

CANADIAN COAST GUARD COLLEGE



Government  
of Canada

Gouvernement  
du Canada

PUBLIC SERVICES AND PROCUREMENT CANADA

SPECIFICATION

Fire Roads and Improved Access / Egress  
Project 3

SYDNEY, NS

RE-ISSUED FOR TENDER



2016-10-19

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**END OF SECTION**

**Part 1            General**

**1.1                ROLES, RESPONSIBILITIES AND DEFINITIONS**

- .1 All references to CCGC shall mean:
  - .1 Canadian Coast Guard College.
- .2 All references to the Departmental Representative shall mean:
  - .1 A representative of Public Services and Procurement Canada

**1.2                WORK COVERED BY CONTRACT DOCUMENTS**

- .1 The Work of this Contract generally includes the supply and installation of all labour, services, materials, testing and equipment to complete Project 3 – Fire Roads and Improved Access / Egress (the Work) as indicated on the drawings and Work as indicated herein. The Work shall include but is not limited to:
  - .1 Site mobilization/demobilization.
  - .2 Supply, installation and maintenance of any sediment and erosion controls required during construction. Plan shall be submitted for Departmental Representative prior to the start of construction;
  - .3 Materials testing and quality control;
  - .4 Supply of traffic control including traffic control devices and signage to keep emergency vehicle access during the construction period. A Plan shall be submitted to the Departmental Representative at the start of construction for review and approval indicating work schedule, phasing, and how traffic controls are implemented.
  - .5 Submission of a record information package including mark-ups, a construction survey and a warranty and maintenance plan.
  - .6 Sawcut, removal and disposal of timber edger and timber retaining wall where indicated on drawings;
  - .7 Removal and disposal of asphalt where indicated on drawings;
  - .8 Adjustment of existing structures as required to bring tops to finished grade.
  - .9 Supply, installation, compaction and testing of aggregate materials;
  - .10 Supply, installation, compaction and testing of asphalt materials;
  - .11 Supply, placement and compaction of concrete sidewalk and landings including formwork, reinforcing, excavation, backfilling and testing.
  - .12 Finish grading. Once construction is complete, all new works shall provide positive drainage without ponding;
  - .13 Rough grading of the site including the supply, placement and compaction of common or imported materials and disposal of surplus materials.
  - .14 Supply and installation of storm culverts including excavation, bedding, backfilling, compaction and testing.

- .15 Supply and installation of perforated and solid drain pipe including excavation, bedding, geotextile, backfilling, compaction and testing.
- .16 Construction of drainage swales;
- .17 Supply, placement and compaction of topsoil and hydroseed where indicated.
- .18 Supply and placement of mulch;
- .19 Supply and installation of pressure treated railing; and,
- .20 General reinstatement and clean-up.

**1.3 CONTRACT METHOD**

- .1 Construct Work under a unit price and lump sum contract.

**1.4 WORK SEQUENCE**

- .1 Construct Work in stages to accommodate Departmental Representative continued use of premises during construction.
- .2 At the start of construction, the Contractor shall submit a phased plan to the Departmental Representative for approval indicating the work area and the schedule for each phase of work.
- .3 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities, walks or roadways until use of one stage of Work will provide alternate usage.
- .4 Maintain fire access/control.

**1.5 CONTRACTOR USE OF PREMISES**

- .1 Unrestricted use of site until Substantial Performance.
- .2 Co-ordinate use of premises under direction of Departmental Representative.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .6 At completion of Construction, return disturbed areas to equal condition or better condition than existed before Work started.

**1.6 OWNER OCCUPANCY**

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate campus usage.

**1.7 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING FACILITIES**

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

**1.8 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 the Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic and tenant operations.
- .3 Provide alternative routes for personnel, pedestrian and vehicular traffic as required to complete the Work.
- .4 Establish location and extent of service lines in area of work before starting Work by careful test excavation methods. Notify Departmental Representative of findings.
- .5 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Departmental Representative to maintain critical building and tenant systems.
- .7 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .9 Record locations of maintained, re-routed and abandoned service lines.

**CONSTRUCTION SURVEYING SERVICES**

**1.9**

- .1 Acquire the services of a Construction Surveyor to establish an accurate location of the installation of new Works within the construction area.
- .2 Prior to commencing with infrastructure confirmations and locations, all parties involved with the test excavation should visit the site and become acquainted with current site conditions.
- .3 Contractor shall have reference points established on site by the Construction Surveyor.
- .4 Contractor shall survey all abandoned, capped, new and existing exposed utilities within the open trench area prior to backfilling operations.
- .5 Contractor shall survey all new Works installed above and below grade. An as-built topographic survey shall be submitted to the Departmental Representative for approval in order to obtain Substantial Performance of the Work. The submittal shall include an ASCI or csv raw points file and an AutoCAD file in dwg format.

**1.10**

.1 **EXCAVATION PERMITS**

Prior to commencing any excavation, the Contractor shall obtain an Excavation Permit through the Departmental Representative indicating the approximate location of all known buried utilities. Contractor shall verify the locations of buried utilities with careful test excavations.

**1.11**

.1 **DOCUMENTS REQUIRED** Maintain at job site, one copy each document as follows:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed Shop Drawings.
- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Erosion and Sedimentation Control Plan.
- .12 Traffic Plan.
- .13 Other documents as specified.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 General**

**1.1 GENERAL REQUIREMENTS OF THE BID AND ACCEPTANCE FORM**

- .1 Unit prices and Lump Sum prices bid are full compensation for the work necessary to complete each item in the Contract and in combination for all work necessary to complete the Work as a whole.
- .2 All measurement shall be along a horizontal plane unless otherwise indicated.
- .3 The quantities listed in the Bid and Acceptance Form are approximate only and are for the purpose of tendering. Payment to the Contractor will be based on actual quantities of work completed in accordance with the drawings and specifications.
- .4 The numbers of the items described below correspond to the items in the Bid and Acceptance Form.

**1.2 MEASUREMENT AND PAYMENT**

**GENERAL**

- .1 Item G1 – Division 01
  - .1 Terms of Payment: Lump Sum This Item includes all associate
  - .2 work and is not limited to the to following:
    - .1 Mobilization / Demobilization:
    - .2 Materials Testing and Quality Control
      - Compaction testing of all materials including backfill, gravels, asphalt and concrete as indicated by third-party testing firm.
      - Approval of sub-grade prior to the placement of any materials or structures.
      - Production of testing reports and submission to the Departmental Representative for review and approval.
    - .3 Temporary Utilities
      - Sanitary, water and power facilities will be supplied by the Coast Guard College.
    - .4 Traffic Control
      - Provision, installation and maintenance of temporary traffic control devices, including detour signs, construction signage, barricades, or other measures as approved by the Departmental Representative.
      - Submission of a traffic control plan.
    - .5 Erosion Protection and Sedimentation Control
      - Periodic and general maintenance of all erosion control measures or as directed by Departmental Representative.

- All environmental protection, sedimentation and erosion control measures required to complete the project, such as (but not limited to) diversion ditching, temporary sedimentation basins, temporary ground cover, filter fabric, Type 1 and Type 2 gravel, berms, sedimentation traps, filters, and rock flow checks.
  - Removal of controls from site as directed by Departmental Representative.
  - Submission of an erosion and sedimentation control plan.
- .6 Record Information Package
- Submission of all record documents in hard copy and digital (on CD or memory stick) format.
  - Contractor mark-ups of drawings and specifications.
  - Final survey by a Construction Surveyor including in-trench survey of all installed and encountered utilities and a complete as-built topographic survey to capture surface features. Provide final survey in AutoCAD dwg format along with csv or ASCII file of raw points.
  - Submission of a warranty and maintenance plan.

## CIVIL

### .2 Item C1 – Section 02 41 13 – Demolition and Removals

.1 Unit of Measurement:

.2 Lump Sum: This item includes all associated work not limited to the following :

.1 Removal and disposal of existing asphalt and concrete surface Works.

.2 Removal and disposal of the timber retaining wall and timber edger in the court yard.

### .3 Item C2 - Section 31 22 13 – Rough Grading – Imported Fill

.1 Unit of Measurement: Cubic Meters (m<sup>3</sup>)

.2 Method of Measurement: Average end area method between cross sections taken after topsoil and unsuitable material removal to lines and elevations indicated.

.3 This item includes: Supply, hauling, placement and compaction of Type 2 fill to lines and elevations indicated.

### .4 Item C3 - Section 31 23 33.01 – Excavating Trenching & Backfilling - Common

.1 Unit of Measurement: Cubic Meters (m<sup>3</sup>).

.2 Method of Measurement: Average end area method between cross sections taken after topsoil removal to lines and elevations indicated.

.3 This item includes: Excavation of suitable (common) material and placement of the same to lines and elevations indicated. Also includes shoring, bracing, cofferdams, underpinning and de-watering of excavation if required and disposal of surplus material.

### .5 Item C4 - Section 31 32 9.01 – Geotextiles

.1 Unit of Measurement: Squared Meters (m<sup>2</sup>).

- .2 Method of Measurement: Measure geotextiles in square metres of surface covered by material. No allowance will be made for seams and overlaps.
  - .3 This item includes: Supply and placement of geotextile as indicated.
- .6 Item C5 – 1.5m Asphalt Sidewalk
- .1 Unit of Measurement: Linear Meter (m)
  - .2 Method of Measurement: Along centerline of sidewalk.
  - .3 This item includes: Supply, placement and compaction of Type 1 Gravels, Type 2 Gravels, Type C-HF Asphalt, and Type B-HF Asphalt.
- .7 Item C6 – 1.5m Concrete Sidewalk
- .1 Unit of Measurement: Linear Meter (m)
  - .2 Method of Measurement: Along centerline of sidewalk.
  - .3 This item includes: Supply and placement of concrete, formwork, welded wire fabric and supply, placement and compaction of Type 1 Gravel.
- .8 Item C7 – 1.75m Asphalt Sidewalk
- .1 Unit of Measurement: Linear Meter (m)
  - .2 Method of Measurement: Along centerline of sidewalk.
  - .3 This item includes: Supply, placement and compaction of Type 1 Gravels, Type 2 Gravels, Type C-HF Asphalt, and Type B-HF Asphalt.
- .9 Item C8 – 1.82m Asphalt Sidewalk
- .1 Unit of Measurement: Linear Meter (m)
  - .2 Method of Measurement: Along centerline of sidewalk.
  - .3 This item includes: Supply, placement and compaction of Type 1 Gravels, Type 2 Gravels, Type C-HF Asphalt and Type B-HF Asphalt.
- .10 Item C9 – 3.2m Access Road
- .1 Unit of Measurement: Linear Meter (m)
  - .2 Method of Measurement: Along centerline of road.
  - .3 This item includes: Supply, placement and compaction of Type 1 Gravels, Type 2 Gravels, Type C-HF Asphalt and Type B-HF Asphalt.
- .11 Item C10 - Section 32 12 16 – Asphalt Paving – Paved Shoulder Swale
- .1 Unit of Measurement: Linear Meter (m)
  - .2 Method of Measurement: Along centerline of swale.
  - .3 This item includes: Supply, placement and compaction of gravels and asphalt as indicated.
- .12 Item C11 - Section 32 16 15 – Concrete Walks, Curbs & Gutters – Concrete Landings
- .1 Unit of Measurement: Lump Sum
  - .2 This item includes all associated work not limited to the following:  
This item includes: Supply, placement and testing of concrete, formwork, welded wire fabric and supply, placement and compaction of bedding and backfill materials.

- .13 Item C12 - Section 32 91 19.13 – Topsoil Placement and Grading
  - .1 Unit of Measurement: Square Meters (m<sup>2</sup>)
  - .2 Method of Measurement: Slope measure of indicated area at mean depth.
  - .3 This item includes: Supply, placement and compaction of topsoil, fine grading, lime and fertilizer.
- .14 Item C13 - Section 32 92 19.16 – Hydraulic Seeding
  - .1 Unit of Measurement: Square Meters (m<sup>2</sup>)
  - .2 Method of Measurement: Slope measure of indicated area at mean depth.
  - .3 This item includes: Supply and placement of hydraulic seeding.
- .15 Item C14 - Section 33 42 13 – Pipe Culverts
  - .1 Unit of Measurement: Meter (m)
  - .2 Method of Measurement: Along centreline of pipe.
  - .3 This item includes:
    - .1 Excavation of trench.
    - .2 Supply, placement and compaction of bedding and backfill material.
    - .3 Supply and placement of pipe culvert.
- .16 Items C15 and C16 - Section 33 46 13.01 – Foundation & Under Slab Drainage
  - .1 Unit of Measurement: Meter (m)
  - .2 Method of Measurement: Along centreline of pipe.
  - .3 This item includes:
    - .1 Excavation of trench.
    - .2 Supply, placement and compaction of bedding and backfill material.
    - .3 Supply and placement of pipe and fittings.
- .17 Item C17 – Miscellaneous Reinstatement
  - .1 Unit of Measurement: Lump Sum This item includes all
  - .2 associated work not limited to the following :
    - .1 Supply, placement and installation of mulch surface and pressure treated railing.
    - .2 Adjustment of existing structures as required to bring tops to finished grade.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 01 11 00 – Summary of Work.

**1.2                ADMINISTRATIVE**

- .1            The Contractor shall schedule and administer project meetings throughout the progress of the work.
- .2            The Contractor shall provide physical space and make arrangements for meetings at their site trailer.
- .3            The Departmental Representative will record the meeting minutes and include significant proceedings and decisions and identify actions by parties.
- .4            The Departmental Representative will reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and affected parties not in attendance.
- .5            Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

**1.3                PRECONSTRUCTION MEETING**

- .1            Upon issuance of “Issued for Construction” drawings, the Contractor shall arrange a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2            Representatives of the Owner, Departmental Representative, Contractor, Subcontractors, field inspectors and supervisors should be in attendance.
- .3            Establish time and location of meeting and notify parties concerned minimum 5 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.
  - .3            Schedule of submission of shop drawings.
  - .4            Requirements for temporary facilities, site sign, offices, storage sheds, utilities and fences.
  - .5            Delivery schedule of specified equipment.
  - .6            Site security.
  - .7            Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime and administrative requirements.

- .8 Monthly progress claims, administrative procedures, photographs, and hold backs.
- .9 Appointment of inspection and testing agencies or firms.
- .10 Insurances, transcript of policies.

**1.4 PROGRESS MEETINGS**

- .1 During course of Work the Contractor shall schedule weekly progress meetings.
- .2 Contractor, Subcontractors, Owner and Departmental Representative are to be in attendance.
- .3 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.
  - .11 Review proposed changes for affect on construction schedule and on completion date.
  - .12 Other business.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1        Section 01 11 00 – Summary of Work.
- .2        Section 01 33 00 – Submittal Procedures.

**1.2                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: Monday to Friday, inclusive, will provide five day work week and 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 the Department Representative to enable monitoring of project work in relation to established milestones.

**1.3                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        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.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to the Departmental Representative within 5 working days of Award of Contract, Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Provide schedule in PDF format.

**1.5 PROJECT MILESTONES**

- .1 Project milestones form interim targets for Project Schedule.

**1.6 PROJECT SCHEDULE**

- .1 Develop detailed Project Schedule.
- .2 Ensure detailed Project Schedule includes as a minimum, milestone and activity types as follows:
  - .1 Award.
  - .2 Shop drawings and submittals.
  - .3 Permits.
  - .4 Mobilization/demobilization.
  - .5 Construction activities.
  - .6 Testing (as required).

**1.7 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.

**1.8 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.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3            Execution**

**3.1                NOT USED**

.1            Not used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1        Section 01 45 00 – Quality Control.
- .2        Section 01 78 00 – Closeout Submittals.

**1.2                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 and product data 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.

**1.3                SHOP DRAWINGS AND PRODUCT DATA**

- .1        The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2        Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Nova Scotia, Canada as required.
- .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 3 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 electronic PDF format, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .8 Submissions shall include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.
    - .9 Single line and schematic diagrams.
    - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

- .11 Submit electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
  - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .14 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .15 Submit electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Delete information not applicable to project.
- .17 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copy 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.

**1.4 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                REFERENCES**

- .1        Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2        Province of Nova Scotia
  - .1        Occupational Health and Safety Act, S.N.S. - Updated 2013.

**1.2                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 days after date of Notice to Proceed and prior to commencement of Work.

**1.3                SAFETY ASSESSMENT**

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

**1.4                MEETINGS**

- .1        Schedule and administer Health and Safety meetings as required by the Nova Scotia Occupational Health and Safety Act, and the Regulations made pursuant to the Act.
- .2        Record and post minutes of all meetings in plain view on the work site. Make copies available to the Departmental Representative upon request.

**1.5                COMPLIANCE REQUIREMENTS**

- .1        Comply with the latest edition of the Occupational Health and Safety Act, and the Regulations made pursuant to the Act.
- .2        Observe and enforce construction safety measures required by:
  - .1        National Building Code of Canada (latest edition).
  - .2        Nova Scotia Health and Safety Act
  - .3        Provincial Worker's Compensation Board.
  - .4        Municipal statutes and ordinances.
  - .5        In event of conflict between any provisions of above authorities the most stringent provision shall apply.
- .3        Provide and maintain Worker's Compensation Board coverage for all employees for the duration of the contract. Prior to commencement of the work, at the time of Interim Completion and prior to final payment, provide to the Departmental Representative a letter of Clearance from the Workers' Compensation Board indicating that the Contractor's account is in good standing.

**1.6                WHMIS**

- .1        Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and

regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.

### **1.7 BIRDS AND WILDLIFE**

- .1 Any food or waste that could attract birds or wildlife can only be discarded in properly sealed waste containers.

### **1.8 REGULATORY REQUIREMENTS**

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

### **1.9 GENERAL REQUIREMENTS**

- .1 Contractors are required under Nova Scotia Occupational Health and Safety Act, and the Regulations made pursuant to the Act to have in place a Health and Safety Program. Compliance requirements for the content, detail and implementation of the program resides with the provincial authority. For the purpose of this contract the Health and Safety Program shall include a site-specific Health and Safety Plan (the "Plan") that acknowledges, assesses and addresses hazardous substances and/or hazardous conditions known and identified and on-going hazard assessments performed during the progress of work identifying and documenting new or potential health risks and safety hazards not previously known and identified.
- .2 Provide one copy of the Health and Safety Program to the Departmental Representative prior to commencement of work on the work site. The copy provided to the Departmental Representative is for the purpose of review against the contract requirements related to the known hazardous substances and/or hazardous conditions. The review is not to be construed to imply approval by the Departmental Representative that the program is complete, accurate and legislatively compliant with the Nova Scotia Occupational Health and Safety Act, and the Regulations made pursuant to the Act, and shall not relieve the Contractor of their legal obligations under such legislation.
- .3 The Health and Safety Program shall include no texting or cell phone use permitted when driving or operating heavy equipment.
- .4 Contractor shall ensure that all site personnel are familiar with the contents of the Plan and maintain records for proof.
- .5 Contractor shall employ measures to ensure all personnel entering the site are advised to abide by the Plan.
- .6 The Departmental Representative reserves the right to demand the removal of any persons not complying with the Plan. Any persons removed from the site shall not be permitted re-entry unless authorized by Departmental Representative.

### **1.10 RADIO COMMUNICATIONS**

- .1 When radio communication is required between the Contractor's personnel, all radio equipment shall be supplied by the Contractor.

**1.11 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Should an unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise the Departmental Representative verbally and in writing of the hazard or condition.

**1.12 POSTING OF DOCUMENTS**

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction.

**1.13 ACCIDENT REPORTING**

- .1 Investigate and report incidents and accidents as required by Nova Scotia Occupational Safety and Health Act, and the Regulations made pursuant to the Act.
- .2 For the purpose of this contract immediately investigate and provide a report to the Departmental Representative on incidents and accidents that involve:
  - .1 A resulting injury that may or may not require medical aid but involves lost time at work by the injured person(s).
  - .2 Exposure to toxic chemicals or substances.
  - .3 Property damage.
  - .4 Interruption to adjacent and/or integral infrastructure operations with potential loss implications.
- .3 In the investigation and reporting of incidents and accidents, the Contractor is required to respond in a timely fashion to correct the action that was deemed to have caused the incident and/or accident and advise in writing on the action taken to prevent a re-occurrence of the incident and/or accident.

**1.14 SITE CONTROL AND ACCESS**

- .1 Control all work site access points and work site activities. Delineate and isolate the work site from adjacent and surrounding areas by use of appropriate means of maintain control of all work site access points.
- .2 Make provisions for granting permission to access onto work site to all persons who require access. Procedures for granting permission to access are to be in accordance with the Nova Scotia Occupational Health and Safety Act, and the Regulations made pursuant to the Act and the Contractor's Health and Safety Program.
- .3 Ensure persons granted access to the work site are in possession of and wear the minimum personal protective equipment (PPE) designated by the Contractor's Health and Safety Program. Ensure persons granted access to the work site are provided with, trained in the use of, and wear, appropriate PPE that are required above and beyond the

designated minimums previously noted and as specifically related to the work site activity that they are involved in. Be responsible for the efficacy of the PPE that is provided above and beyond the designated minimums.

- .4 Erect signage at access points and at other strategic locations around the work site clearly identifying the work site area(s) as being "off-limits" to non-authorized persons. Signage must be professionally made with well understood graphic symbols and is not to be used as advertising but for the specific use as related to site safety and key contact information.
- .5 Secure the work site at all times to protect against un-authorized access.

#### **1.15 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.

#### **1.16 BLASTING**

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

#### **1.17 WORK STOPPAGE**

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

### **Part 2 Products**

#### **2.1 NOT USED**

- .1 Not used.

### **Part 3 Execution**

#### **3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                REFERENCES**

- .1        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.
- .2        Reference Standards:
  - .1        Canadian Environmental Protection Act.

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.3                FIRES**

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

**1.4                DRAINAGE**

- .1        Develop and submit Erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided in accordance with Section 01 56 20 – Erosion Protection and Sediment Control.
- .2        Provide temporary drainage and pumping required to keep excavations and site free from water.
- .3        Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .4        Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

**1.5                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.

**1.6 WORK ADJACENT TO WATERWAYS**

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

**1.7 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .4 Any suspected contamination during excavation shall be reported immediately to the Departmental Representative.

**1.8 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 project 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.
- .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.

**1.9 ENFORCEMENT**

- .1 The Contractor shall adhere to the environmental protection measures outlined in any applicable permits.
- .2 Progress payments will not be made to the Contractor while any requirements for Environmental Protection are outstanding.
- .3 Directions given by the Departmental Representative with respect to action to be taken to correct environmental deficiencies must be acted upon immediately. The Departmental Representative reserves the right to order the Contractor to cease all operations until adequate measures have been taken. No claims by the Contractor for delay of contract or additional costs will be permitted related to environmental protection measures.
- .4 In the event that deficiencies in work are not corrected, then the Departmental Representative will take the necessary action for correction purposes and will deduct the cost thereof from any monies due to the Contractor.

**Part 2            Products**

**2.1                NOT USED**

- .1            Not Used.

**Part 3            Execution**

**3.1                CLEANING**

- .1            Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1            Leave Work area clean at end of each day.
- .2            Do not bury rubbish and waste materials on site.
- .3            Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4            Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .5            Waste Management: separate waste materials for reuse or 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.

**END OF SECTION**

**Part 1           General**

**1.1               REFERENCES AND CODES**

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

**1.2               HAZARDOUS MATERIAL DISCOVERY**

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

**1.3               SMOKING ENVIRONMENT**

- .1     Comply with smoking restrictions and municipal by-laws.

**Part 2           Products**

**2.1               NOT USED**

- .1     Not Used.

**Part 3           Execution**

**3.1               NOT USED**

- .1     Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 01 33 00 – Submittal Procedures.

**1.2                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.
- .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, Owner shall pay cost of examination and replacement.

**1.3                TESTING AGENCIES**

- .1            Contractor shall engage a third-party materials testing agency for purpose of testing portions of Work as normally required under each Section.
- .2            If defects are revealed during inspection and/or testing, 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 Owner. Pay for costs of re-testing and re-inspection.

**1.4                ACCESS TO WORK**

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

**1.5                PROCEDURES**

- .1            Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2            Submit 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 materials on site. Provide sufficient space to store and cure test samples.

**1.6 REPORTS**

- .1 Submit electronic PDF copies of inspection and test reports to Departmental Representative for review.

**1.7 TESTS AND MIX DESIGNS**

Furnish test results and mix designs as requested.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                TEMPORARY UTILITIES**

- .1            CCGC will provide temporary sanitary, water and power.

**Part 2            Products**

**2.1                NOT USED**

- .1            Not Used.

**Part 3            Execution**

**3.1                NOT USED**

- .1            Not used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 01 51 00 – Temporary Utilities.

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.3                INSTALLATION AND REMOVAL**

- .1            Identify areas which have to be gravelled to prevent tracking of mud.
- .2            Indicate use of supplemental or other staging area.
- .3            Provide construction facilities in order to execute work expeditiously.
- .4            Remove from site all such work after use.

**1.4                SCAFFOLDING**

- .1            Scaffolding in accordance with CAN/CSA-S269.2.
- .2            Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs as required.

**1.5                HOISTING**

- .1            Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment.
- .2            Hoists and cranes to be operated by qualified operator.

**1.6                SITE STORAGE/LOADING**

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

**1.7                CONSTRUCTION PARKING**

- .1            Parking will be permitted on site provided it does not disrupt performance of Work.
- .2            Provide and maintain adequate access to project site.

**1.8                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.

**1.9 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Maintain and protect traffic on affected roads during construction period.
- .2 Provide measures for protection and diversion of traffic, including 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.
- .3 Protect travelling public from damage to person and property.
- .4 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .5 Verify adequacy of existing roads and allowable load limit on these roads. Contractor is responsible for repair of damage to roads caused by construction operations.
- .6 Dust control: adequate to ensure safe operation at all times.
- .7 Provide snow removal during period of Work if required to complete the Work.
- .8 Remove, upon completion of work, haul roads designated by Departmental Representative.

**1.10 FIRE ROUTES**

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

**1.11 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1        General**

**1.1            REFERENCES**

- .1        Nova Scotia Provincial Department of Environment's "Handbook for Construction Sites" most recent edition.

**1.2            EROSION AND SEDIMENTATION CONTROL PLAN**

- .1        No work on site is to commence until the Contractor has submitted a marked up site plan and detailed scope indicating the Contractor's plan for protecting the site from erosion and sedimentation migration and/or concerns during construction.
- .2        Plan is to be reviewed by Departmental Representative prior to the start of any work. Allow 5 days for Departmental Representative to review.

**1.3            DEFINITIONS**

- .1        Sediment: soils and other surficial materials transported by surface water as a product of erosion.
- .2        Erosion: the process by which the ground surface is worn away by the action of wind and/or water. Detachment of soil particles by erosion agents, principally water, wind, ice and gravity.
- .3        Watercourse: any natural or improved stream, river, creek, brook, ditch, channel, canal, conduit, culvert, drain, gully, swale or wash in which waters flow either continuously or intermittently. Same as defined in the Nova Scotia Water Act and in CEPA.
- .4        Stripping: any activity which removes or significantly disturbs the vegetative surface cover including clearing, grubbing of stumps and root material and top soil removal.
- .5        Site Development: the resulting condition of land improvements through the constructing, installing, placing or planting of open and enclosed storm drainage facilities, storm water management facilities, supporting foundations for utility lines, service connections, parking lots, driveways, curbs, pavements, sidewalks, bike paths, recreational facilities, patios, ground planters, ground covers, plantings, landscaping, tree and/or timber removal.
- .6        Benching: a technique of grading or placement of fill to create a series of level benches or steps on a slope. Benches reduce the effective slope length and also serve to entrap sediment.
- .7        Berm: a ridge that breaks the continuity of a slope.
- .8        Check Dam: a small dam constructed in a gully, ditch or other similar place to decrease water velocity by reducing the channel gradient minimizing scour erosion and promote accumulation of sediment.

- .9 Buffer Strip: usually a strip of permanent vegetation left beside a stream bank to retard the flow of runoff water that causes deposition of transported materials and to protect the banks. It could also be a vegetative strip, particularly of trees or bushes, left between the construction project and adjacent property.
- .10 Deposition: the accumulation of material which settles or is dropped due to slower movement of the transporting agent.
- .11 Dispersion Ditch: a ditch or channel that converts a concentrated flow of runoff into sheet flow and outlets it onto areas stabilized by existing vegetation thus helping to prevent erosion.
- .12 Filter Fabric: a synthetic material of woven or non-woven plastic description. Its purpose is to allow water to filter through while retaining fine soil particles and preventing them from being washed away.
- .13 Land-disturbing Activity: any land change which may result in soil erosion, including but not limited to clearing grubbing, grading, excavating, transporting and filling of land.
- .14 Ponding: of water shall not be permitted particularly above cut or fill slopes or on drainage terraces nor shall water be impounded on adjacent property. Adequate drainage facilities shall be provided to prevent such ponding.
- .15 Rilling: a small channel not more than 30 centimetres (1 foot deep), cut into the surface of the soil by runoff.
- .16 Drainage: the removal of excess surface water or ground water from land by means of surface or subsurface drains. Soil characteristics that affect natural drainage.
- .17 Erodible: susceptible to erosion.
- .18 Erosive: having sufficient velocity to cause erosion. Refers to wind or water. Not to be confused with "erodible" as a quality of soil.
- .19 Gradient: Change of elevation per unit length; slope.
- .20 Gullying: erosion of soil caused by concentrated runoff which forms a deeply-cut channel in the land surface.
- .21 Rip Rap: large rock, cobbles, or boulders placed on earth surfaces for protection of the soil against the erosive action of water.
- .22 Run-off: the portion of precipitation on a drainage area that is not absorbed into the ground but is discharged into streams. Components of runoff include overland flow (sheet flow) open channel flow and groundwater flow.

- .23 Scouring: erosion of the bed or banks of a channel, usually localized around an obstruction or structure in a channel or at the outlet of a conduit due to an increase in the water velocity around the obstruction our discharging from the conduit.
- .24 Stabilization: the process of establishing an enduring soil cover of vegetation and/or mulch or other ground cover in combination with installing temporary or permanent structures for the purposes of minimizing soil erosion.
- .25 Soil permeability: the ability of soil to allow water or air to move through it.

#### **1.4 GENERAL**

- .1 Submit to Departmental Representative for approval and prior to any work commencing an Erosion and Sedimentation Control Plan for the Construction site. Allow 5 working days for Departmental Representative to review and approve.
- .2 All items identified for installation to be maintained by the Contractor for the duration of the project and until Departmental Representative authorizes removal.
- .3 Preserve all features of natural channels or watercourses.
- .4 Protect all areas in close proximity to flood plains or subject to flooding, from silt prior to any work commencing.
- .5 Expose only the smallest practical area of land for the shortest possible time required to perform the Work of the Contract.
- .6 Schedule phases of construction so that only the areas which are actively being developed are exposed. Schedule to be approved by Departmental Representative prior to the start of any Work.
- .7 Complete grading as soon as possible.
- .8 Immediately after grading is complete establish permanent vegetation and surface cover, and erosion controls in the area of construction.
- .9 Revegetate slopes as work progresses.
- .10 Minimize grading of large or critical areas during the season of maximum erosion potential.
- .11 Keep soils covered as much as possible with temporary or permanent vegetation or with various mulch material.
- .12 Slopes to be roughened on the contour or tracking with a cleated dozer.
- .13 Tracked vehicles to have street pads to protect pavement surfaces.
- .14 Roll and compact soils to make it less erodible.

- .15 Capture and filter all surface run-off from exposed soils.
- .16 Prevent gross erosion in the form of gullies.
- .17 Silt and sedimentation control measures shall be installed before beginning any work. Controls to be maintained regularly to ensure intended results.
- .18 Filter run-off as it flows through an area or impounding the sediment laden runoff for a period of time so that the soil particles settle out. Sediment to be cleaned up and disposed of where approved by the Departmental Representative as soon as practical after it appears or when directed by Departmental Representative.
- .19 Provide berms, sedimentation basins, traps and vegetative or screen filters to control sediments.
- .20 Prevent erosion at source.

## **1.5 PROTECTION**

- .1 Work is not to proceed on the construction site until the sequence of construction has been decided on for all phases, the timing of work, the planning and provision of sedimentation controls are in place and the monitoring of controls and timings are approved by the Departmental Representative.
- .2 Perform a routine end of the day check to ensure all control practices are properly installed and in working order.
- .3 Check weather forecast daily and be prepared if rain is predicted.
- .4 Maintain an adequate inventory on hand of materials such as straw bales, polyethylene, gravel, rip rap, filter fabric, silt screen and stakes. Know where straw, hay, bark or sawdust is readily located.
- .5 Replace hay or straw bales used for controls after each rainfall. Bales to be monitored during periods of heavy precipitation and replaced as required. Bales are not an acceptable control during freeze periods of the year.
- .6 Identify and protect catch basins or storm water receptors from being contaminated with sedimentation in areas of work and in a manner and schedule as approved by Departmental Representative.

## **1.6 GRADING**

- .1 Complete grading work as soon as possible and stabilize the bare earth by mulching seeding to grasses or compacted gravels.
- .2 Keep cuts and fills on as flat a slope as possible. If the slope is steeper than 2 horizontal to 1 vertical consider retaining wall or cribbing.

- .3 In erodible soils lower cuts and fills of 3:1 or 4:1 to be used. In all cases round the top and toe of the slope to blend into existing grades of existing ground.
- .4 Place fills so that there is no danger of sliding or washing onto adjoining property or into watercourses.
- .5 Do not locate fill stockpiles adjacent to a stream bank unless protected with fabric filters and rip rap. Stockpile locations and method of controls to be approved by Departmental Representative.
- .6 Fill stockpiles to be used up as soon as practical during the phases of work and storage areas are to be cleaned up as soon as they are no longer required to perform the work.
- .7 Seeps, water table or springs encountered during construction to be reported to Departmental Representative when encountered and to have proper drainage controls determined and installed.
- .8 During grading operations exercise the necessary measures for dust control.
- .9 Regrade if serious gullying or rilling of the surfaces have occurred before a vegetative cover begins to establish.

#### **1.7 FILTER FABRIC BARRIER**

- .1 Use this type of barrier to be considered as temporary. Filter fabric barrier is more commonly referred to as a silt fence. Use to be limited to situations in which only sheet or overland flows are expected or there is that possibility during any phases of construction.
- .2 Filter barriers are not to be used in a natural watercourse.
- .3 These barriers are not effective when continuous flow and/or moderate to high velocities can be expected.
- .4 This barrier to be used to surround a disturbed work site where it should be installed up slope from the area to be protected in order to prevent silt from being conveyed to an adjacent property or watercourse.
- .5 Filter fabric barriers shall be cleaned out at regular intervals as be determined in consultation with Departmental Representative prior to Contract commencing and specifically after each rainfall to maintain effectiveness.
- .6 Filter barriers to be located so they are protected from damage by heavy equipment operating at the Work Site.
- .7 If the barrier is to be constructed across a wide ditch or swale carrying low flow, ensure that the ends of the filter are keyed-in to the sides of the ditch to prevent end flow. If the side slopes of the ditch are steep, regrade to a more stable slope.

- .8 For silt fence installation, excavate a 100 mm wide x 100 mm deep trench in a crescent shape across the flow path with ends pointing up slope.
- .9 Set wood stakes 50 mm square spaced 1 meter apart, securely into the ground along the downslope side of the trench.
- .10 Install the filter fabric, cutting it to the desired length and in the longest practical continuous piece as possible to avoid seams. All seamed areas to be overlapped by at least two stakes in and backed with straw bales.
- .11 Staple the filter fabric to the upstream side of the stakes extending the bottom 200 mm into the trench.
- .12 The filter fabric not to exceed 900 mm in height.
- .13 Backfill using excavated trench materials and compact the soil in the trench over the bottom of the filter fabric.
- .14 Clean out accumulated sediment at regular intervals and after severe rainstorms and promptly repair the barrier if undercutting or end flow has occurred. Disposal of silt and sedimentation shall be at the direction of the Departmental Representative.
- .15 Remove the barrier once construction work has been completed and the area is stabilized with vegetation or hard cover. In areas of vegetation under growth maintain barriers until growth has been re-established to Departmental Representative's approval. Remove and dispose of collected sediment in manner approved by Departmental Representative.

## **1.8 STRAW FILTER BARRIERS**

- .1 Do not use straw barriers in a natural watercourse.
- .2 Straw filters are to be considered only as short term measures and are to be used when treating runoff from very small drainage areas for a short period of time.
- .3 Straw barriers to be used when normal flows are minimal or where conditions exist for runoff from infrequent, high-intensity rainfall, in shallow ditches or swales, along the side of waterways or along property boundaries during construction and in drainage areas less than 1 hectare in size.
- .4 Clean out, repair and replace regularly and after each rain to maintain effectiveness.
- .5 Straw barriers are designed to allow water to flow through not over the barrier.
- .6 Straw barriers plug up with sediment very quickly and require constant surveillance and close attention to maintenance. If the bales are not replaced when plugged with sediment, a rock apron must be constructed on the downslope side of the barrier. The maximum life is approximately 3 months or considerably less under wetter conditions and successive storms. Departmental Representative to determine replacement frequency based on weather and sediment frequency run off for site.

- .7 If a straw barrier is to be installed in a ditch or swale and the side slopes of the ditch are steep, regrade to a more stable slope. Excavate the sides of the ditch to allow the bales to be keyed in.
- .8 Excavate the trench the width of a straw bale and the length of the barrier to a minimum depth of 150 mm below the existing grade surface.
- .9 Place the straw bales on their sides and tightly together in the trench. If the bales have been tied with non-degradable twine they should be placed on the flat.
- .10 Drive two sturdy wooden or steel stakes through each bale, deep enough to anchor them securely. Drive the first stake in each bale toward the previously laid bale to force the bales together.
- .11 Wedge loose straw between any cracks or other openings and scatter loose straw over the soil on the uphill side of the barrier. Subsequent movement of the loose straw tends to seal any undetected openings in the barrier.
- .12 Backfill and lightly compact the excavated soil up to a depth of 100 mm against the up slope side of the barrier.
- .13 Backfill and compact the excavated soil to ground level on the downslope side.
- .14 Dig a sediment trap on the up slope side of the barrier.
- .15 Check barrier regularly and replace as necessary and as approved by Departmental Representative after each rainstorm.
- .16 Remove the silt from the upside slope of the barrier and dispose in a location and manner approved by the Departmental Representative.
- .17 Remove and dispose of straw barrier at completion of Work of the Contract and after possibility of erosion or sediment is eliminated.

## **1.9 EXCAVATIONS**

- .1 When excavating a trench place the excavated material on the side of the trench where the grade is sloping toward the trench.
- .2 Protect ends of trench with barriers in areas where gradient runs away from trench area.
- .3 Where utility cuts across roadways or paved surfaces the Contractor is to clean-up all sedimentation on road surfaces and or in areas where sedimentation is created as a result of exposed ground from the Work of the contract immediately following precipitation such as snow or rainfall.
- .4 During precipitation the Contractor to place straw bales at intervals along the gutter areas of roads in selected locations and at least 3 metres of spacing prior to a catch basin and up

gradient of the flow to minimize silt from entering storm water catch basins and or watercourses.

- .5 Where sedimentation is being created from exposed ground as a result of the Work the Contractor is to immediately provide a fabric barrier along the edge of roadways to prevent silt from being carried to storm water systems.
- .6 At the end of the contract Catch basins considered by the Departmental Representative to be contaminated with sedimentation as a result of the Work of the Contract to be cleaned out and the lines between the catch basin to be flushed by the Contractor to the satisfaction of the Departmental Representative.
- .7 Disposal of sedimentation collected from the storm water system to be disposed of at location and manner as directed by Departmental Representative. This disposal can be mixed with landscaping topsoil provided it is clean of deleterious items.

#### **1.10 CHECK DAMS**

- .1 The use and type of check dams to be determined by the Departmental Representative prior to the commencement of the project where possible.
- .2 The purpose of check dams commonly referred to sediment or silt traps is to prevent erosion of gully or ditch bottoms: by slowing velocity of concentrated runoff; by collecting and holding moisture and soil in the bottom of gullies, thereby facilitating the establishment of stabilizing vegetation; to trap small amounts of sediment by reducing velocity and to prevent silt caused by sheet and rill erosion from being deposited on lands downstream from those being developed.
- .3 Check dams are not to be used in watercourses and are only for ditches carrying storm drainage.
- .4 Permanent Check dams to be constructed in accordance with the "Handbook for Construction Sites" and/or as detailed in the drawings. Permanent check dams can be used in gully bottoms where channel gradient is too steep for a vegetative lining alone and where the channel is too large for practical installation of structural linings. Permanent check dams can consist of the following types:
  - .1 Rock dams;
  - .2 Gabion Dams;
  - .3 Plank or Slab Dams;
  - .4 Sodded Earth Fill dams;
  - .5 Sandbag Dams;
  - .6 Straw Bale dams;
  - .7 Filter Fabric dams.
- .5 Temporary check dams consist of rock dams, sandbag dams and brush damns and are primarily constructed to avoid wash-outs.

**1.11 DIVERSION DITCHES**

- .1 Diversion ditches apply to overland runoff. Diversion of a natural watercourse is not permitted.
- .2 The purpose of a diversion ditch is to reduce slope lengths; to break up concentration of runoff; to move water to stable outlets at the non-erosive velocity; to divert water away from cut or fill slopes, steeply sloping land, construction sites, buildings and residences, active gullies or other erodible areas; and low-lying areas in order to prevent flooding. The diversion ditch is also used to convey silted runoff to a vegetated area to disperse flow and filter silt.
- .3 Diversion ditches to be used with caution on soils subject to slippage and or erosion and only when approved by Departmental Representative.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1        Section 01 77 00 – Closeout Procedures.
- .2        Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

**1.2                PROJECT CLEANLINESS**

- .1        Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2        Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3        Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4        Provide on-site containers for collection of waste materials and debris.
- .5        Dispose of waste materials and debris at approved facilities.
- .6        Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7        Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8        Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .9        Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly constructed surfaces.

**1.3                FINAL CLEANING**

- .1        When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2        Remove waste products and debris and leave Work clean and suitable for occupancy.
- .3        Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4        Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .5        Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6        Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .7        Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .8        Remove dirt and other disfiguration from exterior surfaces.

- .9 Sweep and wash clean paved areas.
- .10 Clean equipment and fixtures to sanitary condition.
- .11 Clean roofs, downspouts, and drainage systems.
- .12 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

**1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse or recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 01 33 00 – Submittal Procedures.

**1.2                REFERENCES**

- .1            Definitions:
  - .1            Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority.
  - .2            Approved disposal area: Disposal area as designated by the Owner.
  - .3            Class III: non-hazardous waste - construction renovation and demolition waste.
  - .4            Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities.
  - .5            Inert Fill: inert waste - exclusively asphalt and concrete.
  - .6            Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
  - .7            Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
  - .8            Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
  - .9            Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
    - .1            Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
    - .2            Returning reusable items including pallets or unused products to vendors.
  - .10           Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
  - .11           Separate Condition: refers to waste sorted into individual types.
  - .12           Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.

**1.3                ACTION AND INFORMATIONAL SUBMITTALS**

- .1            Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2            Prepare and submit on monthly basis, throughout project or at intervals agreed to by Departmental Representative the following:
  - .1            Receipts, scale tickets, waybills, and/or waste disposal receipts that show quantities and types of materials reused, recycled, or disposed of.

- .2 Written monthly summary report detailing cumulative amounts of waste materials reused, recycled and landfilled, and brief status of ongoing waste management activities.
- .3 Submit prior to final payment the following:
  - .1 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

#### **1.4 USE OF SITE AND FACILITIES**

- .1 Execute Work with minimal interference and disturbance to normal use of premises.
- .2 Maintain security measures established by facility provide temporary security measures approved by Departmental Representative.

#### **1.5 WASTE PROCESSING SITES**

- .1 Contractor is responsible to research and locate waste diversion resources and service providers. Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.

#### **1.6 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations so as to not interfere with Work.
- .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 designated disposal facility.
- .5 Protect structural components not removed and salvaged materials from movement or damage.
- .6 Protect surface drainage, mechanical and electrical from damage and blockage.
- .7 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.
- .8 Separate and store materials produced during project in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.
  - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.
  - .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

## **1.7 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste type into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
  - .1 Number and size of bins.
  - .2 Waste type of each bin.
  - .3 Total tonnage generated.
  - .4 Tonnage reused or recycled.
  - .5 Reused or recycled waste destination.
- .4 Remove materials on-site as Work progresses.

## **1.8 SCHEDULING**

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

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 APPLICATION**

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

### **3.2 CLEANING**

- .1 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**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 01 78 00 – Closeout Submittals.

**1.2                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's inspection.
  - .2            Departmental Representative's 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 that tasks have been performed as follows:
    - .1            Work: completed and inspected for compliance with Contract Documents.
    - .2            Defects: corrected and deficiencies completed.
    - .3            Equipment and systems: tested, adjusted, balanced and fully operational.
    - .4            Operation of systems: demonstrated to Owner's personnel.
    - .5            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.
  - .5            Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .6            Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
  - .7            Final Payment:
    - .1            When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

- .2 When Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

**1.3 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 01 77 00 – Closeout Procedures.

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

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

**1.3                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.
  - .1            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 CAD files in dwg format on CD or memory stick.
- .10          Provide PDF format of Binders, one volume per PDF file, bookmark each separate product and system with description of product and major component parts of equipment.

**1.4                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 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.
  - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

## **1.5 AS -BUILT DOCUMENTS AND SAMPLES**

- .1 Maintain, 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.
- .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.

## **1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record information on set of black line drawings, and in copy of Project Manual.
- .2 Use felt 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 Record information in AutoCAD dwg files.
- .5 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.
- .6 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.
- .7 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .8 Provide digital photos, if requested, for site records.

## **1.7 FINAL SURVEY**

- .1 Submit final site survey certificate certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.
  - .1 Prepare a complete in-trench survey for all utilities.
  - .2 Prepare a complete as-built topographical survey to capture all surface features.
- .2 Locate all curbs, sidewalks, roadways, pads, buildings, trees, shrubs, flag poles, bollards, posts, abandoned utilities, capped utilities and new utilities within the construction area.
- .3 Locate sewer manholes and storm drainage catchbasins c/w inverts indicated by north, south, east, west location.
- .4 Locate electrical manholes, poles, transformers, switching cubicles and specialty lights.
- .5 Survey to be completed by a Construction Surveyor and be a registered Nova Scotia Land Surveyor.
- .6 Provide survey on CD or memory stick in AutoCAD dwg format along with csv or ASCII file of raw data points.

## **1.8 WARRANTIES AND BONDS**

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan to Departmental Representative.
- .3 Warranty management plan to include required actions and documents to assure that Owner 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 Assemble approved information in binder, submit upon acceptance of work and 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.
- .6 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .7 Written verification to follow oral instructions.
  - .1 Failure to respond will be cause for the Owner to proceed with action against Contractor.

**1.9 DELIVERY SCHEDULE**

- .1 Accompany Record Information submissions with a transmittal containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Other pertinent data.
- .2 Within three weeks of substantial completion, or as otherwise agreed, the Contractor shall deliver the Record Information package with the data required as identified herein.
  - .1 Allow ten working days for the Departmental Representative's or Owner's review of each submission.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**