

Public Works and Government Services Canada
Wemindji Airport
Rehabilitation of the access road

Project N° R.070434-001

SEALS PAGE

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These tender documents has been prepared and verified by the undersigned:

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END OF SECTION

SUMMARY OF WORK

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The work covered by this contract includes the repairing of the access road and the parking of Wemindji airport. This work includes without being limited to:
 - .1 Scarification of granular roadbed;
 - .2 Aggregate base course;
 - .3 Vertical adjustment of manholes and fire hydrant;
 - .4 Asphalt paving;
 - .5 Shaping of road embankment;
 - .6 Backfilling of lateral ditch;
 - .7 Digging or reprofiling of lateral ditch;
 - .8 Digging or reprofiling of outlet channel;
 - .9 Removal and disposal of culvert;
 - .10 Proposed culverts;
 - .11 Rip-rap;
 - .12 Cleaning of culvert.

1.3 CONTRACT METHOD

- .1 Construct Work under single unit price contract.
- .2 Subcontractor must have obtained contractor license before proceeding with the works require for the contractor.

1.4 WORK SEQUENCE

- .1 Run the work so as to allow the continued use of the premises by the public.
- .2 At all times, maintain one lane of traffic in accordance with Section 01 35 00.06 – Special Procedures for Traffic Control.

1.5 PERIOD OF EXECUTION

- .1 The period of execution of all works is 10 weeks from the date of award of the contract to the contractor. The date limit for execution of work is September 30, 2015.

1.6 OWNER OCCUPANCY

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

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1.7 OWNER FURNISHED ITEMS

- .1 Owner Responsibilities:
 - .1 Arrange for delivery of shop drawings, product data, samples, manufacturer's instructions, and certificates to Contractor.
 - .2 Arrange for replacement of damaged, defective or missing items.
- .2 Contractor Responsibilities:
 - .1 Designate submittals and delivery date for each product in progress schedule.
 - .2 Review shop drawings, product data, samples, and other submittals. Submit to Consultant notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents.
 - .3 Receive and unload products at site.
 - .4 Inspect deliveries jointly with Owner; record shortages, and damaged or defective items.
 - .5 Handle products at site, including uncrating and storage.
 - .6 Protect products from damage, and from exposure to elements.
 - .7 Assemble, install, connect, adjust, and finish products.
 - .8 Provide installation inspections required by public authorities.
 - .9 Repair or replace items damaged by Contractor or subcontractor on site (under his control).
- .3 Titre
 - .1 All materials and equipment required for the execution of the work are provided and paid by the Contractor.

1.8 EXISTING SERVICES

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give the Departmental Representative 48 hour notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to airport facilities.
- .3 Provide alternative routes for vehicular traffic.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify the Departmental Representative of findings.
- .5 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Where unknown services are encountered, immediately advise Department Representative and confirm findings in writing.

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- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.

1.9 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 Other documents as specified.

1.10 GEOTECHNICAL STUDY

A geotechnical study is available for consultation in the office of the Departmental Representative. Appendix A entitled « Geotechnical log reports » provides geotechnical survey log conducted as part of the Geotechnical study report.

Part 2 PRODUCTS**2.1 NOT USED**

- .1 Not used.

Part 3 EXECUTION**3.1 NOT USED**

- .1 Not used.

END OF SECTION

SUBMITTAL PROCEDURES

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Contractor shall provide Departmental Representative with certificates, certificates of conformity and data sheets for the materials required for the execution of the Work.

1.2 REFERENCES

- .1 Not used.

1.3 ADMINISTRATIVE

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

1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Québec Province of Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work.

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Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

- .4 Allow 15 days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date;
 - .2 Project title and number;
 - .3 Contractor's name and address;
 - .4 Identification and quantity of each shop drawing, product data and sample;
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates;
 - .2 Project title and number;
 - .3 Name and address of:
 - .1 Subcontractor
 - .2 Supplier
 - .3 Manufacturer
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication;
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances;
 - .3 Setting or erection details;
 - .4 Standards;
 - .5 Operating weight.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit 1 print copy or 1 electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit 1 print copy or 1 electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

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- .12 Submit 1 print copy or 1 electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit 1 print copy or 1 electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit 1 print copy or 1 electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets and safety precautions.
- .15 Delete information not applicable to project.
- .16 Supplement standard information to provide details applicable to project.
- .17 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .18 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

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Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

SPECIAL PROCEDURES FOR
TRAFFIC CONTROL

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 For work on or near road right-of-ways, Contractor shall control road traffic.

1.3 REFERENCES

- .1 Ministère des Transports du Québec
 - .1 Tome V des Normes des ouvrages routiers intitulé « Signalisation routière »;
 - .2 Cahier des charges et devis généraux (CCDG), édition 2015, Infrastructures routières, construction et réparation.

1.4 PROTECTION OF PUBLIC TRAFFIC

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 When working on travelled way:
 - .1 Place equipment in position to minimize interference and hazard to travelling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .3 Close lanes of road only after receipt of written approval from Departmental Representative.
 - .1 Before re-routing traffic erect suitable signs and devices according to “Tome V, Signalisation routière”.
- .4 Keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.
 - .1 Provide 7 m wide minimum temporary roadway for traffic in two-way sections through Work and on detours.
 - .2 Provide 5 m wide minimum temporary roadway for traffic in one-way sections through Work and on detours.

1.5 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.

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- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices according to “Tome V, Signalisation routière” des Normes des ouvrages routiers du ministère des Transports du Québec.
- .3 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
- .4 Continually maintain traffic control devices in use:
 - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .2 Remove or cover signs which do not apply to conditions existing from day to day.

1.6 CONTROL OF PUBLIC TRAFFIC

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped according to “Tome V, Signalisation routière” des Normes des ouvrages routiers du ministère des Transports du Québec.
 - .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
 - .2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
 - .3 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .4 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .5 For emergency protection when other traffic control devices are not readily available.
 - .6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .7 Delays to public traffic due to contractor's operators:[15] minutes maximum.
- .2 Where roadway, carrying two-way traffic, is restricted to one lane, for 24 hours each day, provide portable traffic signal system.
 - .1 Adjust, as necessary, and regularly maintain system during period of restriction.
 - .2 Ensure signal system meets requirements according to “Tome V, Signalisation routière” des Normes des ouvrages routiers du ministère des Transports du Québec.

1.7 PAYMENT

- .1 Costs for traffic control procedures are included in tender unit prices.

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Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

HEALTH AND SAFETY REQUIREMENTS

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Quebec
 - .1 An Act Respecting Occupational Health and Safety, R.S.Q. 1997 (updated 26 July 2005).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to authority having jurisdiction, daily to Departmental Representative.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 2 days after receipt of comments from Departmental Representative.
- .7 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

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1.4 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

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

1.7 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Section 01 35 00.06 - Special procedures for traffic control.
 - .2 Section 33 12 16.16 – Road-mix asphalt paving wearing courses.

1.8 GENERAL REQUIREMENTS

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

1.9 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act, B.C. Reg.
- .2 Comply with Occupational Health and Safety Act, Industrial and Commercial Establishments Regulation, R.R.Q.
- .3 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 UNFORSEEN HAZARDS

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

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1.12 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with in works in Cree community.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work [and report directly to and be under direction of Registered Occupational Hygienist

1.13 POSTING OF DOCUMENTS

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

1.14 CORRECTION OF NON-COMPLIANCE

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

1.15 WORK STOPPAGE

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

HEALTH AND SAFETY REQUIREMENTS

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Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Definitions

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

- .2 References

- .1 Federal Government

- .1 Canadian Environmental Protection Act (CEPA 1999) (S.C., 1999, c.33).

- .2 Gouvernement du Québec

- .1 Loi sur les forêts (L.R.Q., chapitre F-4.1).
 - .2 Règlement sur les normes d'intervention dans les forêts du domaine de l'État (R.R.Q., c. Q-2, r.19).
 - .3 Règlement sur l'enfouissement et l'incinération des matières résiduelles (R.R.Q., c. Q-2, r.19).
 - .4 Règlement sur les matières dangereuses (R.R.Q., c. Q-2, r. 32).
 - .5 Loi sur la qualité de l'environnement (R.L.R.Q., chapitre Q-2).
 - .6 Règlement relatif à l'application de la Loi sur la qualité de l'environnement (R.L.R.Q., chapitre Q-2, r. 3).
 - .7 Règlement sur les carrières et sablières (R.L.R.Q., chapitre Q-2, r. 7).
 - .8 Règlement sur la circulation de véhicules motorisés dans certains milieux fragiles (R.L.R.Q., chapitre Q-2, r. 9).
 - .9 Règlement sur l'enfouissement des sols contaminés (R.L.R.Q., chapitre Q-2, r. 18).
 - .10 Règlement sur les normes environnementales applicables aux véhicules lourds (R.L.R.Q., chapitre Q-2, r. 23).
 - .11 Règlement sur le stockage et les centres de transfert de sols contaminés (R.L.R.Q., chapitre Q-2, r. 46).
 - .12 Loi sur la conservation et la mise en valeur de la faune (R.L.R.Q., chapitre C-61.1).
 - .13 Règlement sur les habitats fauniques (R.L.R.Q., chapitre C-61.1, r. 18).
 - .14 Règlement sur la protection des forêts (R.L.R.Q., chapitre F-4.1, r. 11).

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- .15 Politique de protection des rives, du littoral et des plaines inondables (R.L.R.Q, chapitre Q-2, r. 32).
- .16 Politique québécoise de gestion des matières résiduelles (R.L.R.Q., chapitre Q-2, r. 35.1).
- .17 Politique de protection des sols et de réhabilitation des terrains contaminés.
- .18 Code de sécurité pour les travaux de construction (R.L.R.Q., chapitre S-2.1, r. 4).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

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- .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris (Section 01 74 21).
- .11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .13 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
- .15 Pesticide treatment plan to be included and updated, as required.

1.4 FIRES

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

1.5 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 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .3 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

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- .3 Protect roots of designated trees to drip line during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated and designated by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Use waterway beds for borrow material only after written receipt of approval from Departmental Representative.
- .3 Waterways to be kept free of excavated fill, waste material and debris.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .7 Blasting is allowed only above water and 100 m minimum from indicated spawning beds.

1.8 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 HISTORICAL/ARCHAEOLOGICAL CONTROL

- .1 Provide historical, archaeological, cultural resources, biological resources, and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.
- .2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

1.10 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.

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- .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.

1.11 CONTAMINATED SOIL

- .1 Contractor shall immediately inform the Departmental Representative when potentially contaminated soil is identified during excavation work.
- .2 The Departmental Representative will provide Contractor with directives regarding the continuation of the work.

Part 2 PRODUCTS**2.1 NOT USED**

- .1 Not used.

Part 3 Execution**3.1 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .4 Waste Management: waste materials disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

CLEANING

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from work areas, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Dispose of waste materials and debris authorised at designated dumping areas.
- .6 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .7 Schedule cleaning operations so that resulting dust, debris and other contaminants will not contaminate the environment.

1.4 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .3 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris in compliance with applicable laws and regulations and subject to approval from the band council.
- .5 Clean lighting reflectors, lenses, and other lighting surfaces.
- .6 Clean all pipe culverts at the end of the work.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Disposal of waste in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

CLEANING

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1.6 FINAL CONSTRUCTION SITE CLEANUP AND LEVELLING

- .1 Final levelling includes the touch-ups required to ensure that the profiles fully conform to theoretical longitudinal and cross lines, and the work required to clean and restore the sites.
- .2 Carry out touch-ups to ensure profiles fully conform to theoretical longitudinal and cross lines and all the work required to clean and restore the sites.
- .3 Shape the round on each shoulder and the slopes of the road ditches and other structures on which work was executed. The rounds points shall be perfectly straight and parallel to the road centreline and shall comply with the theoretical dimensions indicated on the plans. The slopes of ditches or other structures shall be straight and consistent in keeping with the state of the art for such structures.

1.7 PAYMENT METHOD

- .1 Cleaning
 - .1 Cleaning costs are included in tender unit prices.
 - .2 When supporting materials are required to fill depressions as directed by the Departmental Representative, these materials are paid as per contract unit prices provided they do not replace excavated, moved or contaminated materials as part of the execution of the Work.
- .2 Waste management and disposal
 - .1 Waste management and disposal costs are included in tender unit prices.

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 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.
- .2 PWGSC's Waste Management Goal is to reduce the total Project Waste to be diverted from landfill sites. Provide Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Accomplish maximum control of solid construction waste.
- .4 Preserve environment and prevent pollution and environment damage.

1.2 RELATED REQUIREMENTS

- .1 Not used.

1.3 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Cost/Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.
- .3 Demolition Waste Audit (DWA): relates to actual waste generated from project.
- .4 Inert Fill: inert waste - exclusively asphalt and concrete.
- .5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

- .11 Separate Condition: refers to waste sorted into individual types.
- .12 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .13 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.
- .14 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related required submittal and reporting requirements.
- .15 Waste Reduction Work Plan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (Schedule A).

1.4 DOCUMENTS

- .1 Maintain at job site, one copy of the following document:
 - .1 Construction demolition waste management and disposal plan.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit non-hazardous waste management and disposal plan identifying methods and sites for disposal of solid waste and clearing debris according to Section 35 42 60 – Waterway channel maintenance and the disposal of existing culverts to be replaced according to Section 33 42 13 – Pipe culverts.

1.6 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins;
 - .2 Waste type of each bin;
 - .3 Total tonnage generated.
- .4 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.
- .6 Dispose waste at an authorized site.

1.7 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.

1.8 SCHEDULING

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

Part 2 PRODUCTS

2.1 NOT USED

- .1 Not used.

Part 3 EXECUTION

3.1 APPLICATION

- .1 Execute work in compliance with plans and specifications and the waste disposal and management plan.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.

3.3 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

- .1 Ministère de l'Environnement et de la Faune, siège social 150, boul. René-Lévesque Est, Québec (Québec) G1R 3P4.

END OF SECTION

Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 The Contractor must provide and install traffic signage, road signs of the access road and parking of the Wemindji airport as indicated in the plans and specification.

1.3 PRICE AND PAYMENT PROCEDURES

- .1 Measurement and Payment
 - .1 Measurement by lump sum price.

1.4 REFERENCES

- .1 Ministère des Transports du Québec
 - .1 Normes des ouvrages routiers, Tome V – Signalisation routière, Tomes 1, 2 and 3.
 - .2 Normes des ouvrages routiers, Tome VIII – Matériaux.
 - .3 Normes des ouvrages routiers, Tome III – Ouvrages d'art, chapitre 6 – Signalisation et éclairage.
- .2 American Association of State Highway and Transportation Officials (AASHTO)
 - .1 Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 5th Edition.
- .3 ASTM International
 - .1 ASTM A123/A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A276-10, Standard Specification for Stainless Steel Bars and Shapes.
 - .3 ASTM B209M-10, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .4 ASTM B210M-05, Standard Specification for Aluminum-Alloy Drawn Seamless Tubes.
 - .5 ASTM B211M-03, Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod and Wire.
- .4 Canadian General Standards Board (CGSB)
 - .1 CGSB 62-GP-9M-80, Prefabricated Markings, Positionable, Exterior, for Aircraft Ground Equipment and Facilities.
 - .2 CGSB 62-GP-11M-78, Marking Material, Retroreflective, Enclosed Lens, Adhesive Backing and Amendment.
- .5 CSA International

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- .1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedure.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for traffic signage, including product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials of ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: dispose in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

Part 2 PRODUCTS**2.1 DESIGN CRITERIA**

- .1 Sign supports to be capable of withstanding the combination of following loads:
 - .1 Wind loads in any direction of 1.5 kPa on signboards and 1.5 kPa on sign supports.
 - .2 Dead load of signboards and sign supports.
 - .3 Ice load of 0.8 kPa on face of signboards and around surface of structural.
- .2 Structural deflections and vibration in accordance with American Association of State Highway and Transportation Officials (AASHTO), "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals".

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2.2 MATERIALS

- .1 Sign supports:
 - .1 Steel posts: to CSA G40.21, 4 m long, flanged "U" shaped in cross section, measuring 65 mm wide x 30 mm deep. Metal thickness: 4.5 mm. Hot dipped galvanized: to ASTM A123/A123M, minimum zinc coating 600 g/m².
 - .2 Standard tubular supports for small signs: to ASTM B210M.
 - .3 Homologation of ministère des Transports du Québec required.
 - .4 Anchor and connecting bolts, 'U' clamps and miscellaneous hardware for overhead sign installations: fabricate from 304 stainless steel as specified in ASTM A276.
 - .5 Fasteners: bolts, nuts, washers and other hardware for roadside signs to be cast aluminum alloy, or galvanized steel.
- .2 Signboards:
 - .1 Aluminum sheet: to ASTM B209M, precut to required dimensions.
 - .1 Thickness for signboards up to 750 mm wide: 1.6 mm minimum.
 - .2 Thickness for signboards 750-1200 mm wide: 2.1 mm minimum.
 - .3 Thickness for refurbishing existing sign panels: 1.0 mm minimum.
- .3 Aluminum extrusions: to ASTM B211M, 150 mm or 300 mm panels suitable for bolting together.
- .4 T-shape stiffeners for signboards: to ASTM D210M.
- .5 Connecting straps and brackets: to ASTM B209M.
- .6 Aluminum materials: to ASTM B209M.
- .7 Primer for aluminum: to MPI # 8.
- .8 Silk screen ink:
 - .1 Transparent or opaque colours: selected by Departmental Representative.
- .9 Reflective sheeting and tape: to CGSB 62-GP-11M. Adhesive, class of reflectivity and colour as indicated.
- .10 Transparent tape: flexible, smooth-surfaced, moisture resistant tape with pressure sensitive adhesive.
- .11 Clear varnish protective coat: MPI-EXT 6.4H.

2.3 FABRICATION

- .1 Supports:
 - .1 Connect aluminum support members by welding in accordance with CSA W47.2. Work to be performed by Canadian Welding Bureau qualified members only. Flame cutting of members not permitted.
 - .2 Welds to be of same strength as adjacent member or casting.
 - .3 Reinforce in area of electrical hand holes to equal strength of full section member.

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- .4 Remove sharp edges and burrs.
- .2 Signboards:
 - .1 Aluminum blanks:
 - .1 Degrease, etch and boulderize with chemical conversion coating.
 - .2 Clean surfaces with xylene thinner. Dry.
 - .3 For non-reflective signs, spray face with one coat vinyl pretreatment coating and two finish coats of required colour.
 - .4 For aluminum signboards that are to be painted before installation, spray and bake face of signboards with two coats of enamel in accordance with MPI-EXT 5.4A.
 - .2 Reflective background sheeting and lettering:
 - .1 Cut and apply in accordance with manufacturer's instructions.
 - .2 Apply adhesive coated material with heat lamp vacuum applicator or by squeeze roll application method. Apply pressure sensitive material with roller or squeegee.
 - .3 Edges wrap sheeting on each extrusion prior to bolting extrusions. Match pieces of sheeting from different rolls for each signboard to ensure uniform appearance and brilliance by day and night.
 - .4 Reflective signboard faces may be prepared using silk screen transparent ink.
 - .3 Non-reflective lettering and symbols: cut from vinyl film as specified in CGSB 62-GP-9M, or paint using required colour of finish paint or silk screen transparent ink.
 - .4 Clean signboards completely and apply transparent tape over top edge and extending 25 mm minimum down back and front of signboard.
 - .5 Protect finished signboard faces with one coat of clear varnish.
- .3 Sign identification:
 - .1 Apply sign number and date of installation with 25 mm high stencil painted black letters on lower left back face of each signboard.

Part 3 EXECUTION**3.1 INSTALLATION**

- .1 Sign channel steel post
 - .1 Sign channel steel posts:
 - .1 Drive to required depth without damage to insert.
 - .2 Unfix the post in the insert at the required height and bolt.
 - .2 Permissible tolerance: 12 mm maximum departure from vertical.

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- .2 Signboard:
 - .1 Fasten signboards to supporting posts and brackets as indicated.
 - .2 Fasten lane markers to signboard.
 - .3 Use strapping with crimped or bolted connections where signs fastened to utility poles.
 - .4 Use T-shape aluminum stiffeners to join portions of sign panel on site. Cover face of T-stiffener with material identical to face of sign panel.

3.2 REPAIR/RESTORATION

- .1 Prepare new message on 1.0 minimum mm aluminum sheet.
- .2 Install new message on existing signboard in place, or remove existing signboard and install new message before re-erection.
- .3 Rivet new message to existing using 3 mm blind rivets at 300 mm centre to centre maximum around each portion of sheeting and with four, 6 mm diameter stainless steel bolts at corners.

3.3 CORRECTING DEFECTS

- .1 Correct defects, identified by Departmental Representative, in sign message, consistency of reflectivity, colour or illumination. Correct angle of signboard and adjust luminaire aiming angle for optimum performance during night conditions to approval of Departmental Representative.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.
- .3 Waste Management: Dispose waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by traffic signage installation and salvage operations.

END OF SECTION

EARTHWORK FOR MINOR WORKS

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 Due to the work of installation of the water supply pipe and sanitary pressure pipe in winter time, the slopes of the right side of the road embankments present deformities and irregularities. The work of this section is intended to reshape this slope by the addition of granular foundation material and grading of the slopes, including the compaction.

1.3 REFERENCES

- .1 Not Used.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Erosion and Sedimentation Control: submit erosion and sedimentation control plan in accordance with Section 01 35 43 – Environmental Procedures.
- .3 Construction Waste Management:
 - .1 Submit project Waste Management Plan in accordance with Section 01 74 21 – Construction/Demolition waste management and disposal.

1.5 MEASURING AND PAYMENT METHOD

- .1 The reshaping of road embankment slope is paid per metre measured along the road. The price includes, without limitation, the reshaping of the embankment, the rectification of slope and alignment of the rounding, compaction, and includes any incidental expenses.
- .2 Adding of granular sub-base materials is paid per metric tonne.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Used granular sub-base material, Section 32 11 16.01, for backfill the embankment slope depression.

EARTHWORK FOR MINOR WORKS

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Part 3 EXECUTION**3.1 EXAMINATION**

- .1 Verification of conditions
 - .1 Before starting work, determine with the Departmental Representative the zones in depression of the embankment slope of the access road requiring the addition of granular sub-base material (MG 112).
 - .2 Prior to beginning the work, verify and identify the location of service lines on or near the site including electric power cables.
- .2 Evaluation
 - .1 Take the necessary measures with the relevant authorities to reroute underground lines that are likely to impact the execution of the work, and assume the cost of such work.
 - .2 Prior to beginning the work, verify in the presence of the Departmental Representative the condition of existing road culverts, mounds, shoulders and slope of embankment, trees, vegetation, fencing, service poles, cables, paved surfaces, boundary posts, and benchmarks that may be affected by the Work.

3.2 PREPARATION WORK

- .1 Temporary erosion and sediment control measures
 - .1 Implement temporary erosion and sediment control measures to prevent soil loss and sediment transport by runoff in compliance with the erosion and sediment control plan in Section 01 35 43 – Environmental Procedures.
 - .2 Inspect erosion and sediment control measures in place, and maintain and repair them as required.
- .2 Protection of existing structures
 - .1 Protect existing culverts that are to be retained.

3.3 EXECUTION

- .1 Do not excavate materials above water and sewage pressured lines.
- .2 At the places with depressions in the embankment slope, add layer of granular sub-base materials.
- .3 Shape the slopes of the embankment slope.
- .4 Correct alignment of the rounding of the slope so as to obtain a harmonious line following the access road.
- .5 Perform smoothing, and compaction of fill slope walls.

3.4 CLEANING

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

EARTHWORK FOR MINOR WORKS

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- .1 Dispose of cleared and grubbed material off site daily.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: disposal of unauthorized waste in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

CORRECTED MAXIMUM DRY DENSITY FOR FILL

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Part 1 **GENERAL**

1.1 **RELATED REQUIREMENTS**

- .1 Not used.

1.2 **REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C127-04, Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.
 - .2 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .3 ASTM D1557-02^e, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2,700 kN-m/m³).
 - .4 ASTM D4253-00, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.3 **DEFINITIONS**

- .1 Corrected maximum dry density is defined as:
 - .1 $D = (F1 \times D1) + (0.9 \times D2 \times F2)$
 - .2 Where: D = corrected maximum dry density kg/m³
 - .1 F1 = fraction (decimal) of total field sample passing 19 mm sieve.
 - .2 F2 = fraction (decimal) of total field sample retained on 19 mm sieve (equal to 1.00 – F1).
 - .3 D1 = maximum dry density, kg/m³ of material passing 19 mm sieve determined in accordance with Method of ASTM 1557.
 - .4 D2 = bulk density, kg/m³, of material retained on 19 mm sieve, equal to 1000G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127.
 - .3 For free draining aggregates, determine D1 (maximum dry density) to ASTM D4253 dry method when directed by Departmental Representative.

1.4 **ENVIRONMENTAL PROTECTION**

- .1 Provide erosion and sediment control measures to prevent migration of suspended sediments in downstream areas and erosion of on-site soils/sediments during the execution of the work as per requirements of Section 01 35 43 - Environmental Procedures.

CORRECTED MAXIMUM DRY
DENSITY FOR FILL

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Part 2 PRODUCTS

2.1 MATERIALS

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 The Contractor must provide and install all granular materials required for the execution of the work. Without limitation these materials are included in the following sections:
 - .1 Section 31 23 33.01 Excavation, trenching and backfilling
 - .2 Section 32 11 16.01 Granular sub-base
 - .3 Section 32 11 23 Aggregate base courses
 - .4 Section 33 42 13 Pipe culverts
- .2 The Contractor must provide and install required rip-rap to protect the ends of culverts and ditches walls as prescribed by Section 31 37 00 – Rip-rap.

1.3 REFERENCES

- .1 ASTM International
 - .1 ASTM D4791-[10], Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
- .2 Bureau de la normalisation du Québec
 - .1 Norme NQ 2560-114 « Travaux de génie civil – Granulats ».

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions (certificate of conformity from accredited laboratory), printed product literature and data sheets for aggregate materials and include product characteristics, performance criteria, physical size, finish and limitations.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.

AGGREGATE MATERIALS

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- .2 Flat and elongated particles of coarse aggregate: to ASTM D4791.
 - .1 Greatest dimension to exceed 5 times least dimension.
- .3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
 - .1 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
- .4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
 - .1 Crushed rock.
 - .2 Gravel and crushed gravel composed of naturally formed particles of stone.
- .5 The intrinsic Characteristics of aggregate and granular material are defined in reference 1.3.2.1.

2.2 SOURCE QUALITY CONTROL

- .1 Not used.

Part 3 EXECUTION**3.1 EXAMINATION**

- .1 Not used.

3.2 PREPARATION

- .1 Not used.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .4 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .5 Contaminated granular material disposed of in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

END OF SECTION

Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 This section provides requirements of close cut clearing to allow the reprofiling of the discharge ditches at the outlet of traverse culverts.

1.3 MEASUREMENT PROCEDURES

- .1 Measure close cut clearing in square meters within limits as indicated:
- .2 Clearing isolated trees shall be measured superficially taking into consideration the perimeter of exterior branches.
- .3 Pruning is included as part of the close cut clearing.
- .4 Under bush clearing is included as part of close cut clearing.

1.4 REFERENCES

- .1 Government of Quebec
 - .1 Loi sur les forêts (L.R.Q., c. f-4.1).
 - .2 Règlement sur les normes d'intervention dans les forêts du domaine de l'État.

1.5 DEFINITIONS

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

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit Construction/Demolition Waste management and disposal plan according with Section 01 74 21 – Construction/Demolition waste management and disposal.

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1.7 STORAGE AND PROTECTION

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

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove all forest waste materials and debris from clearing and underbrush clearing work in areas indicated in the plans and specifications or by the Departmental Representative.
- .2 Contractor is authorized to spread shredded forest debris from underbrush clearing work away from the minor bed of the ditch.
- .3 Forest waste and debris from clearing and underbrush clearing work becomes Contractor's property. Contractor shall dispose of it in compliance with applicable laws and regulations, with the approval of the band council, and in compliance with the waste management plan specified in Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .4 Waste materials and debris shall be removed from the airport site as the clearing and underbrush clearing work progresses.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Not used.

Part 3 EXECUTION**3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

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

3.2 PREPARATION

- .1 Inspect site and verify with Departmental Representative, items designated to remain.
- .2 Keep road and parking free of dirt and debris.

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3.3 CLEARING

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

3.4 CLOSE CUT CLEARING

- .1 Close cut clearing to ground level to within 100 mm of ground surface.
- .2 Perform close cut clearing by hand so that existing muskeg is not damaged.
- .3 Cut off branches and down trees overhanging area cleared as directed by Departmental Representative.
- .4 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

3.5 ISOLATED TREES

- .1 Cut off isolated trees as indicated by Departmental Representative at height of not more than 300 mm above ground surface.
- .2 Grub out isolated tree stumps.
- .3 Prune individual trees as indicated.
- .4 Trim trees designated to be left standing within cleared areas of dead branches 4 cm or more in diameter; and trim branches to heights as indicated.
- .5 Cut limbs and branches to be trimmed close to bole of tree or main branches.

3.6 UNDERBRUSH CLEARING

- .1 General
 - .1 Contractor shall execute underbrush clearing work using the appropriate equipment at the locations indicated on the plans.
- .2 Implementation

Contractor shall comply with the following:

 - .1 Underbrush clearing and debris removal shall be carried out within the right-of-ways indicated on the plans.
 - .2 During clearing operations, shrubs and cuttings from brush up to a maximum height of 150 mm from ground level shall be finely shredded.

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- .3 Underbrush clearing is necessary before ditches or outlet channels can be cleaned.
- .4 Contractor shall manage brush cuttings appropriately and ensure they do not impede flow of runoff water.

3.7 REMOVAL AND DISPOSAL

- .1 Remove cleared and grubbed materials off site, to disposal area according to construction demolition with management and disposal plans (Section 01 74 21).
- .2 Cut timber greater than 125 mm diameter to 2 400 mm lengths and stockpile as indicated. Stockpiled timber becomes property of Departmental Representative.
- .3 Keep road and parking road free of dirt and debris.

3.8 FINISHED SURFACE

- .1 Leave ground surface in condition suitable for drainage correction works.

3.9 CLEANING

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

END OF SECTION

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Part 1 **GENERAL**

1.1 **RELATED REQUIREMENTS**

- .1 Not used.

1.2 **SCOPE OF WORKS**

- .1 Section related to this section:
 - .1 Section 33 42 13 Pipe culverts
 - .2 Section 31 37 00 Rip-rap

1.3 **MEASUREMENT PROCEDURES**

- .1 The cost for common excavation is included in the tender or lump sum unit prices.
- .2 The cost for backfilling with MG 20 or other materials is included in the tender or lump sum unit prices.
- .3 The cost for rock excavation in trench includes surface cleaning, drilling holes, blasting, excavation and disposal of material. The method of remuneration is a unit price per metre cube of the theoretical volume of the excavation trench.

1.4 **REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63 (2002), Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³) (2,700 kN-m/m³).
 - .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Bureau de la normalisation du Québec
 - .1 Norme NQ 2560-114 – Travaux de génie civil – Granulats.

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1.5 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
 - .1 Rock: solid material in excess of 1.00 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket]. Frozen material not classified as rock.
 - .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 or ASTM C136: Sieve sizes to CAN/CGSB-8.2.
 - .2 Table:

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 – 100
0.02 mm	10 - 80
0.005 mm	0 – 45
 - .3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit certificates of conformity for aggregate base course materials.
 - .2 Submit certificates of conformity for geotextiles.

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- .3 Submit certificates of conformity for granular sub-base material (MG 112).
- .4 Submit certificates of conformity for rip-rap.
- .5 Submit erosion and sediment control plan in compliance with Section 01 35 43 – Environmental Procedures.
- .6 Submit waste and debris disposal plan in compliance with Section 01 74 21 – Construction Waste Management and Disposal.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Waste materials disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.8 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Confirm locations of buried utilities by careful [test excavations] [soil hydrovac methods].
 - .2 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
 - .3 Record location of maintained, re-routed and abandoned underground lines.
 - .4 Confirm locations of recent excavations adjacent to area of excavation.

Part 2 PRODUCTS

2.1 MATERIALS

- .1 Aggregate base course material: properties to Section 32 11 23 – Aggregate Base courses.
- .2 Granular sub-base materials according to Section 32 11 16.01 – Granular sub-base.
- .3 Type 3 fill “tout venant”: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.
- .4 Geotextiles: According with Section 31 32 19.01 - Geotextiles.
- .5 Rip-rap according to Section 31 37 00 – Rip-rap.

Part 3 EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion, according to sediment and erosion control plan, specific to site, Section 01 35 43 – Environmental Procedures.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

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

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Carry out underbrush cutting and clearing in compliance with Section 31 11 00 – Clearing and Grubbing.

3.3 PREPARATION/PROTECTION

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 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.
- .3 Protect buried services that are required to remain undisturbed.
- .4 Put dry depressions in the ditch in accordance with Section 01 35 43 – Environmental Procedures.

3.4 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for Departmental Representative review details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 - .1 Prevent piping or bottom heave of excavations by groundwater lowering.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to environment.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.
- .6 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.5 EXCAVATION

- .1 Excavate to lines, grades, elevations and dimensions as indicated Departmental Representative.
- .2 For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.

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- .3 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.
- .4 Restrict vehicle operations directly adjacent to open trenches.
- .5 Dispose of surplus and unsuitable excavated material off site.
- .6 SPEC NOTE: Co-ordinate with Section
- .7 Do not obstruct flow of surface drainage or natural watercourses.
- .8 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .9 Notify Departmental Representative when bottom of excavation is reached.
- .10 Obtain Departmental Representative approval of completed excavation.
- .11 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.
- .12 Hand trim, make firm and remove loose material and debris from excavations.
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
- .13 Install geotextiles in accordance with Section 31 32 19.01 - Geotextiles.

3.6 FILL TYPES AND COMPACTION

- .1 Use types of fill as indicated or specified. Compaction densities are percentages of maximum densities.

3.7 BEDDING AND SURROUND OF UNDERGROUND SERVICES

- .1 Place and compact granular material for bedding and surround of underground services as indicated and according to Section 33 42 13 – Pipe Culverts.
- .2 Place bedding and surround material in unfrozen condition.

3.8 BACKFILLING

- .1 Use compaction equipment approved by Departmental Representative.
- .2 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has inspected and approved installations.
 - .2 Inspection, testing, approval, and recording location of underground utilities.
- .3 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .4 Do not use backfill material which is frozen or contains ice, snow or debris.
- .5 Place backfill material in uniform layers not exceeding 300 mm, compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .6 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere.

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- .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
- .3 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 150 m.

3.9 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Replace topsoil as indicated by Departmental Representative.
- .3 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

GEOTEXTILES

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 Contractor shall install geotextile under the quarry stone rip-rap at the ends of the culverts, and protective rip-rap revetment at the locations indicated on plans and specifications in Section 31 37 00 - Rip-rap.

1.3 MEASUREMENT AND PAYMENT

- .1 Geotextiles under rip-rap are paid as part of the unit price for rip-rap or other works applicant geotextile to integrate.

1.4 REFERENCES

- .1 ASTM International
 - .1 ASTM A123/A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM D4491-99a (2009), Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .3 ASTM D4595-09, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .4 ASTM D4716-08, Standard Test Method for Determining the (In-Plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .5 ASTM D4751-04, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 11.2-(2004), Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
 - .1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
 - .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
 - .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
 - .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect geotextiles from direct sunlight and UV rays.
 - .3 Replace defective or damaged materials with new.

Part 2 PRODUCTS**2.1 MATERIAL**

- .1 Geotextile: non-woven synthetic fibre fabric, supplied in rolls.
 - .1 Width: 3.5 m minimum.
 - .2 Length: 100 m minimum.
 - .3 Composed of: minimum 85 % by mass of polypropylene with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure for 60 days.
- .2 Physical properties:
 - .1 Thickness: to CAN/CGSB-148.1, No.3 minimum 2.0 mm.
 - .2 Mass per unit area: to CAN/CGSB-148.1, No.2, minimum 250 g/m².
- .3 Hydraulic properties:
 - .1 Filtration opening size (FOS): to CAN/CGSB-148.1 No.10, OPSS 1860: 53-93 micrometres.
 - .2 Permittivity: to ASTM D4491, 0.7 pers.
- .4 Securing pins and washers: to CSA G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m² to ASTM A123/A123M.
- .5 Factory seams: sewn in accordance with manufacturer's recommendations.
- .6 Thread for sewn seams: equal or better resistance to chemical and biological degradation than geotextile.

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 geotextile material installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with pins and washers as requested by the Departmental Representative.
- .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .5 Pin successive strips of geotextile as indicated by Departmental Representative with securing pins at 1 000 mm interval at midpoint of lap.
- .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .7 After installation, cover with overlying layer within 4 hours of placement.
- .8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .9 Place rip-rap according to section 31 37 00.

3.3 CLEANING

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

3.4 PROTECTION

- .1 Vehicular traffic not permitted directly on geotextile.

END OF SECTION

Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 Contractor shall install rip-rap at the ends of culverts and in places where protective stone rip-rap revetment is indicated in the plans and specifications. Rip-rap is installed on geotextile in compliance with Section 31 32 19.01 – Geotextiles.

1.3 MEASUREMENT PROCEDURES

- .1 Rip-rap at the end of a culvert is paid as part of a unit price. The price includes excavation, disposal of excavated material, shaping of ditch/channel bottom, compaction, geotextiles and overlays, supply and installation of rip-rap, and all incidental expenses.
- .2 Protective stone rip-rap revetments are paid by the square metre for each grade and size of stone specified. The price includes excavation, disposal of excavated material, shaping of ditch/channel bottom, compaction, geotextiles and overlays, supply and installation of rip-rap, and all incidental expenses.

1.4 REFERENCES

- .1 Bureau de la normalisation du Québec
 - .1 NQ 2560-114 “Travaux de génie civil – Granulat”.

1.5 SUBMITTALS FOR APPROVAL

- .1 Submit required documents and samples in compliance with Section 01 33 00 – Submittal Procedures.
- .2 Data sheets (certificates of conformity by accredited laboratory)
 - .1 Submit required data sheets and manufacturer’s instructions and documentation for rip-rap. Data sheets shall indicate product characteristics, performance criteria, dimensions, limitations and finish.
 - .2 Rip-rap shall be inert and non-acid generating.

RIP-RAP

Part 2 PRODUCTS**2.1 STONE**

- .1 Hard, dense with relative density (formally specific gravity) not less than 2.65, durable quarry stone, free from seams, cracks or other structural defects, to meet following size distribution for use intended:
 - .1 Culvert end protection with riprap
 - .1 Crushed clean stones, caliber 200-300 mm thickness.
 - .2 Rip-rap protection
 - .1 Crushed clean stones, caliber 25-75 mm, as indicated.
 - .2 Crushed clean stones, caliber 25-200 mm, as indicated.

2.2 GEOTEXTILE FILTER

- .1 Geotextile: in accordance with Section 31 32 19.01 - Geotextiles.

Part 3 EXECUTION**3.1 PLACING**

- .1 Where rip-rap is to be placed on slopes, excavate trench at toe of slope to dimensions as indicated.
- .2 Fine grade area to be rip-rapped to uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.
- .3 Place geotextile on prepared surface in accordance with Section 31 32 19.01- Geotextiles and as indicated. Avoid puncturing geotextile. Vehicular traffic over geotextile not permitted.
- .4 Place rip-rap to thickness and details as indicated.
- .5 Place stones in manner approved by Departmental Representative to secure surface and create a stable mass. Place larger stones at bottom of slopes.
- .6 Hand placing:
 - .1 Use larger stones for lower courses and as headers for subsequent courses.
 - .2 Stagger vertical joints and fill voids with rock spalls or cobbles.
 - .3 Finish surface evenly, free of large openings and neat in appearance.

END OF SECTION

GRANULAR SUB-BASE

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Part 1 GENERAL**1.1 PRODUCTS**

- .1 All granular sub-base material are provided and paid for by the Contractor.

1.2 RELATED REQUIREMENTS

- .1 Not used.

1.3 SCOPE OF WORKS

- .1 The Contractor uses granular sub-base materials to fill depressions in the ditch and upgrade shaped slope of embankment on the right side of the road.

1.4 MEASUREMENT AND PAYMENT

- .1 Measure granular sub-base weighted in metric tonnes incorporated into Work and accepted by Departmental Representative.

1.5 REFERENCES

- .1 ASTM International
 - .1 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D422-63(2007), Standard Test Method for Particle-Size Analysis of Soils
 - .5 ASTM D698-07e, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .6 ASTM D1557-09, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .7 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .8 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Bureau de la Normalisation du Québec
 - .1 Norme 2560-114 « Travaux de génie civil – Granulat ».
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

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

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- .1 Erosion and Sedimentation Control: submit copy of erosion and sedimentation control plan.
- .2 Construction Waste Management:
 - .1 Submit project Waste Management Plan.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in order to prevent segregation contamination and degradation.
- .2 Storage and Handling requirements:
 - .1 Store materials in accordance with manufacturer's recommendations and erosion and sedimentation control plan.
 - .2 Replace defective or damaged materials with new.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Granular sub-base: material: in accordance with Section 31 05 16 - Aggregate Materials, reference 1.5.2.1 and following requirements:
 - .1 Crushed, pit run or screened stone, gravel or sand.
 - .2 Graduations to be within limits specified in the following table:
 - .3 Table

Tamis (mm)		Tamis (mm)
112	5	80
100 % passing	12-100 % passing	0-10 % passing

Part 3 EXECUTION**3.1 EXAMINATION**

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

GRANULAR SUB-BASE

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3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust according to requirements of sediment and erosion control plan.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 PLACING

- .1 Place granular sub-base material after subgrade is inspected and approved by Departmental Representative.
- .2 Construct granular sub-base to depth and grade in areas indicated.
- .3 Ensure no frozen material is placed.
- .4 Place material only on clean unfrozen surface, free from snow or ice.
- .5 Place granular sub-base materials using methods which do not lead to segregation or degradation.
- .6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
 - .1 Departmental Representative may authorize thicker lifts if specified compaction can be achieved.
- .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .8 Remove and replace portion of layer in which material has become segregated during spreading.

3.4 COMPACTION

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density of not less than 95 % corrected maximum dry density in accordance with ASTM D1557.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

GRANULAR SUB-BASE

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: dispose waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

3.6 SITE TOLERANCE

- .1 Finished sub-base surface to be within 10 mm of elevation as indicated as indicated but not uniformly high or low.

3.7 PROTECTION

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

END OF SECTION

**RESHAPING GRANULAR
ROADBED**

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 The Contractor shall perform the reprofiling of granular roadbed of the access road and the parking, in accordance with the plans and specifications.
- .2 Reshaping of the granular roadbed of the road consists only the scarification of the surface of granular base of the road.
- .3 Reshaping of granular roadbed of the parking includes the scarification of the surface of granular base and the reshaping of the granular platform in order to allow the addition of aggregate base course material as shown on the plans.
- .4 The requirements for the installation of the new layer of aggregate base course are described in Section 32 11 23 – Aggregate base courses.

1.3 MEASUREMENT AND PAYMENT

- .1 Measure the surface of the base granular material of the road in square meter for scarification
- .2 Measure of existing granular surface of the parking in square meter for scarification and reshaping.

1.4 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-03, Test Method for Material Finer Than 0.075 μm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-03, Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-01, Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D698-00a, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
 - .5 ASTM D4318-00, Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

**RESHAPING GRANULAR
ROADBED**

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- .2 Excess materials are to be diverted from landfill to site approved by Departmental Representative.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Not used.

Part 3 EXECUTION**3.1 SEQUENCE OF OPERATION**

- .1 Scarifying:
 - .1 Scarify roadbed to width as indicated unless directed otherwise by Departmental Representative and to minimum depth of 100 mm.
 - .2 Shaping of granular surface material
 - .1 Formatting the granular surface of the existing roadway scarified so as to allow the addition of a minimum layer of granular base layer material.
 - .2 Backfill granular scarified surplus material in the sectors requiring granular embankments.
 - .3 If required by the Department's Representative, perform an additional 50 mm thick scarification in areas which have undergone scarification and cuttings.

3.2 SITE TOLERANCES

- .1 Not used.

END OF SECTION

A GGREGATE BASE COURSES

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Part 1 GENERAL**1.1 SCOPE OF WORKS**

- .1 The Contractor must provide and install the aggregate base courses granular material (MG 20) for the reloading of the access road and parking.
- .2 The Contractor shall supply and install aggregate base courses material for bedding and surround, in compliance with Section 33 42 13 – Pipe Culverts.

1.2 RELATED REQUIREMENTS

- .1 Not used.

1.3 MEASUREMENT AND PAYMENT

- .1 Measure aggregate base courses material base in metric tonnes measurement of material incorporated into Work and accepted in writing by Departmental Representative. The unit cost must include cost for the preparation of the granular surface before asphalt paving.
- .2 Supply and installation of aggregate base courses material required for culvert installation is included in culvert unit price.

1.4 REFERENCES

- .1 ASTM International
 - .1 ASTM C117-04, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .5 ASTM D1557-09, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .6 ASTM D1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .7 ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Bureau de la Normalisation du Québec
 - .1 Norme 2560-114 « Travaux de génie civil – Granulat ».
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-[88], Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-[M88], Sieves, Testing, Woven Wire, Metric.

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1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit documents and certificates of conformity issued by accredited laboratory in compliance with Section 01 33 00 – Submittal Procedure.

1.6 DELIVERY AND HANDLING

- .1 Transport and handle granular material so as to prevent segregation, contamination and degradation.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Granular base: material in accordance with Section 31 05 16 - Aggregate Materials and following requirements:
 - .1 Crushed stone or gravel.
- .2 Aggregate base courses materials shall be conform to specifications in table below:

Granular material	Sieve Size (mm)							Sieve Size (µm)	
	31,5	20	14	10	5	2,5	1,25	315	80
	% Passing								
	100	90-100	68-93	60-85	45-60	30-48	19-38	9-17	2-7

- .3 Required intrinsic characteristics are indicated in reference 1.4.2.

Part 3 EXECUTION**3.1 PREPARATION**

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing according to sediment and erosion control plan, specific to site according to Section 01 35 43 – Environmental Procedures.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 PLACEMENT AND INSTALLATION

- .1 Place aggregate base courses material after subgrade surface is inspected and approved in writing by Departmental Representative.
- .2 Placing:
 - .1 Construct granular base to depth and grade in areas indicated.
 - .2 Ensure no frozen material is placed.

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- .3 Place material only on clean unfrozen surface, free from snow and ice.
- .4 Place material using methods which do not lead to segregation or degradation of aggregate.
- .5 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in uniform layers of required thickness (shoulder corrections).
- .6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
- .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .8 Remove and replace that portion of layer in which material becomes segregated during spreading.
- .3 Compaction Equipment:
 - .1 Ensure compaction equipment is capable of obtaining required material densities.
 - .2 Efficiency of equipment not specified to be proved at least as efficient as specified equipment at no extra cost and written approval must be received from Departmental Representative before use.
- .4 Compacting:
 - .1 Compact to density not less than 98 % corrected maximum dry density.
 - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
 - .3 Apply water as necessary during compacting to obtain specified density.
 - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved in writing by Departmental Representative.
 - .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.3 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.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal

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3.5 PROTECTION

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

END OF SECTION

ASPHALT TACK COATS

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORK

- .1 The Contractor must install one asphalt tack coat between the two layer of asphalt paving.

1.3 PRODUCTS

- .1 All required materials are supplied and paid by the Contractor.

1.4 MEASUREMENTS PROCEDURES

- .1 Asphalt tack coat will measured in square meters of emulsified asphalt actually applied.

1.5 REFERENCES

- .1 Ministère des Transports du Québec, Normes des ouvrages routiers, Tome VII, Matériaux, chapitre 4.
- .2 Ministère des Transports du Québec, Cahier des charges et devis généraux (CCDG), édition 2015, Infrastructures routières, construction et réparation, chapitre 13.2.

1.6 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 asphalt tack coat and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit 2 samples of asphalt tack coat material proposed for use in new, clean, airtight, sealed, wide mouth bottles made with plastic to Departmental Representative, at least 2 weeks prior to beginning Work.
 - .2 Sample asphalt tack coat material to CCDG.
 - .3 Provide access on tank truck for Departmental Representative to sample asphalt material to be incorporated into Work to CCDG.

1.7 QUALITY ASSURANCE

- .1 Upon request from Departmental Representative, submit manufacturer's test data and certification that asphalt prime material meets requirements of this Section.

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1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packing, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials of ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect asphalt tack coats from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
 - .4 Deliver, store and handle materials in accordance with CCDG.
 - .5 Provide, maintain and restore asphalt storage area.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Dispose waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposals.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Anionic emulsified asphalt: Norm 4501 of Tome VII of "Normes des ouvrages routiers, MTQ".
- .2 Cut-back asphalt: to Norm 4501 of Tome VII of "Normes des ouvrages routiers, MTQ".
- .3 Water: clean, potable, free from foreign matter.

2.2 EQUIPMENT

- .1 Equipment required for Work of this Section to be in satisfactory working condition and maintained for duration of Work.
- .2 Pressure distributor:
 - .1 Designed, equipped, maintained and operated so that asphalt material can be:
 - .1 Maintained at even temperature.
 - .2 Applied uniformly on variable widths of surface up to 5 m.
 - .3 Applied at readily determined and controlled rates of 0.2 L/m² with uniform pressure, and with allowable variation from any specified rate not exceeding 0.02 L/m².
 - .2 Equipped with meter, registering travel in metres per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.

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- .3 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.
- .4 Equipped with easily read, accurate and sensitive device which registers temperature of liquid in reservoir.
 - .1 Measure temperature to closest whole number.
- .5 Equipped with accurate volume measuring device or calibrated tank.
- .6 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
- .7 Equipped with nozzle spray bar, with operational height adjustment in increments of 0.6 metres and capable of being raised or lowered.
- .8 Cleaned if previously used with incompatible asphalt material.

Part 3 EXECUTION**3.1 AXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt tack coat 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 APPLICATION

- .1 Apply asphalt tack coat only on clean and dry surface.
- .2 Dilute asphalt emulsion with water at 1:1 ratio for application.
 - .1 Mix thoroughly by pumping or other method approved by Departmental Representative.
- .3 Apply asphalt tack coat evenly to pavement surface at rate of 0.2 L/m² headers.
- .4 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.
- .5 Apply asphalt tack coat only when air temperature greater than 10°C and when rain is not forecast within 2 hours minimum of application.
- .6 Apply asphalt tack coat only on unfrozen surface.
- .7 Evenly distribute localized excessive deposits of tack coat by brooming as directed by Departmental Representative.
- .8 Where traffic is to be maintained, treat no more than one half of width of surface in one application.

ASPHALT TACK COATS

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- .1 Control traffic in accordance with Section 01 35 00.06 – Special procedures for Traffic control.
- .9 Keep traffic off tacked areas until asphalt tack coat has set.
- .10 Re-tack contaminated or disturbed areas as directed by Departmental Representative.
- .11 Permit asphalt tack coat to set before placing asphalt pavement.
- .12 Submit summary report within 7 days minimum of date of application and include informations as follows:
 - .1 Total area tack coated.
 - .2 Quantity of tack coat used.
 - .3 Mean application rate.
 - .4 Actual product quantity used when using equipment on pressure distributors.
 - .5 Dipstick measurements or electronic printouts are acceptable.
- .13 Carry out measurements in presence of Departmental Representative upon request.
- .14 Inspect tack coat application to ensure uniformity.
 - .1 Re-spray areas of insufficient or non-uniform tack coat coverage as directed by Departmental Representative.
 - .2 Ensure tack coating performed using hand held devices is consistent in appearance with adjacent areas of machine applied material.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.
- .3 Waste Management: dispose waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 The Contractor must perform the marking of the pavement of the road access and parking at the airport. Without limitation, work includes:
 - .1 The central axial line of the road;
 - .2 Line of the border of the road lanes;
 - .3 The lines of delimitation of individual parking;
 - .4 The symbol for person suffering from physical disability.

1.3 MEASUREMENTS PROCEDURES

- .1 Pavement marking: by lump sum. The price included also glass beads, symbols and letters.

1.4 REFERENCES

- .1 Ministère des Transports du Québec
 - .1 Normes des ouvrages routiers, Tome V, Signalisation routière, Volume 3.
 - .2 Normes des ouvrages routiers, Tome VII – Matériaux.
 - .3 Cahier des charges et devis généraux, Infrastructures routières, construction et réparation, édition 2015.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.5-99, Low Flash Petroleum Spirits Thinner.
 - .2 CAN/CGSB 1.74-01, Alkyde Traffic Paint.
- .3 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual – Current edition.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:

- .1 Submit manufacturer's printed product literature and data sheets for pavement markings and include product characteristics, performance criteria, physical size, finish and limitations.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packing, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Dispose packaging Waste Management in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

Part 2 PRODUCTS

2.1 MATERIALS

- .1 Paint
 - .1 Mean duration paint.
 - .2 Norm 10202 of chapter 10 of Tome VII of "Normes d'ouvrages routiers, Ministère des Transports du Québec".
 - .3 Colour: yellow and white.
 - .4 Homologation by Ministère des Transports du Québec.
- .2 Glass reflective beads
 - .1 Type suitable for application to wet paint surface for light reflectance. See Norm 14601 of Tome VII – Ouvrages routiers du ministère des Transports du Québec

Part 3 EXECUTION**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrates and surfaces to receive pavement markings previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to pavement markings installation.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Pavement surface: dry, free from water, frost, ice, dust, oil, grease and other deleterious materials.
 - .3 Proceed with Work only after unacceptable conditions have been rectified.

3.2 EQUIPMENT REQUIREMENTS

- .1 Paint applicator: approved pressure type mobile with positive shut-off distributor capable of applying paint in single, double and dashed lines and capable of applying marking components uniformly, at rates specified, and to dimensions as indicated.
- .2 Distributor: capable of applying reflective glass beads as overlay on freshly applied paint.

3.3 TRAFFIC CONTROL

- .1 See Section 01 35 00.06.

3.4 APPLICATION

- .1 Pavement markings: laid out by Departmental Representative.
- .2 Unless otherwise approved by Departmental Representative, apply paint only when air temperature is above 10°C, wind speed is less than 60 km/h and no rain is forecast within next 4 hours.
- .3 Apply traffic paint evenly at rate of 3 m²/L.
- .4 Do not thin paint unless approved by Departmental Representative.
- .5 Symbols and letters to dimensions indicated.
- .6 Paint lines: of uniform colour and density with sharp edges.
- .7 Thoroughly clean distributor tank before refilling with paint of different colour.
- .8 Apply glass beads at rate of 0.5 kg/l of painted area immediately after application of paint.

3.5 TOLERANCE

- .1 Paint markings: within plus or minus 12 mm of dimensions indicated.
- .2 Remove incorrect markings.
- .3 The longitudinal alignment of road marking shall not deviate more than 25 mm from the marking plan.

PAVEMENT MARKINGS

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.
- .3 Waste Management: dispose waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

3.7 PROTECTION OF COMPLETED WORK

- .1 Protect pavement markings until dry.
- .2 Repair damage to adjacent materials caused by pavement marking application.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

Before carrying out the work of this section, the Contractor must perform the work described in the following sections:

Section 31 00 99	Earthwork for minor works
Section 31 23 33.01	Excavation, trenching and backfilling
Section 31 37 00	Rip-rap
Section 32 11 17	Reshaping granular roadbed
Section 32 11 16.01	Granular sub-base
Section 32 11 23	Aggregate base courses
Section 33 42 13	Pipe culverts
Section 35 42 60	Waterway channel maintenance

1.2 SCOPE OF WORKS

The Contractor shall install the asphalt paving on the access road and the airport parking lot as shown to plans and following the requirements of this section. Asphalt paving consists of two layers of bituminous coating bound by an asphalt tack coat - Section 32 12 13.16 – Asphalt tack coat.

1.3 PRODUCTS

- .1 All the materials required for the works of this section are provided and paid by the Contractor.

1.4 MEASUREMENT AND PAYMENT

- .1 Measure mixed-in-place asphalt paving in metric ton of asphalt surface in place. Price includes preparation of granular surface before paving.

1.5 REFERENCES

- .1 Ministère des Transports du Québec
 - .1 Normes de conception routière, Tome VII, « Matériaux », chapitres 2 et 4.
 - .2 Cahier des charges et devis généraux (CCDG), Infrastructures routières, Construction et réparations, édition 2015.
- .2 Bureau de normalisation du Québec :
 - .1 Norme 2560-114 « Travaux de génie civil – Granulats »
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

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- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.6 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 asphalt paving wearing course application and include product characteristics performance criteria, physical size, finish and limitations.
- .3 Certificates: submit certificates signed by certified laboratory that materials comply with specified performance characteristics and physical properties (mixing formula and conformity tests).

1.7 DELIVERY, STORAGE AND HANDLING

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

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Type and composition of asphalt paving:

Type of mix	Bitumen grade	Aggregate Characteristic	Use	Test
ESG-14	PG 52-40	3c2	Base layer	Orniéreur
EST-10	PG 52-40	3b2	Surface layer	Orniéreur

- .2 Aggregate material: to Section 31 05 16 – Aggregate Materials, to references 1.1 an 2.1 and the following requirements:
 - .1 Crushed stone or gravel.
 - .2 Gradation for ESG-14 and ESG-10 mixes: within limits specified by the following table.
 - .3 Table

Materials	ESG-14	ESG-10
Sieve Designation	% passing	
20 mm	100	-
14 mm	95-100	100
10 mm	75-90	92-100
5 mm	50-65	50-65
2,5 mm	29-47	27-50
1,25 mm	20-40	18-42

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630 µm	14-34	12-35
315 µm	10-26	8-26
160 µm	5-17	5-17
80 µm	3,0-8,0	4,0-10,0

2.2 MIXES

- .1 Job mix formula (JMF) will be provided by Contractor.
- .2 Adjust job mix formula to approval of Departmental Representative.
- .3 Ensure JMF provides minimum specified asphalt cement content.

Part 3 EXECUTION**3.1 GENERALITY**

The work of asphalt paving must be performed according to the requirements of Chapter 13 of the CCDG (reference 1.1.2).

3.2 ASPHALT TACK COAT

- .1 The Contractor shall perform an application of a layer of asphalt tack coat between the two layers of asphalt paving.
- .2 Refer to the Section 32 12 13.16 – Asphalt tack coats

3.3 TOLERANCES

- .1 Finished mixed-in-place asphalt course thicknesses to be within 10 mm of specified thicknesses but not uniformly thicker or thinner.
- .2 Correct irregularities exceeding 10 mm when checked with 4 m straight-edge placed in any direction. Correct irregularities by reshaping while mixture is still plastic.
- .3 The paving work found to be defective will be rejected and replace without additional charge for the Departmental Representative.

3.4 DEEMED DEFECTIVE WORK

Defective deemed paving work will be refused and replaced without additional cost to the Departmental Representative.

3.5 PROTECTION

- .1 Restrict traffic speed during setting period to prevent surface damage as directed by Departmental Representative.
- .2 Repair damage to adjacent materials caused by road-mix asphalt paving wearing course application.

END OF SECTION

PIPE CULVERTS

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 The Contractor shall replace a portion of the existing culvert of the access road and install two culverts proposed on the edge of the parking lot of the airport.
The Contractor must clean the existing culverts at the end of the work.

1.3 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION

- .1 All materials are provided and paid by the Contractor.

1.4 MEASUREMENT AND PAYMENT

- .1 The proposed pipe culverts are paid by the metre for each diameter, type and class of continuous pipe measured to the central axis of the pipeline between the ends of the structure for the supply and installation of pipes including the supply of materials, excavation, foundation preparation, bedding, installation, backfilling to ground level, repair of existing pavement and cleaning of pipe at end of work.
- .2 Cleaning of existing culverts is paid by the metre for each diameter specified. The price includes labour, equipment, extraction, pumping and waste disposal, backfilling, compaction and all incidental expenses.
- .3 Culvert removal and disposal are paid by the metre for each diameter removed. The price includes excavation, backfilling, compaction, culvert removal, loading, transportation, disposal at an authorized site, and all incidental expenses.

1.5 REFERENCES

- .1 ASTM International
 - .1 ASTM C14M-07, Standard Specification for Nonreinforced Concrete Sewer, Storm Drain and Culvert Pipe (Metric).
 - .2 ASTM C76M-10a, Standard Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe (Metric).
 - .3 ASTM C117-04, Standard Test Method 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.
 - .5 ASTM C144-04, Standard Specification for Aggregate for Masonry Mortar.
 - .6 ASTM C443M-10, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).
 - .7 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).

PIPE CULVERTS

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- .8 ASTM D1248-05, Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
- .9 ASTM F667-06, Standard Specification for Large Diameter Corrugated Polyethylene Pipe and Fittings.
- .2 Bureau de la Normalisation du Québec
 - .1 Norme NQ 2560-114 “Travaux de génie civil – Agrégats”.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .4 CSA International
 - .1 CSA A3000-08, Cementitious Materials Compendium.
 - .2 CSA A257 Series-09, Standards for Concrete Pipe and Manhole Sections.
 - .3 CAN/CSA G401-07, Corrugated Steel Pipe Products.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions (certificate of conformity, certificates), 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.
- .4 Erosion and Sedimentation Control: submit copy of erosion and sedimentation control plan in accordance with Section 01 35 43 – Environment Procedures.
- .5 Construction Waste Management:
 - .1 Submit project Waste Management Plan according to Section 01 74 21.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Transport, store and handle materials and equipment so as to eliminate risk of chipping, cracking and bending stress.
- .2 Handle aluminized corrugated steel pipe carefully to protect the metal coating. Take special precautions to prevent deformation: twisted or deformed pipes shall be rejected.
- .3 Repair damage to aluminum coating with a metal coating approved by manufacturer.
- .4 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .5 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.

PIPE CULVERTS

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Part 2 PRODUCTS**2.1 ALUMINIZED CORRUGATED STEEL PIPE**

- .1 Corrugated steel pipe: to CAN/CSA-G401.
- .2 Water-tight cut-off collars: as indicated.

2.2 GRANULAR BEDDING AND BACKFILL

- .1 Granular bedding and backfill material to Section 31 05 16 - Aggregate Materials and following requirements:
 - .1 Crushed pit run or screened stone, gravel or sand.
 - .2 Aggregate base courses materials according to section 32 11 23 – Aggregate base courses.

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 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion according to sediment and erosion control plan, specific to site with Section 01 35 43 – Environmental Procedures.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TRENCHING

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

PIPE CULVERTS

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3.4 BEDDING

- .1 Dewater excavation, as necessary, to allow placement of culvert bedding in dry condition.
- .2 Place 200 mm minimum thickness of approved aggregate base course material on bottom of excavation and compact to 95 % minimum of corrected maximum dry density.
- .3 Shape bedding to fit lower segment of pipe exterior so that width of at least 50 % of pipe diameter is in close contact with bedding and to camber as indicated or as directed by Departmental Representative, free from sags or high points.
- .4 Place bedding in unfrozen condition.

3.5 LAYING ALUMINIZED CORRUGATED STEEL PIPE CULVERTS

- .1 Begin pipe placing at downstream end.
- .2 Ensure bottom of pipe is in contact with shaped bed or compacted fill throughout its length.
- .3 Lay pipe with outside circumferential laps facing upstream [and longitudinal laps or seams at side or quarter points].
- .4 Lay paved invert or partially lined pipe with longitudinal centre line of paved segment coinciding with flow line.
- .5 Do not allow water to flow through pipes during construction except as permitted by Departmental Representative.

3.6 JOINTS: CORRUGATED ALUMINIZED STEEL CULVERTS

- .1 Corrugated steel pipe:
 - .1 Match corrugations or indentations of coupler with pipe sections before tightening.
 - .2 Tap couplers firmly as they are being tightened, to take up slack and ensure snug fit.
 - .3 Insert and tighten bolts.
 - .4 Repair spots where damage has occurred to spelter coating by applying [two coats of asphalt paint approved in writing by Departmental Representative [two coats of zinc rich [epoxy] paint].

3.7 BACKFILLING

- .1 Backfill around and over culverts as indicated or as directed by Departmental Representative.
- .2 Place aggregate base courses granular backfill material, in 150 mm layers to full width, alternately on each side of culvert, so as not to displace it laterally or vertically.
- .3 Compact each layer to 95 % corrected maximum dry density taking special care to obtain required density under haunches.
- .4 Protect installed culvert with minimum 900 mm cover of compacted fill before heavy equipment is permitted to cross.

PIPE CULVERTS

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- .1 During construction, width of fill, at its top, to be at least twice diameter or span of pipe and with slopes not steeper than 1:2.
- .5 Place backfill in unfrozen condition.

3.8 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: Waste disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

VEHICLE POST DELINEATORS

N° project R.070434-001

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Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORK

- .1 The Contractor must install vehicle post delineator along the airport access road.

1.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM B209-02a, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 62-GP-11M-78 (R1987), Marking Material, Retroreflective, Enclosed Lens, Adhesive Backing.
- .3 Manual of Uniform Traffic Control Devices for Canada 2002.
- .4 Ministère des Transports du Québec
 - .1 Normes des ouvrages routiers, Tome V – Signalisation routière.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Samples
 - .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
 - .2 Submit to Departmental Representative at least 4 weeks prior to commencing work, following samples of materials proposed for use:
 - .1 Reflective markers.
 - .2 Galvanized steel posts.

1.5 MEASUREMENTS PROCEDURES

- .1 Supply and installation of delineators are paid lump sum price.

1.6 QUALITY ASSURANCE

- .1 Pre-installation meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Dispose waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

VEHICLE POST DELINEATORS

Part 2 PRODUCTS**2.1 REFLECTIVE MARKERS**

- .1 200 x 100 mm with 20 mm radius aluminum base panel with permanently attached reflective sheeting:
 - .1 Aluminum base panel: to ASTM B209M, 1.6 mm thick, degreased and etched or treated with light amorphous chromate type coating.
 - .2 Reflective sheeting: to CGSB 62-GP-11M, type I, class I, reflectivity level I. Colour: yellow or white to match colour of roadway edge line.

2.2 STEEL POSTS

- .1 Steel posts: galvanized steel sign standards 2 m long, flanged, “U” shaped in cross section, measuring 65 mm wide by 30 mm deep. Metal thickness: 4.5 mm. Pre-drill bolt holes in locations as indicated.
- .2 Bolts: 65 mm long galvanized steel, 9 mm minimum diameter. Each bolt to be complete with two nylon washers cast block spacer and galvanized steel nut.

Part 3 EXECUTION**3.1 ASSEMBLY**

- .1 Fasten reflective markers to steel posts using bolts, washers, spacers and nuts. Use two bolts for each delineator unit, centered and spaced at 150 mm.
- .2 Fasten two reflective markers back to back to each steel post for delineator units installed on two-way roads. Attach single reflective marker to each post for delineator units installed on one-way roads.

3.2 INSTALLATION

- .1 Do work in accordance with “Manual of Uniform Traffic Control Devices for Canada”, (MUTCDC) except where specified otherwise.
- .2 Install posts vertically and as indicated 1.0 m beyond shoulder of road and in no case more than 4.0 m nor less than 1.2 m from edge of pavement.
- .3 Locate centre of reflective marker 1.2 m above elevation of outside edge of adjacent lane in accordance with MUTCDC and at right angles to road centerline.
- .4 On straight alignment, space delineator units at 60 m.
- .5 On curves, space delineator units as follows:

VEHICLE POST DELINEATORS

N° project R.070434-001

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Radius of Curve in Metres	Spacing in Metres on Curve	Spacing in Metres in Advance and Beyond		
		First Space	Second Space	Third Space
1500	42	60	60	60
1000	35	60	60	60
500	24	45	60	60
350	20	38	60	60
250	17	32	52	60
200	15	29	46	60
150	13	25	40	60
100	11	20	33	60
75	9	18	28	57
60	8	16	25	51
40	7	13	21	42

- .6 Five markers to be always visible to the right of the road on approaches to and throughout horizontal curves.

3.3 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 GENERAL**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 SCOPE OF WORKS

- .1 The Contractor must reprofile or dig the lateral ditch and outlet channel as shown on the drawings.

1.3 MEASUREMENT AND PAYMENT

- .1 Definitions
 - .1 The airport access road and parking drainage system consists of:
 - .1 Lateral ditches that collect runoff from the road and parking.
 - .2 Outlet channels that discharge water into receiving watercourses, or that are the receiving watercourses.
 - .2 Contractor shall perform the drainage works as summarized below:
 - .1 Reprofiling including cleaning and deepening of existing ditches (lateral ditches or outlet channels).
 - .2 Digging of lateral ditches.
- .2 Measurements for payment purposes
 - .1 Lateral ditch reprofiling is paid by the metre as per the drainage section indicated in the plans. The price includes excavation, surveying, loading, disposal at authorized site, shaping of ditch walls and bottom, compaction, and all incidental expenses.
 - .2 Lateral ditch digging is paid by the metre as per drainage section indicated in the plans. The price includes excavation, surveying, loading, disposal at authorized site, shaping of ditch walls and bottom, compaction, and all incidental expenses.
 - .3 Outlet channel reprofiling is paid by the metre as per drainage section indicated in the plans. The price includes excavation, surveying, spreading of excavated material on site, shaping of channel walls and bottom, compaction, and all incidental expenses.

1.4 REFERENCES

- .1 Definitions:
 - .1 Rock Excavation:
 - .1 Material excavated from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass.
 - .2 Boulders or rock fragments having individual volume in excess of 1 m³.

WATERWAY CHANNEL MAINTENANCE

N° project R.070434-001

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- .2 Common excavation: materials of whatever nature, which are not included under definition of rock excavation, including dense tills, hard pan, frozen materials and partially cemented materials which can be ripped and excavated with heavy construction equipment.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit information as follows for channel excavation operation:
 - .1 Description of processes to be implemented including, but not limited to, site plan, and available equipment specifications.
- .3 Submit project Waste Management Plan.
- .4 Erosion and Sedimentation Control: submit erosion and sedimentation control plan in accordance with Section 01 35 43 – Environmental Procedures.

1.6 ENVIRONMENTAL PROTECTION

- .1 Provide erosion and sediment control measures to prevent migration of suspended sediments in downstream areas and erosion of on-site soils/sediments during the execution of the work as per requirements of Section 01 35 43 - Environmental Procedures.

Part 2 PRODUCTS**2.1 MATERIALS**

- .1 Not used.

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 waterway channel maintenance.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with maintenance work only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Departmental Representative.

3.2 EXCAVATION

- .1 Excavate new and existing channels to design lines, grades and cross sections as indicated.
- .2 Deepen existing channels to design lines, grades and cross sections as indicated.

WATERWAY CHANNEL MAINTENANCE

N° project R.070434-001

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- .3 Confirm existing grades and adjust excavation quantities as necessary to produce desired channel configuration.
- .4 Provide and maintain means and devices for dewatering of water entering excavated areas.
 - .1 Remove water as fast as it collects without interfering with execution of work as reviewed by Departmental Representative.
- .5 Use appropriate toothless bucket for the reprofiling and digging excavation work.
- .6 Excavate as indicted in plans and specifications, protect slopes and grades, and execute the Work in compliance with applicable provincial and municipal regulations.
- .7 Use appropriate equipment to avoid damaging the surface of road and parking.
- .8 Materials produced by the excavation, reprofiling and digging of lateral ditches shall be disposed of offsite as specified in waste management plan.
- .9 Materials produced by the excavation, reprofiling and digging of outlet channels shall be spread out on site in such a way so as to ensure they do not leach into the outlet channel.
- .10 Ensure protection of the aquatic environment in compliance with environmental protection laws and regulations.
- .11 Do not place excavated materials adjacent to channel in manner that will impede flow of surface water from adjacent land, or cause instability of channel banks.
- .12 Upon completion of excavation, clean and trim site.
 - .1 Reinstate disturbed areas immediately after completion of grading as directed by Departmental Representative.
- .13 Dispose of excavated materials as directed by Departmental Representative.

3.3 CLEANING

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

END OF SECTION

Part 1 GENERAL

This appendix provides geotechnical log reports document entitled:

Qualitas, Étude géotechnique, Stavibel, Réfection de la route d'accès à l'aéroport de Wemindji, Québec, N/Dossier 623154, 30 janvier 2015.

The geotechnical study is available for consultation at the office of the Departmental Representative.

CLIENT : Stavibel

PROJET : Caractérisation de la structure de chaussée

ENDROIT : Route d'accès menant à l'aéroport, Wemindji (Québec)

DOSSIER: 623154

SONDAGE: PU-1

DATE: 2014-11-14 au 2014-11-14

COORD. N: 5875383,2 E: 350809,4
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE			ÉCHANTILLONS			ESSAIS IN-SITU ET EN LABORATOIRE			
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION	NIVEAU D'EAU	TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE $\frac{W_p}{W} \text{ (}\% \text{)}$	AUTRES ESSAIS
	17,80							20 40 60 80	● N_{dc} (coups/300 mm) ▲ c_u (kPa) △ c_r (kPa) ▼ c_{us} (kPa) ◆ c_{up} (kPa) ▽ c_{rs} (kPa) ◇ c_{rp} (kPa)
0,40	17,40	REMBLAI DE CHAUSSÉE: sable et gravier à sable graveleux, traces de silt.							
1,40	16,40	REMBLAI: sable graveleux, traces de silt et de cailloux (calibre 112-0 mm). -Classification (USCS): SP-SM.							
1,55	16,25	SOL ORGANIQUE , avec présence de branches.							
1,90	15,90	SABLE , traces de silt et de gravier. -Classification (USCS): SP-SM.							
		FIN DU Puits D'EXPLORATION , dans le sable, aucun refus atteint.							
				VR-1		100	---		G
				VR-2		100	---		G

REMARQUES: - Infiltration d'eau à partir de 1,8 m.

Marie-Ève Roy, ing.
membre OIQ: 5016354

MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX255LC.

DATE: 2015-01-28

CLIENT : Stavibel

PROJET : Caractérisation de la structure de chaussée

ENDROIT: Route d'accès menant à l'aéroport, Wemindji (Québec)

DOSSIER: 623154

SONDAGE: PU-3

DATE: 2014-11-14 au 2014-11-14

COORD. N: 5875354,5 E: 350645,9
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE			ÉCHANTILLONS			ESSAIS IN-SITU ET EN LABORATOIRE			
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION	NIVEAU D'EAU	TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE $\frac{W_p}{W} \text{ (}\% \text{)}$	AUTRES ESSAIS
	18,50							20 40 60 80	● N_{dc} (coups/300 mm) ▲ c_u (kPa) ▲ c_r (kPa) ▼ c_{us} (kPa) ◆ c_{up} (kPa) ▽ c_{rs} (kPa) ◇ c_{rp} (kPa)
0,40	18,10	REMBLAI DE CHAUSSEE: sable et gravier à sable graveleux, traces de silt.							
1,25	17,25	REMBLAI: sable et gravier, traces de silt et de cailloux (calibre 112-0 mm). -Classification (USCS): SP-SM.		VR-1	X	100	---		G
1,40	17,10	SOL ORGANIQUE , avec présence de branches.							
2,20	16,30	SABLE SILTEUX , un peu de gravier, traces de cailloux. -Classification (USCS): SM.		VR-2	X	100	---		G
		FIN DU Puits D'EXPLORATION , dans le sable silteux, aucun refus atteint.							

REMARQUES: - Aucune infiltration d'eau n'a été observée.

Marie-Ève Roy, ing.
membre OIQ: 5016354

MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX255LC.

DATE: 2015-01-28

CLIENT : Stavibel

PROJET : Caractérisation de la structure de chaussée

ENDROIT : Route d'accès menant à l'aéroport, Wemindji (Québec)

DOSSIER : 623154

SONDAGE: PU-4

DATE: 2014-11-14 au 2014-11-14

COORD. N: 5875364,9 E: 350622,2
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE			NIVEAU D'EAU	ÉCHANTILLONS			ESSAIS IN-SITU ET EN LABORATOIRE						
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION		TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE	AUTRES ESSAIS				
	20 40 60 80							● N _{dc} (coups/300 mm) ▲ C _u (kPa) △ C _r (kPa) ▼ C _{us} (kPa) ◆ C _{up} (kPa) ▽ C _{rs} (kPa) ◇ C _{rp} (kPa)		50 100 150 200			
	18,50												
		REMBLAI DE CHAUSSEE: sable et gravier à sable graveleux, traces de silt.											
0,65	17,85												
		REMBLAI: sable, un peu de gravier, traces de silt et de cailloux (calibre 112-0 mm). -Classification (USCS): SP-SM.											
1													
1,25	17,25												
		SOL ORGANIQUE, avec présence de branches.											
1,50	17,00												
		SABLE, un peu de gravier, traces de silt. -Classification (USCS): SP.											
1,80	16,70												
		FIN DU Puits D'EXPLORATION, dans le sable, aucun refus atteint.											
2													

REMARQUES: - Infiltration d'eau à partir de 1,7 m.

Marie-Ève Roy, ing.
membre OIQ: 5016354

MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX255LC.

DATE: 2015-01-28

CLIENT : Stavibel

PROJET : Caractérisation de la structure de chaussée

ENDROIT : Route d'accès menant à l'aéroport, Wemindji (Québec)

DOSSIER: 623154

SONDAGE: PU-5

DATE: 2014-11-14 au 2014-11-14

COORD. N: 5875336,0 E: 350477,1
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE			ÉCHANTILLONS			ESSAIS IN-SITU ET EN LABORATOIRE			
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION	NIVEAU D'EAU	TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE $\frac{W_P}{W_L}$ W (%)	AUTRES ESSAIS
	17,80							20 40 60 80	● N_{dc} (coups/300 mm) ▲ C_u (kPa) △ C_r (kPa) ▼ C_{us} (kPa) ◆ C_{up} (kPa) ▽ C_{rs} (kPa) ◇ C_{rp} (kPa)
								50 100 150 200	
0,55	17,25	REMBLAI DE CHAUSSÉE: sable et gravier à sable graveleux, traces de silt.							
1,40	16,40	REMBLAI: sable graveleux, traces de silt et de cailloux (calibre 112-0 mm). -Classification (USCS): SP.		VR-1	X	100	---		G
1,55	16,25	SOL ORGANIQUE, avec présence de branches.							
1,70	16,10	SABLE, traces de silt et de gravier. -Classification (USCS): SP.		VR-2	X	100	---		G
		FIN DU PUIS D'EXPLORATION, dans le sable, aucun refus atteint.							
REMARQUES: - Infiltration d'eau à partir de 1,6 m.									Marie-Ève Roy, ing. # membre OIQ: 5016354
MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX255LC.									DATE: 2015-01-28

CLIENT : Stavibel
PROJET : Caractérisation de la structure de chaussée
ENDROIT: Route d'accès menant à l'aéroport, Wemindji (Québec)
DOSSIER: 623154

SONDAGE: PU-6

DATE: 2014-11-14 au 2014-11-14
COORD. N: 5875316,9 E: 350456,6
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE			NIVEAU D'EAU	ÉCHANTILLONS			ESSAIS IN-SITU ET EN LABORATOIRE			
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION		TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE	AUTRES ESSAIS	<div>● N_{dc} (coups/300 mm) ▲ C_u (kPa) △ C_r (kPa) ▼ C_{us} (kPa) ◆ C_{up} (kPa) ▽ C_{rs} (kPa) ◇ C_{rp} (kPa)</div>
								<div>W_p W_L W(%)</div>		
	17,10						<div>20 40 60 80</div>		<div>50 100 150 200</div>	
0,70	16,40	REMBLAI DE CHAUSSÉE: sable et gravier à sable graveleux, traces de silt.								
1,80	15,30	REMBLAI: sable et gravier, traces de silt et de cailloux avec présence d'un bloc (calibre 112-0 mm). -Classification (USCS): SP-SM.	VR-1		100	---		G		
2,10	15,00	SOL ORGANIQUE, avec présence de branches.								
2,30	14,80	SABLE ET SILT, traces de gravier. -Classification (USCS): SM.	VR-2		100	---		G		
		FIN DU PUIT D'EXPLORATION, dans le sable et silt, aucun refus atteint.								
REMARQUES: - Infiltration d'eau à partir de 1,8 m.									Marie-Ève Roy, ing. # membre OIQ: 5016354	
MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX255LC.									DATE: 2015-01-28	

CLIENT : Stavibel

PROJET : Caractérisation de la structure de chaussée

ENDROIT : Route d'accès menant à l'aéroport, Wemindji (Québec)

DOSSIER: 623154

SONDAGE: PU-7

DATE: 2014-11-15 au 2014-11-15

COORD. N: 5875323,2 E: 350321,2
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE			NIVEAU D'EAU	ÉCHANTILLONS			ESSAIS IN-SITU ET EN LABORATOIRE			
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION		TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE	AUTRES ESSAIS	<div>● N_{dc} (coups/300 mm) ▲ C_u (kPa) △ C_r (kPa) ▼ C_{us} (kPa) ◆ C_{up} (kPa) ▽ C_{rs} (kPa) ◇ C_{rp} (kPa)</div>
	19,50							<div><div>W_p</div><div>W_L</div><div>W (%)</div></div>		
0,50	19,00	REMBLAI DE CHAUSSÉE: sable et gravier à sable graveleux, traces de silt.								
1,40	18,10	REMBLAI: sable graveleux, traces de silt et de cailloux (calibre 112-0 mm). -Classification (USCS): SP.	VR-1	<div></div>	100	---		G		
1,80	17,70	SABLE SILTEUX GRAVELEUX. -Classification (USCS): SM.	VR-2	<div></div>	100	---		G		
2,80	17,70	FIN DU Puits D'EXPLORATION, dans le sable graveleux silteux, aucun refus atteint.								
REMARQUES: - Aucune infiltration d'eau n'a été observée.										
MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX255LC.								Marie-Ève Roy, ing. # membre OIQ: 5016354		
DATE: 2015-01-28										

CLIENT : Stavibel

PROJET : Caractérisation de la structure de chaussée

ENDROIT: Route d'accès menant à l'aéroport, Wemindji (Québec)

DOSSIER: 623154

SONDAGE: PU-8

DATE: 2014-11-15 au 2014-11-15

COORD. N: 5875334,6 E: 350200,1
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE			ÉCHANTILLONS			ESSAIS IN-SITU ET EN LABORATOIRE			
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION	NIVEAU D'EAU	TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE $\frac{W_P}{W_L}$ W (%)	AUTRES ESSAIS
	17,40							20 40 60 80	● N _{dc} (coups/300 mm) ▲ C _u (kPa) △ C _r (kPa) ▼ C _{us} (kPa) ◆ C _{up} (kPa) ▽ C _{rs} (kPa) ◇ C _{rp} (kPa)
0,30	17,10	REMBLAI DE CHAUSSÉE: sable et gravier à sable graveleux, traces de silt.							50 100 150 200
		REMBLAI: sable graveleux, traces de silt (calibre 112-0 mm).							
0,90	16,50	SABLE ET SILT GRAVELEUX. -Classification (USCS): SM.							
1,50	15,90	FIN DU Puits D'EXPLORATION, dans le sable et silt graveleux, aucun refus atteint.		VR-1		100	---		G

REMARQUES: - Aucune infiltration d'eau n'a été observée.

Marie-Ève Roy, ing.
membre OIQ: 5016354

MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX255LC.

DATE: 2015-01-28

CLIENT : Stavibel

PROJET : Caractérisation de la structure de chaussée


ENDROIT : Route d'accès menant à l'aéroport, Wemindji (Québec)

DOSSIER : 623154

SONDAGE: PU-9

DATE: 2014-11-15 au 2014-11-15

COORD. N: 5875180,5 E: 350917,7
(SCOPQ NAD83)

COUPE STRATIGRAPHIQUE		ÉCHANTILLONS		ESSAIS IN-SITU ET EN LABORATOIRE						
PROFONDEUR (m)	NIVEAU (m) GÉODÉSIQUE	DESCRIPTION	NIVEAU D'EAU	TYPE ET NUMÉRO	ÉTAT	RÉCUPÉRATION (%)	N ou RQD (%)	LIMITES DE CONSISTANCE	AUTRES ESSAIS	● N _{dc} (coups/300 mm) ▲ C _u (kPa) △ C _r (kPa) ▼ C _{us} (kPa) ◆ C _{up} (kPa) ▽ C _{rs} (kPa) ◇ C _{rp} (kPa)
	17,30							W _P — W _L W (%)		50 100 150 200
0,30	17,00	REMBLAI DE CHAUSSÉE: sable et gravier à sable graveleux, traces de silt.								
1,80	15,50	REMBLAI: gravier et sable, traces de silt et de cailloux avec présence d'un bloc (calibre 112-0 mm). -Classification (USCS): GP.		VR-1		100	---		G	
2,80		FIN DU Puits D'EXPLORATION , dans le gravier et sable, aucun refus atteint.								

REMARQUES: - Aucune infiltration d'eau n'a été observée.

Marie-Ève Roy, ing.
 # membre OIQ: 5016354

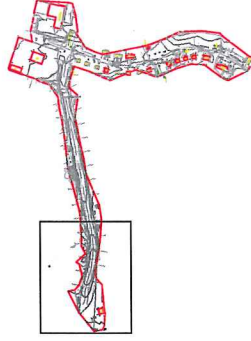
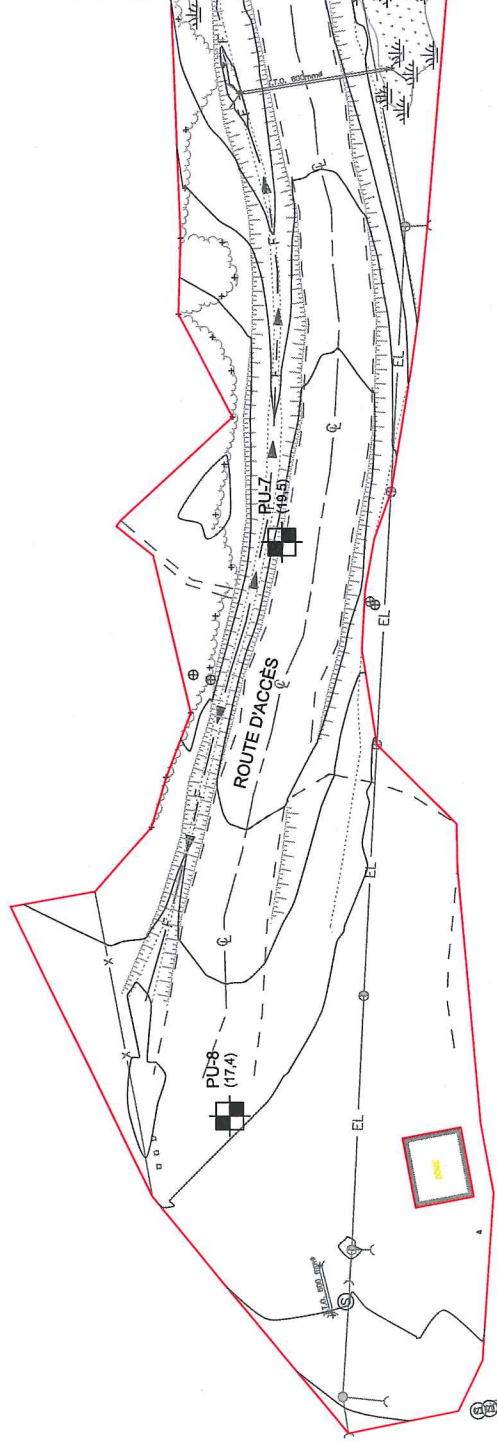
MÉTHODE DE SONDAGE: Pelle hydraulique Doosan DX60R.

DATE: 2015-01-28

SITE À L'ÉTUDE:



△



LÉGENDE:



- Puits #1
- Niveau géodésique (m)

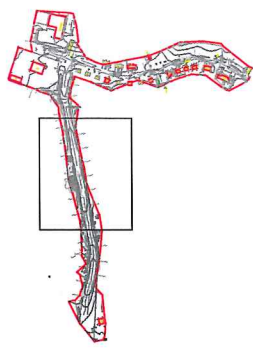
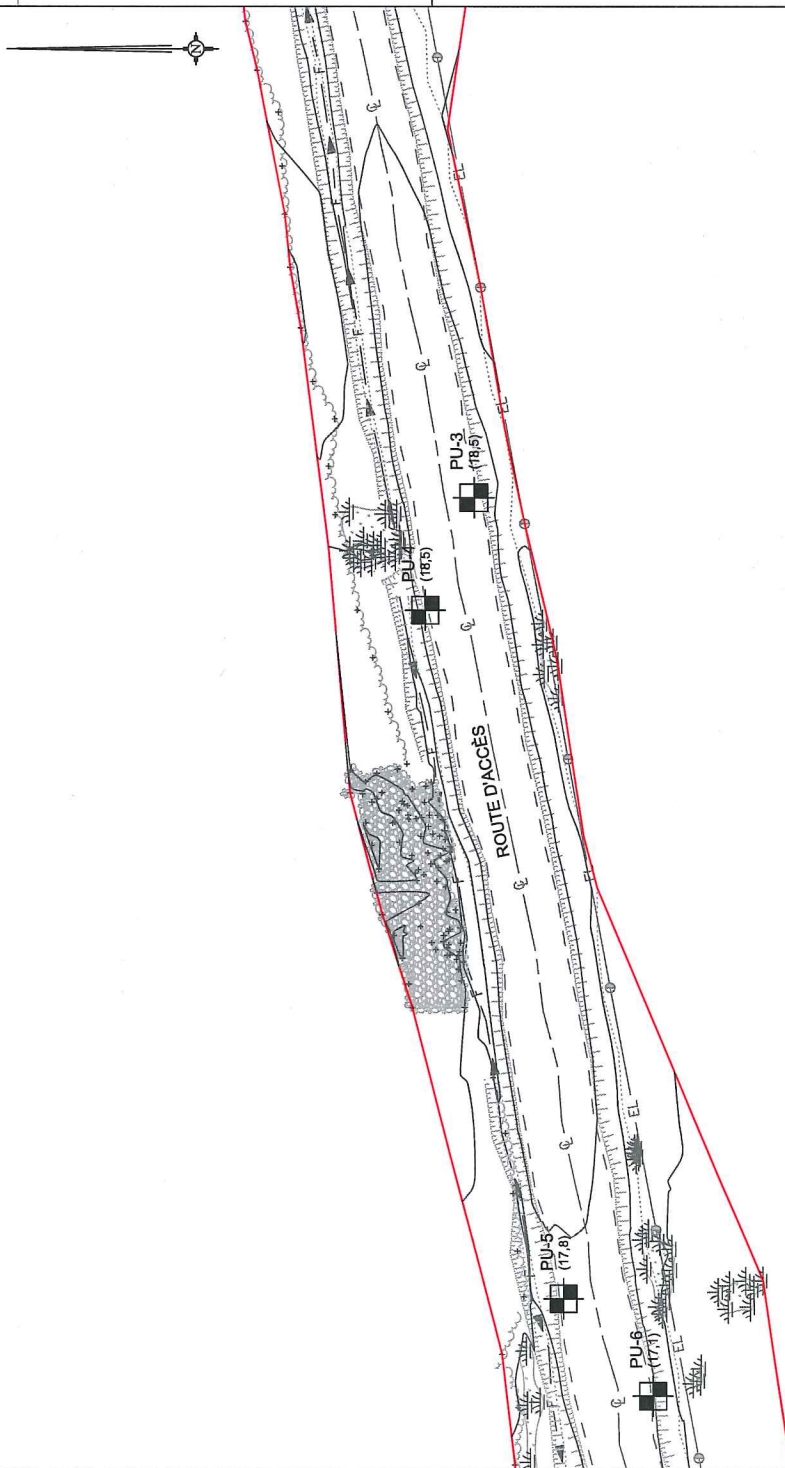
NOTE(S):

- 1- Fond de plan fourni par Stavibel.
- 2- Niveaux estimés à partir du relevé topographique fourni par Stavibel.



TITRE	Croquis de localisation des sondages		
CLIENT	Stavibel		
PROJET	Étude géotechnique Caractérisation de la structure de chaussée		
ENDROIT	Route d'accès de l'aéroport Wemindji, Québec		
INGÉNIEUR	Marie-Ève Roy, ing. # OIQ: 5016354		
ÉCHELLE:			
DATE:	Janvier 2015	DOSSIER:	623154
		DESSIN:	1 de 3

SITE À L'ÉTUDE:



LÉGENDE:

- Puits #1
- Niveau géodésique (m)

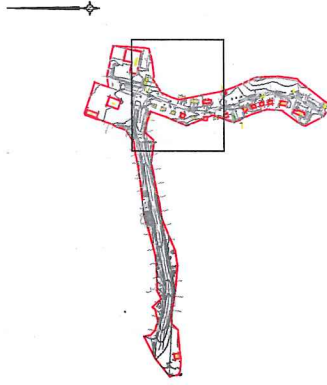
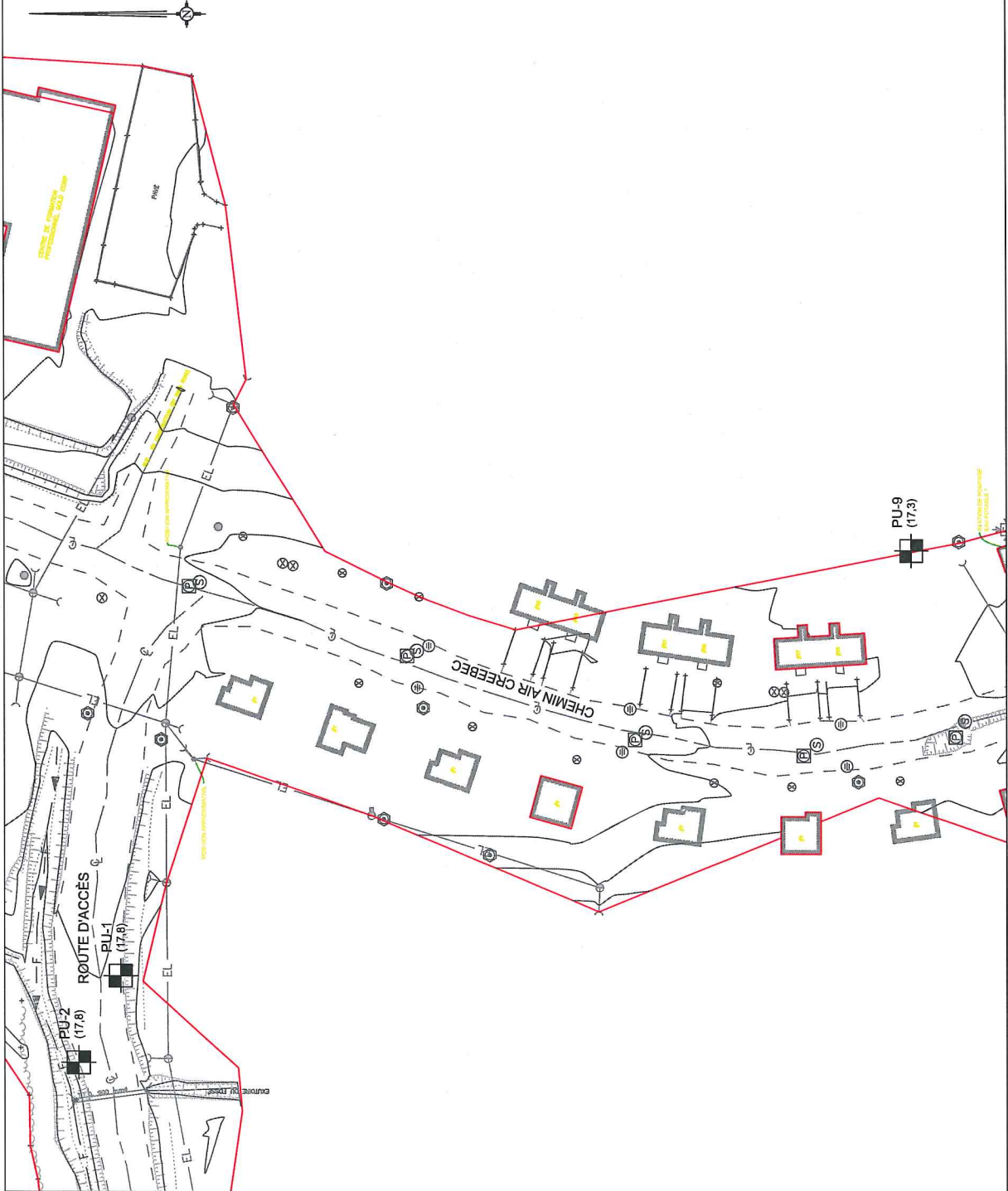
NOTE(S):

- 1- Fond de plan fourni par Stavibel.
- 2- Niveaux estimés à partir du relevé topographique fourni par Stavibel.



TITRE	Croquis de localisation des sondages		
CLIENT	Stavibel		
PROJET	Étude géotechnique Caractérisation de la structure de chaussée		
ENDROIT	Route d'accès de l'aéroport Wemindji, Québec		
INGÉNIEUR	Marie-Ève Roy, ing. # OIQ: 5016354		
ÉCHELLE	0 10 20 30 40 m 1:1000		
DATE	Janvier 2015	DOSSIER	623154
		DESSIN	2 de 3

SITE À L'ÉTUDE:



LÉGENDE:

- Puits #1
- Niveau géodésique (m)



NOTE(S):

- 1- Fond de plan fourni par Stavibel.
- 2- Niveaux estimés à partir du relevé topographique fourni par Stavibel.
- 3- Les coordonnées du PU-9 ont été fournies par l'entrepreneur à l'aide d'une station-totale Leica TCRT 1203.



TITRE	: Croquis de localisation des sondages
CLIENT	: Stavibel
PROJET	: Étude géotechnique Caractérisation de la structure de chaussée
ENDROIT	: Route d'accès de l'aéroport Wemindji, Québec
INGÉNIEUR	: Marie-Ève Roy, Ing. # OIQ: 5076354
ÉCHELLE	: 0 10 20 30 40 m 1:1000
DATE	: Janvier 2015
DOSSIER	: 623154
DESSIN	: 3 de 3