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END OF SECTION

APPENDICES

END OF SECTION

Drawing Number	Title	Rev. Number	Rev. Date
305-22-TP	Title Page	0	August 26, 2022
305-22-C1	Plan and Profile / Plan et profil	0	August 26, 2022
305-22-C2	Sections	0	August 26, 2022

END OF SECTION

1. PROPERTY PINS

.1 It will be the responsibility of the Contractor to protect and maintain existing property pins throughout the entire contract unless they are in the excavation limits for the pipe work. If there are property pins in pipe work excavation limits, they are to be identified to the Consultant prior to beginning the work.

.2 Contractor will be charged $1,000.00 for each pin removed. This will be held back on the progress claim.

2. WORKING HOURS

.1 The Contractor shall inform the Consultant of his normal working hours and shall give a reasonable notice (48 hours minimum) of any alterations to them.

.2 No night work will be allowed unless it is an emergency or special conditions which have been previously allowed, in writing, by the Owner or the Consultant. This item also applies for work done too early in the morning or too late in the evening.

.3 Work will not be permitted on Sundays.

3. CONTRACTOR'S AVAILABILITY OUTSIDE WORKING HOURS

.1 The Contractor is hereby notified that he shall appoint a representative that will be available outside working hours, including nights and weekends, to answer to issues that may arise (i.e.: signs and barricades fallen due to the wind, ruts in roadway, access to driveways, etc.) and address them no later than two (2) hours after receiving the notice from the Consultant or Owner's representatives.

.2 If after two (2) hours, the Contractor has not responded to the issue, the Owner will take care of the situation and invoice the Contractor at the Owner's standard rates including all overtime premium fees, when applicable.

.3 This item will not be measured for payment, but will be considered incidental to the work.

4. EXCESSIVE NOISE

.1 The Contractor shall conform to all applicable local by-laws or ordinances concerning excessive noise. The Contractor shall take all necessary measures and reasonable precautions to limit the amount of excessive noise to a minimum.

5. REMOVAL OF CONTRACTOR'S EMPLOYEES

.1 The Contractor shall, at the request of the Consultant, remove from the work any person employed on the work, who, in the opinion of the Consultant, is incompetent or has been conducting himself improperly and the Contractor shall not permit a person so removed to return to the work site.

.2 No person under the influence or intoxicated will be tolerated or permitted to remain on the work site. Any such person could be fired.

.3 The present item also applies to staff or directing personnel of the Contractor.

6. SCALES AND WEIGHING PROCEDURES

.1 Contractor is to supply or have access to a scale so as to weigh items which are paid per tonne such as Asphalt materials. It will be the responsibility of the contractor to insure that all items which are paid per tonne be weighed prior to installation.

.2 Each truck driver shall be responsible for getting his load weighed on the scale and submit a copy to the owner's representative on site. Otherwise, his load shall not be counted.

.3 The truck driver shall be responsible to ensure that the legal axle limits are not exceeded. Where a load exceeds the legal axle limits, the exceeding amount will be rejected and will not be measured for payment as part of the work under any portion of the contract.

7. CHANGES IN ALIGNMENTS AND GRADES

.1 The Consultant reserves the right to effect such changes to the alignments and elevations as may prove necessary, during the progress of the work.

8. CONSTRUCTION DETOUR AND STREET CLOSURE

.1 The Contractor shall ensure that the condition of the lanes used by the public is acceptable for safe operation without damaging vehicles. The Entrepreneur will be liable for damage to vehicles caused by poor road conditions.

. 2 The Contractor shall ensure that there is constant and safe access to vehicles, pedestrians and merchants affected by the construction zone.

.3 The Contractor shall submit a traffic signage plan for approval.

. 4 The above works will not be measured for payment, but shall be considered as an incidental to the work.

9. EXISTING TRAFFIC SIGNS

.1 All existing traffic signs including posts within the street R.O.W. of this contract are to be removed, properly stored during construction and reinstalled once the roadway work is completed.

.2 All signs must be reinstalled prior to **opening the road to traffic**.

.3 This item will not be measured for payment, but shall be considered as incidental to the work.

10. CONTRACT LIMITS

1. Contract limits may be extended or reduced depending on the quantities available and/or contract prices.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 56 00 – Temporary Barriers and Enclosures.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work under this Contract covers, but is not limited to the following:

1. All labour, all products (i.e.: materials, machinery, equipment and appliances), all construction materials and all services that may be necessary for the execution of the work in accordance with the contractual documents.

.2 The work covered by this contract includes, but is not limited to:

.1 Reconstruction of the road structure.

.2 Installation of the rip-rap.

.3 Installation of the asphalt and shoulder material.

.4 Reinstallation of current pipe.

1.3 MEASUREMENT FOR PAYMENT

.1 The work under this section will not be measured for payment but shall be considered incidental to the work.

.2 Notify Consultant sufficiently in advance of operations to permit required measurements for payment. All measurements for payment shall be done by the Consultant. Quantities shall be as calculated by the Consultant.

.3 Give the chance to, and assist, the Consultant for doing all measurement for payment work. No claim shall be entertained for any delay in work progress that might occur due to the measurement for payment activities.

.4 Measurement for payment is to be done when work items are completed, installed, constructed or others, as the case may be, and approved by the Consultant.

.5 All measurements for payment are to be for materials in place, be it either per unit, lineal metre, cubic metre, square metre or tonnes. Measurements in square metres are to be in square metres of contact area, to the prescribed thicknesses.

.6 No payment shall be made for materials installed to a thickness less than or in excess of the prescribed one unless it has been directed or ordered by the Consultant in writing.

1.4 CONTRACT TIME

.1 The Work must be substantially completed within **15 days** after commencement of construction, except for the asphalt seal. The asphalt seal and shoulder materials will

need to be installed between July 10 and 31, 2023. Construction is to begin no later than **one (1) week** after the Contract has been awarded.

1.5 CONTRACT METHOD

.1 Construct Work under unit price contract.

1.6 WORK SEQUENCE

.1 Construct Work in stages to accommodate Owner's intermittent use of premises during construction.

.2 Coordinate Progress Schedule and coordinate with Owner’s intermittent use of premises during construction.

.3 Construct Work in stages to provide for continuous public usage.

.4 Maintain fire access/control.

1.7 CONTRACTOR USE OF PREMISES

.1 Use of site: Limited to the right-of-ways for the execution of the works. The Contractor shall have all stockpiling and storage areas approved by land owners and Consultant.

.2 Coordinate use of premises under direction of Consultant.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.

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

1.8 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.

1.9 SUPPLY OF MATERIALS

.1 Contractor shall supply all materials and equipment required to complete the contract work.

1.10 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING SITE

.1 Execute work with least possible interference or disturbance to site operations, consumers/occupants, public and/or normal use of premises. Arrange with Consultant to facilitate execution of work.

.2 Where security is reduced by work, provide temporary means to maintain security.

1.11 EXISTING SERVICES

.1 Conduct a cable locate of underground power and utility prior to beginning the work.

.2 Notify Consultant and utility companies of intended interruption of services and obtain required permission.

.3 Provide alternative routes for personnel, pedestrian and vehicular traffic.

.4 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.

.5 Submit schedule to and obtain approval from Consultant 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 Consultant and confirm findings in writing.

.7 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.12 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy of 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 All documents related to the New Brunswick Construction Remedies Act (Regulation 2021-81)

.12 Other documents as specified.

1.13 CODES

.1 Perform work in accordance with the current National Building Code of Canada (NBC) and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Meet or exceed requirements of:

.1 Contract Documents,

.2 Specified standards, codes and referenced documents.

1.14 SETTING OUT OF WORK

.1 The Consultant reserves the right to affect such changes to the alignment and elevations as may prove necessary, during the progress of the work.

.2 Consultant will set stakes for layout purposes and to establish benchmarks for the contractor's use. Give Consultant reasonable notice of requirements for construction layout.

.3 Contractor will establish alignment and grades for all structures including roadway materials. Contractor is to have personnel on site qualified to perform this work and is to identify this person at the pre-construction meeting.

.4 Assist Consultant for all survey work required to check grades and elevations, for measurement of quantities, to collect as-built information or others.

.5 Supply stakes, paint, ribbons, markers ne required for laying out work.

1.15 ADDITIONAL DRAWINGS

.1 Consultant and/or Owner may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.

1.16 SPECIAL REQUIREMENTS

.1 Ensure that Contractor personnel employed on site becomes familiar with and obey regulations including safety, fire, traffic and security regulations.

1.17 SOIL CONDITIONS

.1 A copy of the soils report is located in Appendix A.

.2 The boreholes indicate soil conditions at the exact locations when they were done. This does not guarantee that soils conditions will be the same between borehole locations.

1.18 MITIGATION MEASURES

.1 Refer to Appendix B for environmental mitigation measures.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 32 16.07 – Construction Progress Schedules – Bar (GANTT) Chart.

.2 Section 01 33 00 – Submittal Procedures.

.3 Section 01 52 00 – Construction Facilities.

.4 Section 01 56 00 – Temporary Barriers and Enclosures.

.5 Section 01 78 00 – Closeout Submittals.

1.2 MEASUREMENT FOR PAYMENT

.1 The work under this section will not be measured for payment but shall be considered as incidental to the work.

1.3 ADMINISTRATIVE – ASSUMED BY THE CONSULTANT

.1 Schedule and administer project meetings throughout the progress of the work at the call of Contractor or Owner.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting five (5) days in advance of meeting date to Contractor.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three (3) days after meetings and transmit to meeting participants and, affected parties not in attendance.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.4 PRECONSTRUCTION MEETING

.1 Within five (5) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.1 Pre-construction meeting to be held after contract signing.

.2 Senior representatives of Consultant, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.

.4 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.

.5 Delivery schedule of specified equipment.

.6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.8 Monthly progress claims, administrative procedures, photographs, hold backs.

.9 Appointment of inspection and testing agencies or firms.

1.5 PROGRESS MEETINGS

.1 Provide a schedule of meetings to be held on two (2) occasions during the course of the work, i.e. at the mid-term of the turnaround time, and one (1) week before the completion of the work.

.2 Contractor, major Subcontractors involved in Work, Consultant and Owner are to be in attendance.

.3 Notify parties minimum five (5) days prior to meetings.

.4 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

1.2 MEASUREMENT FOR PAYMENT

.1 The work under this section will not be measured for payment but shall be considered as incidental to the work.

1.3 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Construction Work Week: Monday to Friday, inclusive, will provide five (5) day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.4 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.5 Milestone: significant event in project, usually completion of major deliverable.

.6 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

1.4 REQUIREMENTS

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

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

.3 Limit activity durations to allow for progress reporting.

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

1.5 SUBMITTALS

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

.2 Submit to Consultant within five (5) working days of Award of Contract Bar (GANTT) Chart as Project Schedule for planning, monitoring and reporting of project progress.

1.6 PROJECT MILESTONES

.1 Include the project milestones which form interim targets for Project Schedule.

1.7 PROJECT SCHEDULE

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

.2 Consultant will review and return revised schedules within five (5) working days.

.3 Revise impractical schedule and resubmit within five (5) working days.

.4 Accepted revised schedule will be used as baseline for updates.

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

.1 Shop Drawings, Samples.
.2 Mobilization.
.3 Construction of the Street Structure.
.4 Culvert Reinstallation.
.5 Rip-Rap Installation.
.6 Installation of asphalt
.7 Restoration and cleaning.

1.8 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress.

1.9 PROJECT MEETINGS

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

.2 Weather related delays with their remedial measures will be discussed and negotiated.

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 CONTENTS OF THE SECTION

.1 The purpose of this section is to present data or products intended to confirm or refute the conformity of the proposed elements with the contractual documents. It contains administrative procedures or special requirements that may exceed the intent of this contract. Without limiting the generality of this section, the Contractor shall submit all documents and samples prescribed in the technical sections of the Quotation and required by the Consultant for review.

1.2 RELATED REQUIREMENTS

.1 Section 01 45 00 – Quality Control.

1.3 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.4 ADMINISTRATIVE

.1 Submit to Consultant 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 Consultant. 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 Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant’s review.

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

1.5 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to Contract drawings and specifications.

.3 Allow seven (7) days for Consultant's review of each submission.

.4 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

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

.6 Accompany submissions with transmittal letter, 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.

.7 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 site dimensions and clearances.
  - .3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.8 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

.9 Submit one (1) electronic copy of the shop drawings prescribed in the technical sections of the quotation and according to the reasonable requirements of the Consultant.

.10 If no shop drawing is required due to the use of a standard manufacturing product, submit one (1) electronic copy of the technical data sheets or manufacturer's documentation prescribed in the technical sections of the specification and required by the Consultant.

.11 Submit one (1) electronic copy of test reports for requirements requested in specification Sections and as requested by Consultant.

.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 2 years of date of contract award for project.

.12 Submit one (1) electronic copy of certificates for requirements requested in specification Sections and as requested by Consultant.

.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.

.13 Submit one (1) electronic copy of manufacturer’s instructions for requirements requested in specification Sections and as requested by Consultant.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.14 Submit one (1) electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.

.1 Reports of tests and verifications carried out by the manufacturer's representative for the purpose of confirming the conformity of the products, materials, materials or systems installed with the manufacturer's instructions.

.15 Submit one (1) electronic copy of the operations and maintenance records prescribed in the technical sections of the quote and required by the Consultant.

.16 Delete information not applicable to project.

.17 In addition to current information, provide any additional details that apply to the work.

.18 If upon review by Consultant, 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.

.19 The examination of the workshop drawings by the Consultant is only intended to verify the conformity with the general concept of the data indicated on them.

.1 This review does not imply that the Consultant approves the detailed preliminary design presented in the shop drawings, which is the responsibility of the Contractor submitting them, nor does it release the Contractor from the obligation to submit complete and accurate shop drawings, and to comply with all the requirements of the work and contractual documents.

.2 Without limiting the generality of the foregoing, it is important to note that the Contractor is responsible for the accuracy of the dimensions confirmed on site, for providing information on manufacturing methods or construction and installation techniques, and for coordinating the work performed by all trades.

1.6 SAMPLES

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

.2 Deliver samples prepaid to Consultant's business address.

.3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.6 Make changes in samples which Consultant may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.7 SAMPLES

.1 Carry out the samples of the work required in accordance with section 01 45 00 - Quality control.

1.8 CERTIFICATES AND TRANSCRIPTS

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

.2 Submit transcription of insurance immediately after award of Contract.

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 SECTION INCLUDES

.1 Health and safety considerations required to ensure that Contractor shows due diligence towards health and safety on construction sites, and meets the requirements laid out in the Occupational Health and Safety Regulations.

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 New Brunswick

.1 Occupational Health and Safety Act, (O.C. 91-1035).

1.3 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.4 GENERAL REQUIREMENTS

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

.2 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.

.3 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.5 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.

1.6 COMPLIANCE REQUIREMENTS

.1 Comply with Occupational Health and Safety Act, General Regulation, N.B.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

.3 In case of a difference in any of the above regulations or policies, the most stringent one will apply.

1.7 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 Consultant verbally and in writing.

1.8 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 the Work.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of work and report directly to and be under direction of site supervisor.

1.9 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 Consultant.

1.10 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.

.2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.11 BLASTING

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

1.12 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from Consultant.

1.13 WORK STOPPAGE

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

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED SECTION

.1 Section 01 33 00 – Submittal Procedures.

1.2 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 humankind; or degrade environment aesthetically, culturally and/or historically.

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

1.3 MEASUREMENT FOR PAYMENT

.1 Work or materials described in this section shall not be measured for payment, but shall be considered as incidental to the work, except for the following:

.1 Type C Erosion Control Structure and water barrier will be measured and paid for in units acceptably installed as indicated on the construction drawings. The unit price shall include all labour, materials and equipment to compete the installation and shall also include the removal, disposal, levelling of the area of each unit after removal and hydraulic seeding of the area when indicated by the Consultant.

1.4 FIRES

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

1.5 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.6 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

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

1.7 WORK ADJACENT TO WATERWAYS

.1 It is **strictly forbidden** to refuel or oil of any piece of equipment or machinery within 30 metres of any watercourse.

1.8 POLLUTION CONTROL

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

.2 Control emissions from equipment and plant to 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 REFUELLING

.1 Contractor is to have at his disposal all necessary materials and equipment needed for cleaning up a gas or oil spill.

1.10 RESTORATION OF THE SITE

.1 In general, the area of work should be restored to its original or better condition.

.2 Site restoration should be undertaken as work progresses not only when the entire project is completed.

1.11 ENVIRONMENTAL PERMIT

.1 Refer to “Mitigation Measures” in Appendix B.

1.12 PRESERVATION OF HISTORICAL/ARCHAEOLOGICAL CHARACTER

.1 Establish a plan that sets out the procedures to be followed for the identification and protection of wetlands and historical, archaeological, cultural and biological resources of known existence on the site, and that defines other procedures to be followed in the event of an unexpected discovery of such elements, on the site or in the nearby area, during construction.

.2 The plan must include methods to ensure the protection of known or discovered resources, as well as channels of communication between the Contractor's staff and the Consultant.

1.13 NOTIFICATION

.1 Consultant 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 Consultant of proposed corrective action and take such action for approval by Consultant.

.1 The Contractor must wait until it has obtained the written approval of the Consultant before proceeding with the implementation of the proposed measures.

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

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 CLEANING

1. Cleaning during work: carry out the cleaning work in accordance with section 01 74 11 - Cleaning.

    1. Leave the premises clean at the end of each working day.

2. Final cleaning: remove surplus materials/materials, waste, tools and equipment from the construction site in accordance with section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittals.

1.2 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.3 INDEPENDENT INSPECTION AGENCIES

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

.2 Provide the equipment required by the designated bodies for the conduct of tests and inspections.

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

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

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Consultant and may be authorized as recoverable.

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 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.2 DEWATERING

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

1.3 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.4 WATER SUPPLY

.1 Provide and pay for the supply of potable water for construction use only. Contractor to also provide his own drinking water dispensers.

1.5 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools.

.2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.

.3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on ground is not less than 162 lx.

1.6 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

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 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered incidental to the work.

1.2 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

.3 Contractor and Subcontractor personnel to park only in designated contractor parking area.

1.3 OFFICES

.1 Provide office for own use as necessary.

.2 Provide marked and fully stocked first-aid case in a readily available location.

1.4 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

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

1.5 SANITARY FACILITIES

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

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

.3 Do not use Owner facilities.

1.6 CONSTRUCTION SIGNAGE

.1 No other signs or advertisements, other than warning signs, are permitted on site.

1. Transmit to the Client the requests for approval for the installation of an identification panel of the Contractor.

.2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.

.3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

1.7 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 See also Section 01 53 00 – Traffic Control.

.2 Provide access and temporary relocated roads as necessary to maintain traffic.

.3 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Consultant.

.4 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.5 Protect travelling public from damage to person and property.

.6 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.7 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.8 Dust control: adequate to ensure safe operation at all times.

1.8 CLEAN-UP

.1 See also Section 01 74 11 - Cleaning.

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

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

.4 Store materials resulting from demolition activities that are salvageable.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

.2 Section 31 24 13 - Roadway Embankments.

.3 Section 32 11 16.01 – Granular Sub-Base.

.4 Section 32 11 23 – Aggregate Base Courses.

.5 Section 32 12 16 – Asphalt Paving.

1.2 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.3 REFERENCES

.1 NBDTI - "Work Area Traffic Control Manual".

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 present minimum of 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 Do not close any lanes of road without approval of Consultant. Before re-routing traffic erect suitable signs and devices in accordance with instructions contained in NBDTI - "Work Area Traffic Control Manual". Provide sufficient gravel to ensure a smooth riding surface during work.

.4 Keep travelled way graded, free of pot holes and of sufficient width for required number of lanes of traffic.

.1 Provide minimum 7 m wide temporary roadway for traffic in two-way sections through work and on detours.

.2 Provide minimum 5 m wide temporary roadway for traffic in one-way sections through work and on detours.

.5 As required**,** provide gravel detours or temporary roads to facilitate passage of traffic around restricted area. Provide and maintain signs, lights and roadway.

.6 Provide and maintain road access and egress to property fronting along work under Contract and in other areas as indicated, unless other means of road access exist that meet approval of Consultant.

1.5 INFORMATIONAL AND WARNING DEVICES

.1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from project work which requires road user response.

.2 Supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in NBDTI - Work Area Traffic Control Manual".

.3 Place signs and other devices in locations recommended in NBDTI manual.

.4 Meet with Consultant 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 Consultant.

.5 Continually maintain traffic control devices in use by:

.1 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.

.2 Removing or covering signs which do not apply to conditions existing from day to day.

1.6 CONTROL OF PUBLIC TRAFFIC

.1 Provide flag persons, trained in accordance with, and properly equipped as specified in, NBDTI - "Work Area Traffic Control Manual" in the following situations:

.1 When public traffic is required to pass working vehicles or equipment which 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, round 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 workmen, working equipment and public traffic is not provided by other traffic control devices.

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 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.2 HOARDING

.1 Erect, around the construction work, a temporary hoarding consisting of timber frame elements arranged at 600 mm spacing or other types of hoarding approved by the consultant.

1.3 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.4 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations.

.2 Provide as required by governing authorities.

1.5 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.6 FIRE ROUTES

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

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Within text of each specifications section, reference may be made to reference standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

1.2 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.3 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.4 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 SUBSTITUTION

.1 Any substitution or replacement of one product or system by another will not be permitted without the prior written approval of the Consultant.

.2 Proposal for substitution may only be submitted after award of contract.

.3 Proposals for substitution must include statements of respective costs of items originally specified and the proposed substitution.

.4 Proposals will be considered by Consultant if:

.1 Materials selected by Contractor from those specified, are not available;

.2 Delivery date of materials selected from those materials specified would unduly delay completion of Contract, or

.3 Alternative material to those specified, which are brought to the attention of and are considered by Consultant as equivalent to the material specified, will result in a credit to the Contract Amount.

.5 Should proposed substitution be accepted either in part or in whole, Contractor to assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as result of substitution.

1.6 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.7 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

.2 Ensure the loading, unloading, handling and storage of these products

1.8 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.9 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.10 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.11 CONCEALMENT

.1 Before installation of concealed products, materials, systems and/or equipment, inform Consultant if there is interference. Install as directed by Consultant.

1.12 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

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 SECTIONS

.1 Section 31 23 33.01 – Excavating, Threnching and Backfilling.

.2 Section 31 24 13 – Roadway Embankments.

.3 Section 32 11 16.01 – Granular Sub-Base.

.4 Section 32 11 23 – Aggregate Base Courses.

.5 Section 32 12 16 – Asphalt Paving.

1.2 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.3 PROJECT CLEANLINESS

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

.2 Remove waste materials from site daily at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.

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

.4 Provide on-site containers for collection of waste materials and debris.

.5 Dispose of waste materials and debris off site.

.6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.7 Maintain adjacent streets that would be affected by construction activity by mechanically sweeping on a daily basis.

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 Remove waste products and debris other than that caused by others, and leave site clean.

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

.4 Perform a final sweeping of affected streets to the satisfaction of the Consultant.

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 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but shall be considered as incidental to the work.

1.2 INSPECTION AND DECLARATION

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

.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Consultant’s Inspection.

.2 Consultant’s Inspection: Consultant and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Operation of systems have been demonstrated to Owner's personnel.

.5 Work is complete and ready for final inspection.

.4 Final Inspection

.1 when items noted above are completed, request final inspection of Work by Owner, Consultant and Contractor.

.2 If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request reinspection.

.5 Declaration of Substantial Performance: The Substantial Completion will be determined as follows:

(a) when the improvement under the contract is ready for use or is being used for the purposes intended, and

(b) when the improvement is capable of completion or, if there is a known defect, of correction, at a cost of not more than

(i) 3% of the first $250,000 of the contract price,
(ii) 2% of the next $250,000 of the contract price, and
(iii) 1% of the balance of the contract price.

When defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance.

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

.7 Payment of Holdback: after issuance of certificate of Substantial Performance of Work, apply for payment of holdback amount in accordance with the New Brunswick Construction Remedies Act (Regulation 2021-81)

.8 Final Payment: when Owner and Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. Refer to the New Brunswick Construction Remedies Act (Regulation 2021-81). If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-inspection.

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 SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 45 00 – Quality Control.

1.2 MEASUREMENT FOR PAYMENT

.1 Work under this section will not be measured for payment but it shall be considered as incidental to the work.

1.3 SUBMITTALS

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

.2 Revise content of documents as required prior to submittal.

.3 Two (2) weeks prior to Substantial Performance of the Work, submit to the Consultant two (2) copies of operating and maintenance manuals in English.

.4 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.5 Furnish evidence, if requested, for type, source and quality of products provided.

.6 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.4 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.5 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of the Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of Subcontractor and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.6 RECORDING ACTUAL SITE CONDITIONS

.1 Contract Drawings and shop drawings: Mark each item to record actual construction, including:

.1 Field changes of dimension and detail.

.2 Changes made by change orders.

.3 Details not on original Contract Drawings.

.4 References to related shop drawings and modifications.

.2 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.3 Other Documents: manufacturer's certifications, inspection certifications and/or field test records, required by individual specifications sections.

1.7 WARRANTIES AND BONDS

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

.2 Warranty management plan to include required actions and documents to assure that Owner receives warranties to which it is entitled.

.3 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.4 Assemble approved information in binder and submit upon acceptance of work. Organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 List for each warranted equipment, item, feature or construction or system.

.4 Obtain warranties and bonds, executed in duplicate by Subcontractor, suppliers, and manufacturers, of applicable item of work.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

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

.6 Respond in a timely manner to oral or written notification of required construction warranty repair work.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) Chart.

.3 Section 32 11 16.01 – Granular Sub-Base.

.4 Section 32 11 23 – Aggregate Base Courses.

1.2 REFERENCES

.1 ASTM International

.1 ASTM D4791, latest revision, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.3 MEASUREMENT PROCEDURES

.1 Work under this section will not be measured for payment but shall be considered as incidental to the Work.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Ensure that the Consultant has continued access to the source of supply and prepared materials for sampling.

1. When producing granular lower and upper foundation material, submit to the consultant two samples of 35 kg for every 500 cubic meters of material produced.

.3 Provide sampling facilities at the outlet of the conveyor for the preparation of aggregates so that the Consultant can take representative samples. Stop the conveyor, at the request of the Consultant, to allow the latter to take a sample from part to part of the material transported.

.4 For stockpiled materials, the contractor will provide front-end chargers with operators for sampling.

. 5 Pay for sampling and testing of materials that do not meet prescribed requirements.

1.5 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage: store washed materials or materials excavated from underwater 24 hours minimum to allow free water to drain and for materials to attain uniform water content.

Part 2 Products

2.1 MATERIALS

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

.2 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.

.2 Reclaimed asphalt pavement.

.3 Reclaimed concrete material.

.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.

.3 Light weight aggregate, including slag and expanded shale.

.4 Reclaimed asphalt pavement.

.5 Reclaimed concrete material.

2.2 SOURCE QUALITY CONTROL

.1 Inform Consultant of proposed source of aggregates and provide access for sampling 2 weeks minimum before starting production.

.2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.

.3 Advise Consultant 2 weeks minimum in advance of proposed change of material source.

.4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

Part 3 Execution

3.1 PREPARATION

.1 Aggregate source preparation:

.1 Prior to excavating materials for aggregate production, clear and grub area to be worked, and strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as approved by authority having jurisdiction.

.2 Where clearing is required, leave screen of trees between cleared area and roadways as directed.

.3 Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.

.4 When excavation is completed dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water. Trim off and dress slopes of waste material piles and leave site in neat condition.

.5 Provide silt fence or other means to prevent contamination of existing watercourse or natural wetland features.

.2 Processing:

.1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.

.2 Blend aggregates, as required, including reclaimed materials that meet physical requirements of specification is permitted in order to satisfy gradation requirements for material and, percentage of crushed particles, or particle shapes specified.

.3 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate gradation.

.4 Where necessary, screen, crush, wash, classify and process aggregates with suitable equipment to meet requirements.

.3 Stockpiling:

.1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Consultant. Do not stockpile on completed pavement surfaces.

.2 Stockpile aggregates in sufficient quantities to meet project schedules.

.3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

.4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.

.5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.

.6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Consultant within 48 hours of rejection.

.7 Stockpile materials in uniform layers of thickness as follows:

.1 Maximum 1.5 m for coarse aggregate and base course materials.

.2 Maximum 1.5 m for fine aggregate and sub-base materials.

.3 Maximum 1.5 m for other materials.

.8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.

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

.10 Do not use conveying stackers.

.11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.2 CLEANING

.1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.

.2 Leave any unused aggregates in neat compact stockpiles as directed by Consultant.

.3 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

.4 Restrict public access to temporary or permanently abandoned stockpiles.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittals.

.2 Section 01 35 43 – Environmental Procedures.

.3 Section 01 53 00 – Traffic Control.

1.2 MEASUREMENT PROCEDURES

.1 Work performed under this Section will be incidental to work in Sections 33 42 13.

.2 Disposal of waste or surplus material by Contractor will not be measured for payment but shall be considered as incidental to the contract work.

.3 Dewatering of trenches will not be measured for payment but shall be considered as incidental to the work.

.4 The backfilling of trenches to original grade elevations, where cut and fill operations will be performed on roadway, to protect the subgrade level from construction equipment traffic, will not be measured for payment, but shall be considered as incidental to the work.

1.3 REFERENCES

.1 ASTM C117, latest revision, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C136, latest revision, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D422-63, latest revision, Standard Test Method for Particle-Size Analysis of Soils.

.4 ASTM D1557, latest revision, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700 kN-m/m^3).

.5 ASTM D4318, latest revision, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.6 CAN/CGSB-8.2, latest revision, Sieves, Testing, Woven Wire, Metric.

.7 CSA-A23.1/A23.2, latest revision, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

1.4 DEFINITIONS

.1 Excavation classes: one class of excavation will be recognized, i.e. common excavation.

.1 Common Excavation: excavation of materials of whatever nature other that rock excavation and is identified as Cut and Waste in the bid form.

.2 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.3 Subgrade elevation: elevation immediately below pavement structure.

.4 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

1.6 EXISTING CONDITIONS

.1 Examine soil report.

.2 Buried services:

.1 Before commencing work establish location of buried services on and adjacent to site.

.2 Prior to beginning excavation Work, notify applicable authorities having jurisdiction to establish location and state of use of buried utilities and structures and clearly mark such locations to prevent disturbance during Work.

.3 Confirm locations of buried utilities by careful test excavations.

.4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.

.3 Existing buildings and surface features:

.1 Conduct condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.

.2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Consultant at no cost to Owner.

.3 Where required for excavation, cut roots or branches as directed by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Type 1 fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:

.1 Crushed or screened stone.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.

.3 Table:

Sieve Designation	% Passing
	Type 1
37.5 mm	-
25 mm	100
19 mm	90 – 100
12.5 mm	40 – 80
9.5 mm	20 – 40
4.75 mm	0
2.00 mm	-
0.425 mm	-
0.180 mm	-
0.075 mm	-

.2 Type 3 fill: selected material from excavation or other sources, approved by Consultant for use intended, unfrozen and free from rocks larger than 200 mm, cinders, ashes, sods, refuse or other deleterious materials.

.3 Unshrinkable fill: proportioned and mixed to provide:

.1 Maximum compressive strength of 0.4 MPa at 28 days.

.2 Maximum cement content of 25 kg/m.

.3 Minimum strength of 0.07 MPa at 24 h.

.4 Concrete aggregates: to CSA-A23.1.

.5 Cement: Type GU.

.6 Slump: 160 to 200 mm.

Part 3 Execution

3.1 SITE PREPARATION

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

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

3.2 STOCKPILING

.1 Stockpile fill materials in areas designated by Consultant. Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

.3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.3 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while Work is in progress.

.2 Provide for Consultant's 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. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means

.4 Protect open excavations against flooding and damage due to surface run-off.

.5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures in manner not detrimental to public and private property, or portion of Work completed or under construction.

3.4 EXCAVATION

.1 Carry out excavation work according to the dimensions, alignments, dimensions and levels indicated.

.2 Remove concrete, masonry, walks, roadway culverts, driveway culverts and other obstructions encountered during excavation and dispose off site to an approved construction and demolition site.

.3 Excavation must not interfere with bearing capacity of adjacent foundations.

.4 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Consultant.

.5 Restrict vehicle operations directly adjacent to open trenches.

.6 Dispose of surplus and unsuitable excavated material off site.

.7 Do not obstruct flow of surface drainage or natural watercourses. Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.8 Notify Consultant when bottom of excavation is reached.

.9 Obtain Consultant approval of completed excavation.

.10 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Consultant.

.11 Correct unauthorized over-excavation as follows:

.1 Fill under with Type 1 fill compacted.

.12 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Consultant.

3.5 FILL TYPES AND COMPACTION

.1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D1557.

.1 Use Type 3 fill to subgrade level. Compact to 95% of corrected maximum dry density in paving curbs and sidewalk areas and 90% in other areas.

3.6 BEDDING AND SURROUND OF UNDERGROUND SERVICES

.1 Place and compact granular material for bedding and surround of underground services as specified in Section 33 42 13.

.2 Place bedding and surround material in unfrozen condition.

3.7 BACKFILLING

.1 Do not proceed with backfilling operations until the Consultant has inspected and approved installations.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

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

.4 Place backfill material in uniform layers not exceeding 300 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

.5 Backfilling around installations:

.1 Do not backfill around or over cast-in-place concrete within 8 hours after placing of concrete.

.2 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 150 m.

3.8 RESTORATION

.1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Consultant.

.2 Clean and reinstate areas affected by Work as directed by Consultant.

END OF SECTION

Part 1 General

1.1 DESCRIPTION OF WORK

.1 The work under this section consists of, but is not limited to the following:

.1 Removal and disposal of existing asphaltic concrete.
.2 Excavation of existing roadway to subgrade as indicated on drawings.
.3 Disposal of excavated materials.
.4 Placement of excavated material to widen the roadway subgrade.
.5 Subgrade preparation and compaction.

1.2 RELATED REQUIREMENTS

.1 Section 01 53 00 – Traffic Control

.2 Section 32 11 16.01 – Granular Sub-Base.

1.3 REFERENCES

.1 ASTM D1557, dernière révision, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (2700 kN-m/m^3).

.2 MTO LS 618 Resistance of coarse aggregate to degradation by Abrasion in the Micro-Deval Apparatus.

1.4 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized, common excavation and removal of existing asphalt.

.1 Common excavation: excavation of materials of whatever nature, other than the removal of existing asphalt is identified as cut and waste in the bid form.

.2 Removal of existing asphalt: excavation of existing asphalt as indicated on drawings and identified as removal of existing asphalt in the bid form.

.2 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.3 Subgrade elevation: elevation immediately below pavement structure.

1.5 MEASUREMENT PROCEDURES

.1 Common Excavation: Measure in cubic meters calculated from cross sections taken by Consultant in areas of excavation. This item will be paid as “Cut and Waste” in the tender form. Payment is to include the excavation, removal and/or placement of excavated materials to widen subgrade and disposal of surplus excavated material. Cut and waste material becomes the property of the contractor.

.2 No separate payment for:

.1 Excavating unnecessarily beyond lines established;

.2 Scarifying existing road surfaces;

.3 Watering, drying and compacting;

.4 Finishing.

.3 Removal of Existing Asphalt: Measured in square metres in areas of asphalt removal. This item will be paid as “Removal of Existing Asphalt” in the tender form.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

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

1.7 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Adhere to Provincial and National Environmental requirements when potentially toxic materials are involved.

Part 2 Products

2.1 MATERIALS

.1 Embankment materials require approval by Consultant.

.2 Material used for embankment not to contain more than 3% organic matter by mass, frozen lumps, weeds, sod, roots, logs, stumps or other unsuitable material.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that condition of substrate is acceptable for roadway embankment Work: Visually inspect substrate in presence of Consultant.

.1 Visually inspect substrate in presence of Consultant.

.2 Inform Consultant 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 Consultant.

3.2 COMPACTION EQUIPMENT

.1 Compaction equipment: vibratory rollers or vibrating plate compactors capable of obtaining required density in materials on project.

.1 Demonstrate compaction equipment effectiveness on specified material and lift thickness by documented performance of test-strip before start of Work.

.2 Replace or supplement equipment that does not achieve specified densities.

.2 Operate compaction equipment continuously in each embankment when placing material.

3.3 WATER DISTRIBUTORS

.1 When required to achieve compaction, apply water with equipment capable of uniform distribution.

3.4 EXCAVATING

.1 General:

.1 Notify Consultant when waste materials are encountered and remove to depth and extent directed.

.2 Treat ground slopes, where subgrade is on transition from excavation to embankment, at grade points as directed by Consultant.

.3 Unsuitable materials:

.1 Notify Consultant whenever unsuitable materials are encountered in cut sections and remove unsuitable materials to depth and extent as directed by Consultant.

.2 Unsuitable materials are to be disposed of off site.

.4 Proposed excavation procedures to be discussed with and approved by Consultant prior to start of work. Use of “Ditching Bucket” is recommended.

.2 Drainage:

.1 Maintain profiles, crowns and cross slopes to provide good surface drainage.

.2 Provide ditches as work progresses to provide drainage.

.3 Construct interceptor ditches as indicated or as directed before excavating or placing embankment in adjacent area.

3.5 EMBANKMENTS

.1 Scarify or bench existing slopes in side hill or sloping sections to ensure proper bond between new materials and existing surfaces.

.2 Break up or scarify existing road surface prior to placing embankment material.

.3 Do not place material which is frozen nor place material on frozen surfaces except in areas authorized by Consultant.

.4 Maintain crowned surface during construction to ensure ready run-off of surface water.

.5 Drain low areas before placing materials.

.1 Place and compact to full width in layers not exceeding 300 mm loose thickness. Consultant may authorize thicker lifts if specified compaction can be achieved and if material contains more than 25% by volume stone and rock fragments larger than 100 mm.

.6 Deductions from excavation will be made for overbuild of embankments.

3.6 COMPACTION

.1 Break material down to sizes suitable for compaction and mix for uniform moisture to full depth of layer.

.2 Deposit, spread, and level, embankment material in layers 300 mm maximum thickness before compaction.

.1 Compact each layer of embankment until compaction equipment achieves no further significant consolidation.

.2 Ensure required compaction for each layer before placing any material for next layer.

.3 Use specialized compaction equipment supplemented by routing, hauling, and leveling equipment over each layer of fill.

.4 Compact each layer to minimum 95% maximum dry density: ASTM D1557.

.5 Add water or dry as required to bring moisture content of materials to level required to achieve specified compaction.

3.7 FINISHING

.1 Shape entire roadbed to within 50 mm of design elevations.

.2 Finish slopes, ditch bottoms and borrow pits true to lines, grades and drawings where applicable. Scale slope by removing loose fragments, for cut slopes in bedrock steeper than 1:1.

.3 Remove rocks over 150 mm in dimension from slopes and ditch bottoms.

.4 Hand finish slopes that cannot be finished satisfactorily by machine.

.5 Round top of backslope 1.5 m both sides of top of slope.

.6 Run tractor tracks over slopes exceeding 3 m in height to leave tracks parallel to centreline of highway.

.7 Trim between constructed slopes and edge of clearing to provide drainage and free of humps, sags and ruts.

3.8 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.

3.9 PROTECTION

.1 Maintain finished surfaces in condition conforming to this section until acceptance by Consultant.

.2 Provide silt fences and erosion protection as required to mitigate and prevent impacts to adjacent properties.

END OF SECTION

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

.1 Supply and installation of rip-rap without cement mortar will be measured in square meters at the required thickness acceptably placed including geotextile.

.2 The removal and reinstallation of the existing rip-rap where the culvert pipe is removed and reinstalled will not be measured for payment, but shall be considered as incidental to the “Culvert Pipe Reinstallation” unit price.

2.2 RÉFÉRENCES

.1 MTO LS 614 Freezing and Thawing of Coarse Aggregates.

.2 MTO LS 618 Micro Deval Abrasion Testing of Coarse Aggregates.

Part 2 Products

2.1 STONE

.1 Rip rap must be constructed with hard, dense and resistant quarry stones, with a relative density of at least 2.65 and free of cracks, cracks and other defects. The different sizes of stones used must also, depending on the use that one wants to make of them, meet the following requirements:

.1 Random rip-rap products shall be a well-graded mixture and shall conform to the grading limits shown in Table 2.1.2.
.2 Random rip-rap for each rock shall have both thickness and breadth greater than or equal to one-third of its length.
.3 Rock when tested by the Micro-Deval test method in accordance with MTO LS – 618, shall have a Micro-Deval loss not greater that 35%.
.2 Rock when tested by the Freeze/Thaw test method in accordance with MTO LS – 614, shall have a Freeze/Thaw loss not greater than 15%.

Table 2.1.2: Random Rip-Rap Grading Limits

Mass	Size (Note 1)	Finer by Mass (%)								
(kg)	(mm)	R-A (Note 2)	R-5	R-25	R-50	R-100	R-250	R-500	R-1000	R-2000
6000	1600									100
4000	1400									70 - 90
3000	1300								100	
2000	1100								70 - 90	40 - 55
1500	1000							100		
1000	900							70 – 90		
750	820						100			
500	710						70 - 90	40 - 55		
300	600					100				
250	570						40 - 55			
200	530					70 - 90				0 – 15
150	480				100					
100	420				70 - 90	40 - 55			0 – 15	
75	380			100						
50	330			70 – 90	40 - 55			0 – 15		
25	260			40 - 55			0 - 15			
15	220	100	100							
10	190		70 - 90			0 - 15				
5	150		40 - 55		0 - 15					
2.5	120	0		0 - 15						
0.5	70		0 - 15							
Thickness (mm) (Note 3)		300	300	500	600	800	1100	1400	1600	2200

Note 1	Approximate diameter (for information only)
Note 2	Random rip-rap for abutment and slope protection
Note 3	Measured perpendicular to the prepared surface

2.2 GEOTEXTILE FILTER

.1 Geotextile N3 as per item 601of the Department of Transportation and Infrastructure Standard Specifications for Highway Construction.

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 Place the geotextile on the prepared surface in accordance with the indications on the drawings. Be careful not to puncture the geotextile and prohibit any circulation of vehicles on the surface thus covered.

.3 Place rip-rap to thickness and details as indicated.

.4 Place stones in manner approved by Consultant to secure and create a stable mass. Place larger stones at bottom of slopes.

.5 For Hand placed rip-rap:

- .1 Use the largest stones as the first row and as a base of the following row.
- .2 Shift vertical joints and fill voids with stone chips or pebbles.
- .3 Give the finished work a flat surface, neat in appearance and free of large holes.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 31 05 16 – Aggregate Materials.

.2 Section 31 24 13 – Roadway Embankments.

.3 Section 32 11 23 – Aggregate Base Courses.

1.2 MEASUREMENT AND PAYMENT

.1 The supply and installation of the granular sub-base will be measured in cubic meters of materials measured in place according to the cross-profile and the profile method. Only materials actually incorporated into the work and accepted by the Consultant will be taken into account. Payment includes supply, installation and compaction.

.2 Excavation of sub-base and subgrade materials to correct deficiencies in subgrade caused by contractors poor workmanship (i.e.: compaction, handling of materials, unnecessary travel of construction equipment on subgrade) will not be measured for payment.

.1 Backfill of subgrade with common excavated materials approved by Consultant, will not be measured for payment.

.2 Backfill of subgrade with sub-base material and replacement of sub-base material will not be measured for payment.

1.3 REFERENCES

.1 ASTM International

.1 ASTM C117, latest revision, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C131, latest revision, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136, latest revision, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D422, latest revision, Standard Test Method for Particle-Size Analysis of Soils.

.5 ASTM D1557, latest revision, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700kN-m/m^3).

.6 ASTM D1883, latest revision, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

.7 ASTM D4318, latest revision, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.8 CAN/CGSB-8.2, latest revision, Sieves, Testing, Woven Wire, Metric.

.9 MTO LS 614 Freezing and thawing of Coarse aggregate.

.10 MTO LS 618 The Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 31 05 15 – Aggregate Materials.

Part 2 Products

2.1 MATERIALS

.1 Granular sub-base material: in accordance with Section 31 05 16 - Aggregate Materials and following requirements:

.1 Granular sub-base shall be a crushed rock or gravel composed of clean, hard, durable, uncoated particles free from lumps of clay, organic material or other deleterious substances.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.

.3 Gradation to:

Sieve Designation	CRUSHED ROCK	CRUSHED GRAVEL
	% Passing	% Passing
100 mm	-	-
90 mm	100	100
75 mm	95 – 100	95 – 100
63 mm	85 – 100	80 – 100
50 mm	73 – 95	-
37.5 mm	58 – 87	60 – 87
31.5 mm	-	-
25 mm	-	-
19 mm	35 – 69	34 – 68
12.5 mm	-	-
9.5 mm	25 – 54	25 – 58
4.75 mm	17 – 43	17 – 48
2.36 mm	12 – 35	13 – 39
1.18 mm	8 – 28	9 – 30
.300 mm	4 – 16	4 – 17
0.075 mm	0 - 9	0 - 7

.4 Other properties as follows:

.1 Liquid Limit: to ASTM D4318, Maximum 25.

.2 Plasticity Index: to ASTM D4318, Maximum 5.

.3 Micro-Deval: to MTO LS-618. Max loss by mass 30%.

.4 Freeze Thaw: to MTO LS-614 – Max 20%.

Part 3 Execution

3.1 PLACING

.1 Place granular sub-base after subgrade is inspected and approved by Consultant.

.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 300 mm compacted thickness.

.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.

3.2 COMPACTION

.1 Compaction equipment to be capable of obtaining required material densities.

.2 Compact to density of not less than 95% 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 Consultant.

.6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.3 PROOF ROLLING

.1 For proof rolling use a loader double axle tandem truck with gross weight between 25 000 kg and 30 000 kg.

.2 Proof roll at level in sub-base as indicated by Consultant.

.3 Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.

.4 Where proof rolling reveals areas of defective subgrade:

.1 Remove sub-base and subgrade material to depth and extent as directed by Consultant.

.2 Backfill excavated subgrade with sub-base material and compact in accordance with Section 31 24 13 – Roadway Embankments.

.3 Replace sub-base material and compact.

.5 Where proof rolling reveals areas of defective sub-base, remove and replace in accordance with this section at no extra cost.

3.4 SITE TOLERANCES

.1 Finished sub-base surface to be within 25 mm of elevation as indicated on the drawings but not uniformly high or low. Finished roadway crown to be within 0.5% $\pm$ of design crown.

3.5 PROTECTION

.1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by Consultant.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 31 05 16 – Aggregate Materials.

.2 Section 32 11 16.01 – Granular Sub-Base.

1.2 MEASUREMENT AND PAYMENT

.1 The supply and installation of the granular base layer will be measured in cubic meters of materials measured in place according to the cross-profile and the profile method. Only materials actually incorporated into the work and accepted by the Consultant will be taken into account. Payment includes supply, installation and compaction.

.2 Excavation of base, sub-base and subgrade materials to correct deficiencies in subgrade caused by contractors poor workmanship (i.e.: compaction, handling of materials, unnecessary travel of construction equipment on subgrade and sub-base) will not be measured for payment.

.1 Backfill of subgrade with common excavated materials approved by Consultant, will not be measured for payment.

.2 Backfill of subgrade with sub-base material and replacement of sub-base material will not be measured for payment.

.3 Subsequent replacement of base materials will not be measured for payment.

.3 Shouldering material will be measured for payment by square metre of granular base installed at the thickness indicated on drawings. Payment is to include all labour, equipment and materials required to complete the work.

1.3 REFERENCES

.1 ASTM International

.1 ASTM C117, latest revision, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C131, latest revision, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136, latest revision, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D1557, latest revision, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700kN-m/m^3).

.5 ASTM D1883, latest revision, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

.6 ASTM D4318, latest revision, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.7 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.8 MTO LS 614 Freezing and thawing of Coarse aggregate.

.9 MTO LS 618 The Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and Section 31 05 16 - Aggregate Materials.

Part 2 Products

2.1 MATERIALS

.1 Granular base: material in accordance with Section 31 05 16 - Aggregate Materials and following requirements:

.1 Crushed rock or gravel.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.

.1 Gradation to:

Sieve Designation	CRUSHED ROCK	CRUSHED GRAVEL
	% Passing	% Passing
37.5 mm	100	100
31.5 mm	95 – 100	95 – 100
25 mm	81 – 100	83 – 100
19 mm	66 – 90	70 – 90
12.5 mm	50 – 77	55 – 78
9.5 mm	41 – 70	45 – 72
4.75 mm	27 – 54	30 – 57
2.36 mm	17 – 43	20 – 46
1.18 mm	11 – 32	14 – 35
0.30 mm	4 – 19	5 – 19
0.075 mm	0 - 8	0 - 6

.2 Plasticity index: to ASTM D4318, maximum 6.

.3 Micro-Deval: to MTO LS-618 – max 25%.

.4 Freeze thaw: to MTO-LS-614 – Max. 20%.

.5 Crushed particles: at least 40% of particles by mass to have at least 1 freshly fractured face when tested in accordance to ASTM D 5821.

Part 3 Execution

3.1 PLACEMENT AND INSTALLATION

.1 Place granular base after sub-base surface is inspected and approved by Consultant.

.2 Placing:

- .1 Construct granular base to depth and grade in areas indicated.
- .2 Ensure no frozen material is placed.
- .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 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
- .6 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .7 Remove and replace that portion of layer in which material becomes segregated during spreading.

.3 Compaction Equipment:

- .1 Ensure compaction equipment is capable of obtaining required material densities.

.4 Compacting:

- .1 Compact to density not less than 95% maximum dry density to ASTM D1557.
- .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 by Consultant.
- .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.2 SITE TOLERANCES

.1 Finished base surface to be within plus or minus 15 mm of established grade and cross section but not uniformly high or low. Roadway crown to be within 0.5% $\pm$ of designed crown.

3.3 PROTECTION

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

END OF SECTION

Part 1 General

1.1 DESCRIPTION

.1 The work in this section consists of the removal and disposal of asphaltic concrete from an existing street or roadway in the form of milling for the purpose of creating keys.

1.2 RELATED WORK

.1 Section 32 12 16 - Asphalt Paving.

1.3 PROTECTION

.1 Protect existing pavement not designated for removal, light units and structures from damage. In event of damage, immediately replace or make repairs to approval of Consultant at no additional cost.

.2 Any damage to the underlying layer after removal of asphaltic concrete shall be repaired to the satisfaction of the Consultant prior to reopening to traffic and the roadway maintained in a smooth condition, free of potholes, until asphaltic concrete is placed.

1.4 MEASUREMENT FOR PAYMENT

.1 Cold milling (Asphalt Milling) will be measured in square metres of surface actually removed regardless of depth removed or number of operations required and will include off-site removal.

.2 The removal of bituminous pavement by excavation (Removal of Existing Asphalt) is measured in square meters of pavement actually removed, regardless of depth or number of operations required and will include off-site removal.

.3 Any handwork necessary in removing asphaltic concrete not be measured for payment, but shall be considered as incidental to the work.

.4 The cleaning of loose material from the surface will not be measured for payment, but shall be considered as incidental to the work.

.5 Disposal of reclaimed asphaltic concrete will not be measured for payment, but shall be considered as incidental to the work.

Part 2 Products

2.1 Not Applicable.

Part 3 Execution

3.1 PREPARATION

.1 Prior to commencing removal operation, inspect and verify with Consultant areas, depths and lines of asphalt pavement to be removed.

3.2 REMOVAL

.1 Remove existing asphalt pavement to lines and grades indicated or established by Consultant in field.

.2 Use equipment and methods of removal and hauling which do not tear, gouge, break or otherwise damage or disturb underlying pavement.

.3 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel or other materials.

.4 Provide for suppression of dust generated by removal process.

.5 Milling of keys across a particular street is to be made no sooner than the day before paving of the street. **Any keys milled sooner than this are to be temporarily filled.**

3.3 CLEANING

.1 Clean in accordance with Section 01 74 11 – Cleaning

.1 Sweep remaining surfaces clean of debris resulting from removal operations using rotary power brooms and hand brooming if required.

3.4 FINISH TOLERANCES

.1 Finished surfaces in areas where asphalt pavement has been removed to be within 10 mm of grade specific but not uniformly high or low.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

.1 Mix Design Engineer: Engineer hired by paving Contractor to produce mix designs.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittals Procedures.

.2 Section 01 45 00 - Quality Control.

.3 Section 31 05 16 – Aggregate Materials.

.4 Section 32 11 23 – Aggregate Base Courses.

.5 Section 32 11 24 – Asphaltic Concrete Removal.

.6 Section 32 12 13.16 – Asphalt Tack Coat.

1.3 MEASUREMENT FOR PAYMENT

.1 Supply and installation of asphalt concrete paving will be measured in tonnes of each type of asphalt concrete actually incorporated into work and is to include haulage, spreading and compaction.

.2 Any asphalt quantity placed in excess of 105% of the theoretical quantity, based on the specified thickness, will not be included for payment. This will be based on the total quantity of all types of asphalt using the actual area where asphalt was installed and the bulk density of the asphalt. If the quantities are over 105%, the amount to be deducted for payment of each type of asphalt will be prorated based on the percentage of each layer calculated by using the design thicknesses.

.3 Supply and installation of asphalt concrete used for test strip will not be measured for payment, but shall be considered as incidental to the work.

.4 Each truck driver shall be responsible for handing his "weight ticket" to the inspector on site immediately after his load has been dumped into the spreader. Otherwise, his load shall not be measured for payment.

.5 The contractor will be responsible for all costs associated with the preparation of the mix designs.

.6 Initial review of mix designs will be made by consultant and paid for by owner.

.7 If initial mix designs do not meet contract requirements, cost of reviewing additional mix designs will be the contractor's responsibility.

.8 The cutting of asphalt shall not be measured for payment, but is considered as incidental to the work.

.9 No payment shall be made for correction of defective work.

1.4 REFERENCE

.1 New Brunswick Department of Transportation and Infrastructure

.1 NBDTI Standard Specifications for Highway Construction (latest edition)

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-8.2, latest revision, Sieves Testing, Woven Wire, Metric.

.2 CAN/CGSB-16.3, latest revision, Asphalt Cements for Road Purposes.

.3 American Society for Testing and Materials (ASTM).

.1 ASTM C88, latest revision, Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.

.2 ASTM C117, latest revision, Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.3 ASTM C123, latest revision, Test Method for Lightweight Pieces in Aggregate.

.4 ASTM C127, latest revision, Test Method for Specific Gravity and Absorption of Coarse Aggregate.

.5 ASTM C128, latest revision, Test Method for Specific Gravity and Absorption of Fine Aggregate.

.6 ASTM C131, latest revision.

.7 ASTM C136, latest revision, Method for Sieve Analysis of Fine and Coarse Aggregates.

.8 ASTM D995, latest revision, Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.

.9 ASTM D1559, latest revision, Test Method for Resistance to Plastic flow of Bituminous Mixtures Using Marshall Apparatus.

.10 ASTM D3203, latest revision, Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.

.11 ASTM D4791, latest revision, Test Method for Flat and Elongated Particles in Coarse Aggregate.

.12 ASTM D2419, Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

.13 ASTM D2726, latest revision. Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.

.14 ASTM D75/D75 M-09, Standard Practice for Sampling Aggregates.

.15 ASTM D4867/D4867 M-09. Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures.

.16 ASTM D10/D140-09, Standard Practice for Sampling Bituminous Materials.

.4 Asphalt Institute (AI).

.1 Asphalt Institute MS-2, latest revision, Sixth Edition, Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.

.5 Ministry of Transportation of Ontario (MTO).

.1 MTO LS 618. Resistance of Coarse Aggregate to degradation by Abrasion in the Micro Deval Apparatus.

.2 MTO LS 619. Resistance of Fine Aggregate to Degradation by Abrasion in the Micro Deval Apparatus.

.6 American Association of State Highway and Transportation Officials.

.1 AASHTO T 209. Standard Method of Test for Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA).

.2 AASHTO M 320. Standard Specification for Performance – Graded Asphalt Binder.

.3 AASHTO R35. Standard Practice for Superpave Volumetric Design for Hot Mix Asphalt (HMA).

.4 AASHTO R30-02. Standard Practice for Mixture Conditions of Hot Mix Asphalt (HMA).

.5 AASHTO T 312. Standard Method for Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of Superpave Gyratory Compactor.

.6 AASHTO M332-14 Standard Specification for Performance-Graded Asphalt Binder Using Multiple Stress Creep Recovery (MSCR) Test

.7 AASHTO T350-14 Standard Method for Multiple Stress Creep Recovery (MSCR) Test of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

1.5 PRODUCT DATA

.1 Submit asphalt concrete mix designs and trial mix test results to Consultant for approval at least 2 weeks prior to commencing work.

.2 Asphalt concrete mix design mist include attestation of the quality of the aggregates. Aggregate test results must show compliance with all the requirements of this section. Test results must be less than two years old.

.3 Mix design must be stamped by a professional Engineer licensed to practice in New Brunswick.

.4 Mix Design must be developed by testing laboratory approved by Consultant.

.5 Trial mix results will represent laboratory results from samples produced by the asphalt plant taken within 60 days of scheduled paving operations on this contract.

1.6 SUBMITTALS

.1 The Contractor shall submit, in writing, the proposed source(s) of supply of coarse aggregate, fine aggregate and blending sand for approval by the Owner’s appointed Consulting Engineer.

.2 The Contractor shall notify the Consultant in writing when stockpiles of coarse and fine aggregate are available for sampling.

.3 The Contractor shall submit in writing, the proposed supplier of the asphalt binder.

.1 The Contractor shall supply, upon request, a sample of the asphalt binder (2 L/mix) and a sample of any proposed admixture(s), in a volume proportional to the asphalt binder sample.

.2 The Contractor shall supply, upon request, the optimum mixing and compaction temperature, for PG asphalt binders.

.3 The Contractor shall provide, to the Consultant, at the time of delivery, the refinery certification and delivery slip for each tanker load of asphalt binder delivered to the plant.

.4 If the source of supply of the asphalt binder changes during the Work, the Contractor shall submit in writing, this proposed change prior to using the new asphalt binder supply in the Work.

Part 2 Materials

2.1 MATERIAL PROPERTIES

.1 Asphalt Binder

.1 Asphalt binder shall be supplied by the Contractor.

.2 The asphalt binder grade shall be PG 58-28 (unless otherwise specified).

.3 "Performance Grade" (PG) asphalt binder shall meet the requirements of AASHTO M332 Table 1 – Performance Graded Asphalt Binder Specification and Table 1.

Table 1
MSCR % Recovery Requirements

Traffic Designation	Jnr (@3.2 kPa)	% Recovery (min)
S (Standard)	$\leq 4.5\ kPa^{-1}$	-
H (Heavy)	$\leq 2.0\ kPa^{-1}$	30%
V (Very Heavy)	$\leq 1.0\ kPa^{-1}$	35%
E (Extreme)	$\leq 0.5\ kPa^{-1}$	45%
	$\leq 0.25\ kPa^{-1}$	55%

.4 When anti-stripping admixtures are required, then the asphalt binder grade shall meet the specified requirements of 2.1.1.3, after the addition of the required admixtures.

.5 Provide optimum mixing and compaction temperatures.

.6 Provide copy of delivery slip and refinery certification for each tanker load.

.2 Coarse Aggregate

.1 Coarse aggregate shall be supplied by the Contractor and shall meet the requirement of section 31 05 16.

.2 The Consultant reserves the right to reject any source of supply of coarse aggregates on the basis of past field performance, documented by records and experience of the Consultant with a specific material, regardless of compliance with physical requirements or grading limits.

.3 The coarse aggregate shall be prepared by crushing rock and shall consist of hard, sound, durable particles, free from adherent coatings, shale, clay, loam, schist and other soft or disintegrated pieces, or other deleterious substances.

.4 Coarse aggregate is the portion retained on the 4.75 mm sieve, tested in accordance with ASTM C136, and shall meet the physical requirements of Table 2.

Table 2
Physical Requirements for Coarse Aggregates

Test	Standard	Requirement	
		Surface Mixes	**Base Mixes**
Petrographic Number (Maximum)	NBDTI Method	180	230
Crushed Particles (Min. % by wt., one face)	NBDTI Method	95	95
(Min % by wt., two faces)	NBDTI Method	80	80
Flat and Elongated Particles (Max. % @ 4:1)	NBDTI Method	15.0	20.0
Micro-Deval (Max. % loss)	MOT LS618	15.0	18.0
Freeze / Thaw (Max. % loss)	NBDTI Method	12.0	14.0
Absorption (Max. % by wt. Retained)	ASTM C127	1.50	1.50

.3 Fine Aggregate

.1 Fine aggregate shall be supplied by the Contractor.

.2 The Consultant reserves the right to reject any source of supply of fine aggregates on the basis of past field performance, documented by records and experience of the Engineer with specified material, regardless of compliance with physical requirements of grading limits.

.3 Fine aggregate shall be prepared by crushing rock or gravel or screening a manufactured sand and shall consist of hard, sound, durable particles free from adherent coatings, shale, clay, loam, schist and other soft or disintegrated pieces, or other deleterious substances.

.4 Fine aggregate shall be the portion passing the 4.75 mm sieve, when tested in accordance with ASTM C117 and C136, and shall meet the physical requirements in Table 3.

.5 Washed materials shall be stockpiled for at least 24 hours to allow free water to drain from the aggregate and to allow the material to attain uniform moisture content.

Table 3
Physical Requirements for Fine Aggregates

Test	Standard	Requirement	
		Surface Mixes	Base Mixes
Micro-Deval (Max. % loss)	MOT LS619	17	20.0
Uncompacted Void Content % (min)	ASTM C1252	45	45

.4 Blending Sand

.1 Blending sand shall be supplied by the Contractor.

.2 Blending sand shall be used to obtain acceptable physical asphalt concrete mix properties.

.3 The maximum mass of blending sand to be used in the total asphalt concrete mix shall not exceed 10% of the total mass.

.4 Blending sand shall have 100% passing the 9.5mm sieve prior to the introduction into the coldfeed at the plant.

.5 Anti-Stripping Admixtures

.1 Anti-stripping admixtures shall be supplied by the Contractor.

.1 The requirement for an anti-stripping admixture is determined at the asphalt concrete mix design stage.

.2 The Owner's appointed Consulting Engineer has approved the anti-stripping admixtures listed in Table 5 for use in the Work. Admixtures approved by NBDTI will be acceptable.

Table 4
Approved Anti-Stripping Admixtures

Product	
Redicote 82-S	Redicote C-2914
Redicote C3082	Rediset LQ-1102
Travcor 4505	Evotherm M1
AD-here LOF 65-00	AD-here 7700
Pave Bond T Lite	Innovalt W
Ceca base RT 2N1	

.2 The type and dosage of all asphalt binder anti-stripping admixtures shall be noted on the delivery slip.

.6 WMA Materials

.1 The substitution of hot mix asphalt concrete for WMA must be approved by Consultant prior to paving.

.2 The Contractor shall supply all materials required for production of WMA.

.3 The Contractor shall identify a facility to produce the WMA mix in accordance with the suppliers' instructions for the use of their materials.

.4 The Contractor shall obtain from the suppliers all information required for the proper preparation, handling, storage and use of their materials.

.5 The Consultant has approved the following Warm Mix Technologies listed below for use in the Work:

- Evotherm M1
- Advera
- Gencor Ultrafoam GX
- Astec Double Barrel Green Foaming
- Cecabase RT 2N1
- Sonne Warmmix
- Cecabase RT
- ALmix Foaming Systems
- Meker Foaming Systems
- Rediset LQ

2.2 PRODUCTION OF AGGREGATES

.1 Grading Requirements

.1 Pit run gravel or quarried rock shall be crushed and separated into coarse and fine aggregates.

.2 The gradation of coarse aggregate, fine aggregate, and blending sand for each type of asphalt concrete mix shall meet the pegged limits as shown in Table 5, when tested in accordance with ASTM C117 and C136.

Table 5
Pegged Limits Gradation of Aggregates (by Mix Type)

ASTM Sieve Size	Coarse Aggregate % Passing			Blending Sand % Passing	Fine Aggregate % passing	
	B mix	C mix	D mix		B mix	C, D mixes
25.0 mm	100					
19.0 mm	Maximum 94					
16.0 mm		100				
12.5 mm		Maximum 96	100			
9.5 mm				100	100.0	100.0
4.75 mm	Maximum 15	Maximum 15	Maximum 15		Minimum 80.0	Minimum 80.0
75 µm	Maximum 2.5	Maximum 2.5	Maximum 2.5	Maximum 15.0	Maximum 9.0	Maximum 7.0

.2 Average Grading

.1 After the Contractor starts crushing, an average grading will be determined and tolerances will be applied to subsequent production.

.2 The average grading will be determined by averaging at least six washed sieve results, conducted in accordance with ASTM C117 and C136, on a minimum of 1500 tonnes or 30% of the required amount.

.3 The average grading tolerances for crushed aggregates and blending sand shall be as set out in Table 6.

Table 6
Maximum Grading Tolerances by Sieve Range

Aggregate passing the 25.0 mm to 150 µm sieves	± 6.0%
Aggregate passing the 75 µm sieve	± 2.0%

.4 Irrespective of the tolerance values indicated in Table 6, all gradations are to be within the pegged limits indicated in Table 5.

.5 If the Contractor is unable to maintain production within the average grading tolerances, a new stockpile may be designated, requiring the determination of a new average grading and a new mix design.

.3 Washing Aggregates

.1 Washed material or materials excavated from underwater shall be stored for at least 24 hours to allow free water to drain from the aggregate and to allow the material to attain a uniform moisture content.

.4 Blending Aggregates

.1 Blending of aggregates will only be allowed for the following reasons:

.1 To meet the grading requirements.

.2 To increase the percentage of crushed particles.

.2 Blending of aggregates shall be performed at the asphalt plant cold feed units to produce a consistently graded product.

2.3 COMPOSITION OF ASPHALT CONCRETE MIX

.1 Mix Design

.1 The Contractor shall provide mix designs for each mix using the Superpave methods and procedures in the Asphalt Institute Series SP-2 Superpave Mix Design as specified by the Owner's appointed Consulting Engineer. The design shall be carried out at 0.5% increments of asphalt content with a minimum of two points above and two points below the final design value. The design shall be verified in the field at the plant prior to paving.

.2 The Design Mix Formula (DMF) is the laboratory determination of the precise proportions of asphalt binder and aggregates to be blended together to meet the requirements in Table 7.

.1 The asphalt concrete mix design for the Superpave procedure shall use a compactive effort of 75 gyrations. The design air voids shall be the design target value.

Table 7
Physical Requirements for Asphalt Concrete Mix Design

Superpave Method

Test Property	**B**		**C**		**D**	
	Min.	**Max.**	**Min.**	**Max.**	**Min.**	**Max.**
& Air Voids Range	3	5	3	5	3	5
% Voids in Mineral Aggregate (VMA)	13.5	15	14.5	16	15.5	17
% Voids filled with Asphalt (VFA)	70	75	70	75	70	77
Moisture Sensitivity (Stripping) TSR ASTM D4867	Minimum 80%					
Dust to Binder Ratio	0.6 – 1.2		0.6 – 1.2		0.6 – 1.2	

.2 Trial mix

.1 It is the Contractor's responsibility to show that his plant can produce asphalt mixes that meet the mix design. Contractor is required to provide trial mix results from asphalt mix samples produced at his plant. Trial mix samples must be taken within 60 days of scheduled paving operations on this Contract.

.2 Trial mix results must meet the control tolerances and ranges as shown in Table 9.

.3 Aggregate Requirements

.1 Sampling for DMF shall be representative of each aggregate type, for the current years production, produced and in stockpile. At least 50% of each aggregate type, for the current years production, shall be produced and in stockpile prior to production of asphalt concrete mix.

.2 The Contractor shall be responsible for locating a suitable source of blending sand.

.3 The aggregates, including any required blending sand, shall be combined in such proportions as to provide an asphalt concrete mix conforming to the grading requirements of Tables 8.

.4 Where neither fine or coarse graded mixtures are specified the combined grading shall comply with Table 8. Where fine or coarse graded mixtures are specified the combined grading shall comply with the appropriate combinations of Table 8.

Table 8
Grading Requirements of Combined Aggregate

ASTM Sieve Size	B % passing	C % passing	D % passing
25 mm	100		
19.0 mm	84.0 – 98.0		
16.0 mm	72.0 – 94.0	100	
12.5 mm	60.0 – 87.0	88.0 – 98.0	100
9.5 mm	51.0 – 75.0	68.0 – 90.0	76.0 – 98.0
6.3 mm	41.0 – 66.0	54.0 – 77.0	60.0 – 84.0
4.75 mm	34.0 – 60.0	46.0 – 69.0	52.0 – 77.0
2.36 mm	22.0 – 50.0	28.0 – 58.0	36.0 – 65.0
1.18 mm	12.0 – 42.0	20.0 – 50.0	25.0 – 55.0
600 µm	6.0 – 32.0	13.0 – 40.0	16.0 – 44.0
300 µm	3.0 – 20.0	7.0 – 27.0	8.0 – 26.0
150 µm	2.0 – 8.0	3.0 – 10.0	4.0 – 12.0
75 µm	2.0 – 6.0	2.0 – 6.0	2.0 – 6.0

.4 Handling and stockpiling Aggregates

.1 The coarse aggregate, fine aggregate and blending sand shall each be stockpiled separately.

.2 Stockpiles shall be placed on a level, well drained base and constructed in such a manner that segregation and contamination does not occur.

.1 Segregation and contamination shall be measured and checked, during the normal course of the Work, by comparing stockpile samples to the average grading and tolerance requirement as previously set out.

.3 Segregated or contaminated stockpiles will not be incorporated into the Work.

.4 Before production of asphalt concrete is commenced, stockpiles of each size and gradation of aggregate shall be provided at the asphalt plant site, of a volume as specified in 2.3.2.1, unless specifically designated otherwise in writing by the Owner's appointed Consulting Engineer, and the Contractor shall maintain this amount of material in stockpiles, until no longer applicable due to the production remaining.

.5 Aggregates shall be loaded into cold feed bins so as to prevent the intermixing of separate sizes.

.6 Mixing of materials or loading of more than one type of material into a single bin shall not be permitted.

.5 Physical Requirements for Asphalt Concrete

.1 Once the Design Mix has been designated by the Consultant, the Contractor shall produce an asphalt concrete mix to the mix control tolerances and ranges as shown in Table 9.

Table 9
Asphalt Mix Control Tolerances and Ranges

Tolerances

	Type B/HRB/WMA-B	Type C/D/HRD WMA-C/WMA-D
Asphalt Binder Content	± 0.40 %	± 0.30 %
4.75 mm and above sized material	± 6.0 %	± 5.0%
2.36 mm – 150 µm sized material	± 4.0%	± 4.0%
75 µm and below sized material	± 0.8 %	± 0.5 %
Maximum Percent Passing 75 µm	6.5%	6.5%

Ranges

	Type B/HRB/WMA-B	Type C/D/HRD WMA-C/WMA-D
% Air Voids	3.0 – 5.0 %	3.0 – 5.0 %
75 µm / binder ratio	0.6 – 1.2	0.6 – 1.2

.6 Sampling and Testing of Aggregates

.1 The crushed product may be monitored at any time throughout the period of the Work and may be accepted or rejected on the basis of the testing performed by the Consultant.

.2 The material being produced shall be sampled in accordance with ASTM D75.

.3 The Contractor shall be provided a copy of all test results as soon as they are available and shall be notified if any test result indicates that materials are being produced outside of the specified limits.

Part 3 Construction

3.1 GENERAL

.1 The Contractor shall carry out the Work as indicated in the Contract Documents and/or as specifically directed by the Consultant.

3.2 EQUIPMENT AND PRODUCTION

.1 Placing Equipment

.1 Mechanical self-powered pavers shall be capable of spreading mix true to line, grade and cross-slope.

.2 Pavers shall be equipped with hoppers and distributing screws to place mix evenly in front of the screeds to preclude segregation, or must be fitted with the manufacturer's re-mixing retrofit kit to preclude segregation.

.3 Pavers shall be equipped with vibrating screeds and shall be capable of spreading mixes, without segregation and with a smooth and uniform textured surface, to the required thickness and in widths from 3 to 5 metres.

.1 Screeds shall be equipped with heaters which are capable of preheating the entire screed and screed extensions.

.4 The Contractor shall provide a 3 metre straight edge with each paver.

.5 Pavers shall be equipped with automatic screed controls for the control of longitudinal grade and transverse slope.

.1 The longitudinal grade control shall be equipped to operate from either side of the paver and be capable of providing longitudinal grade control as well as matching longitudinal joints.

.2 The Contractor shall use a minimum 12 metre ski or floating beam for longitudinal grade control.

.1 A joint matching shoe may be used to control longitudinal grade of subsequent mats placed adjacent to the original mat.

.3 A calibrated slope indicator shall be installed in a readily visible location on each paver.

.6 Longitudinal grade control shall be used on all lifts and transverse slope controls shall be used on all lifts except surface course unless otherwise directed by the Engineer.

.7 Vibrating hydraulic screed extensions and vibrating bolt-on screed extensions shall be used in placing mat widths greater than 3 metres.

.1 Hydraulic strike-off extensions are only acceptable when laying mats of irregular widths outside of the driving lanes.

.8 Pavers shall be equipped with deflector plates at the discharge end of the paver conveyor or kicker plates fitted to the paver augers.

.2 Compaction Equipment

.1 Compaction Equipment shall consist of at least one of each of the following:

.1 Vibratory roller having minimum mass of 8 t.

.1 Paving in echelon on the driving lanes shall require the use of two vibratory breakdown rollers.

.2 When the rate of placement exceeds 250 tonnes per hour (tph), the Contractor shall use two vibratory rollers.

.2 Pneumatic-tired roller.

.1 A combination steel-drum vibratory/pneumatic tire roller may be used in place of the vibratory and pneumatic rollers.

.2 Paving in echelon on the driving lanes shall require the use of two pneumatic tired rollers.

.3 Steel-drum tandem finish roller.

.1 Use of a steel-drum finish roller on base courses shall be optional.

.2 All rollers with rubber tires shall be equipped with a means to prevent the asphalt mix from adhering to the rubber tires.

.1 Hydrocarbon fuels or solvents shall not be used.

3.3 PLACEMENT

.1 Timing of Paving Operation

.1 Paving operations shall not commence in the spring until the NBDTI Weight Restrictions are lifted or continue after the dates specified in Table 11 without written permission of the Owner's appointed Consulting Engineer.

.2 Paving operations shall only be conducted during Daylight hours unless specifically altered by written approval of the Engineer.

Table 11
Cut-Off Dates for Paving

County	Surface Mixes	Base Mixes
Gloucester, Madawaska, Restigouche, Victoria	October 07	October 22
All others	October 22	October 31

.2 Plant Calibration and Trial Mix

.1 The asphalt plant must be calibrated, to the satisfaction of the Consultant, prior to commencement of each paving season for permanent plants and after each set up for portable plants or at any time the Consultant has reason to suspect that the calibration values may be incorrect.

.2 The Contractor shall notify the Consultant a minimum of 48 hours in advance of when the plant is ready for calibration.

.3 A trial mix based on the Design Mix Formula shall be prepared by the Contractor for testing by the Consultant and shall only be carried out during daylight hours.

.4 Continuous placement of asphalt concrete in the Work shall only be permitted after the Consultant is satisfied that the mix properties are in accordance with the applicable specified requirements.

.5 The asphalt concrete produced for the trial mix(es) shall be utilized, as determined by the Consultant, for any of the following purposes:

.1 By the Owner on the roadbed, only for the purpose of padding and/or patching.

.2 By the Owner at a location other than the roadbed.

.3 By the Consultant for private use and any asphalt concrete utilized by the Consultant shall remain the property of the Consultant.

.3 Mixing Times and Temperatures

.1 Must comply with requirements of NBDTI Standard Specification for Highway Construction (2019) Section 261.

.4 Moisture Content

.1 The maximum moisture content allowed in the asphalt concrete mix as it is discharged to the surge bin, storage silo, or pug mill shall not exceed 0.10%.

.2 The aggregate shall be dried sufficiently so that visual evidence of moisture, such as but not limited to the presence of foaming, slumping or stripping of the mix, does not occur.

.5 Transportation of Asphalt Concrete

.1 Trucks for transporting asphalt concrete mixes shall have tight, metal boxes free of foreign materials.

.2 Loads shall be covered with tarpaulins of sufficient size to overhang the fully loaded truck boxes and be tied down on three sides and the front shall be tight to the box of the truck or shielded to prevent air infiltration.

.3 Truck boxes may be lightly lubricated with an approved release agent, as required, but must be raised and drained after each application and before loading.

.1 Hydrocarbon fuels or solvents shall not be used.

.4 Truck beds shall be loaded in multiple large-mass drops from the asphalt concrete mix storage silo. The first drop shall be immediately next to the front bulkhead of the truck bed – as far forward as reasonably possible; the second drop shall be deposited adjacent to the tailgate; and the third, and subsequent drops, shall be made into the center of the truck bed.

.5 Tarpaulins shall be rolled back and the hot asphalt concrete shall be uncovered immediately prior to dumping the load into the paver.

.6 Padding

.1 Material for padding shall be the same asphalt concrete mix designation as specified in the Contract Documents.

.2 Asphalt concrete for padding shall be placed by means of a self-powered paver or by other means approved by the Engineer.

.3 The compaction Equipment shall be in accordance with 3.2.9.

.1 The Contactor shall establish a rolling pattern to achieve the maximum compaction of the asphalt concrete used for padding.

.4 Padding is intended to be a separate operation and shall not be done as part of the construction of the subsequent lift of asphalt concrete.

.7 Placing Asphalt Concrete

.1 Ensure the granular base course is to the required grade.

.2 The Contractor shall place asphalt concrete on a dry surface.

.1 Asphalt concrete shall not be placed when weather conditions of fog or rain prevail.

.2 Binder course asphalt concrete is to be laid in two (2) courses.

.3 When placing asphalt concrete surface mix, the surface temperature of the material to be overlaid shall be a minimum of 5°C.

.3 When paving on an aggregate base, the aggregate base must be free from standing water and at least 300 metres of prepared base shall be maintained ahead of pavers.

.4 Place asphalt concrete in compacted lifts of thickness as follows:

.1 Lower course Type B (Base): as shown on drawings;

.2 Surface course Type D (Seal): as shown on drawings.

.5 All prepared surfaces shall be cleaned of loose or foreign material prior to placing of the asphalt concrete.

.1 Milled and aged asphalt concrete surfaces shall be treated with bituminous tack coat in accordance with the requirements of Section 259 Asphalt Tack Coats prior to the placing of asphalt concrete.

.2 New asphalt concrete surface shall be treated with bituminous tack coat when overlaying asphalt concrete lift is not placed within one week after underlaying asphalt concrete was placed.

.6 Existing approaches to railway crossings and bridge structures, or areas adjacent to paved surfaces or other structures, shall be removed to the depths shown on the Contract Documents or as directed by the Contractor.

.1 The removed materials shall be disposed of and the exposed surfaces shall be prepared as identified in the Contract Documents or as directed by the Consultant.

.7 Contact edges of existing mats and contact faces of curb, gutters, manholes, sidewalks and bridge structures shall receive an application of tack coat before placing the asphalt concrete.

.8 The minimum asphalt concrete temperature prior to placement shall be 115^{o}C.

.9 The maximum temperature of the asphalt concrete mix shall be 165^{o}C or the temperature recommended by the asphalt binder supplier.

.10 When laying base and/or surface course the alignment of the paver shall be controlled by an approved method, such as following a stringline, placed by the Contractor from an alignment designated by the Consultant.

.11 Irregularities in alignment and grade along the outside edge of the asphalt concrete shall be corrected by the addition or removal of asphalt concrete before the edge is rolled.

.12 In narrow base widening, deep or irregular sections, intersections, turnouts or driveways where it is impractical to spread and finish asphalt concrete by machine methods, the asphalt concrete shall be spread by hand in accordance with standard hand placement practices.

.13 Paving of intersections, extra widths and other variations from standard lane alignment and as defined in the Contract Documents, whether by hand spreading or machine laying, shall be carried out concurrently with the machine laying operation of the regular mat, unless otherwise approved by the Consultant.

.1 Driveway entrances and aprons shall be paved concurrently or after the machine laying operation of the regular mat.

.14 Spreading of asphalt concrete by hand shall be kept to a minimum and shall be carried out concurrently with the machine laying operation of the regular mat, unless otherwise approved by the Owner’s appointed Consulting Engineer.

.15 Lanes shall be completed to approximately the same location at the end of the day’s paving.

.16 No traffic shall be permitted on the newly placed asphalt concrete until finish rolling is complete, and the finished mat has been permitted to cool to 60^{o}C.

.1 Water required to lower the mat temperature shall be supplied in accordance with special provisions.

.17 Contaminant spills from the Contractor's equipment shall be immediately repaired by the Contractor to the satisfaction of the Consultant.

.18 All placement, spreading, compacting and rolling shall occur only during daylight hours and any loads arriving at the Work Site such that these requirements cannot be met shall be rejected by the Consultant.

.19 Spreading operations shall be conducted to ensure that the paver speed matches the rate of supply so that the number of paving stops is minimized.

.20 The paver shall not be left stationary for prolonged periods with the screed box in contact with either the previously placed asphalt or loose asphalt in front of the screed.

.8 Joints

.1 General

.1 Joints shall be constructed to ensure thorough and continuous bond and to provide a smooth riding surface.

.2 Dirt or other foreign and loose material shall be removed from the faces against which joints are to be made.

.3 The Contractor shall remove and dispose of waste materials, resulting from joint construction or other work activity, outside the Work Site before the end of each work week.

.2 Transverse Construction Joint

.1 A Transverse Construction Joint shall be constructed at the end of each day's work and at other times when paving is halted for a period of time which will permit the asphalt concrete to cool below 115^{o}C.

.2 Where the asphalt concrete surface and/or base course has been terminated due to the conditions noted in the preceding clause; a smooth 1.5 metre long taper shall be paved.

.3 When paving resumes, tapers from surface courses previously laid shall be cut back to full mat thickness to expose fresh, straight vertical surfaces, free from broken or loose material and tacked in accordance with the specification for Bituminous Tack Coat.

.3 Transverse Key Joint

.1 A transverse key joint shall be constructed, between existing and new asphalt concrete pavement at the beginning and at the end of the project and other locations where the new pavement terminates against an existing pavement.

.2 If a key is cut in advance of paving the joint area, the Contractor shall construct a smooth 1.5 metre long taper at the joint area as shown on the attached drawing.

.3 Prior to the placement of the asphalt concrete, all transverse key joint surfaces shall be cleaned of loose foreign material and a tack coat applied in accordance with the specification for tack coat.

.4 Longitudinal Construction Joint

.1 The following requirements shall apply when constructing longitudinal joints.

.1 Widths of succeeding individual courses shall be offset by 50 – 100 mm.

.2 Contractor using a one paver operation between May 15th and September 15th may leave an exposed longitudinal joint for up to one-half of the days production without an application of tack coat unless otherwise directed by the Owner's appointed Consulting Engineer.

.1 Before May 15th and after September 15th the Contractor shall be required to tack the longitudinal joint in accordance with the specifications.

.3 All longitudinal joints left exposed overnight or which are exposed to moisture from rain shall receive an application of tack coat in accordance with the specifications.

.4 Longitudinal joints in the final lift of asphalt concrete shall be either on the centreline of the street or on the center of the travel lane in the final lift of asphalt concrete.

.5 Longitudinal joints shall be constructed to ensure that maximum compression under rolling is achieved.

.6 On surface courses, the method of making joints shall be such that excess materials is not scattered on the surface of the freshly laid mat and all excess material shall be carefully removed.

.9 Compaction of Asphalt Concrete

.1 Mixtures shall be compacted to a density of not less than ninety three percent (93%) of the laboratory Maximum Theoretical Density. At the beginning of placement of each type of mixture compaction trials shall be made to evaluate the number of passes and sequence of rollers required to obtain the specified density.

.2 Maximum roller speed shall be 5 – 8 km/hr.

.3 Vibratory rollers shall be operated to achieve a minimum of 10 downward impacts of the vibration per 300 mm of travel.

.4 Vibratory rollers must be operated in the static mode when used for finish rolling on pavements that are below 85°C.

.5 Pneumatic roller tires shall be capable of air pressure adjustments from 345 – 517 kPa. The higher pressure range to be used for intermediate rolling and the lower for kneading the finished surface.

.6 When placing in single-lane width or full width, the mixture should be rolled in the following sequence:

.1 Transverse joint.

.2 Outside edge.

.3 Breakdown rolling, beginning on the low side and progressing toward the high side.

.4 Intermediate rolling; same procedure as Step 3.

.5 Finish rolling.

.7 When paving in echelon, or when abutting a previously placed lane or other lateral restraint, the mixture should be rolled in the following sequence:

.1 Transverse joint.

.2 Longitudinal joint.

.3 Outside edge.

.4 Breakdown rolling, beginning on the low side and progressing toward the high side.

.5 Intermediate rolling; same procedure as Step 4.

.6 Finish rolling.

.8 When the transverse joint is next to an adjoining lane, the first pass is made with a static steel-wheeled roller moving along the longitudinal joint for approximately 1.5 metres. The surface is then checked with a straightedge and corrections are made if necessary. The joint is then rolled transversely, with 150 mm of the drum width on the newly laid material. This operation should be repeated with successive passes, each covering an additional 150 to 200 mm of the new mat, until the entire width of a drive roll is on the new mixture. During transverse rolling, wooden boards of the proper thickness should be placed at the edge of the pavement to give the roller a surface to drive on once it passes the edge of the mat. If boards are not used, transverse rolling must stop 150 to 200 mm short of the outside edge to prevent damaging it, and the edge must be compacted later during longitudinal rolling.

.9 When using static steel-wheeled or pneumatic-tired rollers to roll longitudinal joints, only 100 to 150 mm of the roller width should ride on the newly placed lane on the first pass. The bulk of the roller width should ride on the previously compacted side of the joint. In each subsequent pass, more and more of the roller width is allowed onto the fresh mat, until the entire roller is on the new mixture. With vibratory rollers the roller drums are extended only 100 to 150 mm onto the previously compacted lane, with the rest of the drum width riding on the newly placed mixture. The roller continues to move along this line until a thoroughly compacted, neat joint is obtained.

.10 A hot joint is one placed between two lanes at approximately the same time by pavers working in echelon. When paving in echelon, the breakdown roller following the lead paver leaves 75 to 150 mm of the common edge or joint unrolled between the pavers. This common joint is then compacted by the roller following the second paver on his first pass. The second paver and roller must keep as close as possible to the first paver to ensure that a uniform density is obtained across the joint.

.11 A cold joint is one between two lanes, one of which has cooled overnight or longer before placing the adjoining lane. Longitudinal joints should be rolled as close behind the paver as possible.

.12 Rolling edges – except in echelon the edges of the pavement should be rolled concurrently with the longitudinal joint. In rolling edges, roller wheels should extend 50 to 100 mm beyond the pavement edge except at curbs, provided that lateral displacement of the mixture is not excessive. For the final lift at curbs sufficient asphalt is required so that when compacted the surface is at or slightly above the level on the concrete curb.

.13 Breakdown rolling – start the breakdown rolling operation on the low side of the mat and progress toward the high side. When adjoining lanes are placed, the same rolling procedures should be followed but only after compaction of the longitudinal joint.

.14 Intermediate rolling – intermediate rolling should follow breakdown rolling as closely as possible, while the asphalt mixture is still well above the minimum temperature at which densification can be achieved, 85°C. Intermediate rolling should be continuous until all of the mixture placed has been thoroughly compacted. The rolling pattern should be developed in the same manner as breakdown rolling.

.15 Finish rolling should be accomplished while the material is still warm enough for removal of roller marks. Vibratory rollers must be operated in the static mode when they are used for finish rolling on pavements that are below 85°C. Finish rolling should remove all roller marks.

.16 Quality assurance testing shall be carried out by the Owner's appointed Consulting Engineer.

.17 If damage to street components and/or adjacent property is occurring while using vibratory compaction equipment, the Contractor shall immediately cease using this equipment and proceed with the work using static rolling equipment.

.18 Along curbs, manholes and similar structures and places not accessible to full size rollers, the mix shall be compacted with either smaller compactive equipment, such as vibrating plate tampers, or by hand tampers.

.10 Surface Defects

.1 The finished surface of any pavement course shall have a uniform texture and be free of visible signs of poor workmanship and bumps and/or dips exceeding 3 mm as measured with a 3 metre straight edge.

.2 Any obvious defects, as determined by the Owner's appointed Consulting Engineer, will be cause for rejection of the pavement course.

.3 Defects shall include but not necessarily be limited to the following:

.1 Individual bumps and dips that exceed 5 mm in the vertical direction.

.2 Segregated areas.

.3 areas of excess or insufficient asphalt binder.

.4 Roller marks.

.5 Cracking or tearing.

.6 Improper matching of longitudinal and transverse joints.

.7 Tire marks.

.8 Sampling locations not properly reinstated.

.9 Improperly constructed patches.

.10 Contaminant spills on the mat.

.11 Ravelling

.11 Repairs

.1 General

.1 Rejected work shall be repaired, remedied, overlaid, or removed and replaced at the Contractor's own expense.

.2 The asphalt concrete repairs replacement or overlay shall be the same asphalt concrete mix designation as that which is repaired, removed or overlaid.

.1 Any asphalt concrete which does not Conform to the Specifications shall not be incorporated in the work.

END OF SECTION

Part 1 General

1.1 MEASUREMENT PROCEDURES

.1 Supply and application of water for dust control will not be measured for payment, but shall be considered as incidental to the work.

.2 No extra compensation will be paid for calcium chloride and water ordered and applied on Saturdays, Sundays or holidays.

Part 2 Products

2.1 MATERIALS

.1 Water: in accordance with Consultant's approval.

Part 3 Execution

3.1 APPLICATION

1. Do not apply water when the temperature is below 0 degrees.

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

.2 If needed or as required by Consultant, dust control measures will be applied on weekends and holidays.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 31 23 33.01 – Excavating, Trenching and Backfilling.

1.2 REFERENCE STANDARDS

.1 ASTM C76M, latest revision, Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.

.2 ASTM C117, latest revision, Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.3 ASTM C136, latest revision, Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM C443M, latest revision, Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

.5 ASTM D1557, latest revision, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (2700 kN-m/m3).

.6 CAN/CSA-A5, latest revision, Ciments portland.

.7 CSA A82.56, latest revision, Aggregate for Masonry Mortar.

.8 CAN/CSA-Série A257, latest revision, Standards for Concrete Pipe and Manhole Sections.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 At least 2 weeks before the start of the work, inform the Consultant of the proposed source of supply for the seating layer materials and allow him to have access to them for sampling purposes.

1.5 MEASUREMENT FOR PAYMENT PURPOSES

.1 The removal and reinstallation of culvert pipe, including excavation, backfilling, compaction as well as bedding material and covering material, geotextile, braces and insulation shall be measured and paid for as a lump sum price.

Part 2 Products

2.1 GRANULAR BEDDING

.1 Type 1 fill as indicated in Section 31 23 33.01 – Excavation, Trenching and Backfilling.

2.2 BACKFILL MATERIAL

.1 Type 3 fill, in accordance with Section 31 23 33.01 – Excavating, Trenching and Backfilling.

2.3 GEOTEXTILE

.1 Geotextile N3 as per item 601of the Department of Transportation and Infrastructure Standard Specifications for Highway Construction.

2.4 RIGIDE INSULATION

.1 The rigid insulation shall have a compressive capacity of 275 kPa (40 psi), as standard ASTM D1621.

.2 Acceptable products: SM Blue HI 40 and Celfortec Formular 400.

Part 3 Execution

3.1 TRENCHING

.1 Obtain Consultant's approval of trench line and depth prior to placing bedding material or pipe.

3.2 BEDDING

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

.2 Place 150 mm minimum thickness of approved granular material on bottom of excavation and compact to 90% minimum of maximum density to ASTM D1557.

.3 Compact each layer full width of bedding to at least 90% maximum density to ASTM D1557 up to underside of sub-base or backfill material.

.4 Place bedding in unfrozen condition.

3.3 LAYING CONCRETE PIPE CULVERTS

.1 Begin at downstream end of culvert with female end of first pipe section facing upstream.

.2 Ensure barrel of each pipe is in contact with shaped bed throughout its length.

.3 Do not allow water to flow through pipes during construction except as permitted by Consultant.

3.4 JOINTS: CONCRETE PIPE CULVERTS

.1 Joints:

.1 Support pipes with hand slings or crane as required to minimize lateral pressure and maintain concentricity until pipe is properly positioned.

.2 Align pipes before joining.

.3 Maintain pipe joints free from mud, silt, gravel and other foreign material.

.4 Wrap each pipe joint with a strip of geotextile 600 mm wide and with an overlap of 600 mm.

.5 Complete each joint before laying next length of pipe.

.6 Minimize joint deflection after joint has been made to avoid joint damage.

3.5 INSTALLING RIGID INSULATION

. 1 Place the insulation inside the bedding layer according to the Consultant's instructions.

3.6 BACKFILLING

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

.2 Place backfill material above pipe surround in uniform layers not exceeding 300 mm compacted thickness up to grades as indicated.

.3 Compact each layer to 95% maximum density to ASTM D1557 taking special care to obtain required density under haunches.

.4 Place backfill in unfrozen condition.

END OF SECTION

APPENDIX A

Test Pit Log Report

TEST PIT LOG REPORT

CLIENT FISHERIES AND OCEANS CANADA

LOCATION RUE DU HAVRE, LE GOULET, NB

DATE JULY 25, 2022 WATER DEPTH 1.22 m

PROJECT No. 305-22

TEST PIT No. AU-1

ABBREVIATIONS

SA : SIEVE ANALYSIS

WC : WATER CONTENT

FIELD TESTS AND OBSERVATIONS

FVST : FIELD VANE SHEAR TEST

▼ : WATER LEVEL

STATE OF SAMPLE

DISTURBED NOT SAMPLED

ELEVATION

☐ GEODETIC

☐ LOCAL GRID

ELEV. (M)	DEPTH (M)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	STATE OF SAMPLE	SAMPLE NO.	COMMENTS
	0						
	0.07	ASPHALT					
		GRAVELLY SAND, SOME TO TRACES OF SILT, BROWN/RED				SA-1	
	0.61						
	1					SA-2	
	1.22			▼			
						SA-3	WET
	1.83	END OF TEST PIT AT 1.83 m					
	2						
	3						
	4						
	5						
	6						
	7						

supervised by D.C drawn by D.H checked by D.H date 07/26/22 rev. 0

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TEST PIT LOG REPORT

CLIENT FISHERIES AND OCEANS CANADA

LOCATION RUE DU HAVRE, LE GOULET, NB

DATE JULY 25, 2022 WATER DEPTH 1.37 m

PROJECT No. 305-22

TEST PIT No. AU-2

ABBREVIATIONS

SA : SIEVE ANALYSIS

WC : WATER CONTENT

FIELD TESTS AND OBSERVATIONS

FVST : FIELD VANE SHEAR TEST

▼ : WATER LEVEL

STATE OF SAMPLE

DISTURBED NOT SAMPLED

ELEVATION

☐ GEODETIC

☐ LOCAL GRID

ELEV. (M)	DEPTH (M)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	STATE OF SAMPLE	SAMPLE NO.	COMMENTS
	0						
	0.05	ASPHALT					
	0.15	CRUSHED ROCK				SA-1	
		GRAVELLY SAND, SOME TO TRACES OF SILT, BROWN/RED					
	0.61					SA-2	
	1						
	1.22			▼		SA-3	WET
	1.83	END OF TEST PIT AT 1.83 m					
	2						
	3						
	4						
	5						
	6						
	7						

supervised by D.C drawn by D.H checked by D.H date 07/26/22 rev. 0

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TEST PIT LOG REPORT

CLIENT FISHERIES AND OCEANS CANADA

LOCATION RUE DU HAVRE, LE GOULET, NB

DATE JULY 25, 2022 WATER DEPTH 0.91 m

PROJECT No. 305-22

TEST PIT No. AU-3

ABBREVIATIONS

SA : SIEVE ANALYSIS

WC : WATER CONTENT

FIELD TESTS AND OBSERVATIONS

FVST : FIELD VANE SHEAR TEST

▼ : WATER LEVEL

STATE OF SAMPLE

DISTURBED NOT SAMPLED

ELEVATION

☐ GEODETIC

☐ LOCAL GRID

ELEV. (M)	DEPTH (M)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	STATE OF SAMPLE	SAMPLE NO.	COMMENTS
	0						
	0.05	ASPHALT					
	0.15	CRUSHED ROCK				SA-1	GEOTEXTILE @ 0.15 m
		GRAVELLY SAND, SOME TO TRACES OF SILT, BROWN/RED		▼		SA-2	
	0.61						
	1						
	1.22	SILTY SAND, SOME CLAY AND GRAVEL, BROWN/RED				SA-3	WET
	1.83	END OF TEST PIT AT 1.83 m					
	2						
	3						
	4						
	5						
	6						
	7						

supervised by D.C drawn by D.H checked by D.H date 07/26/22 rev. 0

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TEST PIT LOG REPORT

CLIENT FISHERIES AND OCEANS CANADA

LOCATION RUE DU HAVRE, LE GOULET, NB

DATE JULY 25, 2022 WATER DEPTH 1.22 m

PROJECT No. 305-22

TEST PIT No. AU-4

ABBREVIATIONS

SA : SIEVE ANALYSIS

WC : WATER CONTENT

FIELD TESTS AND OBSERVATIONS

FVST : FIELD VANE SHEAR TEST

▼ : WATER LEVEL

STATE OF SAMPLE

DISTURBED NOT SAMPLED

ELEVATION

☐ GEODETIC

☐ LOCAL GRID

ELEV. (M)	DEPTH (M)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	STATE OF SAMPLE	SAMPLE NO.	COMMENTS
	0						
	0.05	ASPHALT					
		GRAVELLY SAND, TRACES OF SILT, BROWN/RED				SA-1	
	0.61					SA-2	
	1			▼			
	1.22	GRAVELLY SAND, SOME SILT AND CLAY, BROWN				SA-3	WET
	1.83	END OF TEST PIT AT 1.83 m					
	2						
	3						
	4						
	5						
	6						
	7						

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TEST PIT LOG REPORT

CLIENT FISHERIES AND OCEANS CANADA

LOCATION RUE DU HAVRE, LE GOULET, NB

DATE JULY 25, 2022 WATER DEPTH 1.22 m

PROJECT No. 305-22

TEST PIT No. AU-5

ABBREVIATIONS

SA : SIEVE ANALYSIS

WC : WATER CONTENT

FIELD TESTS AND OBSERVATIONS

FVST : FIELD VANE SHEAR TEST

▼ : WATER LEVEL

STATE OF SAMPLE

DISTURBED NOT SAMPLED

ELEVATION

☐ GEODETIC

☐ LOCAL GRID

ELEV. (M)	DEPTH (M)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	STATE OF SAMPLE	SAMPLE NO.	COMMENTS
	0						
	0.05	ASPHALT					
		GRAVELLY SAND, SOME SILT, TRACES OF CLAY, BROWN/RED				SA-1	
	0.61						
	1					SA-2	
	1.22			▼			
						SA-3	WET
	1.83	END OF TEST PIT AT 1.83 m					
	2						
	3						
	4						
	5						
	6						
	7						

supervised by D.C drawn by D.H checked by D.H date 07/26/22 rev. 0

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TEST PIT LOG REPORT

CLIENT FISHERIES AND OCEANS CANADA

LOCATION RUE DU HAVRE, LE GOULET, NB

DATE JULY 25, 2022 WATER DEPTH 1.22 m

PROJECT No. 305-22

TEST PIT No. AU-6

ABBREVIATIONS

SA : SIEVE ANALYSIS

WC : WATER CONTENT

FIELD TESTS AND OBSERVATIONS

FVST : FIELD VANE SHEAR TEST

▼ : WATER LEVEL

STATE OF SAMPLE

DISTURBED NOT SAMPLED

ELEVATION

☐ GEODETIC

☐ LOCAL GRID

ELEV. (M)	DEPTH (M)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	STATE OF SAMPLE	SAMPLE NO.	COMMENTS
	0						
	0.05	ASPHALT					
		GRAVELLY SAND, SOME TO TRACES OF SILT, TRACES OF CLAY, BROWN/RED				SA-1	
	0.61						
	1					SA-2	
	1.22			▼			
						SA-3	WET
	1.83						
	2	END OF TEST PIT AT 1.83 m					
	3						
	4						
	5						
	6						
	7						

supervised by D.C drawn by D.H checked by D.H date 07/26/22 rev. 0

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TEST PIT LOG REPORT

CLIENT FISHERIES AND OCEANS CANADA

LOCATION RUE DU HAVRE, LE GOULET, NB

DATE JULY 25, 2022 WATER DEPTH 1.22 m

PROJECT No. 305-22

TEST PIT No. AU-7

ABBREVIATIONS

SA : SIEVE ANALYSIS

WC : WATER CONTENT

FIELD TESTS AND OBSERVATIONS

FVST : FIELD VANE SHEAR TEST

▼ : WATER LEVEL

STATE OF SAMPLE

DISTURBED ☒ NOT SAMPLED ☐

ELEVATION

☐ GEODETIC

☐ LOCAL GRID

ELEV. (M)	DEPTH (M)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	STATE OF SAMPLE	SAMPLE NO.	COMMENTS
	0						
	0.07	ASPHALT					
		GRAVELLY SAND, SOME TO TRACES OF SILT, TRACES OF CLAY, BROWN/RED			☒	SA-1	
	0.61				☒	SA-2	
	1			▼			
	1.22				☒	SA-3	WET
	1.83	END OF TEST PIT AT 1.83 m					
	2						
	3						
	4						
	5						
	6						
	7						

supervised by D.C drawn by D.H checked by D.H date 07/26/22 rev. 0

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ENGINEERING SERVICES D'INGENIERIE

APPENDIX B

Mitigation Measures

MESURES D'ATTÉNUATION POUR UNE ACTIVITÉ QUI N'EST PAS CONSIDÉRÉE COMME UN PROJET AU SENS DE LA LEI, UNE ACTIVITÉ EN RAPPORT AVEC UNE SITUATION D'URGENCE OU UN PROJET EXCLU DES MESURES D'ATTÉNUATION DE LA LEI EN VERTU DE L'ARRÊTÉ SUR LES CATÉGORIES DE PROJETS DÉSIGNÉS (LISTE D'EXCLUSION)

- Respecter les lois fédérales et se conformer, lorsque applicables, aux lois, normes et codes internationaux, provinciaux, territoriaux et municipaux.
- Aviser l'autorité portuaire et toute entreprise privée sur le site du projet ou à proximité avant le début du projet.
- Se familiariser avec la Loi sur la Convention concernant les oiseaux migrateurs (LCOM) et la faire respecter en ce qui concerne la protection des oiseaux migrateurs, de leurs œufs, de leurs nids et de leurs petits trouvés sur les lieux et dans les environs.
- Effectuer une inspection visuelle pour repérer les nids d'oiseaux près du chantier. Si un nid est observé, les travaux doivent être reportés jusqu'à ce que les poussins aient quitté le nid ou il faut communiquer avec le Service canadien de la faune pour déterminer si une zone tampon appropriée peut être établie pour éviter toute interaction avec l'oiseau nichant et son nid.
- Minimiser la perturbation de tous les oiseaux sur place et dans les environs pendant toute la durée des travaux.
- S'assurer que tous les déchets seront éliminés d'une manière respectueuse de l'environnement et conformément aux lois provinciales, territoriales et municipales.
- S'assurer que tous les véhicules sont en bon état de marche et que les conducteurs respectent toutes les limitations de vitesse et de poids sur le site.
- S'assurer que l'ensemble de l'équipement de construction est en bon état de fonctionnement et veiller soigneusement à l'entretien et à la surveillance de tout l'équipement, afin de réduire au minimum le risque de déversements ou de fuites de produits pétroliers.
- S'assurer que l'entrepreneur dispose d'un plan d'intervention d'urgence pour contrôler tout déversement de carburant, ce qui comprend la présence sur place de l'équipement d'intervention en cas de déversement approprié prêt à être déployé immédiatement. Tous les déversements et rejets doivent être signalés aux ministères fédéraux, provinciaux ou territoriaux compétents. Le plan d'intervention d'urgence doit comprendre le numéro de téléphone approprié pour signaler les rejets dans la région ainsi que les numéros de téléphone des autorités locales (services de police ou d'incendie).
- S'assurer que les mesures de nettoyage des déversements sont correctement appliquées afin de ne pas entraîner d'impacts hors site.
- Durant l'exécution des travaux, s'assurer de surveiller attentivement la présence de dépôts archéologiques. Arrêter les travaux s'il y a lieu de croire à la présence d'artefacts ou de dépôts archéologiques potentiels et aviser un représentant provincial avant d'aller de l'avant.
- Enlever et éliminer de façon appropriée les substances nocives.
- Laver, ravitailler et faire l'entretien de la machinerie et entreposer le carburant et les autres matériaux servant au fonctionnement de la machinerie de façon à ce que les substances nocives ne s'infiltrent pas dans le cours d'eau.
- S'assurer que les machines sont vérifiées pour détecter les fuites de lubrifiants ou de carburant et qu'elles sont en bon état. S'assurer que le ravitaillement en carburant est effectué à plus de 30 m de tout plan d'eau et sur une surface imperméable. S'assurer

que l’équipement de base pour le nettoyage des déversements de produits pétroliers se trouve sur le site.

- S’assurer que l’accès au site est restreint aux travailleurs autorisés seulement.
- Des mesures d’élimination des poussières (p. ex. arrosage) doivent être appliquées afin d’empêcher la diffusion de poussières.
- Des contrôles de sédiments et de l'érosion doivent être mis en œuvre au besoin et surveillés visuellement pour leur bon fonctionnement. S'ils sont endommagées, les contrôles des sédiments et de l'érosion doivent être immédiatement réparés ou remplacés.
- Toutes les matières dangereuses produites dans le cadre du projet doivent être transportées hors du site pour être éliminées ou traitées dans une installation de traitement des déchets agréée, conformément aux lois et aux règlements provinciaux et fédéraux, et aux spécifications contractuelles applicables.
- Les activités du projet doivent respecter les exigences réglementaires provinciales et fédérales sur la santé et la sécurité au travail.
- Évaluer quotidiennement les conditions météorologiques en vue de déterminer s’il y a un risque de conditions climatiques extrêmes dans la région du projet. Éviter de travailler pendant les périodes où Environnement et Changement climatique Canada a émis un avertissement de pluie ou de vagues pour la zone du chantier.
- S’assurer que tous les matériaux de construction et les débris ne soient pas transportés par l’eau.
- Aucun outil, véhicule, structure temporaire ou partie de structure, utilisé ou gardé afin de construire ou de mettre en place un ouvrage dans un cours d’eau navigable ne doit être abandonné après l’achèvement du projet.
- Les bateaux doivent pouvoir franchir en tout temps et en toute sécurité le site du chantier et être aidés au besoin.
- Lorsqu’ils se trouvent sur la voie navigable, tous les matériaux et l’équipement utilisés dans la construction doivent être marqués conformément au Règlement sur les abordages de la Loi de 2001 sur la marine marchande du Canada.
- Bien avant le début des travaux, informer les Services de communications et de trafic maritimes (SCTM) de la Garde côtière canadienne, au 902-564-7751 ou au 1-800-686-8676 (numéro sans frais), de la mise en place ou de l’enlèvement de marquages sur le site afin de permettre la mise en œuvre des avis à la navigation et des avis aux navigateurs appropriés.

MITIGATION MEASURES FOR AN ACTIVITY NOT CONSIDERED A PROJECT AS DEFINED IN THE IAA, AN ACTIVITY IN RELATION TO AN EMERGENCY, OR A PROJECT EXCLUDED UNDER THE DESIGNATED CLASSES OF PROJECTS ORDER (EXCLUSION LIST) OF THE IAA

- Ensure compliance with all federal legislation and provincial, territorial, municipal and international laws codes, and standards, as applicable.
- Notify the Harbour Authority and any private businesses on or adjacent to the project site prior to the commencement of the project.
- Become knowledgeable with and abide by the *Migratory Birds Convention Act* (MBCA) in regards to the protection of migratory birds, their eggs, nests, and their young encountered on site and in the vicinity.
- Conduct a visual survey for the presence of any birds nests near the worksite. If a nest is observed, work shall either be postponed until the chicks have left the nest or contact shall be made with the Canadian Wildlife Service to determine if a suitable buffer can be established to avoid interaction with the breeding bird and the nest.
- Minimize disturbance to all birds on-site and adjacent areas during the entire course of the Work.
- Ensure that all waste material will be disposed of in an environmentally responsible manner, and in accordance with provincial, territorial, municipal legislation.
- Ensure that all vehicles are road-worthy, and that drivers observe all speed and weight limits on site.
- Ensure that all construction equipment is in good working order and careful maintenance and monitoring of all equipment be carried out to minimize the risk of spills or leaks of petroleum-based products.
- Ensure Contractor has an emergency response plan to control any fuel spills, which will include having on site appropriate spill response equipment readily available for immediate deployment. All spills and releases must be reported to the relevant federal, provincial, or territorial government departments. The emergency response plan must include the appropriate phone number for reporting releases in the area as well as phone numbers for local authorities (Police or Fire departments).
- Ensure clean-up measures of any spills are suitably applied so as not to result in off-site impacts.
- Ensure care is taken to observe for evidence of archaeological deposits while work is being completed. Stop work if evidence shows a potential archaeological artifact or deposit and notify a provincial representative before proceeding.
- Clean-up and appropriately dispose of any deleterious substances.
- Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
- Ensure that machinery is checked for leakage of lubricants or fuel and is in good working order. Ensure that refuelling is done at least 30m from any water body or wetland and on impermeable surface. Ensure that basic petroleum spill clean-up equipment is on-site.
- Site access is restricted to authorized workers only.
- Ensure dust suppression measures (i.e. water) are applied to prevent fugitive dust (if required).
- Sediment and erosion controls shall be implemented as necessary, and visually monitored to ensure proper function. If damaged, sediment and erosion controls must be immediately repaired or replaced.
- Any hazardous materials produced as a result of the Project are to be transported off-site for disposal / treatment at an approved waste handling facility pursuant to applicable provincial and federal regulations / legislation and contract specifications.
- Project activities to comply with the provincial and federal Occupation Health and Safety Act Regulatory requirements.
- Weather conditions are to be assessed on a daily basis to determine the risk of extreme weather in the project areas. Avoid work during periods which ECCC has issued rainfall or wave warning for the work area.
- Construction material and debris shall not be permitted to become waterborne.
- Any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in navigable water shall not be permitted to remain in place after the completion of the project.
- Vessels shall be permitted safe access through the worksite at all times, and shall be assisted as necessary.
- All materials and equipment used in construction must be marked in accordance with the Collision Regulations of the *Canada Shipping Act, 2001* when located on the waterway.

Advise the Canadian Coast Guard, Marine Communication and traffic Services (MCTS) at (902) 564-7751 or toll free at 1-800-686-8676 sufficiently in advance of commencement of work or when deploying or removing site markings in order to allow for appropriate Notices to Shipping/Mariners action.