(2009)], Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .3 ASTM D 4595-[09], Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .4 ASTM D 4716-[08], Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .5 ASTM D 4751-[04], Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 11.2-[2004], Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
 - .1 No.2-[M85], Methods of Testing Geosynthetics - Mass per Unit Area.
 - .2 No.3-[M85], Methods of Testing Geosynthetics - Thickness of Geotextiles.
 - .3 No.6.1-[93], Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
 - .4 No.7.3-[92], Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .5 No. 10-[94], Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's instructions, printed product literature and data sheets for geotextiles and include product characteristics, performance criteria, physical size, finish and limitations, recommended procedures for installation and instructions for handling.

- .3 Samples:
 - .1 Provide following samples 2 weeks prior to beginning Work.
 - .1 Minimum length of 2m of roll width of geotextile.
 - .2 Methods of joining.
- .4 Test and Evaluation Reports:
 - .1 Submit copies of mill test data and certificate at least 2 weeks prior to start of Work.

1.05 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and Handling Requirements:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect geotextiles from direct sunlight and UV rays.
 - .3 Replace defective or damaged materials with new.
- .3 Packaging Waste Management: remove for reuse as specified in Construction Waste Management Plan.

2 PRODUCTS

2.01 MATERIAL –TYPE N1 GEOTEXTILE

- .1 Geotextile: non-woven synthetic fibre fabric, supplied in rolls.
 - .1 Composed of: long chain synthetic polymer composed of at least 85% by mass of propylene, ethylene, ester, amide, or vinylidene-chloride, and shall contain stabilizers or inhibitors added to the base plastic to make the filaments resistant to deterioration by ultraviolet and heat exposure.
- 2 Physical properties:
 - .1 Grab tensile strength and elongation (in any principal direction): to ASTM D4632.
 - .1 Grab tensile strength: minimum 400 N.
 - .2 Elongation at break: minimum 50%.
 - .2 Tearing strength: to ASTM D4533.
 - .1 Tearing Strength: minimum 160 N.
- .3 Hydraulic properties:
 - .1 Apparent opening size (AOS): to ASTM D 4751], 50 to 250 micrometres.
 - .4 Permittivity: to ASTM D 4491, 1.75 to 3.5 pers.
- .4 Securing pins and washers: to manufacturer's recommendations.
- .5 Factory seams: sewn in accordance with manufacturer's recommendations.
- .6 Thread for seams: equal or better resistance to chemical and biological degradation than geotextile, both factory and field sewn seams shall have a grab tensile strength equal to 90% of that of the geotextile.

2.02 MATERIAL – EROSION CONTROL MAT

- .1 Geotextile: fabric, supplied in rolls.
 - .1 Width: 2.3 m minimum.
 - .2 Length: 36.6 m minimum.
 - .3 Composed of: uniformly distributed 70% agricultural straw, 30% coir fibre, and two polypropylene nets sewn together with degradable thread.
- .2 Physical properties:
 - .1 Thickness: to ASTM D6525, minimum 10.2 mm.
 - .2 Mass per unit area: to ASTM D6475, minimum 320.4 g/ m².
 - .3 Tensile strength and elongation (in any principal direction): to ASTM D6818.
 - .1 Tensile strength: minimum 2.6 kN/m, wet condition.
 - .2 Elongation at break: maximum 31.3%.
- .4 Securing pins and washers: ground staples in accordance with manufacturer's recommendations. Ensure pins are biodegradable.
- .5 Factory seams: sewn in accordance with manufacturer's recommendations.
- .6 Thread for sewn seams: in accordance with manufacturer's recommendations.

3 EXECUTION

3.01 EXAMINATION

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

3.02 INSTALLATION –TYPE N1 GEOTEXTILE

- .1 The manufacturer's installation procedures shall be the standard of installation that shall be applied except as follows:
 - .1 Where more than one width of fabric is used, the fabric shall be joined by sewing or by an overlap of at least 500mm and all overlap joints shall be securely held in place.
- .2 Place geotextile material by unrolling onto graded surface, shaped to present a uniform and regular surface free from bumps and depressions, in orientation, manner and locations indicated.
- .3 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .4 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.

- .5 After installation, cover with overlying layer within 4 hours of placement.
- .6 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .7 Geotextile shall not be placed on stumps, brush, limbs, ice or other material that may tear or puncture the fabric.

3.03 INSTALLATION – EROSION CONTROL MAT

- .1 The manufacturer's installation procedures shall be the standard of installation that shall be applied.
- .2 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .3 Replace damaged or deteriorated geotextile to approval of Departmental Representative.

3.04 CLEANING

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

3.05 PROTECTION

- .1 Vehicular traffic not permitted directly on geotextile.
- .2 Do not overload soil or aggregate covering on geotextile.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 02 41 13 – Selective Demolition.
- .2 Section 31 11 00 – Clearing and Grubbing.
- .3 Section 32 92 19.16 – Hydraulic Seeding.

1.2 REFERENCE STANDARDS

- .1 American National Standard Institute (ANSI) / Trees Care Industry Association
 - .1 ANSI A300 National Tree Care Standards:
 - .1 ANSI A300 (Part 1) - 2008 (R2014) Pruning.
 - .2 ANSI A300 (Part 2) - 2011 Soil Management: a. Modification, b. Fertilization, and c. Drainage.
 - .3 ANSI A300 (Part 3) - 2013 Supplemental Support Systems (includes Cabling, Bracing, Guying, and Propping).
 - .4 ANSI A300 (Part 5) - 2012: Management of Trees and Shrubs During Site Planning, Site Development, and Construction.
 - .5 ANSI A300 (Part 6) - 2012 Planting and Transplanting.
 - .6 ANSI A300 (Part 7) - 2012 Integrated Vegetation Management (IVM).
 - .7 ANSI A300 (Part 9) - 2011 Tree Risk Assessment.
 - .2 ASTM International
 - .1 ASTM A1064/A1064M-16b, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
 - .3 Atlantic Canada Pesticide Applicator Training Manual Series
 - .1 Applicator Core Training Manual, July 2006.
 - .4 CSA Group
 - .1 CSA G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement, includes Update No. 1 (2012).
 - .5 Health Canada - Pest Management Regulatory Agency (PMRA)
 - .1 National Standard for Pesticide Education, Training and Certification in Canada (1995).
 - .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .7 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .2 Fertilizers Act (R.S. 1985, c. F-10).
 - .3 Fertilizers Regulations (C.R.C., c. 666).
 - .4 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.3 DEFINITIONS

- .1 Mycorrhiza: association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.

1.4 ADMINISTRATIVE REQUIREMENTS

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

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide in accordance with Section 01 33 00 - Submittal Procedures..
- .2 Product Data:
 - .1 Provide manufacturer's instructions, printed product literature and data sheets for tree and shrub preservation materials and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Provide monthly written reports on maintenance during warranty period, to Departmental Representative identifying:
 - .1 Maintenance work carried out.
 - .2 Development and condition of plant material.
 - .3 Preventative or corrective measures required which are outside Contractor's responsibility.
 - .3 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29_06 - Health and Safety Requirements

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect tree and shrub preservation materials from damage.
 - .3 Replace defective or damaged materials with new.

1.7 MAINTENANCE DURING WARRANTY PERIOD

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

- .4 Remove dead, broken or hazardous branches from plant material. Dispose of debris through alternative disposal, composting or mulching as approved by Departmental Representative.

2 Products

2.1 MATERIALS

- .1 Fill:
 - .1 Obtain fill from local sources.
 - .2 Class A: clean, natural river sand and gravel material, free from silt, clay, loam, friable or soluble materials and organic matter.
 - .3 Class B: excavated pervious soil (or imported from local sources if excavated material not pervious), free from roots, rocks larger than 75 mm, building debris, and toxic ingredients (salt, oil, etc.). Excavated material shall be approved by Departmental Representative before use as fill.
- .2 Coarse washed stones: 35-75 mm diameter clean round hard stone.
- .3 Draintile: 100 mm diameter corrugated plastic perforated tubing, complete with snap couplings. Fill vents with 20 mm clear stone.
- .4 Unamended Peatmoss:
 - .1 Derived from partially decomposed species of Sphagnum Mosses.
 - .2 Elastic and homogeneous.
 - .3 Free of wood and deleterious material which could prohibit growth.
 - .4 Shredded minimum particle size: 5 mm.
 - .5 To have a natural pH and is not to be amended with lime.
- .5 Fertilizer:
 - .1 To Canada Fertilizer Act and Fertilizers Regulations.
 - .2 Complete, commercial, slow release with 35% of nitrogen content in water-insoluble form.
- .6 Anti-desiccant: commercial, wax-like emulsion.
- .7 Filter Cloth:
 - .1 Type 1: 100 % non-woven needle punched polyester, 2.75 mm thick, 240 g/m² mass.
 - .2 Type 2: biodegradable burlap.
- .8 Temporary site fencing materials:
 - .1 T-Bars: 2400 mm steel T-bars.
 - .2 Wire Ties: 9-guage galvanized wire.
 - .3 Plastic Fencing: standard orange snow (safety) fencing, 1.2-metre-high plastic fence.
 - .4 Lumber, to Section 06 10 10 - Rough Carpentry: 25 mm x 75 mm.
- .9 Board Cladding: to consist of 50 x 100 mm lumber secured around the perimeter of tree trunks with plastic strapping or other means which will not damage the tree.

3 Execution

3.1 EXAMINATION

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

3.2 IDENTIFICATION AND PROTECTION

- .1 Tree protection to be installed prior to the start of any on site work.
- .2 Identify plants and limits of root systems to be preserved as approved by Departmental Representative.
- .3 Protect plant and root systems from damage, compaction and contamination resulting from construction as approved by Departmental Representative.
- .4 Ensure no root pruning is done inside drip line. If pruning inside drip line is required consult an arborist or Canadian Certified Horticultural Technician (CCHT) as approved by Departmental Representative.

3.3 TREE PROTECTION

- .1 Drive T-bars into ground sufficient to withstand loads, spaced 1500 mm on centre. Wire T-bars to inside of plastic snow fencing at each T-bar location, using three wire connections per T-bar, equally spaced.
- .2 At framed hoarding locations, plastic snow fencing shall be supported by T-Bars at 1800 mm on centre, supported by lumber framing (25 mm x 75 mm) across top.

3.4 LOWERING GRADE AROUND EXISTING TREE

- .1 Begin Work in accordance with schedule approved by Departmental Representative.
- .2 Cut slope not less than 500 mm from tree trunk to new grade level or retaining wall as applicable to site conditions and location.
- .3 Excavate to depths as indicated. Protect root zone designated to remain from damage.
- .4 When severing roots at excavation level, cut roots with clean, sharp tools.
- .5 Cultivate excavated surface manually to 15 mm depth.

- .6 Prepare homogeneous soil mixture consisting by volume of:
 - .1 60% excavated soil cleaned of roots, plant matter, stones, debris.
 - .2 25% coarse, clean sterile sand.
 - .3 15% organic matter.
 - .4 Grade 2:12:8 fertilizer at rate of 1.5 kg/m².
- .7 Place soil mixture over area of excavation to finished grade level. Compact to 85% Standard Proctor Density.
- .8 Water entire root zone to optimum soil moisture level.
- .9 Install surface cover of seeding and sodding in accordance with Section 32 92 19.16 – Hydraulic Seeding and Section 32 92 23 – Sodding.

3.5 ANTI-DESICCANT

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

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 10 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 10 - Cleaning.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

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

1.02 PRICE AND PAYMENT PROCEDURES

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

1.03 REFERENCE STANDARDS

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-15.1-[92], Calcium Chloride.
- .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

1.05 DELIVERY, STORAGE AND HANDLING

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

2 PRODUCTS

2.01 MATERIALS

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

3 EXECUTION

3.01 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control drawings that complies with EPA

832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.

3.02 APPLICATION

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

3.03 CLEANING

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

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 31 05 00 – Common Work Results for Earthworks.
- .2 Section 31 14 13 – Soil Stripping and Stockpiling.
- .3 Section 31 22 13 – Rough Grading.

1.2 PAYMENT

- .1 Testing of topsoil: Departmental Representative will pay for cost of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.

1.3 REFERENCE STANDARDS

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Canadian Council of Ministers of the Environment
 - .1 PN1340-[2005], Guidelines for Compost Quality.
- .3 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-[2004], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum [2007]).
 - .2 LEED Canada-CI Version 1.0-[2007], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .4 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.4 DEFINITIONS

- .1 Compost:
 - .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
 - .2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.
 - .3 Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below (25) (50)), and contain no toxic or growth inhibiting contaminants.
 - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category (A) (B).

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

- .2 Quality control submittals:
 - .1 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in PART 2 - SOURCE QUALITY CONTROL.
 - .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 QUALITY ASSURANCE

- .1 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 32 16.06 - Construction Progress Schedule.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Divert unused soil amendments from landfill to official hazardous material collections site approved by Departmental Representative.
- .2 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.

2 PRODUCTS

2.1 TOPSOIL

- .1 Topsoil for seeded areas: mixture of particulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth.
 - .1 Soil texture based on The Canadian System of Soil Classification, to consist of 20 to 70 % sand, minimum 7 % clay, and contain 2 to 10 % organic matter by weight.
 - .2 Contain no toxic elements or growth inhibiting materials.
 - .3 Finished surface free from:
 - .1 Debris and stones over 50 mm diameter.
 - .2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
 - .4 Consistence: friable when moist.

2.02 SOIL AMENDMENTS

- .1 Fertilizer:
 - .1 Fertility: major soil nutrients present in following amounts:
 - .2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
 - .3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.
 - .4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.
 - .5 Calcium, magnesium, sulphur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
 - .6 Ph value: 6.5 to 8.0.
- .2 Peatmoss:
 - .1 Derived from partially decomposed species of Sphagnum Mosses.
 - .2 Elastic and homogeneous, brown in colour.
 - .3 Free of wood and deleterious material which could prohibit growth.

- .4 Shredded particle minimum size: [5] mm.
- .3 Sand: washed coarse silica sand, medium to coarse textured.
- .4 Organic matter: compost Category A, B in accordance with CCME PN1340, unprocessed organic matter, such as rotted manure, bark residue or sawdust, meeting the organic matter, stability and contaminant requirements.
- .5 Use composts meeting Category B requirements for land fill reclamation and large scale industrial applications.
- .6 Limestone:
 - .1 Ground agricultural limestone.
 - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.
- .7 Fertilizer: industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

2.3 SOURCE QUALITY CONTROL

- .1 Advise Departmental Representative of sources of local topsoil to be utilized with sufficient lead time for testing.
- .2 Contractor is responsible for amendments to supply topsoil as specified.
- .3 Soil testing by recognized testing facility for PH, P and K, and organic matter.
- .4 Testing of topsoil will be carried out by testing laboratory designated by Departmental Representative.
 - .1 Soil sampling, testing and analysis to be in accordance with Provincial standards.

3 EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction, and sediment and erosion control plan, specific to site.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as directed by Departmental Representative after area has been cleared of brush and grasses and removed from site.

- .2 Strip topsoil to depths as indicated.
 - .1 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- .3 Protect stockpiles from contamination and compaction.

3.3 PREPARATION OF EXISTING GRADE

- .1 Verify that grades are correct.
 - .1 If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Departmental Representative.
- .2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- .3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.
 - .1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.
 - .2 Remove debris which protrudes more than 75 mm above surface.
 - .3 Dispose of removed material off site.
- .4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm.
 - .1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.4 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

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

3.5 FINISH GRADING

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.
 - .1 Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.
 - .1 Leave surfaces smooth, uniform and firm against deep footprinting.
 - .2 Employ dozer treads as indicated on the drawings prior to seeding

3.6 ACCEPTANCE

- .1 Departmental 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 materials except topsoil not required off site.

3.09 CLEANING

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

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

- .1 Section 32 91 21 – Topsoil and Finish Grading.
- .2 Section 32 93 11 – Landscape Maintenance and Warranty.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 31 19 – Project Meetings.
- .2 Scheduling:
 - .1 Schedule hydraulic seeding to coincide with preparation of soil surface.
 - .2 Schedule hydraulic seeding between dates recommended by Provincial Agricultural Department.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for seed, mulch, tackifier, fertilizer, liquid soil amendments and micronutrients.
 - .2 Submit product data relating to fertilizer and fertilizer application rates based on soils analysis of topsoil used for the project.
 - .3 Fibre mulch and tackifier manufacturer's product data, installation instructions and application rate for approval.
 - .4 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 – Health and Safety Requirements.
- .3 Site Planes:
 - .1 Submit site plan showing planned locations for seed mixture types for approval of Departmental Representative.
- .4 Submit in writing 14 days prior to commencing work:
 - .1 Volume capacity of hydraulic seeder in litres.
 - .2 Amount of material to be used per tank based on volume.
 - .3 Number of tank loads required per hectare to apply specified slurry mixture per hectare.
- .5 Written documentation for approval before commencing work regarding:
 - .1 Type and volume capacity of hydraulic seeding and mulching equipment in litres.
 - .2 Amount of each material in kilograms and including water in litres to be used per tank based on volume to achieve required application rate.
 - .3 Number of tank loads required per hectare to apply specified slurry mixture per hectare.

- .6 Samples:
 - .1 Submit 500 g sample of each seed mixture intended for use. Submit samples in clean containers with label identifying project, seed sample and lot number, supplier and date. Seed mix sample shall match tested seed lots.
 - .2 Submit 0.5 kg container of each type of fertilizer used.
- .7 Certificates:
 - .1 Certificate(s) of analysis of each seed sample. Seed analysis report shall be current and show specie and variety of seed, date and results of all tests.
 - .2 Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .8 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

1.4 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Landscape Contractor: to be a Member in Good Standing of Canadian Nursery Landscape Association.
 - .2 Landscape Planting Supervisor: Landscape Industry Certified Technician with Softscape Installation designation.
 - .3 Landscape Maintenance Supervisor: Landscape Industry Certified Technician with Turf Maintenance designation.
- .2 All original seed labels and seed bags at completion of seeding to confirm amount of seed used on site.
- .3 Conform to requirements of Federal and Provincial seed regulations.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:
 - .1 Labelled bags of fertilizer identifying mass in kg, mix components and percentages, date of bagging, supplier's name and lot number.
 - .2 Inoculant containers to be tagged with expiry date.
- .3 Storage and Handling Requirements:
 - .1 Store fertilizer off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.6 WARRANTY

- .1 For seeding the 12 months' warranty period is extended to 1 full growing season.
- .2 Contractor hereby warrants that seeding will remain free of defects for 1 full growing season.
- .3 End-of-warranty inspection will be conducted by Departmental Representative.
- .4 Departmental Representative reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

2 Products

2.1 MATERIALS

- .1 Fertilizer: synthetic fertilizer, granular in composition, minimum 50% of elements derived from organic sources.
- .2 Grass seed: certified Canada No. 1 seed, free of disease, weed seeds or other foreign materials in accordance with the Canada "Seeds Act" and "Seeds Regulations" and having minimum purity of 97% and germination of 75%.
- .3 Water: clean, fresh, and free of substances or matter that would inhibit vigorous and healthy growth of grass.
 - .1 Contractor shall supply clean water, equipment, methods of transportation, water tanker, hoses, attachments, and other accessories as necessary for all seeding requirements, maintenance and other related work.
 - .2 All costs for supply of water incurred during the contract period shall be borne by Contractor.
 - .3 Tackifier: non-toxic, water dilutable, liquid dispersion, mulch binder free of growth or germination inhibiting factors.
- .4 Fibre mulch: wood or wood cellulose fibre meeting following requirements:
 - .1 Free of growth or germination inhibiting ingredients.
 - .2 Specially manufactured for use in hydraulic seeding and mulching equipment.
 - .3 Minimum organic matter content of 95%.
 - .4 Minimum moisture content of 12%.
 - .5 Water absorption potential of 800-900% for wood cellulose fibre mulch and 1200-1350% for wood fibre mulch.
- .5 Erosion control agent: A mulch binder with a pH value of 7 to 8.

2.2 GRASS SEED MIXTURES

- .1 Seed Mixture composition:
 - .1 40% Creeping red fescue.
 - .2 60% Annual Rye

3 Execution

3.1 EXAMINATION

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

3.2 INSTALLERS

- .1 Use installers members in Good Standing of Canadian Nursery Landscape Association.

3.3 PROTECTION OF EXISTING CONDITIONS

- .1 Protect structures, signs, guide rails, fences, plant material, utilities and other surfaces not intended for spray.
- .2 Immediately remove any material sprayed where not intended as directed by Departmental Representative.

3.4 PREPARATION OF SURFACES

- .1 Do not perform work under adverse field conditions such as wind speeds over 10 km/h, frozen ground or ground covered with snow, ice or standing water.
- .2 Fine grade areas to be seeded free of humps and hollows.
 - .1 Ensure areas are free of deleterious and refuse materials.
- .3 Cultivated areas identified as requiring cultivation to depth of 25 mm.
- .4 Ensure areas to be seeded are moist to depth of 150 mm before seeding.
- .5 Obtain Departmental Representative's approval of grade and topsoil depth before starting to seed.

3.5 FERTILIZING PROGRAM

- .1 Composition of fertilizer during year 1: 10-20-20. Use a controlled release Nitrogen with pelletized lime. 1 pound per 1000 sq.ft. of actual phosphorus.
- .2 Fertilize prior to fine grading applying fertilizer equally distributed.

- .3 Apply fertilizer at least 6 days before seeding or planting.
- .4 Spread fertilizer uniformly with mechanical spreaders at rate determined on basis of soil tests.
- .5 Incorporate fertilizer thoroughly into upper 50 mm of growing media
- .6 When hydroseeding, mix with a water soluble phosphorus 10 - 52 -10

3.6 HYDRAULIC SEEDING

- .1 Proceed with hydro seeding only after final grade has been reviewed by Departmental Representative.
- .2 Mix seed with water and fertilizer in following application rates:
 - .1 Grass seed: 2 kg/ 1000 sq.ft.
 - .2 Fertilizer & Pelletized Lime: 20 lb / 100 sq.ft.
- .3 Thoroughly mix seed, fertilizer, mulch, binder (if required) and water in a uniform slurry.
- .4 Apply slurry within 24-hours of dry seeding. Apply slurry to produce a uniform cover and at specified rates.
- .5 Do not hydroseed when wind velocities would cause seed mix to be blown.
- .6 Apply hydroseed to all areas of seed or as shown on the Drawings.
- .7 Re apply where application is not uniform.
- .8 Remove slurry from items and areas not designated to be sprayed.

3.7 PROTECTION OF SEEDED AREAS

- .1 Provide adequate protection to protect seeded areas from all damage, disturbance, or other construction activity after seeding operations are complete. Remove protection after seed areas are properly established.
- .2 Damaged seed areas resulting from inadequate protection shall be promptly repaired with topsoil, fertilizer and seed at Contractor's expense. All damages shall be repaired prior to final acceptance.
- .3 Keep site well drained and landscape excavations dry.

3.8 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 10 - Cleaning.
- .2 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 10 - Cleaning.
- .4 Waste Management: separate and divert waste materials from landfill in accordance with

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

- .5 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.9 PROTECTION

- .1 Protect seeded areas from trespass until plants are established.
- .2 Remove protection devices as directed by Departmental Representative.

3.10 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Ensure maintenance is carried out under supervision of certified Landscape Maintenance Supervisor.
- .2 Perform following operations from time of seed application until acceptance by Departmental Representative.
- .3 Grass Mixture:
 - .1 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.
 - .2 Mow grass to 50 mm whenever it reaches height of 70 mm. Remove clippings which will smother grass.
 - .3 Fertilize seeded areas 10 weeks after germination provided plants have mature true leaves in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles.
 - .4 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.
 - .5 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
- .4 Legume Mixture:
 - .1 Repair minor dead and bare spots as determined by Departmental Representative to allow establishment of seed prior to acceptance.
 - .2 Repair major dead and bare spots as determined by Departmental Representative in accordance with site climatic averages and recommendations of local agricultural or horticultural governmental representative.
 - .3 Mow legume mixtures to 100mm whenever height reaches 200 mm and as follows:
 - .1 Do not mow within period commencing 3 weeks before and ending 3 weeks after first severe, average fall frost date and 3 weeks after actual severe fall frost.
 - .2 When mowing after first severe fall frost, mow at a height of not less than 300 mm.
 - .4 Remove clippings that will smother plants.
 - .5 Water seeded areas to maintain optimum soil moisture level for germination and continued growth. Control watering to prevent washouts.

3.11 ACCEPTANCE

- .1 Seeded areas will be accepted by Departmental Representative provided that:
 - .1 Plants are uniformly established and seeded areas are free of rutted, eroded, bare or dead spots.

- .2 Areas have been mown at least twice.
 - .3 Areas have been fertilized.
- .2 Areas seeded in fall will achieve final acceptance in following spring, one month after start of growing season provided acceptance conditions are fulfilled.

3.12 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period:
 - .1 Repair and reseed dead or bare spots to satisfaction of Departmental Representative.
 - .2 Mow areas seeded, remove clippings that will smother grassed areas, as directed by Departmental Representative.
 - .3 Fertilize seeded areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles.

3.13 CLEANING

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

3.14 CLOSEOUT ACTIVITIES

- .1 Submit maintenance reports for hydraulically seeded areas.

END OF SECTION

1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 32 92 21 – Topsoil and Finish Grading.
- .2 Section 32 91 19.16 – Hydraulic Seeding.
- .3 Planting Plans (Drawings).

1.2 REFERENCE STANDARDS

- .1 Agriculture and Agri-Food Canada (AAFC).
 - .1 Plant Hardiness Zones in Canada-2015.
- .2 American National Standard Institute (ANSI) / Trees Care Industry Association
 - .1 ANSI A300 National Tree Care Standards:
 - .1 ANSI A300 (Part 1) - 2008 (R2014) Pruning.
 - .2 ANSI A300 (Part 2) - 2011 Soil Management: a. Modification, b. Fertilization, and c. Drainage.
 - .3 ANSI A300 (Part 5) - 2012: Management of Trees and Shrubs During Site Planning, Site Development, and Construction.
 - .4 ANSI A300 (Part 6) - 2012 Planting and Transplanting.
 - .5 ANSI A300 (Part 7) - 2012 Integrated Vegetation Management (IVM).
 - .6 ANSI A300 (Part 9) - 2011 Tree Risk Assessment.
 - .3 ANSI A300 (Part 10)-2016: IPM.
- .4 Canadian Nursery Landscape Association (CNLA)
 - .1 Canadian Standards for Nursery Stock-2006.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .6 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 DEFINITIONS

- .1 Mycorrhiza: association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Scheduling: obtain approval from Departmental Representative of schedule 7days in advance of shipment of plant material.
- .2 Schedule to include:
 - .1 Quantity and type of plant material.
 - .2 Shipping dates.
 - .3 Arrival dates on site.

.4 Planting Dates.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for trees, shrubs, ground cover, fertilizer, mycorrhiza, anti-desiccant, anchoring equipment, and mulch, and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit 2 copies of WHMIS MSDS in accordance with Section 0 01 35 29_06 - Health and Safety Requirements.

.3 Samples:

.1 Submit samples of mulch and mycorrhiza.

1.6 QUALITY ASSURANCE

.1 Qualifications:

.1 Landscape Contractor: to be a Member in Good Standing of Canadian Nursery Landscape Association.

.2 Landscape Planting Supervisor: Landscape Industry Certified Technician with Softscape Installation designation.

.2 Work shall comply with ANSI A300 National Tree Care Standards.

1.7 DELIVERY, STORAGE AND HANDLING

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

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

.1 Protect plant material from frost, excessive heat, wind and sun during delivery.

.2 Protect plant material from damage during transportation:

.1 Delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box.

.2 Delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle where practical.

.3 Protect foliage and root balls using anti-desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.

.3 Storage and Handling Requirements:

.1 Immediately store and protect plant material which will not be installed within 1 hour in accordance with supplier's written recommendations and after arrival at site in storage location approved by Departmental Representative.

.2 Protect stored plant material from frost, wind and sun and as follows:

.1 For bare root plant material, preserve moisture around roots by heeling-in or burying roots in sand or topsoil and watering to full depth of root zone.

.2 For pots and containers, maintain moisture level in containers.

- .3 For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.
- .3 Store and manage hazardous materials in accordance with manufacturer's written instructions.
- .4 If trees or shrubs are transplanted from within Terra Nova National Parks ensure:
 - .1 Plants are taken from within the limit of contract or other designated area with the approval of Parks Canada. Do not transplant any trees greater than 60mm caliper. Do not take trees or shrubs outside of contract limits without prior approval.
 - .2 Ensure donor site is backfilled to match surrounding grade.
 - .3 Shrubs and trees should be healed in, watered daily and replanted within 2 days of removal. All plants should be in healthy condition with no broken limbs, leaders, or cuts to the trunk before transplanting.
 - .4 Trees should include a 600mm dia. rootball, burlap wrapped for transport to receiving location. Cut and transport in accordance with ANSI A300 standards.
 - .5 Contractor to warranty transplanted trees in accordance with 1.8

1.8 WARRANTY

- .1 For plant material over 60 mm caliper the 12 months' warranty period is extended to 24 months.
- .2 All other plant material (imported or transplanted) will have a 1 year warranty.
- .3 End-of-warranty inspection will be conducted by Departmental Representative.
- .4 Departmental Representative reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.
- .5 Contractor is not responsible for the warranty on any Memorial University plantings as indicated on drawings (contractor is, however, responsible for the maintenance of MUN plantings during grow-in).

2 PRODUCTS

2.1 PLANT MATERIAL

- .1 Refer to and comply with Planting Plan (Drawings) and plant sources indicated therein.
- .2 Type of root preparation, sizing, grading and quality: comply to Canadian Standards for Nursery Stock.
 - .1 Source of plant material: grown in Zone in accordance with Plant Hardiness Zones in Canada. Plants must come from a Newfoundland Seed Source
 - .2 Plant material must be planted in zone specified as appropriate for its species.
 - .3 Plant material in location appropriate for its species.
- .3 Plant material: free of disease, insects, defects or injuries and structurally sound with strong fibrous root system.

- .4 Trees: with straight trunks, well and characteristically branched for species.
- .5 Trees larger than 200 mm in height: half root pruned during each of two successive growing seasons, the latter at least one growing season before arrival on site.
- .6 Bare root stock: nursery grown, in dormant stage, not balled and burlapped or container grown.
- .7 Collected stock: maximum 40 mm in caliper, with well developed crowns and characteristically branched; no more than 40% of overall height may be free of branches.
 - .1 During collection, ensure 10% maximum seed crop (or plants) are collected from healthy population of many individuals, and from several plants of same species.
 - .2 Leave remainder for natural dispersal and as food for dependent organisms.

2.2 WATER

- .1 Free of impurities that would inhibit plant growth.

2.3 MULCH

- .1 Bark chip: varying in size from 25 to 50 mm in diameter, from bark of coniferous trees.
- .2 Wood chip: varying in size from 50 mm to 75 mm and 5 to 20 mm thick, free of bark, small branches and leaves.
- .3 Shredded wood: varying in size from 25 to 125 mm in length, from coniferous trees.
- .4 Synthetic or inorganic mulch.

2.4 FERTILIZER

- .1 Synthetic commercial type as recommended by soil test report manufacturer.
 - .1 Ensure new root growth is in contact with mycorrhiza.
 - .2 Use mycorrhiza as recommended by manufacturer's written recommendations.

2.5 ANTI-DESICCANT

- .1 Wax-like emulsion.

2.6 FLAGGING TAPE

- .1 Fluorescent, colour.

2.7 SOURCE QUALITY CONTROL

- .1 Obtain approval from Departmental Representative of plant material prior to ordering plant material, and prior to planting.
- .2 Imported plant material must be accompanied with necessary permits and import licenses. Conform to Federal, Provincial or Territorial regulations.

3 EXECUTION

3.1 EXAMINATION

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

3.2 PRE-PLANTING PREPARATION

- .1 Proceed only after receipt of written acceptability of plant material from Departmental Representative.
- .2 Remove damaged roots and branches from plant material.
- .3 Apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.
- .4 Locate and protect utility lines.
- .5 Notify and acquire written acknowledgement from utility authorities before beginning excavation of planting pits for trees and shrubs.
- .6 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction sediment and erosion control drawings sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 EXCAVATION AND PREPARATION OF PLANTING BEDS

- .1 Establishment of sub-grade for planting beds in accordance with Section 31 05 99 – Common Work Results for Earthworks.
- .2 Preparation of planting beds in accordance with Section 32 91 21 - Topsoil Placement and Grading.
- .3 For individual planting holes:
 - .1 Stake out location and obtain approval from Departmental Representative prior to excavating.
 - .2 Excavate to depth and width as indicated.
 - .3 Remove subsoil, rocks, roots, debris and toxic material from excavated material that will be used as planting soil for trees and individual shrubs. Dispose of excess material.

- .4 Scarify sides of planting hole.
- .5 Remove water which enters excavations prior to planting. Notify Departmental Representative if water source is ground water.

3.4 PLANTING

- .1 For bare root stock, place 50 mm backfill soil in bottom of hole.
 - .1 Plant trees and shrubs with roots placed straight out in hole.
- .2 For jute burlapped root balls, cut away top one third of wrapping and wire basket without damaging root ball.
 - .1 Do not pull burlap or rope from under root ball.
- .3 For container stock or root balls in non-degradable wrapping, remove entire container or wrapping without damaging root ball.
- .4 Plant vertically in locations as indicated.
 - .1 Orient plant material to give best appearance in relation to structure, roads and walks.
- .5 For trees and shrubs:
 - .1 Backfill soil in 150 mm lifts.
 - .1 Tamp each lift to eliminate air pockets.
 - .2 When two thirds of depth of planting pit has been backfilled, fill remaining space with water.
 - .3 After water has penetrated into soil, backfill to finish grade.
 - .2 Form watering saucer as indicated.
- .6 For ground covers, backfill soil evenly to finish grade and tamp to eliminate air pockets.
- .7 Water plant material thoroughly.
- .8 After soil settlement has occurred, fill with soil to finish grade.

3.5 TRUNK PROTECTION

- .1 Install trunk protection on deciduous trees as indicated.
- .2 Install trunk protection before installation of tree supports.

3.6 TREE SUPPORTS

- .1 Tree supports are at the discretion of the contractor.

3.7 MULCHING

- .1 Ensure soil settlement has been corrected prior to mulching.
- .2 Spread mulch as indicated.

3.8 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following maintenance operations from time of planting to acceptance by Departmental Representative.
 - .1 Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
 - .1 For evergreen plant material, water thoroughly in late fall prior to freeze-up to saturate soil around root system.
 - .2 Remove weeds monthly.
 - .3 Replace or re-spread damaged, missing or disturbed mulch.
 - .4 For non-mulched areas, cultivate as required to keep top layer of soil friable.
 - .5 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Departmental Representative prior to application.
 - .6 Remove dead or broken branches from plant material.
 - .7 Keep trunk protection and guy wires in proper repair and adjustment.
 - .8 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
 - .9 Contractor will be responsible for maintaining plantings by Memorial University through-out the grow in phase. Contractor will not be responsible for the warranty of any MUN plantings.

3.9 MAINTENANCE DURING WARRANTY PERIOD

- .1 From time of acceptance by Departmental Representative to end of warranty period, perform following maintenance operations.
 - .1 Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion.
 - .2 Reform damaged watering saucers.
 - .3 Remove weeds monthly.
 - .4 Replace or re-spread damaged, missing or disturbed mulch.
 - .5 For non-mulched areas, cultivate monthly to keep top layer of soil friable.
 - .6 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Departmental Representative prior to application.
 - .7 Apply fertilizer in early spring as indicated by soil test.
 - .8 Remove dead, broken or hazardous branches from plant material.
 - .9 Keep trunk protection and tree supports in proper repair and adjustment.
 - .10 Remove trunk protection, tree supports and level watering saucers at end of warranty period.
 - .11 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
 - .12 Submit monthly written reports to Departmental Representative identifying:
 - .1 Maintenance work carried out.
 - .2 Development and condition of plant material.
 - .3 Preventative or corrective measures required which are outside Contractor's responsibility.

3.10 CLEANING

- .1 Progress Cleaning: clean in accordance with Cleaning.
 - .1 Leave Work area clean at end of each day.

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Cleaning.

3.11 CLOSEOUT ACTIVITIES

- .1 Submit maintenance reports for trees, shrubs, and other plantings.

END OF SECTION