Environment and Climate Change Canada

TECHNICAL SPECIFICATIONS

Projet : **Culvert installation**
Pointe-de-l'Est National Wildlife Area

Date : **April 2021**
Issued FOR TENDER
Do not use for construction purpose

PSPC project number : R.114074.001

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END OF SECTION

END OF SECTION

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 The work covered by this contract consists primarily of, but is not limited to

.1 Supply and installation of one culvert made of three pipes in the all-terrain vehicle (ATV) trail network of the Pointe-de-l'Est National Wildlife Area (NWA), located in the Iles-de-la-Madeleine.

.2 Specifically, the work shall consist primarily of, but not be limited to, providing all labour, materials, equipment and all operations necessary for:

.1 Carry out of a bathymetric survey of the area adjacent to the work.

.2 Removal and disposal of existing pipes.

.3 Excavation of existing soil to levels shown on plan.

.4 Supply and installation of a new granular foundation.

.5 Supply and installation of the new culvert pipes.

.6 Reuse of excavated material and provision of new material to backfill expansion areas, including profiling and compaction.

.7 Embankments stabilization with geotextile and rockfill.

.8 Installation and compaction of a granular material running surface.

.3 The following related work is also part of the project:

.1 Construction site facilities including storage areas and/or access to structures.

.2 Environmental protection.

.3 Site restoration.

.4 Final survey certificate.

.5 Any other work or special requirements necessary to complete the work.

1.2 WORK SEQUENCE

.1 All work shall be completed as follows:

.1 Kick off meeting : 10 working days after the date of the contract award.

.2 Completion of the bathymetric survey: No later than 10 working days before the date of mobilization.

.3 Mobilization: No sooner than mi-August.

.4 Substantial completion of the work and full demobilization of the work site: No later than mid-September.

.5 Final completion of the Work: No later than 15 working days after the date of Substantial Completion of the Work.

.2 If delays in completion are encountered for reasons other than unsuspected site conditions or requests for additional work from the Department Representative, the Contractor shall, to the extent possible, add the resources required to meet the original schedule. Otherwise, all costs related to accelerating the work or extending the work to meet the schedule

objectives will be the responsibility of the Contractor. Adverse weather conditions (rain, snow, cold) are not considered valid reasons for claiming additional time.

.3 See Section 01 32 16.19 - *Construction Progress Schedule - Bar (gantt) Chart* for all specifics and requirements for project and work scheduling.

1.3 MAIN ISSUES AND CONSTRAINTS – WORKSITE ORGANIZATION

.1 The work site is located in the Pointe-de-l'Est NWA, more than 3 km from Route 199. Transportation of equipment, materials, employees, machinery and all other elements required for the achievement of the mandate must be done by the ATV trail network. No other access is possible.

.2 The choice of machinery and equipment required for transporting material and the completion of the work must be made in consideration of the characteristics of the access path. All the machinery must ensure that the flora around the trail is not damaged. The rehabilitation of the trail is an integral part of this contract.

.3 A photographic record shall be produced and made available weekly for remote monitoring of the project. In addition, a daily progress report with photos shall be sent by the contractor. See Section 01 33 00 *Submittal Procedures* for all specifics and requirements for deliverables.

.4 The tide levels for the stations closest to the site are presented in the table below. The tidal ranges are referred to Chart datum (CD). For archived water levels, please visit the Fisheries and Oceans Canada archives at: Canadian Station Inventory and Data Download (dfo-mpo.gc.ca).

Station Station - **Localité** Area	**Unité : m - Unit : m**								
	Marnage Range		**Grande marée** Large Tide		**Marée moyenne** Mean Tide		**Extrêmes enregistrés** Recorded Extremes		**Niveau moyen de l'eau** Mean Water Level
	Grande Marée Large Tide	**Marée Moyenne** Mean Tide	**PMS** HHW	**BMI** LLW	**PMS** HHW	**BMI** LLW	**Pleine mer** High Water	**Basse mer** Low Water	
1986 - Old Harry	1.0	0.6	1.1	0.1	1.0	0.4	SDMM	SDMM	0.7
1987 - Leslie (Grosse Ile)	0.7	0.4	0.9	0.1	0.7	0.3	SDMM	SDMM	0.5

1.4 MAIN ISSUES AND CONSTRAINTS - CIVIL WORK

.1 Before the start of the excavation works, the projected elevation of the invert of the pipes shall be validated by the Departmental Representative. To that end, the Contractor must:

.1 Carry out a bathymetric survey of the depths of the watercourse over a distance of 20m on each side of the projected location of the culvert, as well as a survey within a radius of 30m from the center of the projected culvert. The maximum distance between the surveys points must be 500mm.

.2 The survey must be carried out by coordinate X, Y, Z (SCOPQ NAD 83).

.3 The computer file of this statement (.dwg) must be submitted to the Departmental Representative no later than 5 working days after the date of the statement.

.2 The Departmental Representative will examine the survey and confirm the elevation of the pipe invert no later than 5 working days following the submission of the survey.

1.5 MAINS ISSUES AND CONSTRAINTS - ENVIRONMENT

.1 The Contractor must provide and install a turbidity curtain for all work in water, including the installation of a cofferdam if needed.

.2 The work must be done outside the nesting period of the main migratory bird species, which extends to mid-August in the area covered by the work.

.3 The Contractor must produce an environmental protection plan which must present a complete overview of the known or potential environmental issues to be resolved during construction.

.4 Sediment control measures must remain in place at all times during the work to capture and filter runoff water from the work area before it reaches the watercourse.

.5 Use machinery in good working order to minimize the risk of accidental spillage. Biodegradable hydraulic oils must be used for machinery. Biodegradable oil and machinery maintenance certificates must be presented to the departmental representative before mobilizing the machinery.

.6 Refueling and maintenance of the machinery and vehicles shall be conducted in an area designated for this purpose, as far as possible from a watercourse or wetland.

.7 Provide spill response materials and equipment, including containers, absorbents, shovels and personal protective equipment.

.8 See Section 01 35 43 *Environmental Procedures* for all specifics and requirements for environmental protection measures.

1.6 QUALITY CONTROL

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Independent inspection agencies

.1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

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

1.7 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be used by Contractor, construction signage and offices. Indicate use of supplemental or other staging area.

.2 Provide construction facilities in order to execute work expeditiously.

1.8 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

.3 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.9 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 WORK SURVEY

.1 Based on the control levels indicated on the plans, the Contractor must establish the main benchmarks necessary for the execution of the work and provide all the required equipment.

.2 Take all necessary precautions to prevent the reference points from being moved during the work.

.3 Provide all the necessary material to allow the Departmental Representative to carry out the confirmations deemed necessary.

.4 Before starting work, the Contractor must confirm all measurements on site and notify the Departmental Representative of any errors or mismatches.

.5 During the work, if non-conformities are detected following staking errors made by the Contractor, the Contractor must resume non-conforming work at his own expense.

.6 The Contractor shall engage the services of a technician specializing in land surveying in order to establish the onsite references points indicated on the plans and any other element required for the execution of the work.

.7 Submit layout plan to Departmental Representative for confirmation.

.8 Submit certificate signed by surveyor certifying those elevations and locations of completed Work that conform and do not conform with Contract Documents. See Section 01 77 00 *Closeout Procedures* for all specifics and requirements for surveyor certificate.

1.11 CLEAN-UP

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove construction debris, waste materials, packaging material from work site daily.

.3 Clean dirt or mud tracked onto paved or surfaced roadways.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

1.12 CONTRACTOR USE OF PREMISES

.1 Unrestricted use of site until Substantial Performance.

.2 The Contractor is required to keep the physical site limits in place and safe for the duration of the work.

.3 Co-ordinate use of premises under direction of Departmental Representative.

.4 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

.5 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

1.13 DOCUMENTS REQUIRED

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

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Reviewed Shop Drawings.

.5 List of Outstanding Shop Drawings.

.6 Change Orders.

.7 Other Modifications to Contract.
.8 Field Test Reports.
.9 Copy of Approved Work Schedule.
.10 Health and Safety Plan and Other Safety Related Documents.
.11 Permit according to the Canadian Wildlife Area Regulations.
.12 Other documents as specified.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 UNIT PRICE OR LUMP SUM PRICE

.1 The total amount of the contract is broken down based on a description of certain work remunerated on a per unit basis and the balance of work and/or specific requirements and/or other expenses related to the contract are remunerated at a single fixed price.

.2 The lump sum price and unit prices will include, unless otherwise indicated in the description of the unit items all expenses, all works, disbursements, payments, direct or indirect costs, mobilizations, demobilizations and access, all costs, as well as all the responsibilities, obligations, omissions and errors of the Contractor related to the performance of the contract. These prices also include all overhead costs of the business: administration, insurance, contributions, interest, rents, taxes and other incidental expenses. It must include losses and damages that may result from the nature of the work, fluctuations in prices and wages, business risks, strikes, delays not attributable to the Ministerial Representative, restrictions relating to transport, accidents and the action of the elements of nature.

.3 Unit prices as well as lump sum prices submitted at the time of submission represent the totality of the Contractor's remuneration and incorporate the cost elements of any kind for the entire project. The cumulative price submitted includes all costs for the work shown on the drawings, as described in the specifications and includes the costs for all the specific requirements of the construction specifications or the general clauses of the contract. The Contractor must prepare his tender diligently to ensure that the costs submitted for all work and general or specific requirements of the contract are included in a relevant item on the bid form. No request for additional costs for the claim of work shown in the drawings or described in the specifications whose description is not explicitly mentioned in one of the item descriptions of the bid form will be admissible.

.4 Without limitation, each unit price and the single lump sum price submitted must also include:

- .1 Testing.
- .2 Shop drawings stamped and signed by professional engineer registered or licensed in Province of Québec.
- .3 Conformity attestation stamped and signed by professional engineer registered or licensed in Province of Québec.
- .4 Health and safety measures, protection of the environment such as sediment control and water control.
- .5 The materials, labor, equipment, protection and special equipment for maritime works.
- .6 Temporary installations at construction sites.
- .7 The supply of materials, including certificates of compliance as well as transportation and handling.
- .8 Implementation of materials.
- .9 Cleaning and restoration of the worksite.

.10 All other costs related to meeting the requirements described in the relevant sections of the specifications.

1.2 DEFINITIONS

.1 Lump sum price: when the work is determined in a precise and detailed way to the drawings and specifications, and a price is agreed and accepted by both parties for the whole

.2 Unit price works: Such work is subjected to a unit price agreement and the quantities indicated in the price list are estimated quantities.

1.3 BREAKDOWN OF THE UNIQUE LUMP SUM AMOUNT

.1 Following the opening of tenders and prior to the awarding of the contract to the lowest compliant bidder, the Contractor must provide the breakdown of its single fixed price according to the table B in the appendix. The breakdown of the single fixed price must respect the breakdown required in this same table. Subject to approval by the Departmental Representative, the Contractor may suggest additional items or a single fixed price schedule to further allocate the single lump sum price submitted. The sum of the amounts submitted to the various items of the single fixed price breakdown table must be equal to the single fixed price bid. Approval of the price breakdown submitted by the Departmental Representative is mandatory prior to the recommendation necessary to award the contract. The prices on the single fixed price list will be used for the preparation of payment requests throughout the project.

1.4 ITEMS DESCRIPTIONS IN THE UNIT PRICE TABLE

.1 Provision of new material

.1 This price remunerates, per metric ton (m.t.), the supply of approved new materials as indicated in the plans and specifications. This price includes all necessary measurements, actions and supplies such as, but not limited to, delivery, field survey, as well as coordination with the Laboratory and the Departmental Representative for the approval of backfill materials, namely:

.1 MG-20 fill.

.2 Net stone 19mm.

.3 200-300mm rockfill.

.4 CG-14 fill.

.2 Before using CG-14 fill materials, the Contractor must favor the reuse of draining and compactable excavation materials. The Contractor must receive the written approval of the Departmental Representative before the use of CG-14 borrow materials.

1.5 APPOINTMENT AND PAYMENT

.1 Departmental Representative will appoint and pay for services of testing laboratory except follows:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing performed exclusively for Contractor's convenience.

.3 Tests specified to be carried out by Contractor under supervision of Departmental Representative.

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

1.6 CONTRACTOR'S RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:

.1 Provide access to Work for inspection and testing.

.2 Facilitate inspections and tests.

.3 Make good Work disturbed by inspection and test.

.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.1 Notify Departmental Representative 48 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.2 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

TABLE B: LUMP SUM PRICE

Item No	Class of labour, Plant and Material	Estimated Quantity	Unit of measur-ement	Price per unit	Extended amount
B	**Overhead costs**				
.1	Jobsite organisation	1	Lump sum		
.2	Environmental protection measures	1	Lump sum		
.3	Water managment	1	Lump sum		
.4	Earthworks includingexcavation, backfill, compaction, surveying and all other related work	1	Lump sum		
.5	1050mm diam. PEHD pipes and accessories	1	Lump sum		
LUMP SUM				**(LS)**	

Part 1 General

1.1 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately **5 working days**, to allow for progress reporting.

.4 The schedule must show for each activity, the time required for the issuance of shop drawings, a reasonable time for their approval, the ordering and delivery of materials to the site, place on the site as well as all other relevant information, mainly for the elements that have an impact on the critical progress of the work.

.5 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

.6 The critical path must be clearly indicated in the schedule. To do this, the predecessors of each of the tasks must be identified in order to demonstrate a logic in the interventions.

.7 Any modifications made to the work, in connection with requests for additional work from the Departmental Representative or unsuspected site conditions, must be incorporated into the project schedule. The Contractor must exercise diligence in order to reorganize its schedule and avoid any additional delays. In the event that additional delays are unavoidable, the Contractor must immediately notify the Departmental Representative and provide an update of the schedule showing the implication of the modification on the critical path of the project.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit to the Departmental Representative, no later than 10 working days after notice of acceptance of the offer, a schedule which will serve as an overall plan and will be used for planning and monitoring the work, and for the production of progress reports. A PDF file and the native file of the document must be sent to the Departmental Representative. Following acceptance of the implementation schedule, it will become the master plan for the project.

1.3 PROJECT MILESTONES

.1 Project milestones are essential contract conditions and must be stated and clearly identified in the schedule.

.2 Project milestones form interim targets for Project Schedule.

.1 Kick off meeting : 10 working days after the date of the contract award.

.2 Completion of the bathymetric survey: No later than 10 working days before the date of mobilization.

.3 Mobilization: No sooner than mi-August.

.4 Substantial completion of the work and full demobilization of the work site: No later than mid-September.

.5 Final completion of the Work: No later than 15 working days after the date of Substantial Completion of the Work.

1.4 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Departmental Representative will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.

.2 Permits

.3 Mobilization.

.4 Shop Drawings, Samples (including the approval period of the Departmental Representative).

.5 Water management.

.6 Excavation.

.7 Backfilling of the sub-base and foundation.

.8 Culvert installation.

.9 Backfilling up to the infrastructure limit.

.10 Rockfill and slope stabilization.

.11 Backfilling of the pavement structure.

.12 Site restoration.

.13 Inspection of the work by the Departmental Representative.

.14 Correction of deficiencies.

.15 Final inspection of the work.

.16 Substantial completion of the work.

.17 Final completion of the work.

1.6 PROJECT SCHEDULE REPORTING

.1 Update the schedule before each site meeting, so that it reflects changes to activities, their completion and those in progress. Send the revised implementation schedule to all the project team at least 2 working days before site meetings. Calendar updates must be carried

out in "Track changes" mode with a percentage of completion for each of the activities presented.

.2 All modifications made to the work, following change requests from the Departmental Representative or unsuspected conditions, must be incorporated into the project schedule. The Contractor must reorganize its schedule in order to avoid any additional delays. In the event that additional delays are unavoidable and demonstrated by the Contractor, he must immediately notify the Departmental Representative and provide an update of the execution schedule showing the implication on the critical path of the project.

1.7 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.4 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.5 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work.

.1 Make references to specifications and project drawings.

.3 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.4 The documents submitted must bear or indicate the following:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of :

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.5 Submit an electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.6 Submit an electronic copy of the documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.7 Supplement standard information to provide details applicable to project.

.8 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic colour digital photography, standard resolution as directed by Departmental Representative.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Frequency of photographic documentation: weekly or as directed by Departmental Representative.

.1 Upon completion of Work, but before the works are concealed as directed by Departmental Representative.

1.4 DAILY PROGRESS REPORT

.1 Submit an electronic copy of the daily progress report as directed by Departmental Representative.

.2 Les documents soumis doivent porter ou indiquer ce qui suit :

.1 Project identification.

.2 Date of report.

.3 Activities executed by the Contractor.

.4 Activities executed by the testing laboratory.

.5 Personnel and equipment on the work site.

.6 Unusual conditions, incident or accident, accidental spill and visitors.

.3 Frequency of progress report: daily or as directed by Departmental Representative.

1.5 ENVIRONMENTAL MONITORING FORM

.1 Submit an electronic copy of the environmental monitoring form as directed by Departmental Representative.

.2 Frequency of environmental monitoring report: weekly or as directed by Departmental Representative.

.3 See Section 01 35 43 *Environmental Procedures* for all specifics and requirements for environmental monitoring form.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Partie 1 General

GENERAL NOTE: in this section the term "site" includes all the facilities located at the site where the work is taking place (construction site, buildings, access, infrastructure, parkings, bays, etc.).

1.1 REFERENCES

.1 Province of Québec

.1 Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting occupational health and safety).

.2 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit to Departmental representative, and the CNESST the site-specific prevention program, as outlined in the article "GENERAL REQUIREMENTS", at least 10 days prior to the start of work.

.3 Departmental representative will review Contractor's site-specific prevention program and provide comments to Contractor within 10 days after receipt of the document. Revise plan as appropriate and resubmit to Departmental representative within 5 days after receipt of comments from Departmental representative. Departmental representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contactor shall then update his prevention program and resubmit it to the Departmental representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.

.4 Departmental representative's review of Contractor's site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor's overall responsibility for construction Health and Safety during the work.

.5 Submit copies of Contractor's authorized representative's construction site health and safety inspection reports to Departmental representative at least once a week.

.6 Submit to Departmental representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.

.7 Submit to Departmental representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

.8 The investigation report shall contain at least the following:

.1 date, time and place of accident;

.2 name of sub-contractor involved in the accident;

.3 number of persons involved and condition of wounded;

.4 witness identification;

.5 detailed description of tasks performed at the time of the accident;

.6 equipment being used to accomplish the tasks performed at the time of the accident;

.7 corrective measures taken immediately after the accident;

.8 causes of the accident;

.9 preventive measures that have been put in place to prevent a similar accident.

.9 Submit to Departmental representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals. Contractor must also keep one copy of these documents on the construction site.

.10 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental representative.

.11 Submit to Departmental representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article "GENERAL REQUIREMENTS" of this section.

.12 Submit to Departmental representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:

.1 first aid in the workplace and cardiopulmonary resuscitation;

.2 work likely to release asbestos dust (mandatory for all work where asbestos is present);

.3 work in confined spaces (mandatory for all work in confined spaces);

.4 lockout-tagout procedures (mandatory for all work requiring lockout);

.5 safely operating forklift trucks (mandatory for all forklift usage);

.6 safely operating elevating work platforms (mandatory for the use of all elevating platforms);

.7 any other requirement of Regulations or the safety program.

In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.

.13 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

1.3 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

.1 Notice of construction site opening shall be submitted to the CNESST before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental representative.

At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental representative.

.2 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.

.3 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

1.4 HAZARD ASSESSMENT

.1 The contractor must perform construction site specific safety hazard assessment related to project.

1.5 MEETINGS

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

.2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.

.3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental representative no later than 5 days after the committee meeting.

1.6 REGULATORY REQUIREMENTS

.1 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.

.2 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.

.3 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that *Code.*

1.7 COMPLIANCE REQUIREMENTS

.1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction*

(S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.8 RESPONSIBILITIES

.1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).

.2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.

.3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental representative.

.4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.9 WORK PERFORMED BY EXTERNAL CONTRACTORS

.1 On this construction site, it is anticipated that work will be performed by an external contractor that has not been hired by the Contractor:

.2 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental representative to perform certain work. In return, these external contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental representative prior to the start of the work of each contractor (see the wording in the article HEALTH AND SAFETY SUBORDINATION AGREEMENT)

1.10 GENERAL REQUIREMENTS

.1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.

.2 The safety program must include at least the following:

.1 company safety and health policy;

.2 description of the stages of the work;

.3 total costs, schedule and projected workforce curves;

.4 flow chart of safety and health responsibilities;

.5 physical and material layout of the construction site;

.6 risk assessment for each stage of the work, including preventive measures and the procedures for applying them;

.7 identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";

.8 identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";

.9 training requirements;

.10 procedures in case of accident/injury;

.11 written commitment from all parties to comply with the safety program;

.12 construction site inspection cheklist based on the preventive measures;

.13 emergency response plan which shall contain at least the following:

.1 construction site evacuation procedures;

.2 identification of resources (police, firefighters, ambulance services, etc.);

.3 identification of persons in charge of the construction site;

.4 identification of the first-aid attendants;

.5 communication organizational chart (including the person responsible for the site and the Departmental representative);

.6 training required for those responsible for applying the plan;

.7 any other information needed, in the light of the construction site's characteristics.

.14 If available the Departmental representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental representative.

.3 Departmental representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.

.4 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental representative.

.5 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.

.6 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.

.7 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall

obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental representative on demand.

.8 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental representative on demand.

.9 The Departmental representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.

.10 The Departmental representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.11 RISKS INHERENT TO THE WORKSITE

.1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed..

.2 At the worksite there is in particular the presence of the following:

- .1 trees and landscaping to preserve and protect;
- .2 potentially unstable ground;
- .3 body of water close by;

.3 The Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in its prevention program all risks that have been identified.

1.12 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC

.1 N/A

1.13 UNFORESEEN HAZARDS

.1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.14 PERSON IN CHARGE OF HEALTH AND SAFETY

.1 If the construction site meets the requirements of article 2.5.3 of the *Code the sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be

dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:

.1 have a safety officer certificate issued by the CNESST;

.2 have site-related working experience of at least five years specific to the activities associated with the present project;

.3 have working knowledge of occupational health and safety regulations in the workplace;

.4 be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;

.5 be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;

.6 be on construction site at all times during execution of work;

.7 inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.

.8 Keep a daily log of actions taken and submitting a copy to Departmental representative each week.

.2 The safety officer's certificate shall be submitted to the Departmental representative before the start of the work.

.3 When the hiring of a safety officer is not required or if this person is hired by the Departmental representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental representative before the start of work.

1.15 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental representative.

.2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:

.1 notice of construction site opening;

.2 identification of principal Contractor;

.3 company OSH policy;

.4 site-specific prevention program;

.5 emergency plan;

.6 minutes of worksite committee meetings;

.7 names of worksite committee representatives;

.8 names of the first-aid attendants;

.9 action reports and correction notices issued by the CNESST.

1.16 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

.1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental representative in accordance with the article "ACTION AND INFORMATIONAL SUBMITTALS" in this section.

.2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental representative or his agent.

.3 Submit to Departmental representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.

.4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site workers and environmental protection take precedence over cost and scheduling considerations.

.5 The Departmental representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.17 PREVENTION OF VIOLENCE

.1 Health and safety management of Public Works and Government Services Canada construction sites includeS the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental representative.

1.18 BLASTING

.1 N/A

1.19 POWDER ACTUATED DEVICE

.1 N/A

1.20 USE OF PUBLIC ROADS

.1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding,

cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.

.2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.21 LOCKOUT-TAGOUT

.1 N/A

1.22 ELECTRICAL WORK

.1 N/A

1.23 ASBESTOS EXPOSURE

.1 N/A

1.24 FUNGAL CONTAMINATION

.1 N/A

1.25 EXPOSURE TO SILICA

.1 N/A

1.26 SANDBLASTING

.1 N/A

1.27 LEAD-BASE PAINT REMOVAL

.1 N/A

1.28 EXPOSURE TO ANIMAL'S FECAL DROPPINGS

.1 N/A

1.29 RESPIRATORORY PROTECTION

.1 Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 *Selection, use and care of respirators*. Submit the certificates of the fit testings to the Departmental representative on demand.

1.30 FALL PROTECTION

.1 N/A

1.31 SCAFFOLDINGS

.1 N/A

1.32 CONFINED SPACES

.1 N/A

1.33 EXCAVATION WORK

.1 In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who performs the digging of trenches or excavations must respect the following requirements:

.2 Fill out the following form and submit it to the Departmental representative before beginning to excavation work.

.3 Submit to the Departmental representative, as appropriate, the following documents:

.1 plans and specifications, signed and sealed by an engineer, of the shoring needed to be installed for the excavation work; or engineer's advice specifying the wall angles of the trench or excavation.

Excavation guidelines

N° ____ of ____

This directive is provided as an example by the Commission de la santé et de la sécurité du travail (CSST). It contains the main instructions that the employer should give to the person responsible for the work on the site and to the operator of the earth-moving machine.

Company name	
Project name	Project no.
Address of the site	Construction start date

Field survey

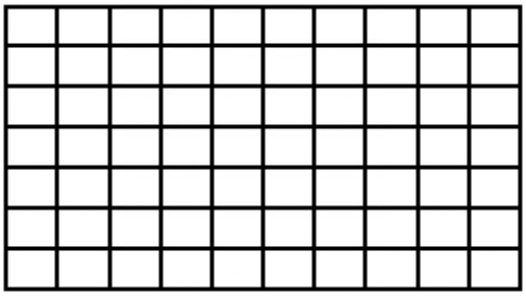
Chaining or axes : from _____ to _____ Attached plan ☐ Plan no. : _____

Working method to use

While making sure the excavation walls do not pose the risk of landslide

- ☐ dig and shore according to the plans and specifications of the engineer ;
- ☐ dig and shore using a trench box ;
- ☐ dig without shoring as long as one of the following conditions is respected:
  - ☐ rock is sound;
  - ☐ no worker goes down in the trench or excavation;
  - ☐ the walls are dug according to the engineer's advice.

Dimensions of excavation (Dig according to the following profile.)



	Minimum	Maximum
H Depth		
Wb Width at bottom Width at top		

Safety measures

Deposit the materials at a distance of at least 1.2 metre (4 feet) from top of walls.
Do not allowed any vehicle to come closer than 3 metres (10 feet) from top of walls.

- ☐ Respect the engineer's plan concerning work in the proximity of an existing facility.
- ☐ Follow the location plan to locate the underground infrastructures.
- ☐ Install signaling devices prescribed in the traffic plan (barriers, visual references, etc.).
- ☐ Assign a flag person or more to control the flow of traffic.
- ☐ Respect the procedure prescribes for work near power lines.
- ☐ Provide protection devices for the workers, such as concrete crash barriers.

Name	Occupation	
Signature	Date	Telephone no.

Directive submitted
☐ to the responsible of the work on the site ☐ to the operator of the earth-moving machine

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1.34 LIFTING LOADS WITH CRANE OR BOOM TRUCK

.1 N/A

1.35 HOT WORK

.1 N/A

1.36 ROOFING WORK

.1 N/A

1.37 STEEL STRUCTURE ERECTION OR DISMANTLING WORK

.1 N/A

1.38 WORK NEAR BODIES OF WATER

.1 For all work done near a body of water (such as work above water, work on a wharf, work on the edge of a watercourse, etc.), the Contractor must respect the requirement of the following paragraphs in addition to those of *Code de sécurité pour les travaux de construction* (Safety code for the Construction Industry).

.2 The Contractor must plan his work in a way to implement safety measures to prevent any worker from falling in the water. The use of theses measures should be favoured over the wearing of a life jacket.

.3 Submit the following documents to the Departmental representative before the beginning of the work:

.1 description of the body of water;

.2 description of the work done next to this body of water;

.3 plan of transportation on water adapted to the work and to the characteristics of the body of water;

.4 rescue plan adapted to the work and to the characteristics of the body of water;

.4 Each of the document listed above must contain at a minimum the information required in section 11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).

.5 If there is the possibility that all or part of the work can be done during the winter, the safety measures included in the documents required above must be adapted accordingly.

.6 The Contractor must submit to the Departmental representative the certificate of training required in article 11.2 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry) for the following individuals:

.1 the person assigned to prepare the documents required in the preceding paragraph; and

.2 each person responsible for the transport or rescue operations

.7 If the rescue plan stipulates the use of a vessel, the Contractor must submit to Departmental representative the competency card or certificate for the individuals in the rescue team for his work, issued by Transport Canada.

.8 The Contractor must include in his weekly inspection checklist the devices required in the articles 11.4 and 11.5 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).

.9 Ensure that a rescue vessel moored and in the water is available at each place where a worker may fall in the water. However, a vessel may serve more than one workplace on the same construction site provided the distance between any of these workplaces and the vessel is less than 30 m.

.10 Where the construction site is a wharf, a pier, a quay or any similar structure, a ladder with at least two (2) rungs below the surface of the water shall be installed on the front of the structure every 60 m.

1.39 INTERIOR USE OF INTERNAL COMBUSTION ENGINES

.1 N/A

1.40 TEMPORARY HEATING

.1 N/A

1.41 WORK NEAR OVERHEAD POWER LINES

.1 N/A

1.42 DIVING OPERATIONS

.1 N/A

1.43 HEALTH AND SAFETY SUBORDINATION AGREEMENT

Project: _____ Address: _____

EXTERNAL CONTRACTOR

I hereby agree to submit to the authority of (name of the Principal Contractor's business) _____, which is the Principal Contractor for the project indicated above during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to:

- inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times;
- apply the prevention program that is specific to the activities that we carry out under this project;
- inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and
- follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.

Name of representative: _____

Name of business: _____

Description of work to be done on the construction site: _____

Approximate dates of work (start-end): _____

Signature: _____ Date: _____

PRINCIPAL CONTRACTOR

I hereby agree to allow the business (name of external contractor) _____ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PWGSC's Departmental representative of this and to provide documentary evidence of my actions or dealings with the Contractor.

Name of representative: _____

Name of the Principal Contractor's business: _____

Signature: _____ Date: _____

Submit a completed and signed copy to PWGSC's Departmental representative

END OF SECTION

Part 1 General

1.1 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.

.3 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.1 The table of mitigation measures presented in the appendix to this section must be considered and be an integral part of the environmental protection plan. The environmental monitoring form should be submitted to the Departmental Representative for review.

.4 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.5 Include in Environmental Protection Plan:

.1 Name of person responsible for ensuring adherence to Environmental Protection Plan.

.2 Plan of the work area, showing the activities planned in each part of the work area, as well as the wetland protection zones.

.3 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.4 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.5 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.6 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.7 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into

air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.8 The names and competency of the persons responsible for the exit manifests for hazardous waste to be removed from the site.

.6 The environmental monitoring form, presented in the appendix to this section, must be duly completed by an environmental supervisor present on the site during the work and for each site.

1.3 FIRES

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

1.4 DRAINAGE

.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.5 PLANT PROTECTION AND WETLAND

.1 Inspect site and verify with Departmental Representative, items designated to remain.

.2 Carry out as much as possible the work outside the periods of reproduction and rearing of young birds and terrestrial fauna. The general nesting period for the Iles-de-la-Madeleine extends to late August.

.3 Ensure the protection of trees, plants and wetlands on the site and on adjacent properties, as indicated (environmental monitoring form in the appendix to this section).

.4 Protect trees and plants on site and adjacent properties as indicated.

.5 Minimize stripping of topsoil and vegetation.

.6 The contractor must minimize disturbance to the natural environment outside the work area. Bare or disturbed areas in the natural environment will have to be rehabilitated with the existing soil from the surface layer which has been excavated for the installation of infrastructures.

1.6 PRESERVATION OF WATER COURSE

.1 Install stabilized entrances at equipment access points to water course.

.2 The work must be carried out in the presence of as little water as possible.

.3 Prior to the installation of temporary structures in the water course, a turbidity curtain shall be installed as to completely surround the work area and prevent the dispersion of soil and fine particles in the watercourse. The turbidity curtain must be installed and

removed at low tide to avoid sequestering fish in the arm of the bay and to limit the resuspension of sediment in the water.

.4 The turbidity curtain shall be maintained in place throughout the work in the water and removed at the end of work, following the removal of the temporary structures and the complete decanting of suspended matter.

.5 The method used for sediment removal must be subject to the approval of the Departmental Representative.

.6 The discharge into the watercourse of pumped water, drainage water or from any other source or activity, containing suspended matter beyond the CCME standard (2002) which is a 25 mg / L increase over natural levels, is prohibited.

.7 Dumping excavated fill, waste material, or debris in watercourse or wetland is prohibited.

.8 If a rockfill cofferdam is to be used, build it using clean materials and favor the installation of a membrane on all sides to ensure the structure is watertight and to facilitate the collection of rock fill at the end of the work without altering the Canal bed.

.9 The water coming from the cofferdam enclosure must be pumped into a buffer vegetation zone or a tailing pond before returning it to the aquatic environment in order to limit sediment input.

1.7 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Use machinery in good working order to minimize the risk of accidental spillage. Biodegradable hydraulic oils must be used for machinery.

.3 Refueling and maintenance of the machinery and vehicles shall be conducted off-site. Otherwise, carry out refueling activities above an watertight container that can contain 110% of the volume to be managed.

.4 No storage of petroleum products is authorized on the work site.

.5 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

.6 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

.7 Departmental Representative will stop work at any time when Contractor's control of dusts and particulates is inadequate for wind conditions present at site, or when air quality monitoring indicates that release of fugitive dusts and particulates into atmosphere equals or exceeds specified levels.

.8 If Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, stop work. Contractor must discuss procedures that Contractor proposes to resolve problem. Make necessary changes to operations prior to resuming excavation, handling, processing, or other work that may cause release of dusts or particulates.

.9 Perform good management of residual and hazardous materials (environmental monitoring form in the appendix to this section).

.10 Comply with federal, provincial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.

.11 Work to meet or exceed minimum requirements established by federal, provincial, and local laws and regulations which are applicable.

.1 Contractor: responsible for complying with amendments as they become effective.

.12 Prevent contamination of access roads. Immediately scrape up debris or material on access roads which is suspected to be contaminated as determined by Departmental Representative; transport and dispose of in appropriate off-site disposal facility.

.13 Be prepared to intercept, clean up, and dispose of spills or releases that may occur whether on land or water. Maintain materials and equipment required for cleanup of spills or releases readily accessible on site.

.14 Promptly report spills and releases potentially causing damage to environment to:

.1 Authority having jurisdiction or interest in spill or release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.

.2 Departmental Representative.

.15 Provide spill response materials including, containers, adsorbent, shovels, and personal protective equipment. Make spill response materials available at all times in which hazardous materials or wastes are being handled or transported. Spill response materials: compatible with type of material being handled.

1.8 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.1 Take action only after receipt of written approval by Departmental Representative.

.3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 CLEANING

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

.2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.3 Maintain cleanliness of Work and surrounding site to comply with federal, provincial, and local fire and safety laws, ordinances, codes, and regulations.

.4 Co-ordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

END OF SECTION

ENVIRONMENTAL MONITORING FORM

Project identification		
Project promoter	Public works & Government Services Canada for Environment and Climate Change Canada	
Project title	Culvert installation, Pointe-de-l'Est NWA	
Date of work		
Date of site supervision		
Surveillance activities conducted		Worksite visit
		Other surveillance activities (specify) :
		Environmental emergency
WORKSITE SURVEILLANCE CONDUCTED BY :		
Name : Title : Company :		
I certify that the information provided above is correct and complete and that it corresponds to my interpretation of the work.		
Signature		Date :
Name :		

REDUCTION MEASURES	PROVIDE		MEASURE		COMMENTS (IF NOT, EXPLAIN)
	Photo(s)	Document(s)	Yes	No	
CONSTRUCTION FACILITIES					
Before the start of the work, delimit the work area and have the storage areas approved by the Supervisor. Ensure that the boundaries put in place are functional and visible throughout the work.					
Clearly delimit the work and storage areas and limit the area dedicated to these activities to a minimum.					
Mark the access roads and the limits of the works. The machinery must circulate only within the proposed limits of the work.					
Identify sensitive areas (special status plants, wetlands and watercourses).					
Choose the size of the machinery according to the scope of the work to be carried out.					
In order to prevent the introduction and spread of invasive plant species in the work area, machinery must be cleaned before arriving on the site so as to be free of any material that may increase the risk of invasive plants spreading.					
As much as possible, carry out work outside the periods of reproduction and rearing of young birds and terrestrial fauna. The general nesting period for the Îles-de-la-Madeleine extends to late August.					
CLEARING AND WETLAND WORK					
Limit clearing to the areas necessary to the construction work by putting up protective fences or delimiting the work areas with barricade tape.					
Precisely identify the clearing area, using fencing, before logging begins.					
The contractor must minimize disturbance to the natural environment outside the work area. Bare or disturbed areas in the natural environment will have to be rehabilitated with the existing soil from the surface layer which has been excavated for the installation of infrastructures.					
Before the start of the work, precisely delimit the wetland area to be protected with fences.					
Limit the works to the areas necessary for the construction work by maximizing the protection of previously identified areas.					
All soil temporarily excavated in wetlands should be set aside for reuse if possible in the same location after the work.					
All exposed embankments are covered with a geotextile membrane and a rockfill.					

REDUCTION MEASURES	PROVIDE		MEASURE		COMMENTS (IF NOT, EXPLAIN)
	Photo(s)	Document(s)	Yes	No	
Install a turbidity curtain in the water course so as to completely surround the work area and prevent the dispersion of soil and fine particles in the watercourse. The turbidity curtain must be installed and removed at low tide to avoid sequestering fish in the arm of the bay and to limit the resuspension of sediment in the water.					
The discharge into the watercourse of pumped water, drainage water or from any other source or activity, containing suspended matter beyond the CCME standard (2002) which is a 25 mg / L increase over natural levels, is prohibited.					
Ensure compliance with the recommendations issued by the DFO Fish and Habitat Protection Program.					
TRANSPORTATION AND USE OF THE MACHINERY					
Refueling and maintenance of the machinery and vehicles shall be conducted off-site. Otherwise, carry out refueling activities above an watertight container that can contain 110% of the volume to be managed. No storage of petroleum products is authorized on the work site.					
Biodegradable hydraulic oils must be used for machinery.					
Use machinery in good working order to minimize the risk of accidental spillage.					
CONSTRUCTION OF INFRASTRUCTURE					
Transport and store construction materials on previously identified gravel and grass surfaces.					
Provide and enforce an emergency plan in the event of an accidental spill of contaminants. Identify the people and authorities responsible as well as the procedure to be followed in the event of an environmental emergency. Ensure that the response plan contains, at a minimum, a response plan and an alert structure that are known to all employees.					
Have at hand recovery kits on site as well as absorbent material in case of spillage.					
Carry out, under constant supervision, all handling and transfer of fuel, oil, other petroleum products or contaminants in order to avoid accidental spills and to react promptly if necessary.					
Maintain the equipment in perfect working order. Check equipment daily for contaminant leaks, which should be repaired immediately if necessary.					
If soils showing signs of contamination (stain, odor, presence of debris, etc.) are encountered during excavation work, stop the work and notify the site supervisor without delay. In the presence of contaminated soil, surface water and groundwater, it is necessary to manage it properly (safe storage, among others) and dispose of it in a site authorized by the MELCC.					

REDUCTION MEASURES	PROVIDE		MEASURE		COMMENTS (IF NOT, EXPLAIN)
	Photo(s)	Document(s)	Yes	No	
Carry out a characterization of the backfills to ensure their good quality if they are reused in the work.					
In the event of a spill, apply the emergency plan, notify ECCCC and the MELCC, use protective and restraining measures (absorbent berms), quickly clean the area (if possible). Notify ECCC's National Environmental Emergency Center (1-866-283-2333) and Urgence Environnement Québec (1-866-694-5454) for any accident that could disrupt the environment. The telephone numbers will be posted in the construction trailer.					
Store any potentially contaminated material on a waterproof surface and cover it to prevent wind erosion or surface runoff of particles.					
Hazardous residual materials are disposed of in a site duly authorized by the MELCC. Manage contaminated soils in accordance with the Guide d'intervention - Protection des sols et réhabilitation des terrains contaminés.					
Keep the site free of waste or dispose of it temporarily in sealed containers intended for such purpose.					
No new hazardous material can be thrown away. At the end of the work, the contractor must take back all his unused hazardous materials in order to leave the site perfectly clean.					
The same mitigation measures identified for the soil, surface water and groundwater components during the construction phase can be applied.					
Any residual material produced during the work must be collected and disposed of according to its nature. The contractor must ensure that no debris is left on the work site.					
Recover or recycle residual materials when possible or transport them off the site and dispose of them according to the regulations in force. Waste disposed off-site will be transported to a location authorized by the MELCC.					
The contractor must remove from the site all residual materials, hazardous residual materials, temporary installations, tools, equipment, machinery and materials on the site in order to leave it perfectly clean.					

Comments (field observations, poor waste management, presence of used oil, leaks on machinery, work not taken into account in the environmental assessment, etc. - any detail not mentioned in the measures for mitigation)

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor : conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Departmental Representative inspection.

.2 Departmental Representative Inspection:

.1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English and French that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.

.2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 When Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.2 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation.

.2 Final plan: Using felt tip marking pens and maintaining separate colours for each major system, record information on set of opaque drawings mark each item to record actual construction, including:

- .1 Measured horizontal and vertical locations of the completed works.
- .2 Field changes of dimension and detail.
- .3 Changes made by change orders.
- .4 Details not on original Contract Drawings.
- .5 Referenced Standards to related shop drawings and modifications.

.3 Other Documents: maintain photographic documentation and daily progress report in accordance with Section 01 33 00- Submittal procedures.

1.3 FINAL SURVEY

.1 Submit final site survey certificate, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

.2 The Contractor must carry out a complete survey by coordinate X, Y, Z (SCOPQ NAD 83) of the completed work. The computer file of this statement (.dwg) must be submitted to the Departmental Representative before the issuance of the certificate of substantial completion for the realization of the final plan before final acceptance of the project.

.3 The survey must include, without being limited to, the following elements:

- .1 Top and bottom of banks.
- .2 Rockfill limits.
- .3 High and low elevation points of the running surface.
- .4 Survey benchmarks and markers.
- .5 Raft of the culvert pipes on both extremities
- .6 Any other relevant information to be included in the final plan.

1.4 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 10 days before substantial completion of works, to Departmental Representative approval.

.3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.4 Conduct joint 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.

.5 Include information contained in warranty management plan as follows:

- .1 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item, equipment, feature of construction or system.

.2 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.3 Starting point and duration of warranty period.

.2 Contractor's plans for attendance at 9 month post-construction warranty inspections.

1.5 FINAL CLEANING

.1 Clean in accordance with Section 01 11 00 – Summary of work.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

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 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM D698-07e1 , Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft)

.2 ASTM D1557-09 , Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft)

.3 ASTM C117-04 , Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.

.4 ASTM C136-06 , Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Preconstruction Submittals:

.1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.

.3 Samples:

.1 Inform Departmental Representative at least 4 weeks prior to beginning Work, of proposed source of fill materials and provide access for sampling.

Part 2 Products

2.1 MATERIALS

.1 MG-20 borrow material: Stone or crushed gravel composed of hard particles, resistant, angular and free from clods of clay, hydraulic, organic or frozen materials as well as any other deleterious substance.

.2 CG-14 borrow material: Sand approved by the Departmental representative from the excavation or other sources and free of roots, stones over 75 mm in diameter, construction debris, clinker, ash, sod, garbage or other deleterious substance.

.3 19mm net stone: 19mm caliber crushed stones from a quarry.

.4 The particle size of the compacted materials shall remain within the following limits and the particle size curve plotted on a semi-logarithmic diagram shall be continuous and unbroken:

Sieve		**% passing**	
	MG-20	CG-14	Net stones
40mm	-	-	-
31.5 mm	[100]	-	[100]
20 mm	[90-100]	[100]	[90-100]
14 mm	[68-93]	-	-
5 mm	[35-60]	[35-100]	-
1.25 mm	[15-38]	-	-
0.315 mm	[5-17]	-	-
0.080 mm	[2-7]	[0-10]	-

.5 Hard, with relative density (formally specific gravity) not less than 2.65, dense, durable quarry stone, free from seams, cracks or other structural defects, to meet following size distribution for use intended:

.1 Caliber 200-300mm with a d50 = 250mm, or any other similar particle size approved by the Departmental Representative.

.6 Geotextile: non-woven synthetic fibre fabric, supplied in rolls.

.1 Width : minimum 3.5m

.2 Lenght : minimum 100m

.3 Separation membrane

.1 Physical properties:

.1 Tensile strength and elongation (in any principal direction): to ASTM D4632.

.1 Tensile strenght : minimum 500N

.2 Elongation at break: minimum 50%.

.2 CBR puncture : to ASTM D6241.

.1 CBR puncture minimum 1550N

.2 Hydraulic properties:

.1 Filtration opening size (FOS): to CAN/CGSB-148.1 No.10: between 60 and 180 µm

.2 Transmissivity: to ASTM D4491, minimum $1.7s^{-1}$

.4 Separation membrane

.1 Physical properties:

.1 Thickness : minimum 2.5mm

.2 Weight : minimum $250g/m^2$

.3 Tensile strength and elongation (in any principal direction): to ASTM D4632.

.1 Tensile strenght : minimum 1000N

.2 Elongation at break: minimum 50%.

.4 CBR puncture : to ASTM D6241.

.1 CBR puncture minimum 3300N

.2 Hydraulic properties:

.1 Filtration opening size (FOS): to CAN/CGSB-148.1 No.10: between 45 and 150 µm

.2 Transmissivity: to ASTM D4491, minimum $0.9s^{-1}$

Part 3 Execution

3.1 EXAMINATION

.1 Evaluation and Assessment:

.1 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.

.2 Not later than 1 week before backfilling or filling, provide to designated testing agency, 23 kg sample of backfill material proposed for use.

.3 Not later than 48 hours before backfilling or filling with approved material, notify Departmental Representative so that compaction tests can be carried out by designated testing agency.

.4 Before commencing work, conduct, with Departmental Representative, condition survey of existing structures, trees and plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

3.2 PREPARATION

.1 Temporary Erosion and Sedimentation Control:

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

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

.2 Protection of in-place conditions:

.1 Protect excavations from freezing.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 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.

.4 Protect buried services that are to remain undisturbed.

.3 Removal:

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

.2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

.3 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.

3.3 EXCAVATION

.1 Shore and brace excavations, protect slopes and banks and perform work in accordance with Provincial and Municipal regulations.

3.4 TEMPORARY EROSION AND SEDIMENTATION CONTROL

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

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.5 SITE QUALITY CONTROL

.1 Fill material and spaces to be filled to be inspected and approved by Departmental Representative.

.2 Do not begin backfilling or filling operations until material has been approved for use by Departmental Representative.

.3 Not later than 48 hours before backfilling or filling with approved material, notify Departmental Representative to allow compaction tests to be carried out by designated testing agency.

3.6 BACKFILLING

.1 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.

.2 Placing:

.1 Do not use backfill material which is frozen or contains ice, snow or debris.

.2 Place backfill, fill and basecourse material in 150 mm lifts. Add water as required to achieve specified density.

.1 Departmental Representative may authorize thicker lifts if specified compaction can be achieved.

.3 Before placing the materials of the next lift, give every layer a uniform profile and compact it until the prescribed density is obtained.

.3 Compaction: compact each layer of material to obtain density of 95% of M.P. for all material to ASTM D1557 :

.4 Geotextile membrane: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geotextile material installation in accordance with manufacturer's written instructions.

.1 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.

.2 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.

.3 Overlap each successive strip of geotextile 600 mm over previously laid strip.

.4 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.

.5 After installation, cover with overlying layer within 4 hours of placement.

3.7 GRADING

.1 Blade finished surfaces in cut and fill areas free from ruts, depressions, rocks in excess of 20mm.

.2 Grade to ensure that water will drain away from adjacent installations and paved areas, to catch basins and other disposal areas approved by Departmental Representative. Grade to be gradual between finished spot elevations as indicated.

3.8 SITE 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.

3.9 ROCKFILL PLACEMENT

.1 The equipment used for the placement of the stone must be able to lay the stone without releasing it more than 0.3 m above its final position and must also be able to move and reposition a stone if necessary .

.2 Place the stones so that they are well supported on the one below and be in firm contact with the neighboring stones. It may be necessary to change the arrangement of adjacent stones to achieve this result.

.3 The stones should be placed in an irregular arrangement with a random orientation so that the joints between the neighboring stones are not aligned.

.4 The finishing of the outer slopes must be done as the layer of protective stone is laid.

.5 Riprap work should be considered final when the Departmental Representative has approved the implementation.

.6 Prior to final acceptance, any damage to the existing structure or stone layers partially constructed or approved as a result of the Contractor's or subcontractor's operations, wind, waves, tides or Ice must be repaired by the Contractor at his expense.

.7 Stones should be placed carefully to avoid damage to existing structures. All costs of repair and / or replacement of these works, which would have been damaged for lack of the necessary precautions, are the responsibility of the Contractor.

.8 The placement by any method likely to cause segregation in a given category of stone is not permitted. The set-up should start at the bottom of the slope and go up. It is not allowed to throw stone or move it by shifting or handling down. The final slope and the height must be done as the stone is put in place.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for pipes and backfill and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Certification: to be marked on pipe.

1.2 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

.1 Store materials in accordance with manufacturer's recommendations.

.2 Store and protect pipes from damage.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 CORRUGATED POLYETHYLENE PIPE AND FITTINGS

.1 Rigid dual wall pipe, with smooth interior and corrugated exterior walls for roadway use, made from high-density polyethylene (HDPE) complies with properties classification of ASTM D3350 standard with watertight and soil tight couplers.

.2 Provide accessories, fittings and adapters molded or manufactured, recommended by the supplier. Couplers will comply with ASTM F477 and BNQ 3624-120 standards. Fused and / or glued couplings will not be permitted.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for pipe culvert installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 BEDDING

.1 Dewater excavation, as necessary, to allow placement of culvert bedding in dry condition.

.2 Place 300 mm minimum thickness of approved granular material on bottom of excavation.

3.3 LAYING CORRUGATED POLYETHYLENE PIPE CULVERTS

.1 Ensure bottom of pipe is in contact with shaped bedding throughout pipe length.

.2 Allow water to flow through pipes during construction only as permitted Departmental Representative.

3.4 JOINTS FOR POLYETHYLENE CULVERTS

.1 Install couplings in accordance with manufacturer's instructions.

3.5 BACKFILLING

.1 Backfill around and over culverts as indicated or as directed by Departmental Representative.

.2 Place backfill material, approved in writing 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 90 % of modified Proctor, taking special care to obtain required density under haunches.

.4 The backfill must be placed and compacted at 90% of the modified Proctor up to 150 mm above the pipe with the material specified in the specifications. No compaction should be done directly on the pipe until the backfill reaches at least this level.

.5 Protect installed culvert with minimum 300 mm cover of compacted fill before heavy equipment is permitted to cross.

.6 Place backfill in unfrozen condition.

END OF SECTION