

Specifications

Issued for Tender

**Cape Spear NHS Lighthouse
Access Road Recapitalization
St. John's, NL**

PROJECT NO. 584

PARKS CANADA

September 16, 2016

DISCIPLINE

DATE

STAMP

Civil
Specifications:

September 16, 2016



END OF SECTION

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- C104 Access Road Details

END OF SECTION

Part 1 General

1.1 DESCRIPTION OF WORK

- .1 The Work of the Project is defined by the Contract Documents and generally involves the Lighthouse Access Road Recapitalization that includes but is not limited to the following:
 - .1 Mobilization, start-up planning and scheduling, material order, supply and delivery, and site control and access and site vegetation contamination controls.
 - .2 Earthworks including clearing, grubbing, soil and rock excavation, earth stock pile, and reinstatement.
 - .3 Installing and replacing old culverts.
 - .4 Regrading and resurfacing of the existing access roads.
 - .5 Site cleanup and reinstatement to original conditions as specified by departmental representative.
 - .6 Demobilization.
- .2 Type of Contract
 - .1 Project will be constructed under a combined lump sum and unit price contract.

1.2 PROJECT INFORMATION

- .1 Project Identification: Cape Spear NHS Lighthouse Access Road Recapitalization –Parks Canada, Cape Spear, NL.
 - .1 Project Location: Blackhead Road / Route 11, Cape Spear, NL
- .2 Tenant: Parks Canada

1.3 FAMILIARIZATION WITH SITE

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

1.4 CODES AND STANDARDS

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

1.5 ARCHEOLOGICAL DISCOVERIES

- .1 If cultural or archaeological resources are encountered, work must cease in the immediate area and the Departmental Representative informed immediately. The Departmental Representative will then notify Martin Perron (Tel: 819-420-9558) and Virginia Sheehan

(Tel: 819-420-9213), Parks Canada, immediately. If features (i.e., structural remains and/or artifact concentrations) are encountered, leave in place, mark the location (e.g. with prominent flagging) and do not disturb prior to archaeological assessment of nature and significance.

1.6 INTERPRETATION OF DOCUMENTS

- .1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.7 TERM ENGINEER

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

1.8 SETTING OUT WORK

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices needed to lay out and construct work.
- .3 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.
- .4 Supply stakes and other survey markers required for laying out work.

1.9 COST BREAKDOWN

- .1 Before submitting first progress claim submit breakdown of Contract Amount in detail as directed by Departmental Representative and aggregating contract amount. Required forms will be provided for application of progress payment.
- .2 List items of work numerically following the same division/section number system of the specification manual and thereafter sub-divide into major work components and building systems as directed by Departmental Representative.
- .3 Upon approval, cost breakdown will be used as basis for progress payment.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each of the following:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda and amendments.
 - .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 Other documents as stipulated elsewhere in the Contract Documents.

1.11 PERMITS

- .1 In accordance with the General Conditions, obtain and pay for building permit, certificates, licenses and other permits as required by municipal, provincial and federal authorities.
- .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
- .3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.
- .4 Submit to Departmental Representative, copy of application forms and approval documents received from above referenced authorities.

1.12 COORDINATION WITH OCCUPANTS

- .1 Partial Tenant Occupancy: Tenant will occupy the premises during entire construction period, with the exception of areas under construction. Coordinate with Departmental Representative during construction operations to minimize conflicts and facilitate Tenant usage. Perform the Work so as not to interfere with Tenant's operations. Maintain existing exits unless otherwise indicated.
 - .1 The site will remain open to the public throughout the duration of the Contract. Coordinate with Departmental Representative to minimize interference with public use of areas not under construction.
 - .2 Contractor is advised that parts of the access road are accessible to the general public (24 hours a day, 7 days a week all year long) through existing walking trails. These walking trails are to remain open during the course of the construction and therefore the contractor is required to provide applicable safety measures to protect the general public.
 - .3 Do not close or obstruct walkways or other occupied or used facilities without written permission from Departmental Representative and authorities having jurisdiction.
 - .4 Provide not less than 72 hours' notice to Departmental Representative of activities that will affect Tenant's operations.
 - .5 Any work that requires access to an area of the building or site that the Tenant or public have access to must occur after Tenant's regular work hours. Contractor is to ensure area is left in its original state for Tenant's use the next day.
 - .6 Contractor must maintain 3rd party access to the automated coast guard light house at all times during the project. Contractor must communicate restrictions to this access to the Departmental Representative immediately for approval. Sufficient notice must be provided to the Departmental Representative for approval and notification to 3rd party users.

1.13 ACCESS TO SITE

- .1 General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
 - .1 Please note that limited on-site parking is available for Contractor or its employees. Contractor is responsible for finding off-site parking as required.
 - .2 Contractor is advised that any snow clearing within the construction and provided lay down areas will be the responsibility of the contractor during construction.
- .2 Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - .1 Limits: Where the Work involves site work, limit site disturbance, including earthwork and clearing of vegetation, to 12.2 m beyond building perimeter; 3 m beyond surface walkways, patios, surface parking, and utilities less than 300 mm in diameter; 4.5 m beyond primary roadway curbs and main utility branch trenches; and 7.6 m beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities, and playing fields) that require additional staging areas in order to limit compaction in the constructed area. Unless stated otherwise by the Departmental Representative.
 - .2 Driveways, Walkways and Entrances: For Work involving renovations to an existing structures or adjacent to other buildings then keep driveways and loading areas, and entrances serving premises clear and available to Tenant, Tenant's employees, and emergency vehicles at all times. **Do not use these areas for parking or storage of materials unless it is a designated zone agreed to by the Project Manager.**
 - .1 Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - .2 Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- .3 Condition of Existing Structure: Where the Work involves work on an existing structure, repair damage caused by construction operations.

1.14 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian, vehicular traffic and tenant operations.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection of electrical power and communication services to tenant's operational areas. Adhere to approved schedule and provide notice to affected parties.
- .4 Provide temporary services when directed by Departmental Representative to maintain critical building and tenant systems.

- .5 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed and abandoned service lines.

1.15 BILINGUAL NOTATIONS

- .1 Any items supplied and installed under this contract which have operating instructions on them such as door hardware, mechanical equipment, etc., and which can be expected to be used by the public and building tenants, must have such operating instructions in bilingual format - English and French.
- .2 Factory embossed or recessed symbols illustrating equipment operation is an acceptable alternate to lettering.
- .3 Items supplied with factory - embossed or recessed lettering in one official language with an applied sticker or decal representing the second official language is not acceptable unless the Departmental Representative gives prior approval before any such items are ordered.
- .4 Internationally recognized colour coding such as red and blue center pieces for plumbing brass is acceptable.
- .5 No extra costs will be paid for re-stocking or re-ordering of materials and equipment due to Contractor's failure to fully meet bilingual signage requirements specified herein.
- .6 Ensure that all trades are made aware of above requirements.

1.16 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.

END OF SECTION

Part 1 GENERAL

1.1 SUBMITTALS

- .1 Upon award of contract and prior to commencement of work, submit to Departmental Representative the following work management documents:
 - .1 Work Schedule as specified herein.
 - .2 Shop Drawing Submittal Schedule
 - .3 Waste Management Plan.
 - .4 Health and Safety Plan.
 - .5 Hot Work Procedures.
 - .6 Lockout Procedures.
 - .7 Dust Control Plan.
 - .8 List of workers requiring security clearance and those to be placed on Site Security Control list.
 - .9 Public Access Plan.
 - .10 Erosion and Sediment Control Plan.

1.2 WORK SCHEDULE

- .1 Upon acceptance of bid submit:
 - .1 Detailed work schedule submitted within 7 calendar days.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid. Schedule to include Tenant operations outlined in Section 01 10 10.
- .3 Provide sufficient details in detailed schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .4 Detailed work schedule content to include as a minimum the following:
 - .1 Bar (GANTT) Charts, indicating all work activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
 - .2 Written narrative on key elements of work illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.
 - .3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.

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

1.3 PROJECT PHASING

- .1 Be aware that Facility must be kept operational for the full duration of work of this contract.
- .2 Unless indicated or approved otherwise, complete all work of a particular phase prior to commencement of another phase. Obtain Departmental Representative's permission prior to moving between phases

1.4 OPERATIONAL RESTRICTIONS

- .1 The Contractor must recognize that site occupants will be affected by implementation of this Contract. The Contractor must perform the work with utmost regard to the safety and convenience of site occupants and users. All work activities must be planned and scheduled with this in mind. The Contractor will not be permitted to disturb any portion of the site without providing temporary facilities as necessary to ensure safe and direct passage through disturbed or otherwise affected areas.
- .2 Contractor to ensure locations of underground services are identified and prevent impact by heavy equipment.

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- .3 Contractor to meet with the Departmental Representative on a weekly basis to identify intended work areas, activities and scheduling for the coming week.
 - .4 Limited Maneuvering Space on Site:
 - .1 The Contractor's access to site will be limited to area of work.
 - .2 Control points to be relocated/ installed as part of this project.
 - .5 Facility circulation maintained:
 - .1 Ensure that entrances, corridors, and other circulation routes are maintained free and clear providing safe and uninterrupted passage for Facility users and public at all times during the entire work.
 - .2 Maintain those areas clean and free of construction materials and equipment. Provide temporary suitable enclosures to ensure users are not exposed to construction activities and are protected from exposure to dust, noise, and hazardous conditions.
 - .3 Provide temporary corridors, walkways, passageways, etc. when required due to nature of work. Such circulation routes must be constructed to barrier free requirements unless approved otherwise by Departmental Representative.
 - .4 Maintain fire escape routes accessible and fire fighting access open all times for the duration of the project.
 - .6 To assure that construction work may proceed productively without risk to safety of site occupants, be aware that certain work of this contract must be carried out during "Off-Hours".
 - .7 The following work, if necessary, shall be performed during Off-Hours:
 - .1 Any work undertaken in the corridor.
 - .2 Asbestos removal.
 - .3 Erection and dismantling of hoarding or other protective devices to separate areas of Facility occupied and under use by public and tenants from work areas;
 - .4 Erection of site enclosure fencing and temporary hoarding at site entrances to keep them operational during work;
 - .5 Asbestos abatement;
 - .6 Demolition of any masonry or concrete;
 - .7 All work involving saw cutting or boring of openings through masonry and concrete walls, floors, ceilings or roof;
 - .8 Work which requires the use of products controlled by WHMIS and for which MSDS sheets indicate toxic or hazardous materials requiring special handling and application procedures;
 - .9 Use of materials having high solvent content or other content emitting strong noxious fumes or odours;
 - .10 Painting;
 - .11 Removal of demolition debris from the site, including cleaning of premises;

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- .12 Cleaning and preparing of occupied areas for daytime use by tenants immediately following an off-hour work shift;
 - .13 Work within a tenant occupied area including corridors, and other circulation routes under use;
 - .14 Work which requires the temporary disconnection of power and communication services to occupied areas;
 - .15 Testing of fire alarms and other emergency annunciating system;
 - .16 Delivery of materials and equipment from exterior to the interior of building when access routes are located in tenant occupied spaces.
 - .17 Work which creates excessive noise or vibration creating interference with tenant operations.
- .8 Off Hours: The site could be accessed by the public 24 hours a day, 7 days a week and the Contractor shall be responsible for site security throughout however for the purposes of this contract, "off-hours" are defined as follows:
- .1 Weeknight Hours: between the hours of 18:00 and 07:00 for each weekday Monday to Friday inclusive.
 - .2 Weekend Hours: between the hours of 18:00 Friday evening to 07:00 Monday morning.
 - .3 Dependent on the nature and location of the construction activity, the day of the week and the time of the year, "off-hours" could be subject to redefinition to start or end at adjusted time periods. Scheduling of "off-hours" work will be subject to approval by the Departmental Representative.
- .9 Traffic Signage:
- .1 Provide road signage as required to facilitate heavy equipment movement and traffic.
- .10 Safety Signage:
- .1 Provide on site, and erect as required during progress of work, proper bilingual signage, mounted on self-supporting stands, warning the public and occupants of construction activities in progress and alerting need to exercise caution in proceeding through disturbed areas of the facility, and directing occupants through any detours which may be required.
 - .2 Signage to be professionally printed and mounted on wooden backing, coloured and to express messages as directed by the Departmental Representative.
 - .3 Generally maximum size of sign should be in the order of 1.0 square metres. Number of signs required will be dependent on number of areas in facility under renovation at any one time.
 - .4 Include costs for the supply and installation of these signs in the bid price.
- .11 Dust and Dirt Control:
- .1 See Section 01 50 00 and 01 74 11 for dust control and cleaning requirements.
 - .2 Effectively plan and implement dust control measures and cleaning activities as an integral part of all construction activities. Review all measures with the

-
- Departmental Representative before undertaking work, especially for major dust generating activities.
- .3 Do not allow demolition debris and construction waste to accumulate on site and contribute to the propagation of dust.
 - .4 As work progresses, maintain construction areas in a tidy condition at all times. Remove gross dust accumulations by cleaning and vacuuming immediately following the completion of any major dust generating activity.
 - .5 Immediately remove all debris and dust from within occupied areas as generated by work therein during a given workshift.
 - .6 Avoid situations and practices which results in dust and dirt being brought from the construction areas or from the exterior and tracked into occupied areas used by tenants and the public.
 - .7 Stop workers with soiled footwear from entering building. This includes roofing mechanics and heavy civil workers.
 - .8 Inform workers and make them sensitive to the need for dust and dirt control. Stringently enforce rules and regulations, immediately address non-compliance.
 - .9 Keep access doors to work areas closed at all times. Use only designated doors for entry or egress.
- .12 Work in Occupied Areas:
- .1 Where work must be carried out in an occupied area beyond the boundaries of the enclosed construction site, perform such work during the non-operational off-hour periods of the Facility.
 - .2 Ensure that all dust, dirt, debris, construction waste, materials, tools and equipment are completely removed at the end of each workshift. Clean and reinstate area ready for daytime use by tenant.
 - .3 Conduct work in such a way as to minimize the creation of dust and to avoid contaminating areas beyond the immediate location.
 - .4 Discuss and obtain Departmental Representative's approval beforehand on the type and extent of dust barriers, protective devices and measures needed.
 - .5 Disconnect and reconnect any power and communications systems feeding workstations as required.
 - .6 Clean such areas as well as those corridors and routes used to gain entry and access.
- .13 Cleaning of tenant occupied areas used by Contractor:
- .1 Clean stairs, and other circulation routes used by workers to gain access to work by conducting cleaning of floors, walls and other soiled surfaces.
 - .2 Meager attempts at controlling dust and ineffective unprofessional cleaning procedures will not be tolerated.
 - .3 Failure to provide effective dust control, allowing construction dust and dirt to escape beyond construction areas and contaminate occupied areas and building circulation areas will result in Contractor being ordered to immediately provide professional cleaning services without delay to remedy the situation and conduct all cleaning to the extent as determined by Departmental Representative.

Alternatively, Departmental Representative may, at certain times and at own discretion; obtain the services of an independent building cleaning agency when cleaning being provided by Contractor is ineffective or tardy in response. Costs of such services will be charged against Contractor in the form of financial penalties or holdback assessments against the Contract.

- .14 Ensure that all sub-trades are made aware of and abide by the contents of this section and in particularly the work restrictions specified herein due to tenant operational requirements.

1.5 PROGRESS MEETINGS

- .1 Refer to Section 01 31 19 – Progress Meetings.

1.6 WORK COORDINATION

- .1 The General Contractor is responsible for coordinating the work of the various trades and predetermining where the work of such trades interfaces with each other.
 - .1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.
- .2 The General Contractor shall convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required.
 - .1 Provide each trade with the plans and specs of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
 - .2 Develop coordination drawings when deemed required illustrating potential interference between works of various trades and distribute to all affected parties including structural trade.
 - .1 Pay particularly close attention to overhead and within or near to building structural elements.
 - .2 Coordination drawings to identify all elements, services lines, rough-in points and indicate from where various services are coming.
 - .3 Review coordination drawings at purposely called meetings. Have subcontractors sign-off on drawings and publish minutes of each meeting.
 - .4 Plan and coordinate work in such a way to minimize quantity of service line offsets.
 - .5 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.
- .3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Work Cooperation:
 - .1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.

- .2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.
- .5 No extra costs to the Contract will be considered by the Departmental Representative as a result of Contractor's failure to effectively coordinate all portions of the Work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor to be resolved at own cost.

END OF SECTION

Part 1 GENERAL

1.1 ADMINISTRATIVE

- .1 Contractor will schedule and administer project meetings throughout the progress of the work.
- .2 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative and Consultant.
- .3 Provide physical space and make arrangements for meetings.
- .4 Preside at meetings.
- .5 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .6 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants.
- .7 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Within 7 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Consultant, Contractor, major Subcontractors, field inspectors and supervisors will 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: in accordance with Section 01 14 10 – Scheduling and Management of Work
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 50 00 - Temporary Facilities.
 - .5 Delivery schedule of specified equipment.
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .7 Departmental Representative provided products.
 - .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 77 00 – Closeout Procedures and 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.
- .14 Site specific cultural and natural resource considerations and mitigation measures identified in the Parks Canada Basic Impact Analysis (e.g., issues, required modifications).

1.3 PROGRESS MEETINGS

- .1 Schedule project meetings, held on a minimum bi-weekly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work or particular situation.
- .2 Contractor, major Subcontractors involved in Work, Departmental Representative are to be in attendance.
- .3 Notify parties minimum 4 days prior to meetings.
 - .1 Ensure attendance of all subcontractors.
 - .2 Departmental Representative will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Departmental Representative.
- .5 Preside at meetings and record minutes indicating significant proceedings and decisions. Minutes will identify action items by parties.
 - .1 Distribute to participants by email within 4 calendar days after each meeting.
 - .2 Make revisions as directed by Departmental Representative.
- .6 Prepare agenda for meetings. 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 Site specific cultural and natural resource considerations and mitigation measures identified in the Parks Canada Basic Impact Analysis (e.g., issues, required modifications).
 - .13 Review of mitigation measures identified in the

.14 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 SUMMARY

- .1 Types of items described in this Section:
 - .1 Administrative and procedural requirements for the following:
 - .1 Preconstruction photographs.
 - .2 Periodic construction photographs.
 - .2 Types of items you will not find described in this Section:
 - .1 Procedures for submitting photographic documentation.
 - .2 Procedures for submitting photographic documentation as project record documents at project closeout.
 - .3 Submitting video recordings of demonstration of equipment and training of Canada personnel.
 - .4 Photographic documentation before demolition operations commence.
 - .5 Photographic documentation before site clearing operations commence.

1.2 SUBMITTALS

- .1 Digital Photographs: Submit image files within three days of taking photographs.
 - .1 Identification: Provide the following information with submission:
 - .1 Name of Project.
 - .2 Name of Contractor.
 - .3 Date photograph was taken.
 - .4 Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.3 USAGE RIGHTS

- .1 Obtain and transfer copyright usage rights from photographer to Canada for unlimited reproduction of photographic documentation.

Part 2 PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- .1 Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 6 megapixels.

Part 3 EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- .1 Restrictions: Notwithstanding the requirements listed below, there are strict security restrictions on the use of cameras in and around the site. Departmental Representative will advise on these restrictions at the construction start up meeting.
- .2 General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
- .3 Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - .1 Date and Time: Include date and time in file name for each image.
 - .2 Field Office Images: Maintain one set of images accessible in any field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Departmental Representative.
- .4 Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Departmental Representative.
 - .1 Take not less than 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - .2 Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- .5 Periodic Construction Photographs: Take not less than 20 photographs monthly, coinciding with the cut-off date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- .6 Departmental Representative-Directed Construction Photographs: From time to time, Departmental Representative will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

- .1 Types of items described in this Section:
 - .1 Requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- .2 Types of items you will not find described in this Section:
 - .1 Requirements for submitting applications for payment and the schedule of values.
 - .2 Requirements for submitting schedules and reports, including contractor's construction schedule.
 - .3 Requirements for submitting operation and maintenance manuals.
 - .4 Requirements for submitting record drawings, record specifications, and record product data.
 - .5 Requirements for submitting video recordings of demonstration of equipment and training of Canadas personnel.

1.2 DEFINITIONS

- .1 Action Submittals: Written and graphic information and physical samples that require Departmental Representative's responsive action. Action submittals are those submittals indicated in individual Specification Sections as *action submittals*.
- .2 Informational Submittals: Written and graphic information and physical samples that do not require Departmental Representative's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as *informational submittals*.
- .3 Portable Document Format (PDF): a digital file format licensed by Adobe and other software developers and used to display and print information in a consistent format regardless of computer operating system, monitor, or printer.
- .4 Days: Days of the week, excluding Saturday, Sunday, and any statutory holidays.

1.3 ACTION SUBMITTALS

- .1 Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Departmental Representative and additional time for handling and reviewing submittals required by those corrections.

- .1 Coordinate submittal schedule with list of subcontracts, and Contractor's construction schedule.
- .2 Submit Submittal Schedule concurrently with the first complete submittal of Contractor's construction schedule.
- .3 Format: Arrange the following information in a tabular format:
 - .1 Scheduled date for first submittal.
 - .2 Specification Section number and title.
 - .3 Submittal category: Action; informational.
 - .4 Name of subcontractor.
 - .5 Description of the Work covered.
 - .6 Scheduled date for Departmental Representative's final release.
 - .7 Scheduled date of fabrication.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- .1 Digital Data Files: Electronic CAD files of the Contract Drawings are available upon request from the Departmental Representative for the Contractor's use in preparing submittals.
 - .1 Available files:
 - .1 Floor plans.
 - .2 Reflected ceiling plans.
 - .2 Departmental Representative makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - .3 Digital Format: Files will be provided in the format generated by the drawing software used to produce the drawing.
- .2 Coordination: Coordinate preparation and processing of submittals with the performance of the construction activities.
 - .1 Coordinate each submittal to accommodate time required for fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - .2 Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - .3 Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 - .4 Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - .5 Departmental Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- .3 Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Departmental Representative's receipt of

submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

- .1 Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Departmental Representative will advise Contractor when a submittal being processed must be delayed for coordination.
- .2 Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
- .3 Resubmittal Review: Allow 15 days for review of each resubmittal.
- .4 Electronic Submittals: Place a permanent label or title block on each submittal item for identification.
 - .1 Indicate name of firm or entity that prepared each submittal on label or title block.
 - .2 Include the following information for processing and recording action taken:
 - .1 Project name.
 - .2 Date.
 - .3 Name of Contractor.
 - .4 Name of subcontractor.
 - .5 Name of supplier.
 - .6 Submittal number or other unique identifier, including revision identifier.
 - .1 Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - .7 Number and title of appropriate Specification Section.
 - .8 Drawing number and detail references, as appropriate.
 - .9 Location(s) where product is to be installed, as appropriate.
 - .10 Other necessary identification.
- .5 Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Departmental Representative may discard submittals received from sources other than Contractor.
 - .1 Transmittal Form for Submittals: Provide locations on form for the following information:
 - .1 Project name.
 - .2 Date.
 - .3 Name of Contractor.
 - .4 Names of subcontractor, manufacturer, and supplier.
 - .5 Category and type of submittal: action or informational as indicated in the applicable Specification Section.
 - .6 Specification Section number and title.

- .7 Specification paragraph number or drawing designation and generic name for each of multiple items.
 - .8 Drawing number and detail references, as appropriate.
 - .9 Indication of full or partial submittal.
 - .10 Transmittal number, if applicable
 - .11 Submittal and transmittal distribution record.
 - .12 Remarks.
 - .13 Signature of transmitter.
- .6 Options: Identify options requiring selection by Departmental Representative.
- .7 Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Departmental Representative on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- .8 Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- .1 Note date and content of previous submittal.
 - .2 Note date and content of revision in label or title block and clearly indicate extent of revision.
 - .3 Resubmit submittals until they are marked with approval notation from Departmental Representative's action stamp.
- .9 Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- .10 Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Departmental Representative's action stamp.

Part 2 PRODUCTS

2.1 SUBMITTAL PROCEDURES

- .1 General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - .1 Action Submittals: Submit electronic copy of each submittal unless otherwise indicated.
 - .2 Informational Submittals: Submit electronic copy of each submittal unless otherwise indicated. Departmental Representative will not return copies.
 - .1 Return of Action Submittals: Departmental Representative will return a PDF of a reviewed Submittal via online Construction Contract Administration service. No paper copies will be returned.

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- .2 Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - .1 If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - .2 Mark each copy of each submittal to show which products and options are applicable.
 - .3 Include the following information, as applicable:
 - .1 Manufacturer's catalogue cuts.
 - .2 Manufacturer's product specifications.
 - .3 Standard colour charts.
 - .4 Statement of compliance with specified referenced standards.
 - .5 Testing by recognized testing agency.
 - .6 Application of testing agency labels and seals.
 - .7 Notation of coordination requirements.
 - .8 Availability and delivery time information.
 - .4 For equipment, include the following in addition to the above, as applicable:
 - .1 Wiring diagrams showing factory-installed wiring.
 - .2 Printed performance curves.
 - .3 Operational range diagrams.
 - .4 Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - .5 Submit Product Data before or concurrent with Samples.
 - .3 Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - .1 Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - .1 Identification of products.
 - .2 Schedules.
 - .3 Compliance with specified standards.
 - .4 Notation of coordination requirements.
 - .5 Notation of dimensions established by field measurement.
 - .6 Relationship and attachment to adjoining construction clearly indicated.
 - .7 Seal and signature of professional engineer if specified.
 - .2 Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets no larger than 11 x 17 in size.
 - .4 Samples: Submit Samples for review of kind, colour, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

- .1 Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
- .2 Identification: Attach label on unexposed side of Samples that includes the following:
 - .1 Generic description of Sample.
 - .2 Product name and name of manufacturer.
 - .3 Sample source.
 - .4 Number and title of applicable Specification Section.
 - .5 Specification paragraph number and generic name of each item.
- .3 Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - .1 Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - .2 Samples not incorporated into the Work, or otherwise designated as Canada's property, are the property of Contractor.
- .4 Samples for Initial Selection: Submit manufacturer's colour charts consisting of units or sections of units showing the full range of colours, textures, and patterns available.
 - .1 Number of Samples: Submit one full set(s) of available choices where colour, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Departmental Representative will return submittal with options selected.
- .5 Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of colour and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing colour, texture, and pattern; colour range sets; and components used for independent testing and inspection.
 - .1 Number of Samples: Submit two sets of Samples. Departmental Representative will retain one Sample set; remainder will be returned.
 - .2 Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - .3 If variation in colour, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least two sets of paired units that show approximate limits of variations.
- .5 Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

- .1 Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
- .2 Manufacturer and product name, and model number if applicable.
- .3 Number and name of room or space.
- .4 Location within room or space.
- .6 Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section *Project Management and Coordination*.
- .7 Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section *Construction Progress Documentation*.
- .8 Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section *Payment Procedures*.
- .9 Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section *Quality Requirements*.
- .10 Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section *Closeout Procedures*.
- .11 Maintenance Data: Comply with requirements specified in Division 01 Section *Operation and Maintenance Data*.
- .12 Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of design consultants and owners, and other information specified.
- .13 Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record. Include names of firms and personnel certified.
- .14 Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- .15 Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- .16 Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- .17 Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

- .18 Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- .19 Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- .20 Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - .1 Name of evaluation organization.
 - .2 Date of evaluation.
 - .3 Time period when report is in effect.
 - .4 Product and manufacturers' names.
 - .5 Description of product.
 - .6 Test procedures and results.
 - .7 Limitations of use.
- .21 Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- .22 Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- .23 Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- .24 Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- .1 Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

- .1 Submittals shall bear the seal and signature of the Contractor's design professional licensed in the jurisdiction of the project.
- .2 If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Departmental Representative.

Part 3 EXECUTION

3.1 CONTRACTOR'S REVIEW

- .1 Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Departmental Representative.
- .2 Project Closeout and Maintenance Material Submittals: See requirements in Division 01 Section 01 77 00 Closeout Procedures.
- .3 Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 DEPARTMENTAL REPRESENTATIVE'S ACTION

- .1 Action Submittals: Departmental Representative will review each submittal, make marks to indicate corrections or revisions required, and return it. Departmental Representative will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- .2 Informational Submittals: Departmental Representative will review each submittal and will not return it, or will return it if it does not comply with requirements.
- .3 Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Departmental Representative.
- .4 Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- .5 Submittals not required by the Contract Documents may be returned by the Departmental Representative without action.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

- .1 Fire Safety Requirements.
- .2 Hot Work Permit.
- .3 Existing Fire Protection and Alarm Systems.

1.2 RELATED SECTIONS

- .1 Section 01 35 30 - Health and Safety Requirements.

1.3 REFERENCES

- .1 Fire Protection Standards issued by Fire Protection Services, Labour Program Division of Service Canada:
 - .1 FCC No. 301-June 1982 Standard for Construction Operations.
 - .2 FCC No. 302-June 1982 Standard for Welding and Cutting.
- .2 FCC standards may be viewed at: http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/inde.shtml
 - .1 Fire Protection Services - Atlantic Region office, Halifax, N.S, Tel. 902-426-6053.

1.4 DEFINITIONS

- .1 Hot Work defined as:
 - .1 Welding work.
 - .2 Cutting of materials by use of torch or other open flame devices.
 - .3 Grinding with equipment which produces sparks.
 - .4 Use of open flame torches such as for roofing work.

1.5 SUBMITTALS

- .1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days of acceptance of bid.
- .2 Submit in accordance with section 01 33 00.

1.6 FIRE SAFETY REQUIREMENTS

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Fire Code 2010.
 - .2 Fire Protection Standards FCC 301 and FCC 302.
 - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.7 HOT WORK AUTHORIZATION

- .1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot Work on site.
- .2 To obtain authorization submit to Departmental Representative:
 - .1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
 - .2 Description of the type and frequency of Hot Work required.
 - .3 Sample Hot Work Permit to be used.
- .3 Upon review and confirmation that effective fire safety measures will be implemented and followed during performance of hot work, Departmental Representative will give authorization to proceed as follows:
 - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
 - .2 Subdivide the work into pre-determined, individual activities, each activity requiring a separately written authorization to proceed.
- .4 Requirement for individual authorization will be based on:
 - .1 Nature or phasing of work;
 - .2 Risk to Facility operations;
 - .3 Quantity of various trades needing to perform hot work on project or;
 - .4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.
- .5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.
- .6 In tenant occupied Facility, coordinate performance of Hot Work with Facility Manager through the Departmental Representative. When directed, perform Hot Work only during non-operative hours of the Facility. Follow Departmental Representative's directives in this regard.

1.8 HOT WORK PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Hot Work Procedures to include:
 - .1 Requirement to perform hazard assessment of site and immediate work area beforehand for each hot work event in accordance with Safety Plan specified in section 01 35 30.
 - .2 Use of a Hot Work Permit system with individually issued permit by Contractor's Superintendent to worker or subcontractor granting permission to proceed with Hot Work.
 - .3 Permit required for each Hot Work event.
 - .4 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 60 minutes immediately following the completion of the Hot Work.

- .5 Compliance with fire safety codes, standards and occupational health and safety regulations specified.
- .6 Site specific rules and procedures in force at the site as provided by the Facility Manager.
- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Label document as being the Hot Work Procedures for this contract.
- .4 Procedures shall clearly establish responsibilities of:
 - .1 Worker performing hot work,
 - .2 Person issuing the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 Subcontractor(s) and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.

1.9 HOT WORK PERMIT

- .1 Hot Work Permit to include the following:
 - .1 Project name and project number;
 - .2 Building name and specific room or area where hot work will be performed;
 - .3 Date of issue;
 - .4 Description of hot work type needed;
 - .5 Special precautions to be followed, including type of fire extinguisher needed;
 - .6 Name and signature of permit issuer.
 - .7 Name of worker to which the permit is issued.
 - .8 Permit validity period not to exceed 8 hours. Indicate start time/date and termination time/date.
 - .9 Worker's signature with time/date of hot work completion.
 - .10 Stipulated time period of safety watch.
 - .11 Fire Safety Watcher's signature with time/date.
- .2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.
- .3 Each Hot Work Permit to be completed in full, signed and returned to Contractor's Superintendent for safe keeping on site.

1.10 FIRE PROTECTION AND ALARM SYSTEMS

- .1 Fire protection and alarm systems shall not be:
 - .1 Obstructed.
 - .2 Shut-off, unless approved by Departmental Representative.
 - .3 Left inactive at the end of a working day or shift.

- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than fire fighting.
- .3 Costs incurred, from the fire department, Facility owner and tenants, resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.

1.11 DOCUMENTS ON SITE

- .1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.
- .2 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

END OF SECTION

Part 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 35 24: Special Procedures on Fire Safety Requirements.

1.2 DEFINITIONS

- .1 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
- .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
 - .2 Knowledgeable about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
 - .3 Knowledgeable about potential or actual danger to health or safety associated with the Work.
- .3 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
- .4 PPE: personal protective equipment.
- .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00.
- .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
- .1 Submit within 10 work days of notification of Bid Acceptance. Provide 3 copies.
 - .2 Departmental Representative will review Health and Safety Plan and provide comments.
 - .3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
 - .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
 - .5 Submit revisions and updates made to the Plan during the course of Work.
- .3 Submit name of designated Health and Safety Site Representative and support documentation specified in the Safety Plan.
- .4 Submit building permit, compliance certificates and other permits obtained.

- .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
 - .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
- .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit copies of incident reports.
- .8 Submit WHMIS MSDS - Material Safety Data Sheets.

1.4 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act for Province of Newfoundland and Labrador, and Occupational Health & Safety Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code - Part II (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations as well as any other regulations made pursuant to the Act.
 - .1 The Canada Labour Code can be viewed at:
[www.http://laws-lois.justice.gc.ca/eng/acts/L-2_fulltext.html](http://laws-lois.justice.gc.ca/eng/acts/L-2_fulltext.html).
 - .2 Canadian Occupational Health and Safety Regulations can be viewed at:
<http://laws-lois.justice.gc.ca/eng/regulations/SOR-86-304/index.html>.
 - .3 A copy may be obtained at: Canadian Government Publishing Public Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: 819-956-4800 or 1-800-635-7943 Publication No. L31-85/2000 (E or F).
- .3 Treasury Board of Canada Secretariat (TBS):
 - .1 Treasury Board, Fire Protection Standard April 1, 2010
www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316§ion=text.
- .4 Canadian Standards Association (CSA):
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .5 Observe construction safety measures of:
 - .1 NBC 2010, Division B, Part 8.
 - .2 Municipal by-laws and ordinances.
- .6 In case of conflict or discrepancy between above specified requirements, the more stringent shall apply.
- .7 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter in Good Standing.
- .8 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.

1.5 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by all workers, sub-contractors and other persons granted access to Work Site with safety requirements of Contract Documents, applicable federal, provincial, and local by-laws, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.6 SITE CONTROL AND ACCESS

- .1 Control the Work and entry points to Work Site. Approve and grant access only to workers and authorized persons. Immediately stop and remove non-authorized persons.
 - .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter onto Work Site and will ensure that such authorized persons have the required knowledge and training on Health and Safety pertinent to their reason for being at the site, however, Contractor remains responsible for the health and safety of authorized persons while at the Work Site.
 - .2 Isolate Work Site from other areas of the premises by use of appropriate means.
 - .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment. See Section 01 50 00 for minimum acceptable requirements.
 - .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
 - .3 Use professionally made signs with bilingual message in the 2 official languages or international known graphic symbols.
- .3 Provide safety orientation session to persons granted access to Work Site. Advise of hazards and safety rules to be observed while on site.
- .4 Ensure persons granted site access wear appropriate PPE. Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
- .5 Secure Work Site against entry when inactive or unoccupied and to protect persons against harm..

1.7 PROTECTION

- .1 Give precedence to safety and health of persons and protection of environment over cost and schedule considerations for Work.
- .2 Should unforeseen or peculiar safety related hazard or condition become evident during performance of Work, immediately take measures to rectify situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

1.8 FILING OF NOTICE

- .1 File Notice of Project with pertinent provincial health and safety authorities prior to beginning of Work.

- .1 Departmental Representative will assist in locating address if needed.

1.9 PERMITS

- .1 Post permits, licenses and compliance certificates, specified in section 01 10 10, at Work Site.
- .2 Where a particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed before carrying out applicable portion of work.

1.10 HAZARD ASSESSMENTS

- .1 Perform site specific health and safety hazard assessment of the Work and its site.
- .2 Carryout initial assessment prior to commencement of Work with further assessments as needed during progress of work, including when new trades and subcontractors arrive on site.
- .3 Record results and address in Health and Safety Plan.
- .4 Keep documentation on site for entire duration of the Work.

1.11 PROJECT/SITE CONDITIONS

- .1 Following are potential health, environmental and safety hazards at the site for which Work may involve contact with:
 - .1 Existing hazardous and controlled products stored on site:
 - .1 No known products.
 - .2 Existing hazardous substances or contaminated building materials:
 - .1 No known substances or contaminates.
 - .3 Known latent site and environmental conditions:
 - .1 No known site and environmental conditions
 - .4 Facility on-going operations:
 - .1 Adjacent portion of building and fields surrounding will be utilized by Tenant and public.
- .2 Above items shall not be construed as being complete and inclusive of potential health and safety hazards encountered during Work.
- .3 Include above items in the hazard assessment of the Work.
- .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.

1.12 MEETINGS

- .1 Attend pre-construction health and safety meeting, convened and chaired by Departmental Representative, prior to commencement of Work, at time, date and location determined by Departmental Representative. Ensure attendance of:
 - .1 Superintendent of Work.
 - .2 Designated Health & Safety Site Representative.

- .3 Subcontractors.
- .2 Conduct regularly scheduled tool box and safety meetings during the Work in conformance with Occupational Health and Safety regulations.
- .3 Keep documents on site.

1.13 HEALTH AND SAFETY PLAN

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
- .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified.
 - .3 On-site Contingency and Emergency Response Plan as specified below.
 - .4 On-site Communication Plan as specified below.
 - .5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.
 - .6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.
- .3 On-site Contingency and Emergency Response Plan shall include:
 - .1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency.
 - .2 Evacuation Plan: site and floor plan layouts showing escape routes, marshalling areas. Details on alarm notification methods, fire drills, location of fire fighting equipment and other related data.
 - .3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.
 - .4 Emergency Contacts: name and telephone number of officials from:
 - .1 General Contractor and subcontractors.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
 - .5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name of PCA and Facility Management contacts.
- .4 On-site Communication Plan:
 - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
 - .2 List of critical work activities to be communicated with Facility Manager which have a risk of endangering health and safety of Facility users.
- .5 Address all activities of the Work including those of subcontractors.

- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor arrive at Work Site.
- .7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.
- .8 Post copy of the Plan, and updates, prominently on Work Site.

1.14 SAFETY SUPERVISION

- .1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.
- .2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
 - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work
 - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
 - .3 Conduct site safety orientation session to persons granted access to Work Site.
 - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
 - .5 Stop the Work as deemed necessary for reasons of health and safety.
- .3 Health & Safety Site Representative must:
 - .1 Be qualified and competent person in occupational health and safety.
 - .2 Have site-related working experience specific to activities of the Work.
 - .3 Be on Work Site at all times during execution of the Work.
- .4 All supervisory personnel assigned to the Work shall also be competent persons.
- .5 Inspections:
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
 - .2 Follow-up and ensure corrective measures are taken.
- .6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
- .7 Keep inspection reports and supervision related documentation on site.

1.15 TRAINING

- .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
- .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.

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

1.16 MINIMUM SITE SAFETY RULES

- .1 Notwithstanding requirement to abide by federal and provincial health and safety regulations; ensure the following minimum safety rules are obeyed by persons granted access to Work Site:
 - .1 Wear appropriate PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, safety glasses and hearing protection.
 - .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
 - .3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
 - .4 Obey warning signs and safety tags.
- .2 Brief persons of disciplinary protocols to be taken for non compliance. Post rules on site.

1.17 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 will stop Work if non-compliance of health and safety regulations is not corrected in a timely manner.

1.18 INCIDENT REPORTING

- .1 Investigate and report the following incidents to Departmental Representative:
 - .1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
 - .2 Medical aid injuries.
 - .3 Property damage in excess of \$10,000.00,
 - .4 Interruptions to Facility operations resulting in an operational lost to a Federal department in excess of \$5,000.00.
- .2 Submit report in writing.

1.19 HAZARDOUS PRODUCTS

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

- .3 For interior work in an occupied Facility, post additional copy in one or more publically accessible locations.

1.20 POWDER ACTUATED DEVICES

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

1.21 CONFINED SPACES

- .1 Abide by occupational health and safety regulations regarding work in confined spaces.

1.22 SITE RECORDS

- .1 Maintain on Work Site copy of safety related documentation and reports stipulated to be produced in compliance with Acts and Regulations of authorities having jurisdiction and of those documents specified herein.
- .2 Upon request, make available to Departmental Representative or authorized Safety Officer for inspection.

1.23 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post other documents as specified herein, including:
 - .1 Site specific Health and Safety Plan.
 - .2 WHMIS data sheets.

END OF SECTION

1.1 RELATED SECTIONS

- .1 Waste Management and Disposal: Section 01 74 21.
- .2 Parks Canada Basic Impact Analysis: Lighthouse Access Road Recapitalization, Cape Spear Lighthouse National Historic Site.

1.2 DEFINITIONS

- .1 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .2 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.
- .3 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 FIRES

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

1.4 HAZARDOUS MATERIAL HANDLING

- .1 Store and handle hazardous materials in accordance with applicable federal and provincial laws, regulations, codes and guidelines. Store in location that will prevent spillage into the environment
- .2 Label containers to WHMIS requirements and keep MSDS data sheets on site for all hazardous materials.
- .3 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.
- .4 Store and handle flammable and combustible materials in accordance with National Fire Code.
- .5 Transport hazardous materials in accordance with federal Transportation of Dangerous Goods Regulations and applicable Provincial regulations.
- .6 Any hazardous waste or contaminated material uncovered during excavation / construction, must be investigated, source identified, removed and disposed of outside the protected heritage place at an approved facility. Disposal documentation must be provided to the Departmental Representative.
- .7 Petrochemical products, paints and chemicals must be stored 100 meters from the shoreline. They must be secured overnight in a Parks Canada approved enclosed area under lock and key.
- .8 A spill contingency response kit including sorbent material and berms to contain 110% of the largest possible spill (i.e., fuel or other toxic liquids) related to the work must be available on site at all times. On-site personnel must be aware of its location and trained

in its use. Any contaminants must be recovered at source and disposed according to applicable laws, policies and regulations.

1.5 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site. Dispose in accordance with project waste management requirements specified in section 01 74 21.
- .2 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.
- .3 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.

1.6 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing regulations and requirements.
- .4 Provide control devices such as filter fabrics, sediment traps and settling ponds to control drainage and prevent erosion of adjacent lands. Maintain in good order for duration of work.

1.7 SITE AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties where indicated.
- .2 Wrap in burlap, 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.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated or designated by Departmental Representative.
- .6 Introduction of invasive plant species must be prevented:
 - .1 All soil, gravel, untreated construction lumber, erosion and sediment control products (e.g., hay, straw, mulch), or other applicable materials from outside the protected heritage place must be from a certified weed-free source.
 - .2 Minimize bare soil exposure (e.g., cover stockpiled material with tarps, plant native species, cover with natural mulch/ground coverings).
 - .3 Minimize ground disturbance and vegetation removal, as practical and within project requirements.
- .7 Trees must be preserved and left in place. If there is no alternative and select trees/shrubs must be removed, all attempts to dig out and preserve for use in restoration efforts

associated with this or other projects at Cape Spear must be made. Any alteration to trees and shrubs must be approved by the Departmental Representative.

- .8 Restore the decommissioned section of Access Road 'B' and other areas affected by construction activity as closely as possible to the natural surrounding areas. Specifically:
 - .1 Preserve native topsoil from the site, spread over the affected areas, re-grade to natural contour, install effective erosion control measures (e.g., erosion control blankets) on the steepest sections of the road to ensure the soil does not wash away prior to native plant re-population next season.
- .9 The contractor must prepare an erosion and sediment control plan and submit it to the Departmental Representative for approval prior to the start of project activities.
- .10 Use erosion and sediment control products made of 100% biodegradable materials (e.g., jute, sisal or coir fiber) when possible. Ensure backing materials are also biodegradable.
- .11 Topsoil separation is required; stockpile topsoil away from subsoils and spoil material and more than 15 meters away from the shoreline, drainage features and/or the top of steep slopes.
- .12 Salvage topsoil for reclamation activities at this project site or others at Cape Spear.

1.8 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial and federal environmental regulations.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .7 Do not blast under water or 100 m of spawning beds.
- .8 Do not refuel any type of equipment within 100 meters of a water body. Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.
- .9 Ensure all materials (e.g., organic materials, soil stockpiles, construction waste and materials) are securely stored in place, especially during high wind/storm conditions and at the staging area; materials must not enter the marine environment.

1.9 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment to local authorities emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and around entire construction site.

- .5 Have appropriate emergency spill response equipment and rapid clean-up kit on site located adjacent to hazardous materials storage area. Provide personal protective equipment required for clean-up.
- .6 Report, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment to Federal and Provincial Department of the Environment.
 - .1 Notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

1.10 WILDLIFE PROTECTION

- .1 Should nests of migratory birds be encountered during work, immediately notify Departmental Representative for directives to be followed.
 - .1 Do not disturb nest site and neighbouring vegetation until nesting is completed.
 - .2 Minimize work immediately adjacent to such areas until nesting is completed.
 - .3 Protect these areas by following recommendations of Canadian Wildlife Service.
- .2 All wildlife attractants must be secured (e.g., petroleum products, human food, recyclable drink containers and garbage) within wildlife-proof containers, in a secured building or a vehicle. Keep food waste separate from construction waste and remove daily. Notify the Departmental Representative immediately should wildlife gain access to the above mentioned attractants.
- .3 Never approach or harass wildlife (e.g., feeding, baiting, luring).
- .4 Alert the Departmental Representative, immediately to any potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion), distress or mortality. In the case of aggressive behaviour or persistent intrusion, stop work and evacuate the area.

END OF SECTION

Part 1 GENERAL

1.1 GENERAL

- .1 Due to nature of this Facility, and client operations therein, security regulations pertaining to site will be in place during the work resulting in need for:
 - .1 Control and limit movement of construction workers at the site and inside building;
 - .2 Workers must provide valid government issued ID and sign in and sign out of site.
 - .3 Specific rules and regulations as specified in this section and as directed by the Departmental Representative to be stringently followed.
- .2 It is the Contractor's responsibility to:
 - .1 Become familiar with and abide by security rules and regulations;
 - .2 Brief all workers and subcontractors in respect of the security regulations and ensure that they abide by all rules and directives.
- .3 The Departmental Representative will coordinate a pre-construction meeting between Contractor, Facility Management and Security Personnel who will provide details and directives on control and movement on site.
- .4 Any infraction of site security regulations on the part of the Contractor, members of work force or any Subcontractor in his employ, could result in:
 - .1 Financial penalties in the form of progress payment reduction or holdback assessments being levied against the Contractor and;
 - .2 Demand immediate removal of offending party from the site.

1.2 SECURITY CONTROL LIST

- .1 Provide a list of employee names from workforce and from subcontractors who will be present at site during the course of work.
- .2 List to include each person's name, address and telephone number.
- .3 Submit copy of list to Departmental Representative for control of workers.
- .4 Update list as work progresses.
- .5 Ensure that each worker can provide government issued proof of identity upon demand, when requested by Facility's Security Personnel, Departmental Representative or by Facility Management.

1.3 BUILDING ACCESS

- .1 Keys and door security access cards necessary for access to restricted areas may be issued at the discretion of the Departmental Representative. Follow all instructions in regards to use, care and disposition of all keys and access cards so issued.
- .2 Do not, under any circumstances, make or allow workers to make duplicates of keys issued.

- .3 At end of project, return to Departmental Representative all keys and access cards issued. Departmental Representative will deduct from final contract payment, \$25.00 for each item not returned, regardless of the reason.
- .4 Immediately report to Departmental Representative any lost, stolen or destroyed keys and door security access cards.

1.4 SITE SECURITY

- .1 Where work of this contract requires use of a permanently locked door, it is Contractor's responsibility to ensure that door is unlocked and locked after each use or provide a competent security guard, posted at door, when door must remain open for an elongated period of time during a particular work shift.
 - .1 Notify Building Security when security doors will be used and stringently follow all directives to ensure building security is effectively maintained.
- .2 Where work of this contract results in removal of doors or walls (providing security to the exterior or between spaces and suites), erect temporary security hoarding over openings constructed in such a way to provide the same degree of security as doors/walls removed.
- .3 When work must be carried out during Off Hours or beyond the work hours previously agreed upon at start of work, provide notice within 48 hours beforehand to minimize impact on Facility's security and tenant operations.

END OF SECTION

PART 1 GENERAL

1.1 ABBREVIATIONS AND ACRONYMS

- .1 The abbreviations and acronyms are commonly found in the Project Manual and represent the associated organizations or terms.

1.2 MATERIALS, EQUIPMENT AND METHODS

.1 A:

- .1 AC: acoustic.
- .2 AC PAN: acoustic panel.
- .3 ACU: acoustic unit ceiling.
- .4 AFF: above finished floor.
- .5 AC PLAS: acoustic plaster.
- .6 ACT: acoustic tile.
- .7 ACR CU LVR: acrylic cube louvre.
- .8 ADH: adhesive.
- .9 ADJ: adjustable.
- .10 A/C: air conditioner.
- .11 AL: aluminum.
- .12 AB: anchor bolt.
- .13 ANOD: anodized.
- .14 ARCH: architecture.
- .15 ARCH BLK: architectural block.
- .16 AVB: air vapour barrier.

.2 B:

- .1 B: base.
- .2 BEAST: benthic assessment of sediment.
- .3 BH: bore hole.
- .4 BL: bottom layer.
- .5 BLK: block.
- .6 BLKD: bulkhead.
- .7 BM: beam.
- .8 BOT: bottom.
- .9 BMP: best management practice.
- .10 B PL: base plate.
- .11 BRG: bearing.
- .12 BRK: brick.
- .13 BSMT: basement.

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- .14 BTEX: benzene, toluene, ethylbenzene and xylenes.
.15 BUR: built-up roof.
- .3 C:
- .1 CAL: caliper.
.2 CANTIL: cantilever.
.3 CB: catch basin.
.4 CC: centre to centre.
.5 CCN: contemplated change notice.
.6 CDF: controlled density fill.
.7 CEC: Canadian Electrical Code.
.8 CF: chair fabric.
.9 CHAN: channel.
.10 CHS: Canadian hydrographic service.
.11 CJ: construction joint.
.12 CL: centreline.
.13 CK: cork.
.14 CLG: ceiling.
.15 CLR: clear.
.16 COL: column.
.17 CONC: concrete.
.18 CONC BLK: concrete block.
.19 CONC BRK: concrete brick.
.20 CONT: continuous.
.21 CONT J: control joint.
.22 COMPL: complete.
.23 CM: centimetre. (Nursery stock).
.24 CPL: cement plaster.
.25 CPM: critical path method.
.26 CPT: carpet.
.27 CPTT: carpet tile.
.28 CT: ceramic tile.
.29 CVT: conductive vinyl tile.
.30 C/W: complete with.
- .4 D:
- .1 D: deep.
.2 DD: dutch door.
.3 DEG: degree.
.4 DF: drinking fountain.
.5 DIA: diameter.
.6 DIM: dimension.

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- .7 DL: dead load.
.8 DMNT: demountable.
.9 DP: dampproofing.
.10 DR: door.
.11 DRP: drapery.
.12 DWL: dowel.
- .5 E:
- .1 EA: each.
.2 EC: epoxy coating.
.3 ECF: engineered containment facility.
.4 EE: each end.
.5 EF: each face.
.6 EL: elevation.
.7 ELEC: electric.
.8 ELEV: elevator.
.9 EM: expanded metal.
.10 ENCL: enclosure.
.11 EQ: equal.
.12 EXH: exhaust.
.13 EXIST: existing.
.14 EXPJ: expansion joint.
.15 EXP STRUCT: exposed structure.
.16 EXT: exterior.
.17 EW: each way.
- .6 F:
- .1 FC: fuel contributed.
.2 FD: floor drain.
.3 FDN: foundation.
.4 FEAT W: feature wall.
.5 FEXT: fire extinguisher.
.6 FH: fire hose.
.7 FHC: fire hose cabinet.
.8 FHR: fire hose rack.
.9 FIN: finish.
.10 FIP: federal identity program.
.11 FL: floor.
.12 FLD: field.
.13 FLUOR: fluorescent.
.14 FR: frame.
.15 FRR: fire resistance rating.

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- .16 FTG: footing.
- .7 G:
- .1 GALV: galvanized steel.
- .2 GB: grab bar.
- .3 GBD: gypsum board.
- .4 GC: General Conditions.
- .5 GF: ground floor.
- .6 GFCI: ground fault circuit interrupter.
- .7 GL: glass or glazing.
- .8 GL BLK: glass block.
- .9 GPC: gypsum plaster ceiling.
- .10 GPW: gypsum plaster wall.
- .11 GT: glass tile.
- .8 H:
- .1 HB: hose bib.
- .2 HC: hollow core.
- .3 HCWD: hollow core wood door.
- .4 HD: hand dryer.
- .5 HDW: hardware.
- .6 HDWD: hardwood.
- .7 HM: hollow metal.
- .8 HOR: horizontal.
- .9 HOR EF: horizontal each face.
- .10 HP: hydro pole.
- .11 HPA: Hamilton Port Authority.
- .12 HR: hour.
- .13 HRV: heat recovery ventilator.
- .14 HT: height.
- .15 HTR: heater.
- .16 HWT: hot water tank.
- .17 HYD: hydrant.
- .9 I:
- .1 ICF: insulated concrete formwork.
- .2 ID: inside diameter.
- .3 INS: insulation.
- .4 INTLK: interlock.
- .10 J:
- .1 JT: joint.
- .11 K:

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- .1 KPL: kick plate.
- .12 L:
- .1 LAV: lavatory.
- .2 LDG: landing.
- .3 LG: long.
- .4 LINO: linoleum.
- .5 LL: live load.
- .6 LT: light.
- .13 M:
- .1 MAS: masonry.
- .2 MAS FL: masonry flashing.
- .3 MAX: maximum.
- .4 MBG: metal bar grating.
- .5 MCL: metal cube louvre.
- .6 MECH: mechanical.
- .7 MET: metal.
- .8 MET DK: metal deck.
- .9 MET FL: metal flashing.
- .10 MET GRID CLG: metal grid ceiling.
- .11 MET GRTG: metal grating.
- .12 MET LIN CLG: metal linear ceiling.
- .13 MET T PTN: metal toilet partition.
- .14 MH: maintenance hole.
- .15 MIN: minimum.
- .16 MLP: metal lath and plaster.
- .17 MO: masonry opening.
- .18 MR: marble.
- .19 MT: metal threshold.
- .20 MWP: membrane waterproofing.
- .14 N:
- .1 NBC: national building code.
- .2 NF: near face.
- .3 NFC: national fire code.
- .4 NIC: not in contract.
- .5 NO: number.
- .6 NRC: noise reduction coefficient.
- .7 NRP: non removable pin.
- .8 NTS: not to scale.
- .15 O:

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- .1 OBC: Ontario building code.
.2 OC: on centre.
.3 OD: outside diameter.
.4 OPNG: opening.
.5 OPR: operator.
.6 OVHD: overhead.
.7 OWSJ: open web steel joist.
- .16 P:
- .1 P: prefinished.
.2 PAH: polynuclear aromatic hydrocarbons.
.3 PARG: parging.
.4 PCC: precast concrete.
.5 PCT: porcelain ceramic tile.
.6 PED ACS FLG: pedestal access flooring.
.7 PF: panel fabric.
.8 PL: plate.
.9 PLAM: plastic laminate.
.10 PLAS: plaster.
.11 PLYWD: plywood.
.12 PR: pair.
.13 PREFAB: prefabricated.
.14 PREFIN: prefinished.
.15 PRFL: profile.
.16 PT: paint.
.17 PTD: paper towel dispenser.
.18 PTN: partition.
.19 PVC: polyvinyl chloride.
- .17 Q:
- .1 QTB: quarry tile base.
.2 QTF: quarry tile floor.
.3 QTR: quarry tile roof.
- .18 R:
- .1 R: radius.
.2 RA: return air.
.3 RB: resilient base.
.4 RC: reinforced concrete.
.5 RCPT: receptacle.
.6 RD: roof drain.
.7 REINF: reinforced/reinforcing.

- .8 REQD: required.
.9 REQT: requirement.
.10 RFT: rubber floor tile.
.11 RM: room.
.12 RO: rough opening.
.13 RP: radiant panel.
.14 RRS: recycled rubber sheet.
.15 RRT: recycled rubber tile.
.16 RSD: rolling steel door.
.17 RSF: rubber sheet flooring.
.18 RTU: roof top unit.
.19 RWL: rain water leader.
- .19 S:
- .1 SAN SEW: sanitary sewer.
.2 SCHED: schedule.
.3 SC: solid core.
.4 SCRN: screen.
.5 SCWD: solid core wood door.
.6 SD: smoke developed.
.7 SDT: static dissipative tile.
.8 SECT: section.
.9 SH: sill height.
.10 SIM: similar.
.11 SL: sliding.
.12 SLR: sealer.
.13 SPEC: specification.
.14 SS: stainless steel.
.15 STD: standard.
.16 STL: steel.
.17 STL BM: steel beam.
.18 STC: sound transmission class.
.19 STL FL DK: steel floor deck.
.20 STL PL: steel plate.
.21 STN: stone.
.22 STR: structure or structural.
.23 ST SEW: storm sewer.
.24 S&U: stain and urethane.
.25 S&V: stain and varnish.
.26 SVT: solid vinyl tile.
- .20 T:

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- .1 T: top.
 - .2 T&B: top and bottom.
 - .3 TCB: turbidity control plan.
 - .4 TEL: telephone.
 - .5 TER: terrazzo.
 - .6 TERT: terrazzo tile.
 - .7 THKNS: thickness.
 - .8 THR: threshold.
 - .9 TMPD: tempered.
 - .10 TOPG: topping.
 - .11 TRANSV: transverse.
 - .12 TYP: typical.

 - .21 U:
 - .1 U: urethane.
 - .2 UCUT: undercut.
 - .3 UGRD: underground.
 - .4 UNO: unless noted otherwise.
 - .5 UOS: unless otherwise specified.
 - .6 U/S: underside.
 - .7 UR: urinal.

 - .22 V:
 - .1 VCF: vinyl coated fabric.
 - .2 VCT: vinyl composite tile.
 - .3 VERT: vertical.
 - .4 VERT B: vertical blinds.
 - .5 VERT EF: vertical each face.
 - .6 VSF: vinyl sheet flooring.
 - .7 VT: vinyl tile.
 - .8 VWC: vinyl wall covering.

 - .23 W:
 - .1 WC: water closet.
 - .2 W-C: wall connectors.
 - .3 WD: wood.
 - .4 WDV: wood veneer.
 - .5 WH: wall hydrant.
 - .6 WHMIS: workplace hazardous materials information system.
 - .7 WP: waterproofing.
 - .8 WR: washroom.
 - .9 WSIB: workplace safety and insurance board.

- .10 WT: weight.
- .11 WTP: water treatment plant.

1.3 STANDARDS ORGANIZATIONS

- .1 Standards writing organizations:
 - .1 AA - Aluminum Association.
 - .2 ACPA - American Concrete Pipe Association.
 - .3 ANSI - American National Standards Institute.
 - .4 ASHRAE - American Society of Heating and Refrigerating and Air-Conditioning Engineers.
 - .5 ASTM - American Society for Testing and Materials.
 - .6 AWI/AWMAC - Architectural Woodwork Institute/Architectural Woodwork Manufacturers Association of Canada.
 - .7 AWPA - American Wood Preservers' Association.
 - .8 AWWA - American Water Works Association.
 - .9 BHMA - Builders Hardware Manufacturers Association.
 - .10 CCDC - Canadian Construction Documents Committee.
 - .11 CCMPA - Canadian Concrete Masonry Producers Association.
 - .12 CGSB - Canadian General Standards Board.
 - .13 CNTA - Canadian Nursery Trades Association.
 - .14 CPCA - Canadian Painting Contractors Association.
 - .15 CRCA - Canadian Roofing Contractors Association.
 - .16 CSA - Canadian Standards Association.
 - .17 CSC - Construction Specifications Canada.
 - .18 CSDMA - Canadian Steel Door Manufacturers Association.
 - .19 CSI - Construction Specifications Institute.
 - .20 CSSBI - Canadian Sheet Steel Building Institute.
 - .21 CRCA - Canadian Roofing Contractors Association.
 - .22 DHI - Door and Hardware Insitute.
 - .23 EEMAC - Electrical and Electronic Manufacturer's Association of Canada.
 - .24 ESA - Electrical Safety Authority.
 - .25 FCC - Fire Commissioner of Canada.
 - .26 FSC - Forest Stewardship Council.
 - .27 GANA - Glass Association of North America.
 - .28 HMMA - Hollow Metal Manufacturers Association.
 - .29 IEEE - Institute of Electrical and Electronics Engineers Inc.
 - .30 ISO - International Organization for Standardization.
 - .31 IWFA - International Window Film Association.
 - .32 MPI - Master Painters Institute.
 - .33 NAAMM - National Association of Architectural Metal Manufacturers.
 - .34 NCPI - National Clay Pipe Institute.

- .35 NEMA - National Electrical Manufacturers Association.
- .36 NFPA - National Fire Protection Association.
- .37 PPI - Plastics Pipe Institute.
- .38 SDI - Steel Door Intitute.
- .39 SCAQMD - South Coast Air Quality Management District.
- .40 TIA - Telecommunications Industry Association.
- .41 TIAC - Thermal Insulation Association of Canada.
- .42 TTMAC - Terrazzo Tile and Marble Association of Canada.
- .43 UL - Underwriters Laboratories.
- .44 ULC - Underwriters Laboratories of Canada.
- .45 US EPA - United States Environmental Protection Agency.
- .46 WH - Warnock Hersey.

1.4 FEDERAL GOVERNMENT DEPART- MENTS AND AGENGIES

- .1 Departments, agencies and crown corporations.
 - .1 CEAA - Canadian Environmental Assessment Agency.
 - .2 CSC - Correctional Service Canada.
 - .3 CRA - Canada Revenue Agency.
 - .4 DND - Department of National Defence.
 - .5 EC - Environment Canada.
 - .6 FHBRO - Federal Heritage Buildings Review Office.
 - .7 HC - Health Canada.
 - .8 HCD - Heritage Conservation Directorate.
 - .9 LC - Labour Canada.
 - .10 PC - Parks Canada.
 - .11 PWGSC - Public Works and Government Services Canada.
 - .12 RCMP - Royal Canadian Mounted Police.
 - .13 TBS - Treasury Board Secretariat.
 - .14 TC - Transport Canada.

1.5 UNITS OF MEASURE METRIC

- .1 The following abbreviations of units of measure are commonly found in the Project Manual:
 - .1 C: Celsius.
 - .2 cm: centimetre.
 - .3 kg: kilogram.
 - .4 kg/mü: kilogram per cubic metre.
 - .5 kN: kilonewton.
 - .6 kPa: kilopascals.
 - .7 kw: kilowatts.
 - .8 l/s: litre per second.

- .9 m: metre.
- .10 mü: cubic metre.
- .11 mg/kg: milligrams per kilogram.
- .12 mg/L: milligrams per litre.
- .13 mm: millimetres.
- .14 MPa: megapascal.
- .15 NTU: nephelometric turbidity unit.
- .16 ppm: parts per million.
- .17 ug/L: micrograms per litre.
- .18 ug/mü: micrograms per cubic metre.

1.6 UNITS OF MEASURE IMPERIAL

- .1 The following abbreviations of units of measure are commonly found in the Project Manual:
 - .1 F: Fahrenheit.
 - .2 ft: foot/feet.
 - .3 ga: guage.
 - .4 gpm: gallons per minute.
 - .5 in: inches.
 - .6 lbs: pounds.
 - .7 NTU: nephelometric turbidity unit.
 - .8 psi: pounds-force per square inch.
 - .9 ppm: parts per million.

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 INSPECTION

- .1 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.
- .2 In accordance with the General Conditions, Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.
- .3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed.
- .4 Pay costs to uncover and make good work disturbed by inspections and tests.

1.2 TESTING

- .1 Tests on materials, equipment and building systems as specified in various sections of the Specifications is the responsibility of the Contractor except where stipulated otherwise.
 - .1 Provide all necessary instruments, equipment and qualified personnel to perform tests.
 - .2 At completion of tests, turn over 2 sets of fully documented tests reports to the Departmental Representative. Submit in accordance with Section 01 33 00.
 - .1 Obtain additional copies for inclusion of a complete set in each of the maintenance manuals specified in Section 01 78 00.
 - .3 Unspecified tests may also be made by Departmental Representative, at the discretion of the Departmental Representative. The costs of these tests will be paid for by the Departmental Representative.
 - .4 Where tests or inspections reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests and inspections incurred by Departmental Representative as required to verify acceptability of corrected work.

1.3 REJECTED WORK

- .1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.
- .2 Make good damages to new and existing construction and finishes resulting from removal or replacement of defective work.

1.4 MOCK-UPS

- .1 Prepare mock-ups of certain work as specified in various sections of the Specifications. Include in each mock-up all related work components representative of final assembly.
- .2 Construct in locations acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.
- .6 Dismantle and remove mock-up when directed by Departmental Representative, unless approval is given for mock-up to remain as part of the Work.

END OF SECTION

Part 1 GENERAL

1.1 SITE ACCESS AND PARKING

- .1 The Departmental Representative will designate Contractor's access to project site, as well as parking facilities for equipment. Contractor's personnel will have to find alternative off-site parking throughout the entire construction period.
- .2 Vehicular traffic and staging areas will be restricted to present-day roadways and disturbed areas.
- .3 Maintain existing roads and parking areas at site, where used by Contractor, for duration of contract.
 - .1 Keep clean and free of mud and dirt by washing on a regular basis.
 - .2 Provide snow removal in areas located within construction site or enclosed by work.
 - .3 Make good and repair damage resulting from Contractor's use of existing roads, asphalted areas and lawns on site.

1.2 CONTRACTOR'S SITE OFFICE

- .1 Be responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Departmental Representative.

1.3 MATERIAL STORAGE

- .1 Area for site storage trailers will be made available. Locate as directed by Departmental Representative.

1.4 SITE ENCLOSURES

- .1 Provide temporary fence to enclose various construction areas of work site.
- .2 Erect wood fence to 2400 mm height, constructed as follows:
 - .1 Use 38 x 89 mm construction grade framing spaced at maximum 600 mm oc covered with 13 mm thick exterior grade fir plywood on public side and adequately braced.
 - .2 Apply plywood panels vertically with flush and butted joints.
 - .3 Provide one truck gate and at least one pedestrian door as directed by Departmental Representative.
 - .4 Paint public side of site enclosure in selected colours with one coat primer to CGSB 1-GP-55e and one coat exterior paint to CGSB 1-GP-59M.
 - .5 Maintain public side of enclosure in clean condition.
- .3 Make all gates lockable and provide keyed padlocks.
- .4 Obtain Departmental Representative's approval beforehand of location and layout of all temporary fence enclosures.
- .5 Provide battery powered lanterns around the perimeter of the site enclosure to clearly mark its location at night.

- .6 Provide warning signs affixed to all fenced areas, identifying those enclosed areas as "Construction Zones" with access restricted to only those persons so authorized by General Contractor.
- .7 Do not construe fencing as an acceptable replacement for pedestrian walkway and hoarding requirements specified below.

1.5 PEDESTRIAN WALKWAYS AND HOARDING

- .1 Ensure maximum safety and security to facility users during the course of work.
- .2 Be responsible for and provide temporary 2.4 metre high plywood construction hoarding when work is adjacent to exterior sidewalks and circulation routes used by facility employees and public.
- .3 Maintain access and egress to building entrances and fire exits designated by Departmental Representative to remain in use. Provide enclosed walkways when work is adjacent to such doors as follows:
 - .1 Erect wooden pedestrian walkway complete with roof and side covers.
 - .2 Install walkways as soon as work is in the vicinity of entrance and exit doors and poses a potential danger to facility users.
 - .3 Construct to approximate size of 2.0 metre wide x 2.1 metre high x length as required to fully clear danger zone.
 - .4 Provide signage and lighting.
 - .5 Submit details of walkway size, location, layout and construction to Departmental Representative beforehand and obtain approval.
- .4 Adequately frame and brace hoarding and walkways to resist wind, and other weather or site conditions.
- .5 Erect such protective devices during Facility's non-operational off hour periods.
- .6 Obtain Departmental Representative's concurrence prior to removal of hoarding and walkways.

1.6 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .3 Sanitary facilities are available at the site and may be used by Contractor's work force. Make arrangements for the use of such facilities through the Departmental Representative.
- .4 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Departmental Representative.

1.7 ENCLOSURE OF STRUCTURE

- .1 Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed.

- .2 Provide weathertight and heated enclosures to conduct exterior work during winter and other inclement weather conditions. Erect to allow accessibility for installation of materials and working inside of enclosure.
- .3 Design enclosures to withstand wind pressure and snow loading.

1.8 POWER

- .1 The contractor is to provide its own power for construction.
- .2 Provide and pay all costs to supply and install temporary cabling, panelboards, switching devices and other equipment as required to connect into power source, provide adequate ground fault protection and extend power supply from existing source to work areas. Perform work and make all connections in accordance with the CSA C22.1-12 Canadian Electrical Code, in compliance with the federal and provincial Occupational Health and Safety Regulations as specified in section 01 35 30 and to lockout requirements specified in section 01 35 25.
- .3 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 162 lx in all locations.
- .4 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage. Replace lamps which have been used over period of 3 months.

1.9 WATER SUPPLY

- .1 Water is not available on site during the construction season. Water is trucked in for domestic use only during the visitor season. Contractor is responsible for water supply.

1.10 HEATING AND VENTILATING

- .1 Supply, install and pay for costs of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work areas will not be permitted.
- .2 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of work.
 - .2 Protect work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Maintain minimum temperature of 10 degrees C, or higher where specified, as soon as finishing work is commenced and maintain until acceptance of structure by Departmental Representative.
 - .1 Maintain ambient temperature and humidity levels as required for comfort of office personnel.
- .4 Ventilating:

- .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
- .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
- .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .6 Submit bid assuming existing or new equipment and systems will not be used for temporary heating and ventilating.
- .7 Upon acceptance of bid, Departmental Representative may permit use of permanent system providing agreement can be reached on:
 - .1 Conditions of use, special equipment, protection and maintenance.
 - .2 Saving on Contract price.
 - .3 Provisions relating to warranties on equipment.

1.11 CONSTRUCTION SIGN AND NOTICES

- .1 Upon request by Departmental Representative, erect a self supporting project sign in location indicated.
- .2 Departmental Representative will provide a vinyl sign facing for installation by Contractor on sign framework. Sign frame to be plywood face of approximately 1200 x 2400 mm in size complete with required wood framing at 400 mm o.c and support posts.
- .3 Install sign plumb and level in neat wood framework and securely anchor in ground by posts to withstand wind pressure of 160 km/h.
- .4 Contractor or subcontractor advertisement signboards are not permitted on site.
- .5 Safety and Instruction Signs and Notices:
 - .1 Signs and notices for safety and instruction shall be in both official languages or commonly understood graphic symbols conforming to CAN/CSA-Z321-96(R2006).
- .6 Maintenance and Disposal of Site Signs:
 - .1 Maintain approved signs and notices in good condition for duration of project and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.12 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by Departmental Representative.

END OF SECTION

1.1 GENERAL

- .1 Use new material and equipment unless otherwise specified.
- .2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
 - .1 Name and address of manufacturer.
 - .2 Trade name, model and catalogue number.
 - .3 Performance, descriptive and test data.
 - .4 Compliance to specified standards.
 - .5 Manufacturer's installation or application instructions.
 - .6 Evidence of arrangements to procure.
 - .7 Evidence of manufacturer delivery problems or unforeseen delays.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 PRODUCT QUALITY

- .1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.
- .2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions of the Contract.

1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES

- .1 Acceptable Materials: When materials specified include trade names or trade marks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.
- .2 Alternative Materials: Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.
- .3 Substitutions: After contract award, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.4 MANUFACTURERS INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.

- .2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions, so that Departmental Representative will designate which document is to be followed.

1.5 AVAILABILITY

- .1 Immediately notify Departmental Representative in writing of unforeseen or unanticipated material delivery problems by manufacturer. Provide support documentation as per clause 1.1.2 above.

1.6 WORKMANSHIP

- .1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Remove unsuitable or incompetent workers from site as stipulated in the General Conditions of the Contract.
- .3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.
- .4 Coordinate work between trades and subcontractors. See section 01 14 10 in this regard.
- .5 Coordinate placement of openings, sleeves and accessories.

1.7 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.
- .2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.
- .3 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- .4 Fastenings which cause spalling or cracking of material to which anchorage is made, are not acceptable.
- .5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See section on Health and Safety Requirements in this regard.

1.8 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and, use resilient washers with stainless steel.

1.9 STORAGE, HANDLING AND PROTECTION

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

END OF SECTION

Part 1 GENERAL

1.1 ACTION AND INFORMATIONAL SUBMITTALS

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

1.2 MATERIALS

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

1.3 PREPARATION

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

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .10 Restore work with new products in accordance with requirements of Contract Documents.
- .11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Waste Management: separate waste materials for reuse 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

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

1.2 MATERIALS

- .1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 CLEANING DURING CONSTRUCTION

- .1 Maintain work site in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Keep building entrances, corridors, stairwells and tenant occupied areas of building in a clean dust free condition at all times. Conduct thorough cleaning of these areas when used by workers or affected by the Work.
- .3 Provide on-site dump type and recycling containers for collection of waste materials and debris.
- .4 Use separate collection bins, clearly marked as to purpose, for source separation and recycling of waste and debris in accordance with waste management requirements specified.
- .5 Work Site is in a location that experience high wind speeds that have the potential to blow unsecured waste material and debris around. Ensure waste material is secured by cover and removed from site on a minimum weekly basis. More frequent removal may be required at the discretion of the Departmental Representative.
- .6 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .7 Provide dust barriers, dividers, seals on doors and employ other dust control measures as required to ensure that dust and dirt, generated by work, are not transmitted to existing areas of building. Should dust migrate into tenant occupied and public areas of building, employ such means as may be necessary to immediately clean all contaminated surfaces to the satisfaction of the Departmental Representative.
 - .1 See Section 01 50 00 for requirements on dust control and for erection of dust partitions.
- .8 Immediately clean all dust, dirt, smears, scuffs and soiled surfaces in lobbies, corridors, stairwells and within tenant occupied areas resulting from the Work.
 - .1 Perform cleaning, dusting and washing operations, carpet vacuuming (including shampooing if deemed required by Departmental Representative) and floor washing as necessary to thoroughly clean all soiled surfaces.
- .9 Remove snow and ice from access doors used by workforce.

1.4 FINAL CLEANING

- .1 In preparation for acceptance of the completed work perform final cleaning.
- .2 Remove grease, dust, dirt, stains, labels, fingerprints, marks and other foreign materials, from interior and exterior finished surfaces. Clean and polish surfaces including glass, mirrors, hardware, wall tile, stainless steel, chrome, baked enamel, plastic laminate, mechanical and electrical fixtures.
- .3 Replace items with broken pieces, scratches or disfigured.
- .4 Clean lighting reflectors, lenses, and other lighting surfaces.
- .5 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .6 Wax, seal, shampoo or prepare floor finishes as recommended by manufacturer.
- .7 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.
- .8 Broom clean and wash exterior paved surfaces and walks; rake clean other surfaces of grounds.
- .9 Remove debris and surplus materials from crawl areas, roof areas and other accessible concealed spaces.
- .10 Clean equipment, washroom and kitchen fixtures to a sanitary condition. Replace filters of mechanical equipment.

END OF SECTION

PART 1 GENERAL

1.1 DEFINITIONS

- .1 Hazardous Material: Product, substance, or organism that is used for its original purpose, and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

1.2 WASTE MANAGEMENT

- .1 Incorporate environmental and sustainable practices in managing waste resulting from work.
- .2 Divert as much waste as possible from landfill.
- .3 Coordinate work of subtrades and subcontractors to ensure all possible waste reduction and recycling opportunities are taken. Follow waste management requirements specified in trade sections of the Specifications.
- .4 Reduce waste during installation of new materials. Undertake practices which will optimize full use of materials and minimize waste.
- .5 Develop innovative procedures to reduce quantity of waste generated by construction such as by delivering materials to site with minimal packaging etc.
- .6 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable and recyclable materials.
- .7 During demolition and removal work separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:
 - .1 Reinstallation into the work where indicated.
 - .2 Salvaging reusable items not needed in project which Contractor may sell to other parties.
 - .3 Sending as many items as possible to locally available recycling facility.
 - .4 Segregating remaining waste and debris into various individual waste categories for disposal in a "non-mixed state" as recommended by waste processing/landfill sites.
- .8 Isolate product packaging and delivery containers from general waste stream. Send to recycling facility or return to supplier/manufacturer.
- .9 Send leftover material resulting from installation work for recycling whenever possible.
- .10 Establish methods whereby hazardous and toxic materials, and their containers used on site are properly handled, stored and disposed in accordance with applicable federal, provincial and municipal laws and regulations.

1.3 DISPOSAL REQUIREMENTS

- .1 Burying or burning of rubbish and waste materials is prohibited.
- .2 Disposal of volatile materials, mineral spirits, oil, paint, and other hazardous materials into waterways, storm, or sanitary sewers is prohibited.

- .3 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.
- .4 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.
- .5 Transport and dispose of waste intended for waste processing plant or landfill facility in separated condition and to Operator's rules and recommendations in support of their effort to recycle, reduce and divert certain waste stream from general landfill.
- .6 Collect, bundle and transport salvaged materials to be recycled in separated categories and condition as directed by recycling facility. Ship materials only to approved recycling facilities.
- .7 Sale of salvaged items by Contractor to other parties not permitted on site.

END OF SECTION

1.1 SECTION INCLUDES

- .1 Administrative procedures preceding inspection and acceptance of Work by Departmental Representative.

1.2 RELATED SECTIONS

- .1 Section 01 78 00: Closeout Submittals.

1.3 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Coordinate and perform, in concert with subcontractors, an inspection and check of all Work. Identify and correct deficiencies, defects, repairs and perform outstanding items as required to complete work in conformance with Contract Documents.
 - .1 Notify Departmental Representative in writing when deficiencies from Contractor's inspection have been rectified and that Work is deemed to be complete and ready for Departmental Representative's inspection of the completed work.
 - .2 Departmental Representative's Inspection: Accompany Departmental Representative during all substantial and final inspections of the Work.
 - .1 Address defects, faults and outstanding items of work identified by such inspections.
 - .2 Advise Departmental Representative when all deficiencies identified have been rectified.
 - .3 Note that Departmental Representative will not issue a Certificate of Substantial Performance of the work until such time that Contractor performs following work and turns over the specified documents:
 - .1 Project record as-built documents;
 - .2 Final Operations and Maintenance manuals;
 - .3 Maintenance materials, parts and tools;
 - .4 Compliance certificates from applicable authorities;
 - .5 Reports resulting from designated tests;
 - .6 Demonstration and training complete with user manuals;
 - .7 Manufacturer's Guarantee certificates.
 - .8 Testing, adjusting and balancing of equipment and systems complete with submission of test reports.
 - .9 Commissioning of equipment and systems specified.
 - .4 Correct all discrepancies before Departmental Representative will issue the Certificate of Completion.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

- .1 Project Record Documents.
- .2 Operations and Maintenance data.

1.2 RELATED SECTIONS

- .1 Section 01 79 00: Demonstration and Training.

1.3 PROJECT RECORD DOCUMENTS

- .1 Departmental Representative will provide 2 white print sets of contract drawings and 2 copies of Specifications Manual specifically for "As-Built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual As-Built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative upon request.
- .4 As-Built Drawings:
 - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of work, neatly transfer notations to second set (also by use of red ink).
 - .2 Submit both sets to Departmental Representative prior to application for Certificate of Substantial Performance.
 - .3 Stamp all drawings with "As-Built". Label and place Contractor's signature and date.
 - .4 Show all modifications, substitutions and deviations from what is shown on the contract drawings.
 - .5 Record following information:
 - .1 Depths of various elements of foundation in relation to first floor level.
 - .2 Horizontal and vertical location of exterior underground utilities and appurtenances referenced to permanent surface improvements.
 - .3 Horizontal and vertical location of various elements in relation to Geodetic Datum;
 - .4 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;
 - .5 Field changes of dimension and detail;
 - .6 Location of all capped or terminated services and utilities.
 - .7 Chases for mechanical, electrical and other services;
 - .8 Ceiling and floor elevations;
 - .9 Reflected ceiling plan condition showing finished layout of all ceiling-mounted services and devices;

- .10 Plumbing, heating, air conditioning and ventilation, sprinkler and electrical service installation locations; all to be dimensioned and referenced to building columns or load bearing walls;
 - .11 All structural steel installations to be fully dimensioned;
 - .12 All design elevations, sections, floor plans and details dimensioned and marked-up to consistently report finished installation conditions;
 - .13 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings;
 - .14 All change orders issued over the course of the contract must be documented on the finished As-Built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.
- .5 As-Built Specifications: legibly mark in red each item to record actual construction, including:
- .1 Changes made by Addenda and Change Orders.
 - .2 Mark up both copies of specifications; stamp "As-Built", sign and date similarly to drawings as per above clause.
- .6 Maintain As-Built documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis. Failure to maintain as-builts current and complete to satisfaction of the Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.
- .7 Submit on paper and in electronic format as pdf files. Forward pdf and in the native program format, MS Word, Autocad dwg and photograph jpg files on USB compatible with PCA encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.4 REVIEWED SHOP DRAWINGS

- .1 Provide a complete set of all shop drawings reviewed for project to incorporate into each copy of the Operations and Maintenance Manuals.
- .2 Submit full sets at same time and as part of the contents of the Operation and Maintenance Manuals specified.

1.5 UPDATING OF DIGITAL DRAWINGS

- .1 Obtain and pay for the services of a qualified drafting firm to update the digital files which were used to produce the contract drawings.
 - .1 Update the digital drawing files with the same As-Built information as specified for the paper As-Built drawings.
 - .2 Supply of digital documents does not replace the requirement to provide marked-up white prints specified above.
- .2 The Departmental Representative will provide a copy of the digital drawing files.
- .3 Incorporate the as-built changes to the digital drawings by following the standards specified in the latest version of the PCA National CADD Standard. A copy of this manual will be provided by the Departmental Representative.

- .4 Make revisions to electronic files found to be in non-conformance with the PCA National CADD Standard as directed by Departmental Representative.
- .5 In regards to updating the digital files to reflect changes resulting from Change Orders, the change in cost of completing the As-Built documentation of changes is to be included in the amount for each Change Order issued. The amount included will constitute only the increase or decrease in CADD related costs resulting directly from the change. In determining the cost difference, full consideration will be given to the fact that other clauses of this section require As-Built CADD updates to the drawings irrespective of any Change Orders.
- .6 Deliver the digital As-Built information in same format and sequence as the contract drawings and specifications.
 - .1 Submit on PCA encrypted USB.
 - .2 Provide 1 full set of paper plots.
 - .3 Submit the digital As-Built at the same time as the marked-up paper white prints.

1.6 OPERATIONS & MAINTENANCE MANUAL

- .1 O&M Manual - Definition: an organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual sections of the specifications.
- .2 Manual Language: final manuals to be in English language.
 - .1 Upon review and acceptance by Departmental Representative, submit 3 final copies. Interim copies are not to be considered as part of the final copies unless they have been fully revised and are identical to the final approved version.
- .3 Submission Date: submit complete operation and maintenance manual to Departmental Representative 3 weeks prior to application for Certificate of Substantial Performance of the work.
- .4 Binding:
 - .1 Assemble, coordinate, bind and index required data into Operation and Maintenance Manual.
 - .2 Use vinyl, hard covered, 3 "D" ring binders, loose leaf, sized for 215 x 280 mm paper, with spine pocket.
 - .3 Where multiple binders are needed, correlate data into related consistent groupings.
 - .4 Identify contents of each binder on spine.
 - .5 Organize and divide data following same numerical system as the section numbers of the Specification Manual.
 - .6 Dividers: separate each section by use of cardboard dividers and labels. Provide tabbed fly leaf for each individual product and system and give description of product or component.
 - .7 Type lists and notes. Do not hand write.
 - .8 Drawings, diagrams and manufacturers' literature must be legible. Provide with reinforced, punched binder tab. Bind in with text; fold larger drawings to size of text pages.

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- .5 Manual Contents:
 - .1 Cover sheet containing:
 - .1 Date submitted.
 - .2 Project title, location and project number.
 - .3 Names and addresses of Contractor, and all Sub-Contractors.
 - .2 Table of Contents: provide full table of contents in each binder(s), clearly indicate which contents are in each binder.
 - .3 List of maintenance materials.
 - .4 List of spare parts.
 - .5 List of special tools.
 - .6 Original or certified copy of warranties and product guarantees.
 - .7 Copy of approval documents and certificates issued by Inspection Authorities.
 - .8 Copy of reports and test results performed by Contractor as specified.
 - .9 Product Information (PI Data) on materials, equipment and systems as specified in various sections of the specifications. Data to include:
 - .1 List of equipment including manufacturer's name, supplier, local source of supplies and service depot(s). Provide full addresses and telephone numbers.
 - .2 Nameplate information including equipment number, make, size, capacity, model number and serial number.
 - .3 Parts list.
 - .4 Installation details.
 - .5 Operating instructions.
 - .6 Maintenance instructions for equipment.
 - .7 Maintenance instructions for finishes.
 - .6 Shop drawings:
 - .1 Include complete set of reviewed shop drawings into each copy of the operations and maintenance manual.
 - .2 Fold and bind material professionally in a manner that corresponds with the specification section numbering system.
 - .3 When large quantity of data is submitted, place into separate binders of same size as O&M binders.
 - .7 Equipment and Systems Data: the following list indicates the type of data and extent of information required to be included for each item of equipment and for each system:
 - .1 Description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
 - .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
 - .3 Include installed colour coded wiring diagrams.
 - .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and

- emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Servicing and lubrication schedule, and list of lubricants required.
- .7 Manufacturer's printed operation and maintenance instructions.
- .8 Sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports.
- .15 Additional requirements as specified in individual specification sections.
- .8 Materials and Finishes Maintenance Data:
 - .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
 - .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .4 Additional Requirements: as specified in individual specifications sections.

1.7 SPARE PARTS, TOOLS AND MAINTENANCE MATERIALS

- .1 Provide spare parts, special tools and extra materials for maintenance purposes in quantities specified in individual specification sections.
- .2 Tag all items with associated function or equipment.
- .3 Provide items of same manufacture and quality as items in Work.
- .4 Deliver to site in well packaged condition. Store in location as directed by Departmental Representative.
- .5 Clearly mark as to contents indicating:
 - .1 Part number.
 - .2 Identification of equipment or system for which parts are applicable.
 - .3 Installation instructions or intended use as applicable.
 - .4 Name, address and telephone number of nearest supplier.

- .6 Prepare and submit complete inventory list of items supplied. Include list within Maintenance Manual.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Subsoil materials.
- .2 Topsoil materials.

1.2 RELATED SECTIONS

- .1 Subsurface Investigation Report: Geotechnical report; bore hole locations and findings of subsurface materials.
- .2 Section 01 35 43 – Environmental Procedures.
- .3 Section 31 05 16 - Aggregate Materials.
- .4 Section 31 23 33.01 – Excavation, Trenching and Backfilling.
- .5 Section 32 92 20 - Seeding.

1.3 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Materials Source: Submit name of imported materials source.

1.4 CLOSEOUT SUBMITTALS

- .1 Section 01 78 00: Closeout Submittals

Part 2 Products

2.1 SUBSOIL MATERIALS

- .1 Subsoil:
 - .1 Excavated and re-used material.
 - .2 Graded.
 - .3 Free of lumps larger than 75 mm, rocks larger than 50 mm, and debris.

2.2 TOPSOIL MATERIALS

- .1 Topsoil:
 - .1 Excavated and reused material.
 - .2 Graded.
 - .3 Free of roots, rocks larger than 13 mm, subsoil, debris, large weeds and foreign matter.
 - .4 Conforming to ASTM D2487 Group Symbol OH.

2.3 SEED SALVAGE MATERIALS

- .1 Seed Salvage:
 - .1 Excavated and reused material. Seed bank shall be the top 100m of the topsoil layer.
 - .2 Stockpiled in wind rows no more than 450mm deep.
 - .3 Graded.
 - .4 Departmental Representative to confirm slope stabilization materials to be used over winter.

Part 3 Execution

3.1 SOIL REMOVAL

- .1 Remove lumped soil, boulders, and rock.
- .2 Stockpile excavated material in area designated on site.
- .3 Remove excavated material from site.

3.2 STOCKPILING

- .1 Stockpile materials on site at locations designated by Departmental Representative.
- .2 Stockpile in sufficient quantities to meet Project schedule and requirements.
- .3 Separate differing materials with dividers or stockpile apart to prevent mixing.
- .4 Prevent intermixing of soil types or contamination.
- .5 Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.3 STOCKPILE CLEANUP

- .1 Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.
- .2 Leave unused materials in a neat, compact stockpile.
- .3 If a borrow area is indicated, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

3.4 HYDROSEEDING

- .1 Hydroseed to not be used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 32 11 16.01 - Granular Sub-Base.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM) - Most recent edition:
 - .1 ASTM D4791, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
 - .2 ASTM C117, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .3 ASTM C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .4 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .5 ASTM 127, Standard Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.
- .2 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition).
- .3 Newfoundland and Labrador - Department of Natural Resources:
 - .1 Quarry Rights Administration - Acts and Regulations.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:
 - .1 Allow continual sampling by the Departmental Representative during production.
 - .2 Provide the Departmental Representative with access to source and processed material for sampling.
 - .3 Install sampling facilities at discharge end of production conveyor, to allow the Departmental Representative to obtain representative samples of items being produced. Stop conveyor belt when requested by the Owner to permit full cross section sampling.

Part 2 Products

2.1 MATERIALS

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.
- .2 Class “A” Gravel:
 - .1 Conform to Section 32 11 23 – Aggregate Base Courses.
- .3 Class “B” Granular Gravel:
 - .1 Conform to Granular Sub-Base, Section 32 11 16.01 - Granular Sub-Base.
- .4 Approved Fill:
 - .1 Use of material subject to approval by Departmental Representative.
- .5 100mm Minus Rock Fill: to meet the following requirements:
 - .1 To be quarried, crushed rock.
 - .2 Gradations and properties to be within limits as indicated for Granular “C” in Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 3 - Pavement, Selected Granular Base Course and Related Materials - Section 315 - Selected Granular Base Course.
 - .3 100mm Minus Rock Fill to be supplied by Contractor.

2.2 SOURCE QUALITY CONTROL

- .1 Inform the Departmental Representative of proposed source of aggregates and provide access for sampling at least two (2) weeks minimum before starting production.
- .2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.
- .3 Advise the Departmental Representative at least two (2) weeks minimum in advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.
- .5 Park quarries shall not be available for this project.

Part 3 Execution

3.1 PREPARATION

- .1 Aggregate Source Preparation:

- .1 Prior to excavating materials for aggregate production, clear and grub area to be worked, and strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as approved by authority having jurisdiction.
 - .2 Where clearing is required, leave screen of trees between cleared area and roadways as directed.
 - .3 Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
 - .4 When excavation is completed dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.
 - .5 Trim off and dress slopes of waste material piles and leave site in neat condition.
 - .6 Provide silt fence or other means to prevent contamination of existing watercourse or natural wetland features.
- .2 Processing:
- .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
 - .2 Blend aggregates, if required, including reclaimed materials that meet physical requirements of specification in order to satisfy gradation requirements for material and percentage of crushed particles, or particle shapes, as specified:
 - .1 Use methods and equipment approved in writing by the Departmental Representative.
 - .3 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.
 - .4 Where necessary, screen, crush, wash, classify and process aggregates with suitable equipment to meet requirements.
- .3 Handling:
- .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
- .4 Stockpiling:
- .1 Stockpile aggregates in sufficient quantities to meet project schedules.
 - .2 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
 - .3 Stockpile aggregates on ground but do not incorporate bottom 200 mm of pile into Work.
 - .4 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
 - .5 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by the Departmental Representative within 48 hours of rejection.

.6 Do not cone piles or spill material over edges of piles.

3.2 CLEANING

- .1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .2 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 30 - Health and Safety Requirements.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 01 74 11 - Cleaning.
- .4 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

1.2 REFERENCES

- .1 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 2 - Grading, Section 201 - Clearing and Grubbing.

1.3 DEFINITIONS

- .1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.
- .2 Grubbing consists of excavation and disposal of stumps and roots to not less than 200 mm below existing ground surface.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 STORAGE AND PROTECTION

- .1 Prevent damage to fencing, bench marks, underground utilities, water courses, and root systems of trees which are to remain.

Part 2 Products

2.1 MATERIALS

- .1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 All installation and maintenance of temporary erosion and sedimentation control shall be completed in accordance to the latest version of the Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 8 - Environmental Requirements, Section 817 - Check Dam Sediment Trap and Section 01 35 43 - Environmental Procedures.
 - .2 Provide temporary erosion and sedimentation control measures (silt fencing and erosion control structures) to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
 - .3 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .4 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 PREPARATION

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

3.3 CLEARING

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

- .2 All clearing shall be hand cut.
- .3 Clear as directed by the Departmental Representative, by cutting at height of not more than 300 mm.
- .4 Timber materials less than 100 mm in diameter must be chipped and spread evenly as directed by the Department Representative.
- .5 The maximum chip size shall be no more than 300 mm long by 75 mm in thickness.
- .6 Timber greater than 100 mm in diameter must be cut to 1200 mm lengths, transported and stockpiled as directed by the Departmental Representative for future use by the Park.

3.4 GRUBBING

- .1 Remove and dispose of roots larger than 75 mm in diameter, matted roots, and designated stumps from indicated grubbing areas.
- .2 Grub out stumps and roots to not less than 200 mm below ground surface.
- .3 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.

3.5 REMOVAL AND DISPOSAL

- .1 Remove grubbed materials outside the Park to a disposal area approved for such materials by applicable regulations.

3.6 FINISHED SURFACE

- .1 Leave ground surface in condition suitable for stripping of topsoil to approval of the Departmental Representative.

3.7 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 30 - Health and Safety Requirements.
- .3 Section 01 35 43 - Environmental Procedures.
- .4 Section 31 05 16 - Aggregate Materials.
- .5 Section 31 24 13 – Roadway Embankments.
- .6 Section 33 42 13 – Pipe Culverts

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM): latest edition:
 - .1 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
 - .5 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian Standards Association (CSA International); latest edition:
 - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005):
 - .1 CSA-A3001, Cementitious Materials for Use in Concrete.
 - .2 CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
 - .3 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition).
- .3 Canadian Environmental Protection Act (Available on-line Government of Canada Website).
- .4 Newfoundland and Labrador Environmental Act and Regulations.
- .5 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition).

- .6 Occupational Health & Safety Act - Province of Newfoundland and Labrador.

1.3 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation:
- .1 Rock: solid material in excess of 1.00 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket. Frozen material not classified as rock.
- .2 Common excavation: excavation of materials of whatever nature up to required depth, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .4 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .5 Fill material: rock fill meeting the requirements specified in Section 31 05 16 - Aggregate Materials, maximum size 100 mm in any dimension.
- .6 Fill against structure: material supplied, placed and compacted adjacent to structures, as shown in Contract Documents. Material is crushed and screened gravel or rock meeting the requirements specified in Section 31 05 16 - Aggregate Materials.
- .7 Unsuitable materials:
- .1 Weak, chemically unstable, and compressible materials.
- .2 Frost susceptible materials:
- .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136.
- .2 Table:
- | Sieve Designation | % Passing |
|-------------------|-----------|
| 2.00 mm | 100 |
| 0.10 mm | 45 - 100 |
| 0.02 mm | 10 - 80 |
| 0.005 mm | 0 - 45 |
- .3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.
- .8 Backslope: the slope in a cut between the invert of the roadside ditch and the point where the slope intersects original ground.
- .9 Rock Face: the vertical or near vertical face between the top of the existing rock surface and the designated rock or ditch grade line.

1.4 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.

- .2 Where the Consultant is employee of the Contractor, submit proof that Work by the Consultant is included in Contractor's insurance coverage.
- .3 Submit design and supporting data at least two (2) weeks prior to beginning Work.
- .4 Design and supporting data submitted to bear stamp and signature of qualified Professional Engineer registered or licensed in the Province of Newfoundland and Labrador.
- .5 Keep design and supporting data on site.
- .6 Engage services of a qualified Professional Engineer who is registered or licensed in the Province of Newfoundland and Labrador in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.
- .7 Do not use soil material until written report of soil test results are reviewed and approved by the Departmental Representative.
- .8 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

1.6 EXISTING SITE CONDITIONS

- .1 Contractor to visit site prior to submission of tender.

Part 2 Products

2.1 MATERIALS

- .1 Class "A" Granular Backfill: properties to Section 32 11 23 – Aggregate Base Courses.
- .2 Class "B" Granular Backfill: properties to Section 31 05 16 - Aggregate Materials.
- .3 100mm Minus Rock Fill: properties to Section 31 05 16 – Aggregate Materials.
- .4 Bedding Material: properties to Section 31 05 16 - Aggregate Materials.
- .5 Type 3 Fill: selected materials from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 25mm, cinders, ashes, sods, refuse or other deleterious materials.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

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

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.3 PREPARATION/PROTECTION

- .1 Protect existing features in accordance with applicable local regulations.
- .2 Keep excavations clean, free of standing water, snow, ice and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative approval.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .5 Protect buried services that are required to remain undisturbed.

3.4 STOCKPILING

- .1 Stockpile fill materials in areas designated by the Departmental Representative:
 - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.5 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for the Departmental Representative's approval details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur:

- .1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures to approved collection areas and in a manner not detrimental to public and private property, or portion of Work completed or under construction:
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.
- .6 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.6 EXCAVATION

- .1 Advise the Departmental Representative at least 7 days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as directed by the Departmental Representative.
- .3 All surplus excavated material shall be stockpiled at locations as directed by the Departmental Representative.
- .4 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by the Departmental Representative.
- .5 Restrict vehicle operations directly adjacent to open trenches.
- .6 Dispose of surplus by stockpiling on site as directed by the Departmental Representative.
- .7 Do not obstruct flow of surface drainage or natural watercourses.
- .8 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .9 Notify the Departmental Representative when bottom of excavation is reached.
- .10 Obtain the Departmental Representative's approval of completed excavation.
- .11 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by the Departmental Representative.
- .12 Correct unauthorized over-excavation as follows:
 - .1 Fill over excavated space with approved fill compacted to not less than 100% of Standard Proctor maximum dry density.
 - .2 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .13 Hand trim, make firm and remove loose material and debris from excavations:
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

- .2 Clean out rock seams and fill with concrete mortar or grout to approval of the Representative.
- .14 Install geotextiles around pipe in accordance with Section 31 32 19.01 - Geotextiles.

3.7 ROADWAY GRADING, FILL AND COMPACTING

- .1 Complete all roadwork following Section 31 24 13 – Roadway Embankments.

3.8 BEDDING

- .1 Place bedding and compact as per Section 33 42 13 – Pipe Culverts.

3.9 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 The Departmental Representative has inspected and approved installations.
 - .2 The Departmental Representative has inspected and approved of construction below finish grade.
 - .3 Inspection, testing, approval, and recording location of underground utilities.
 - .4 Removal of concrete formwork.
 - .5 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 300 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere.
 - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
 - .3 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 0.2 m.
 - .4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
 - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from the Departmental Representative.
 - .2 If approved by the Departmental Representative, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by the Departmental Representative.
- .6 Place fill in areas as indicated.
- .7 Consolidate and level unshrinkable fill with internal vibrators.
- .8 Install drainage system in backfill as directed by the Departmental Representative.

3.10 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Restore the site as close as possible to pre-construction condition focusing on re-vegetating sloped and cleared areas of the site with existing preserved sod mats, trees and shrubs and native plant/seed mix, trees and shrubs as directed by the Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 11 - Cleaning.
- .3 Section 31 05 16 – Aggregate Materials.

1.2 REFERENCES

- .1 Reference Standards:
 - .1 ASTM International:
 - .1 ASTM D698-07e1, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft³) (600 kN- m/m³).
 - .2 American Association of State Highway and Transportation Officials (AASHTO):
 - .1 AASHTO T99-10, Standard Method of test for Moisture-Density Relations of Soils Using a 2.5 kg (5.5lb) Rammer and 305 mm (12 in) Drop.
 - .3 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 2 - Grading.
 - .2 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 3 - Pavement, Selected Granular Base Course and Related Materials.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Adhere to regulations of authority having jurisdiction when blasting is required.
 - .2 Adhere to Provincial and National Environmental requirements when potentially toxic materials are involved.

Part 2 Products

2.1 MATERIALS

- .1 Embankment materials require approval by Departmental Representative.
- .2 Embankment materials as per the requirements of Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 2 - Grading - Section 207 - Borrow.
- .3 Material used for embankment not to contain more than 3% organic matter by mass, frozen lumps, weeds, sod, roots, logs, stumps or other unsuitable material.
- .4 Borrow material to be as specified on drawings conforming to Section 31 05 16 – Aggregate Materials.

Part 3 Execution

3.1 GENERAL

- .1 As per the requirements of the most recent version of the Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition).

3.2 EXAMINATION

- .1 Verification of Conditions: verify that condition of substrate is acceptable for roadway embankment Work:
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.3 COMPACTION EQUIPMENT

- .1 Compaction equipment: vibratory rollers or vibrating plate compactors capable of obtaining required density in materials on project.
 - .1 Demonstrate compaction equipment effectiveness on specified material and lift thickness by documented performance of test-strip before start of Work.
 - .2 Replace or supplement equipment that does not achieve specified densities.
- .2 Operate compaction equipment continuously in each embankment when placing material.

3.4 WATER DISTRIBUTORS

- .1 Apply water with equipment capable of uniform distribution.

3.5 EXCAVATING

- .1 General:
 - .1 Notify Departmental Representative when waste materials are encountered and remove to depth and extent directed.
 - .2 Sub-excavate below bedrock below road subgrade as shown on drawings unless otherwise directed by Departmental Representative.
 - .1 Compact
 - .2 Treat ground slopes, where subgrade is on transition from excavation to embankment, at grade points as directed by Departmental Representative.
 - .3 Treat ground slopes, where subgrade is on transition from excavation to embankment, at grade points as directed by Departmental Representative.
- .2 Drainage:
 - .1 Maintain profiles, crowns and cross slopes to provide good surface drainage.
 - .2 Provide ditches as work progresses to provide drainage.
 - .3 Construct interceptor ditches as indicated or as directed before excavating or placing embankment in adjacent area.
- .3 Borrow Excavation:
 - .1 Completely use in embankments, suitable materials removed from right-of-way excavations before taking material from borrow areas.
 - .2 Obtain embankment materials, in excess of what is available from cut areas, from designated borrow areas.
 - .1 Departmental Representative to designate extent of borrow areas and allowable depth of excavation.
 - .2 Remove waste and stripping material from borrow pits to designated locations.
 - .3 Slope edges of borrow areas and provide drainage as directed.
 - .4 Trim and leave borrow pits in condition to permit accurate measurement of material removed.

3.6 EMBANKMENTS

- .1 Scarify or bench existing slopes in side hill or sloping sections to ensure proper bond between new materials and existing surfaces.
 - .1 Method used to be to be pre-approved in writing by Departmental Representative.
- .2 Break up or scarify existing road surface prior to placing embankment material.

- .3 Do not place material which is frozen nor place material on frozen surfaces except in areas authorized by Departmental Representative.
- .4 Maintain crowned surface during construction to ensure ready run-off of surface water.
- .5 Drain low areas before placing materials.
 - .1 Place and compact to full width in layers not exceeding 200 mm loose thickness. Departmental Representative may authorize thicker lifts if specified compaction can be achieved and if material contains more than 25% by volume stone and rock fragments larger than 100 mm.
- .6 Where material consists of rock:
 - .1 Place to full width in layers of sufficient depth to contain maximum sized rocks, but in no case is layer thickness to exceed 1 m.
 - .2 Distribute rock material to fill voids with smaller fragments to form compact mass.
 - .3 Fill surface voids at subgrade level with rock spalls or selected material to form earth-tight surface.
 - .4 Do not place boulders and rock fragments with dimensions exceeding 150 mm within 300 mm of pavement subgrade elevation.
- .7 Deductions from excavation will be made for overbuild of embankments.

3.7 **COMPACTION**

- .1 Break material down to sizes suitable for compaction and mix for uniform moisture to full depth of layer.
- .2 Deposit, spread, and level, embankment material in layers 200 mm maximum thickness before compaction.
 - .1 Compact each layer of embankment until compaction equipment achieves no further significant consolidation.
 - .2 Ensure required compaction for each layer before placing any material for next layer.
- .3 Use specialized compaction equipment supplemented by routing, hauling, and leveling equipment over each layer of fill.
- .4 Obtain written approval from Departmental Representative before using specialized compaction equipment such as tamping rollers, vibratory rollers, or other alternate compaction equipment that produces the required results
 - .1 For tamping rollers, use equipment that exerts 1000 kPa minimum of pressure on tamping surface of each tamping foot in transverse row.
- .5 Compact each layer to minimum 95% maximum dry density: ASTM D698 and AASHTO T99 except top 150 mm of subgrade.
 - .1 Compact top 150 mm to 100% maximum dry density.
- .6 Add water or dry as required to bring moisture content of materials to level required to achieve specified compaction.

3.8 FINISHING

- .1 Shape entire roadbed to within 25 mm of design elevations.
- .2 Finish slopes, ditch bottoms and borrow pits true to lines, grades and drawings where applicable. Scale slope by removing loose fragments, for cut slopes in bedrock steeper than 1:1.
- .3 Remove rocks over 150 mm in dimension from slopes and ditch bottoms.
- .4 Hand finish slopes that cannot be finished satisfactorily by machine.
- .5 Round top of backslope 1.5 m both sides of top of slope.
- .6 Run tractor tracks over slopes exceeding 3 m in height to leave tracks parallel to centreline of highway.
- .7 Trim between constructed slopes and edge of clearing to provide drainage and free of humps, sags and ruts.

3.9 CLEANING

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

3.10 PROTECTION

- .1 Maintain finished surfaces in condition conforming to this section until acceptance by Departmental Representative.
- .2 Provide silt fences and erosion protection as required to mitigate and prevent impacts to adjacent properties.

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 32 19.01 - Geotextiles.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM):
 - .1 ASTM C144-99, Standard Specification for Aggregate for Masonry Mortar.
 - .2 ASTM C618-00, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
- .2 Canadian Standards Association (CSA):
 - .1 CAN/CSA-A23.1-00, Concrete Materials and Methods of Concrete Construction.
 - .2 CAN/CSA-A3000-98, Cementitious Materials Compendium.
- .3 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 6 - Protection - Section 610 - Rip-Rap Treatment.

1.3 MEASUREMENT PROCEDURES

- .1 See Section 01 29 00 - Payment Procedures.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Place materials defined as hazardous or toxic in designated containers.
- .2 Fold up metal banding, flatten and place in designated area for recycling.
- .3 Divert left over aggregate materials from landfill to local facility for reuse as approved by Departmental Representative.
- .4 Divert left over geotextiles to local plastic recycling facility as approved by Departmental Representative.

Part 2 Products

2.1 STONE

- .1 Random Rip-Rap:
 - .1 Hard, durable, angular quarry stone, free from seams, cracks or other structural defects, to meet the size distribution for use intended, as shown on contract drawings. (See table "Random Rip-Rap Grading Limits" next page.).

Random Rip-Rap Grading Limits

Mass	Size (Note 1)	Finer by Mass (%)								
		R-A (Note 2)	R-5	R-25	R-50	R-100	R-250	R-500	R-1000	R-2000
(kg)	(mm)									
6000	1600									100
4000	1400									70 - 90
3000	1300								100	
2000	1100								70 - 90	40 - 55
1500	1000							100		
1000	900							70 - 90	40 - 55	
750	820						100			
500	710						70 - 90	40 - 55		
300	600					100				
250	570						40 - 55			
200	530					70 - 90				0 - 15
150	480				100					
100	420				70 - 90	40 - 55			0 - 15	
75	380			100						
50	330			70 - 90	40 - 55			0 - 15		
25	260			40 - 55			0 - 15			
15	220	100	100							
10	190		70 - 90			0 - 15				
5	150		40 - 55		0 - 15					
2.5	120	0		0 - 15						
0.5	70		0 - 15							
Thickness (mm) (Note 3)		300	300	500	600	800	1100	1400	1600	2200
Note 1		Approximate diameter (for information only)								
Note 2		Random riprap for abutment and slope protection								
Note 3		Measured perpendicular to the prepared surface								

2.2 GEOTEXTILE FILTER

- .1 Geotextile: as indicated on Plans and in accordance with Section 31 32 19.01 - Geotextiles, Type N2.

Part 3 Execution

3.1 PLACING

- .1 Rip-rap shall be machine placed by hand as shown on drawings.
- .2 Where rip-rap is to be placed on slopes and at the ends of culverts, excavate trench at toe of slope to dimensions as indicated.
- .3 Fine grade area to be rip-rapped to uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.
- .4 Place rip-rap to thickness as indicated.
- .5 Place stones in manner approved by the Departmental Representative to secure surface and create a stable mass. Place larger stones at bottom of slopes.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

- .1 This section specifies requirements for supplying, producing and placing crushed quarry stone as a granular subbase (Granular “B” Gravel) to lines, grades and typical cross sections indicated, or as directed by Departmental Representative.

1.2 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 31 05 16 - Aggregate Materials.

1.3 REFERENCES

- .1 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 3 - Pavement, Selected Granular Base Course and Related Materials - Section 315 - Selected Granular Base Course - Granular “B”.
- .2 ASTM International - most recent edition:
 - .1 ASTM C117, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D422, Standard Test Method for Particle-Size Analysis of Soils.
 - .5 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .6 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .3 Ministry of Transportation of Ontario:
 - .1 LS-618 Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

Part 2 Products

2.1 MATERIALS

- .1 Granular Sub-Base: to meet Granular “B” Gravel and the following requirements:
 - .1 Granular sub-base to be quarried, crushed rock.
 - .2 Gradations and properties to be within limits as indicated for Granular “B” in Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 3 - Pavement, Selected Granular Base Course and Related Materials - Section 315 - Selected Granular Base Course.
 - .3 Granular sub-base to be supplied by Contractor.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of subgrade are acceptable for Granular Sub-base installation in:
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of approval to proceed from Departmental Representative.

3.2 PLACING

- .1 Place Granular Sub-base after subgrade is inspected and approved by the Departmental Representative.
- .2 Construct Granular Sub-base to depth and grade in areas indicated on the plans or as directed by the Departmental Representative.
- .3 Ensure no frozen material is used in placing.
- .4 Place material only on clean unfrozen surface, properly shaped and compacted and free from snow or ice.
- .5 Begin spreading sub-base material on crown line or high side of one-way slope.
- .6 Place Granular Sub-base materials using methods which do not lead to segregation or degradation.
- .7 Place material to full width in uniform layers not exceeding 200 mm compacted thickness. The Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
- .8 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

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

3.3 COMPACTION

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density of not less than 100% maximum dry density in accordance with ASTM D698.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .4 Apply water as necessary during compaction to obtain specified density. If aggregate is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by the Departmental Representative.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.4 CLEANING

- .1 Leave work area clean at end of each day.

3.5 SITE TOLERANCES

- .1 Finished sub-base surface to be within 25 mm of elevation as indicated but not uniformly high or low.

3.6 PROTECTION

- .1 Maintain finished Granular Sub-base in condition conforming to this section until succeeding base is constructed, or until Granular Sub-base is accepted by the Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 32 11 16.01 - Granular Sub-Base.

1.2 REFERENCES

- .1 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 3 - Pavement, Selected Granular Base Course and Related Materials - Section 315 - Selected Granular Base Course.
 - .2 American Society for Testing and Materials (ASTM) - most recent edition:
 - .1 ASTM C117, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - .4 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .5 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .6 ASTM D2922- Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods.
 - .3 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-8.1, Sieves, Testing, Woven-Wire, Inch Series.
 - .2 CAN/CGSB-8.2-, Sieves, Testing, Woven Wire, Metric.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

Part 2 Products

2.1 MATERIALS

- .1 Aggregate Base Course: to meet Granular "A" Gravel and the following requirements:
 - .1 Aggregate base to be quarried, crushed rock.

- .2 Gradations and properties to be within limits as indicated for Granular "A" in Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 3 - Pavement, Selected Granular Base Course and Related Materials - Section 315 - Selected Granular Base Course.
- .3 Aggregate base to be supplied by Contractor.

Part 3 Execution

3.1 INSPECTION OF UNDERLYING SUB-BASE

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

3.2 PLACING

- .1 Construct granular base to depth and grade in areas indicated on the plans or as directed by the Departmental Representative.
- .2 Ensure no frozen material is used in placing.
- .3 Place material only on clean unfrozen surface, properly shaped and compacted and free from snow and ice.
- .4 Begin spreading base material on crown line or high side of one-way slope.
- .5 Place granular base materials using methods which do not lead to segregation or degradation.
- .6 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .7 Remove and replace that portion of layer in which material becomes segregated during spreading.

3.3 COMPACTION EQUIPMENT

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

3.4 COMPACTING

- .1 Density of granular base course will be determined according to ASTM D2922.
- .2 Compaction equipment to be capable of obtaining required material densities.
- .3 Compact to density not less than 100% maximum dry density in accordance with ASTM D698.
- .4 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
- .5 Apply water as necessary during compacting to obtain specified density. If aggregate is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.

- .6 In areas not accessible to rolling equipment, compact to specified density with vibratory mechanical tampers approved by the Departmental Representative.
- .7 Equipment:
 - .1 Compaction equipment to be capable of obtaining required material densities.
 - .2 Efficiency of equipment not specified to be proved at least as efficient as specified equipment at no extra cost and written approval must be received from the Departmental Representative before use.
 - .3 Equipped with device that records hours of work, not motor running hours.

3.5 FINISH TOLERANCES

- .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.
- .2 Density of Granular Base Course will be determined according to ASTM2922.
- .3 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.6 CLEANING

- .1 Leave Work area clean at end of each day.

3.7 PROTECTION

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

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

1.2 MEASUREMENT PROCEDURES

- .1 See Section 01 29 00 - Payment Procedures.

1.3 REFERENCES

- .1 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-15.1-92, Calcium Chloride.
- .2 Government of Newfoundland and Labrador - Department of Transportation and Works:
 - .1 Government of Newfoundland and Labrador - Department of Transportation and Works Highway Design Division - Highways Specification Book (Latest Edition) - Division 8 - General Environmental Requirements - Section 840 - Dust Control.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Supply calcium chloride in quantities and at times as directed by Departmental Representative.
- .4 Deliver calcium chloride to site. Indicate name of manufacturer, name of product, net weight or mass, and percentage of calcium chloride guaranteed by manufacturer.
- .5 Storage and Handling Requirements:
 - .1 Store bags of calcium chloride in weather- proof enclosures.

Part 2 Products

2.1 MATERIALS

- .1 Calcium chloride, Type I: to CAN/CGSB-15.1, flake 35% aqueous solution.

- .2 Water: to Departmental Representative's approval. All water required for roadway dust control must be acquired from outside the Park boundaries.

Part 3 Execution

3.1 APPLICATION

- .1 Apply calcium chloride and water with equipment approved by Departmental Representative. In general, the initial application rate shall be 0.9 to 1.2 L/m² as subsequent applications if required shall be 0.3 to 0.6 L/m², assuming a 35% solution by weight of calcium chloride:
 - .1 Example calculation for mixing is as follows: Calcium Chloride content of flakes provided = 77-88%. To make a 4000 litre batch, mix 2400 kg of 77-88% flakes with 3000 kg (3000 litres) of water.
- .2 Apply water or aqueous calcium chloride with distributors equipped with means of shut-off and with spray system to ensure uniform application.

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 SECTION INCLUDES

- .1 Seed Bank Salvage- Collection.
- .2 Preparation of subsoil.
- .3 Placing topsoil.
- .4 Seed Bank Salvage - Placement.
- .5 See Protection.
- .6 Maintenance.

1.2 RELATED SECTIONS

- .1 Section 31 05 13 - Soil Materials: Topsoil material.
- .2 Section 31 29 33.01 – Excavation, Trenching and Backfilling.

1.3 DEFINITIONS

- .1 Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.4 QUALITY ASSURANCE

- .1 Natural seed bank contained within topsoil sourced on site; ensure long lasting erosion control measures are installed to support native plant re-population next season.

1.5 DELIVERY, STORAGE, AND PROTECTION

- .1 Seed bank salvage shall be completed onsite.

Part 2 Products

2.1 SEED SUPPLIERS

- .1 Onsite sources seed bank salvage only.

2.2 SEED MIXTURE

- .1 To be taken from onsite seed bank salvage areas.

2.3 SOIL MATERIALS

- .1 Topsoil: As specified in Section 31 05 13.

- .2 Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.
- .3 Topsoil: Excavated from site and free of weeds.
- .4 Seed Bank Salvage: As specified in Section 31 05 13.
- .5 Seed Bank Salvage: Excavated from site and free of weeds.

2.4 ACCESSORIES

- .1 Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are acceptable.
- .2 Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.
- .3 Erosion Fabric: Jute matting, open weave.
- .4 Stakes: Softwood lumber, chisel pointed.
- .5 String: Inorganic fibre only.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify that prepared soil base is ready to receive the work of this section.

3.2 EXCAVATION

- .1 Existing topsoil and vegetation to excavated and stockpiled with intent of reuse as topsoil and vegetation regrowth.

3.3 PREPARATION OF SUBSOIL

- .1 Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- .2 Remove foreign materials and undesirable plants and their roots. Remove contaminated subsoil.
- .3 Scarify subsoil to a depth of 75 mm where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.4 PLACING TOPSOIL

- .1 Spread topsoil to a minimum depth of 150 mm over area to be seeded. Rake until smooth.
- .2 Place topsoil during dry weather and on dry unfrozen subgrade.
- .3 Remove vegetable matter and foreign non-organic material from topsoil while spreading.

- .4 Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

3.5 SALVAGES TOPSOIL PROTECTION

- .1 Identify topsoil areas with stakes and string around area periphery. Set string height to 300 mm. Space stakes at 900 mm. Place snow fence around areas as well.
- .2 Cover topsoil slopes where grade is 1:3 or greater with erosion control matting. Roll fabric onto slopes without stretching or pulling.
- .3 Lay fabric smoothly on surface, bury top end of each section in 150 mm deep excavated topsoil trench. Provide 300 mm overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- .4 Secure outside edges and overlaps at 900 mm intervals with wood stakes.
- .5 Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- .6 At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 150 mm.

3.6 MAINTENANCE

- .1 Water to prevent topsoil salvage areas from drying out.
- .2 Neatly trim edges and hand clip where necessary.
- .3 Control growth of weeds. Herbicide use not necessary at the site.
- .4 Protect revegetated areas with warning signs during maintenance period.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Materials and installation for pipe culverts.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 61 00 - Common Product Requirements.
- .3 Section 31 05 16 - Aggregate Materials.
- .4 Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .5 Section 32 11 23 – Aggregate Base Course.

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - .4 ASTM D 1751, Standard for Specification for Performed Expansion joint Filler for Concrete Paving and Structure Construction (Non-extruding and Resilient Bituminous Types).
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA B1800 Series, Thermoplastic Non-pressure Piping Compendium.
 - .2 CSA A3000, Cementitious Materials Compendium.

1.4 SUBMITTALS

- .1 Inform Departmental Representative at least 4 weeks prior to commencing work, of proposed source of bedding materials and provide access for sampling.
- .2 Submit manufacturer's test data and certification at least 4 weeks prior to beginning work.

- .3 Certification to be marked on pipe.

1.5 DELIVERY, STORAGE AND HANDLING

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

PART 2 PRODUCTS

2.1 HIGH-DENSITY POLYETHYLENE (HDPE)

- .1 Corrugated double walled pipe shall have a smooth inner wall. Pipes may be bell and spigot style or plain end fastened with a coupling recommended by manufacturer. For sizes 300mm to 900mm, pipe shall be certified to CSA B182.8, have a pipe stiffness of 320kPa, and conform to ASTM F667 for storm sewers.
- .2 Couplers and plastic pipe, consisting of corrugated polyethylene pipe, shall be of a type, size and strength acceptable to the Engineer. The Contractor shall provide the plastic pipe and couplers.

2.2 GRANULAR BEDDING AND BACKFILL

- .1 Granular bedding material to be Granular "A" material conforming to Section 32 11 23 – Aggregate Base Courses.
- .2 Culvert backfill materials to conform with road structure specified on contract drawings and where applicable Type 3 fill as described in Section 31 23 33.01 – Excavating, trenching and Backfilling may be used.

PART 3 EXECUTION

3.1 TRENCHING

- .1 Do trenching Work in accordance with Section 31 23 33.01 - Excavating Trenching and Backfilling.
- .2 Obtain Departmental Representative's approval of trench line and depth prior to placing bedding material or pipe.

3.2 BEDDING

- .1 Dewater excavation, as necessary, to allow placement of culvert bedding in dry condition.
- .2 Place minimum thickness of 150 mm of approved granular material on bottom of excavation and compact to minimum 95% of corrected maximum dry density.

- .3 Shape bedding to fit lower segment of pipe exterior so that width of at least 50% of pipe diameter is in close contact with bedding and to camber as indicated or as directed by Departmental Representative, free from sags or high points.
- .4 Place bedding in unfrozen condition.

3.3 BACKFILLING

- .1 Backfill around and over culverts as indicated or as directed by Departmental Representative.
- .2 Place granular backfill material backfill material, approved by Departmental Representative, in 150 mm layers to full width, alternately on each side of culvert, so as not to displace it laterally or vertically.
- .3 Compact each layer to 95% corrected maximum dry density maximum density to ASTM D698 except to 150mm of subgrade taking special care to obtain required density under haunches.
- .4 Compact top 150mm to 100% maximum dry density.
- .5 Protect installed culvert with minimum 600 mm cover of compacted fill before heavy equipment is permitted to cross. During construction, width of fill, at its top, to be at least twice diameter or span of pipe and with slopes not steeper than 1:2.
- .6 Place backfill in unfrozen condition.
- .7 The cover shall not be less than the manufacturer's recommended minimum cover.

END OF SECTION