

Consultant

ROY CONSULTANTS

548 King Avenue
Bathurst, NB E2A 1P7
Tél. : (506) 546-4484
Télécopieur : (506) 548-2207

Civil:

Sylvain Comeau, P.Eng.
Tel.: (506) 546-4484, Ext.: 2239
Email: sylvain.comeau@royconsultants.ca

END OF SECTION

Section Number	Section Title	No. of Pages
-----------------------	----------------------	---------------------

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

00 01 07	Seals Page	1
00 01 10	Table of Contents	2
00 01 15	List of Drawings	1
00 40 00	Special Conditions	2

DIVISION 01 – GENERAL REQUIREMENTS

01 11 00	Summary of Work	4
01 31 19	Project Meetings	3
01 32 16.07	Construction Progress Schedule – Bar (Gantt) Chart	3
01 33 00	Submittal Procedures	5
01 35 29.06	Health and Safety Requirements	3
01 35 43	Environmental Procedures	3
01 45 00	Quality Control	2
01 51 00	Temporary Utilities	2
01 52 00	Construction Facilities	3
01 53 00	Traffic Control	3
01 56 00	Temporary Barriers and Enclosures	2
01 61 00	Common Product Requirements	4
01 74 11	Cleaning	2
01 77 00	Closeout Procedures	2
01 78 00	Closeout Submittals	3

DIVISION 31 – EARTHWORK

31 05 16	Aggregate Materials	4
31 24 13	Embankments	5
31 32 19.01	Geotextiles	3
31 37 00	Rip-Rap	3

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 15 60	Roadway Dust Control	1
----------	----------------------	---

DIVISION 33 - UTILITIES

33 41 00	Storm Utility Drains	2
----------	----------------------	---

APPENDICES

Appendix A	Silt Curtain
Appendix B	Mitigation Measures

END OF SECTION

Drawing Number	Title	Rev. Number	Rev. Date
036-23-1-C1	Existing Condition	O	Sept. 26,2023
036-23-1-C2	Site Plan	O	Sept. 26,2023
036-23-1-C3	Cross Sections	O	Sept. 26,2023

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. If there are property pins in 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 removed from job site.

- .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.

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.

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 Construction of a containment cell complete with drainage piping;

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 **Thirty (30) days** 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.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 32 16.07 – Construction Progress Schedules – Bar (GANNT) 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 Containment Cell.
 - 4. Rip-Rap Installation.
 - 5. 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 The contractor shall provide a silt curtain/mitigation measures to surround and/or isolate the work area (see drawing 036-23-1-C2). Silt curtain will be paid as a lump sum item (see Tender Form). Cost to include supply, installation, maintenance, removal, and disposal of silt curtain. Silt curtain must be full height of water. Silt curtain will be Terratrack 400 w or approved equivalent- See Appendix A.

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 24 13 - Roadway Embankments.
- .2 Section 31 37 00 – Rip Rap.

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 24 13 – Roadway Embankments.

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.

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 31 37 00 – Rip Rap.

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 DESCRIPTION OF WORK

- .1 The work under this section consists of, but is not limited to the following:
 - 1. Cut and fill to create a level bottom for the containment cell and to build the containment cell berms.

1.2 RELATED REQUIREMENTS

- .1 Section 01 53 00 – Traffic Control.
- .2 Section 31 37 00 – Rip Rap.

1.3 REFERENCES

- .1 ASTM D1557, latest revision, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (2700 kN-m/m³).
- .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, “cut and fill” for the containment cell construction and “cut and stockpile, cut from the stockpile and fill” for the installation of shoreline protection.
 - .1 Cut and Fill: Excavation of the containment cell area to create a level bottom for the containment cell and to build the containment cell berms. This work is identified as “Cut and Fill” in the tender form.
 - .2 Borrow: Supply and install borrow material. Borrow is defined as granular material with maximum particles of 200 mm and less than 25% passing the 0.075 mm sieve. This work is identified as “Borrow” in the tender 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 Cut and Fill: Measure in cubic meters calculated from cross sections taken by Consultant in areas of excavation. This item will be paid as “Cut and Fill” in the tender form. Payment is to include the excavation, removal and/or placement of excavated materials to level the bottom of the containment cell and to construct the containment cell berms.

- .2 Borrow: Measured in cubic meters calculated from tonnage and unit weight. This item will be paid as “Borrow” in the tender form. Payment is to include the supply and installation placement of materials to level the bottom of the containment cell and to construct the containment cell berms.
- .3 No separate payment for:
 - .1 Excavating unnecessarily beyond lines established;
 - .2 Scarifying existing road surfaces;
 - .3 Watering, drying and compacting;
 - .4 Finishing.

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 Granular materials require approval by Consultant.
- .2 Material used for cut and fill and borrow shall 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 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.

3.2 WATER DISTRIBUTORS

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

3.3 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.

3.4 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.

3.5 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.

3.6 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.

3.7 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.

3.8 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 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 31 37 00 – Rap Rap.

1.2 MEASUREMENT FOR PAYMENT

- .1 Supply and installation of G-2 Geotextile (for the containment cell drainage pipe berm) will not be measured for payment, but shall be considered as incidental to the containment cell drainage berm unit price.
- .2 Supply and installation of G-3 Geotextile which is placed under the R-50 Rip Rap, will be paid by the square metre of material acceptably installed.

1.3 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 11.2, Textile Test Methods - Bursting Strength - Ball Burst Test.
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
 - .1 No.2, Methods of Testing Geosynthetics - Mass per Unit Area.
 - .2 No.3, Methods of Testing Geosynthetics - Thickness of Geotextiles.
 - .3 No.6.1, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
 - .4 No.7.3, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .5 No. 10, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

1.4 SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Owner's appointed Consulting Engineer following samples at least two (2) weeks prior to beginning work.
 - .1 Minimum length of 2 m of roll width of geotextile.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

Part 2 Products

2.1 MATERIAL

- .1 Geotextile: non-woven synthetic fibre fabric, supplied in rolls.
 - .1 Composed of: minimum 85% by mass of polypropylene with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure for 60 days.
 - .2 Physical and Hydraulic Properties:

Table 2.1.2 “Physical and Hydraulic Properties of Geotextiles”							
Values are minimum requirements			Fabric Type				
Property	Unit	CAN/CGSB	G1	G2	G3	G4	---
Tensile Strength	N	148.1 No. 7.3-92	755	900	1450	2500	---
Elongation at Break	%	148.1 No. 7.3-92	55-85	75-100	70-100	65-95	---
Tear Propagation Trapezoid Method	N	4.2, No. 12.2-95	325	375	600	1050	---
Bursting (Mullen)	KPa	4.2, No. 11.1-94	2250	2450	3500	7000	---
Permeability	10 ⁻¹ cm/sec	148.1, No. 4-94	2.8	2.4	2.3	1.3	---
Filtration Opening Size (F.O.S.)	microns	148.1, No. 10-94	4590	44-105	40-80	40-70	---
Thickness	mm	148.1, No. 3-85	1.4	2.6	3.5	5.8	---

UTILIZATION GUIDELINES

Use noted fabric type for the following uses: (Refer to Section 31 37 00 for Rip-Rap gradation)

- .1 Type G1: Storm sewer pipe joints, manholes, catch basins and pipe culverts.
- .2 Type G2: Placed under R-25 Rip-Rap.
- .3 Type G3: Placed under R-50 to R500 Rip-Rap.
- .4 Type G4: Placed under R-1000 Rip-Rap or larger.

- .3 Securing pins and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600g/m² to CAN/CSA G164.
- .4 Factory seams: sewn in accordance with manufacturer’s recommendations.
- .5 Thread for sewn seams: equal or better resistance to chemical and biological degradation than geotextile.
- .2 Woven geotextile: Terrafix 400W.

Part 3 Execution

3.1 INSTALLATION

- .1 For rip-rap installation, refer to Section 31 37 00.

3.2 CLEANING

- .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner.

3.3 PROTECTION

- .1 Vehicular traffic not permitted directly on geotextile.

END OF SECTION

Part 1 General

1.1 MEASUREMENT FOR PAYMENT

- .1 Supply and installation of both the R-5 and R-50 Rip Rap will be measured by the tonne of the material acceptably supplied and installed.

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 than 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 (kg)	Size (Note 1) (mm)	Finer by Mass (%)								
		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									

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 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 SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.

1.2 MEASUREMENT FOR PAYMENT

- .1 Supply and installation of the containment cell drainage berm will be paid by the lineal metre. Payment it to include all labour, material and equipment to perform the work including the perforated HDPE piping, HDPE Cap, G-2 Geotextile, R-5 Rip Rap and R-A rip rap. Refer to details on Drawing C-2.
- .2 Supply and installation of HDPE non-perforated piping from the end of the containment cell drainage berm to the R-50 Rip Rap will be paid by the lineal metre.
- .3 Fusion (butt fusion or electrofusion) of HDPE pipe will not be measured for payment, but shall be considered as incidental to the work.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C 136, latest revision, Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .2 ASTM D 1557, latest revision, Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (2700 kN-m/m³).
 - .3 ASTM D2657, latest revision, Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings.
 - .4 ASTM F714, latest revision, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Inform Consultant at least 2 weeks prior to commencing work, of proposed source of bedding materials and provide access for sampling.

1.5 CERTIFICATES

- .1 Upon request of Consultant, submit manufacturers test data and certification.
- .2 Certification, date of manufacture and name or trademark of manufacturer to be marked on pipe.

1.6 SCHEDULING

- .1 Schedule work to minimize interruptions to existing services and to maintain existing flow during construction.

- .2 Submit schedule of expected interruptions for approval and adhere to approved schedule.

Part 2 Products

2.1 HDPE PIPE

- .1 Polyethylene pipe (HDPE): to ASTM D3035, ASTM F714.
 - .1 Pipe Wall Thickness: DR17
 - .2 Acceptable material: Sclairpipe or approved equal.
 - .3 Perforation: As per details on Drawing C-2.
 - .4 HDPE Cap: DR17, capable of being fused to HDPE pipe.

2.2 GEOTEXTILE

- .1 Refer to Section 31 32 19.01 – Geotextiles

2.3 RIP RAP

- .1 Refer to Section 31 37 00 – Rip Rap.

Part 3 Execution

3.1 PREPARATION

- .1 Clean pipes of debris and water before installation, and remove defective materials from site to approval of Consultant.

3.2 PLACEMENT OF FUSED PIPING

- .1 Lay fused piping on the prepared containment cell bottom as indicated on drawings.
- .2 Fuse HDPE cap onto pipe end prior to placing R-5 Rip Rap.
- .3 Place R-5 Rip Rap over HDPE perforated pipe to dimensions as indicated on Drawing C-2.
- .4 Place G-2 Geotextile over the top of R-5 Rip Rap.
- .5 Place R-A rip rap onto the G-2 Geotextile at thickness of 0.15 metres.
- .6 HDPE pipe is to extend to the R-50 Rip Rap.

END OF SECTION

APPENDIX « A »

Silt Curtain

Canada's leader of complete geosynthetic solutions

terrafix[®]
geosynthetics inc.



terrafix[®]
Silt Curtains

To view our complete product line visit us at www.terrafixgeo.com



terrafix® Silt Curtains are designed to deflect and contain sediment within a designated area. Manufactured from high strength geotextiles and fabricated to a variety of sizes.

Provide sedimentation protection for a watercourse from land disturbance or from dredging or filling within the watercourse. Placed in a water body, they minimize sediment migration from a disturbed area by enclosing the area of work so as to provide an enclosed area.

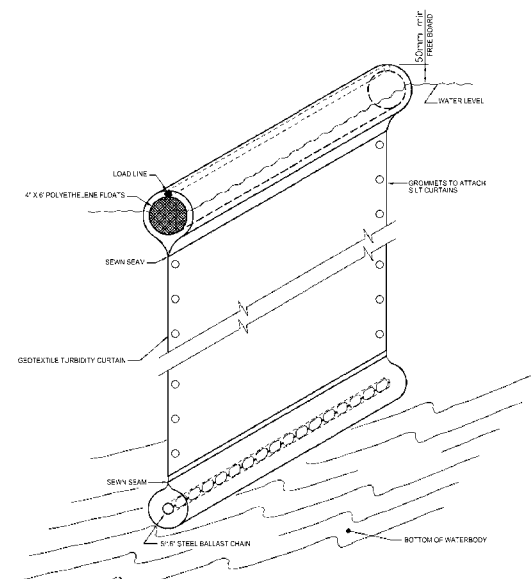
For containment of the sediments

Fabricated with a pocket sewn along the entire top edge so as to contain the flotation and load line within the pocket. A pocket is also sewn along the entire bottom edge so as to contain the ballast. Silt Curtains are provided in custom made sizes to meet project requirements. Silt Curtains can be joined to provide a continuous run by overlapping and threading them together with rope through grommets or batten strips.

terrafix® offers a wide selection of woven, nonwoven and composite geotextiles for silt curtain fabrication. The two most common recommendations are as follows:

Terratrack 400W is a high strength woven geotextile made of U.V. protected polypropylene. Terratrack 400W silt curtains offer excellent sediment deflection with a lightweight durable material.

Terrafix 370RS is a composite geotextile, combining polyester nonwoven and polypropylene woven construction. **terrafix®** 370RS offers high strength with low elongation and added durability and resistance to tearing.



PRODUCT SPECIFICATIONS FOR SILT CURTAINS				
Property	Test Method	Unit	TERRATRACK 400W	TERRATRACK 370S
GRAB TENSILE	ASTM D4632	N	1400	1000
GRAB ELONGATION	ASTM D4632	N	15	45-105
TEAR RESISTANCE	ASTM D4533	N	533	425
PUNCTURE RESISTANCE	ASTM D4833	N	533	n/a
APPARENT OPENING SIZE (A.O.S.)	ASTM D4751 (U.S. Sieve)	mm	0.425	.015

The information contained herein has been compiled by Terrafix Geosynthetics Inc. and is, to the best of knowledge, true and accurate. All suggestions and recommendations are offered without guarantee. Final determination of suitability for use based on any information provided is the sole responsibility of the user. There is no implied or expressed warranty of merchantability or fitness of the product for the contemplated use.

DISTRIBUTED BY

terrafix®
geosynthetics inc.

455 Horner Avenue
Toronto, Ontario • M8W 4W9
Telephone (416) 674-0363
Fax (416) 674-1159

APPENDIX « B »

Mitigation Measures

MITIGATION MEASURES

1 GENERAL

- .1 Work under this contract will be monitored regularly and mitigation measures adjusted as required to meet the applicable federal, provincial and municipal acts, regulations, codes, standards and guidelines as required.
- .2 Ensure applicable permits, articles, notices and orders are maintained and posted on site in a conspicuous location in accordance with all applicable acts and regulations

2 TRANSPORTATION

- .1 Transport hazardous materials and hazardous waste in compliance with the Transportation of Dangerous Goods Act.
- .2 Maintain trucks clean and free of excessive mud, dirt, and other foreign matter.
- .3 All trucks to be equipped with watertight seals in their boxes to prevent leakage during the loading and transporting of dredge material.
- .4 Secure contents against free board spillage when excavating, loading and hauling material. Do not overload trucks when hauling material and avoid potential release of contents, and of any foreign matter onto highways, roads and access routes used for the work. Immediately clean any ground spills and soils to extent as directed by authority having jurisdiction.

3 WORK SITE ACCESS

- .1 It will be the Contractor's responsibility to gain access to all areas of the work site.
- .2 Use public roadways and established access routes whenever possible and provide appropriate signage and traffic control personnel as required.
- .3 Ensure that public and private road surfaces remain free from clay, mud, etc. throughout the hauling activities.
- .4 Prior to commencement of work, submit a site plan for any new terrestrial access roads on the site to the Departmental Representative for approval. Construction of new access roads will only commence after approval is received from the Departmental Representative.

4 OPERATION OF MACHINERY

- .1 Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- .2 Operate machinery on land above the high water mark in a manner that minimizes disturbance to the banks and bed of a water body.
- .3 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.
- .4 Biodegradable fluids should be considered for use in place of petroleum products whenever possible, as a standard for best practices.
- .5 No storage of vehicles or equipment/material is permitted on any beach, dune, wetland or other environmentally sensitive areas.
- .6 Do not perform cleaning and wash down within a 30-metre buffer zone of a wetland, watercourse or other identified environmentally sensitive area.
- .7 Wash down stations will be employed prior to leaving the work site; and also at the disposal site. Arrange for sufficient space adjacent to work site for conduct of operations. Exercise care so as not to obstruct or damage public or private property in the area. Do not interfere with normal day-to-day operations in progress at site. All arrangements for space and access will be made by Contractor, and submitted for review to the Departmental Representative. Coordinate use of premises with the Harbour Authority and Departmental Representative.

5 CONTAINMENT AND SPILL MANAGEMENT

- .1 Comply with federal (CEPA - Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations) and provincial regulations, codes, standards and guidelines for the storage of fuel and allied petroleum products on the site.
- .2 In the event of a petroleum spill and release into the environment, stop work and immediately notify the Departmental Representative and the Canadian Coast Guard 24-Hour Environment Emergencies Report System (1-800-565-1633). Contain spill and perform clean-up in accordance with all regulations and procedures stipulated by authority having jurisdiction.
- .3 Do not dump petroleum products or any other deleterious substances on ground or in the water.
- .4 Be diligent and take all necessary precautions to avoid spills and contamination of the soil and water (both surface and subsurface) when handling petroleum products on the site and during fueling and servicing of vehicles and equipment.
- .5 Maintain on site appropriate emergency spill response equipment consisting of at least one 250-litre overpack spill kit for containment and clean-up of spills.
- .6 Maintain vehicles and equipment in good working order to prevent leaks on site. Hoses, couplings and tanks are to be inspected on a regular basis to prevent fractures and breaks.

.7 All equipment is to be free from leaks or coatings of hydrocarbon-based fluids and/or lubricants harmful to the environment.

.8 Materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals are not to enter the watercourse.

.9 Submit to the Departmental Representative an Emergency Response Plan to be implemented immediately in the event of a sediment release or spill of a deleterious substance. Plan must include federal and provincial environmental emergency contact information and Departmental Representative's contact information. The plan must include a detailed notification process to ensure the appropriate entities are notified in the appropriate and timely manner. The plan must including roles and responsibilities in the event of an emergency.

.10 If an oiled seabird is encountered, it will be handled according to Environment and Climate Change Canada (ECCC) – Canada Wildlife Service (CWS)'s guidelines.

6 HAZARDOUS MATERIAL HANDLING

.1 Store and handle hazardous materials in accordance with applicable federal and provincial regulations, codes, standards and guidelines. Store in location that will prevent spillage into the environment.

.2 Label containers to Workplace Hazardous Materials Information System (WHMIS) requirements and keep Safety Data Sheets (SDS) on site for all hazardous materials.

.3 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when stored.

.4 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada.

.5 Workers in contact with hazardous materials must be provided with, and use regulated Personal Protective Equipment (PPE) and must have the necessary training to know how to handle the different hazardous materials in accordance with applicable health and safety and environmental regulations.

7 DISPOSAL OF WASTES

.1 Dispose and recycle construction and demolition-related debris and waste materials in accordance with provincial waste management regulations.

.2 Do not bury construction and demolition-related debris (e.g., concrete, creosote timbers, steel, impacted soil, etc.) or other waste materials on site.

.3 Do not dispose of hazardous wastes (e.g., paints, batteries, cleaners, acids, etc.) including volatile materials (e.g., solvents, mineral spirits, aerosol cans, etc.) and petroleum products on the ground, near or into watercourses, storm or sanitary sewers or in waste landfill sites. Dispose of hazardous wastes in accordance with applicable federal and provincial, regulations, codes, standards and guidelines.

.4 Chipped vegetation may be used as mulch but must not be spread into a water body or wetland.

.5 Construction material and debris is not to become waterborne. Retrieve any debris entering the marine environment without delay, when it is safe to do so.

.6 Concrete waste:

.1 Perform dumping of residual material and truck cleaning operations off site or as directed by the Departmental Representative.

.2 Do not perform washing and cleaning of concrete vehicles within 30 meters of a wetland, watercourse or other identified environmentally sensitive area.

.3 Immediately clean any accidental release of concrete on site prior to solidification.

.4 Follow environmental regulations and good practices as approved by the provincial Departments of the Environment and other authorities having jurisdiction.

8 WATER QUALITY

.1 Contractor is responsible to develop and implement an Erosion and Sediment Control Plan for the work site that will minimize the risk of entry or re-suspension of sediment in a water body during all phases of the work. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the water body or settling basin and runoff water is clear.

.2 The Plan is to be submitted for review by the Departmental Representative and should, where applicable, include:

.1 Effective sediment control measures (e.g., silt fencing, settling ponds, diversion ditches, site grading, check dams, etc.) as an initial step in the construction sequence.

.2 Measures for managing water flowing onto the site, as well as water being pumped / diverted from the site such that sediment is filtered out prior to entering a water body (e.g., pumping / diversion of water to a vegetated area, construction of a settling pond or other filtration system). The water can be pumped into a settling pond or filter bag to ensure that the concentration of sediment is below regulated discharged criteria before it reaches a water body.

.3 Measures for containing and stabilizing waste material (e.g., construction waste and materials) above the high water mark of nearby water bodies to prevent re-entry.

.4 Regular inspection and reporting details for sediment control measures to ensure they are functioning properly.

- .5 Repair methodology for erosion and sediment control measures and structures if damage occurs.
- .6 Removal methodology of non-biodegradable erosion and sediment control materials (e.g. hay mulch) once site has been stabilized. Upon completion of use, these control measures must be removed in a way so as to prevent the escape of settled sediments.
- 7 Methodology for monitoring weather, specifically rainfall and storms and altering work plans and contingency measures as a result of inclement weather.
- .3 Where work may affect water quality, schedule work in cooperation with the Harbour Authority as directed by Departmental Representative to minimize interference and impact on harbour users.
- .4 Where work may affect the water quality adjacent to water intake lines used by lobster holding facilities, fish processing facilities or other harbour users, schedule work in cooperation with the Harbour Authority, facility owners and as directed by Departmental Representative to minimize interference and impact to harbour users.

9 AIR QUALITY

- .1 Keep airborne dust and dirt resulting from the work on site to an absolute minimum.
- .2 Dust suppression by the application of water must be employed, when required. Apply dust control measures to roads, parking lots and work areas. The Departmental Representative shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil or any other petroleum products must not be used for dust control under any circumstances.
- .3 Spray surfaces with water or other environmentally approved product. Use purposely suited equipment or machinery and apply in sufficient quantity and frequency to provide effective result and continued dust control during the entire course of the work.
- .4 Fires and burning of rubbish on site is not permitted.
- .5 To reduce emissions of air contaminants and greenhouse gas, implement an idling policy that includes:
 - .1 Diesel construction equipment will be turned off when not in active use.
 - .2 Vehicles idling more than 5 minutes will be turned off.
 - .3 Morning vehicle warm-ups will be restricted to 3-5 minutes.
 - .4 A staging zone will be established for trucks that are waiting to load/unload to minimize public exposure to emissions.
- .6 Idling restrictions will not apply when:
 - .1 The engine is required to power auxiliary equipment (e.g., hoist, lift, computers, safety lights, etc.).
 - .2 Extreme weather conditions (-10° Celsius or below / +30° Celsius or above) or any other circumstance where heating or air conditioning is required for worker's health and safety.
 - .3 The original equipment manufacturer specifically recommends a longer idling period for normal and efficient operation of the motor vehicle in which case such recommended period shall not be exceeded;
 - .4 Vehicle/equipment maintenance and diagnostic purposes.
 - .5 Where the unit is not expected to restart due to mechanical issues.

10 BIRD AND BIRD HABITAT

- .1 Become knowledgeable with and abide by the Migratory Birds Convention Act regarding the protection of migratory birds, their eggs, nests and their young encountered on site and in the vicinity.
- .2 Minimize disturbance to all birds on site and adjacent areas during the entire course of the work.
- .3 During nighttime work, position flood lights in opposite direction of nearby bird nesting habitat.
- .4 Ensure that no litter (including food wastes) is left in and around the site.
- .5 Do not approach concentrations of seabirds, waterfowl and shorebirds when anchoring equipment, accessing wharves or ferrying supplies.
- .6 Do not use beaches, dunes, coastal wetlands and other natural previously undisturbed areas of the site to conduct work unless specifically approved by the Departmental Representative.
- .7 All machinery must be well muffled. If necessary, trucks may be required to avoid the use of engine brakes along specific sections of the route.
- .8 To avoid the risk of nest destruction, the proponent shall avoid vegetation clearing during the most critical period of the migratory bird breeding season, which is May 1st through August 31st.
 - .1 In the event that vegetation clearing is to take place inside the May 1st to August 31st window, a qualified biologist must inspect the area prior to potential disturbance or loss of habitat activities to ensure there will be no adverse impacts to birds and wildlife.
- .9 Should nests or chicks of migratory birds or raptors be encountered during work, immediately stop work in that area and notify Departmental Representative for directives to be followed.
 - .1 Do not disturb nest site and neighboring vegetation until nesting is completed.
 - .2 Minimize work immediately adjacent to such areas until nesting is completed.
 - .3 Protect these areas by following recommendations of Canadian Wildlife Service (CWS).

.4 Intrusive work conducted in potential migratory bird nesting habitat should be scheduled to avoid the regional migratory bird nesting period. In the New Brunswick, the regional nesting period is from mid-April to late August.

.10 Maintain a minimum distance of 300 m from all areas occupied by concentration of seabirds and waterbirds. Travel at steady speeds when close to seabird and waterbird colonies, moving parallel to the shore, rather than approaching the colony directly. Avoid any sharp or loud noises, do not blow horns or whistles, and maintain constant engine noise levels. Do not pursue seabirds or waterbirds swimming on the water surface and avoid concentration of these birds on the water.

11 FISH AND FISH HABITAT PROTECTION

.1 Monitor and assess weather forecast on a daily basis to determine the risk of extreme weather. Avoid work during periods for which Environment and Climate Change Canada had issued rainfall, storm surge or other weather warnings for the work area.

.2 Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.

.3 The release of deleterious substances into the watercourse is strictly prohibited. In the event of a release of a deleterious substance, stop work, contain sediment-laden water or other deleterious substances and prevent their further migration into the watercourse. Immediately report any spills or releases of sewage, oil, fuel or other deleterious material, whether near or directly into a water body.

12 AQUATIC INVASIVE SPECIES

.1 Be aware of the risk for contamination of the fish habitat at the site as a result of invasive (or alien species) being introduced into the marine environment.

.2 To minimize the possibility of fish habitat contamination and the spread of aquatic invasive species, all construction equipment that will be immersed into the water of a watercourse, or has the possibility of coming into contact with such water during the course of the work, must be cleaned and washed to ensure that they are free of marine growth and invasive species prior to mobilization to the site.

.1 Equipment shall include boats, barges, scows, cranes, excavators, haul trucks, pumps, pipe lines and other all miscellaneous tools and equipment previously used in a marine environment.

.3 Cleaning and washing of equipment shall be performed immediately upon their arrival at the site and before use in or over the water body.

.4 Clean, drain, decontaminate and fully dry all gear and equipment (including waders, nets, buckets, tools, boats, and trailers) before transferring from one body of water to another to prevent the transfer of disease and non-native organisms.

13 SOCIOECONOMIC RESTRICTIONS

.1 Abide by provincial and municipal regulations for any restrictions on work performed during the night time and on flood lighting of the site. Obtain applicable permits.

.2 Work equipment and machinery must be equipped with adequate muffling capacity to reduce noise on site to lowest possible level. Maintain mufflers in good operating condition at all times.

.3 Place flood lights in opposite direction of adjacent residential and business areas. Use LED lights instead of other types of lights, where possible. LED light fixtures are less prone to light trespass (i.e., are better at directing light where it needs to be, and do not bleed light into the surrounding area).

.4 Sounds such as whistle blasts and horns will be limited or replaced, to the extent possible, with radio communications.

.5 Contractor to coordinate with the local Harbour Authority prior to commencement of the work such that the schedule with the least possible conflicts will be implemented.

14 ARCHAEOLOGICAL RESOURCES

.1 All construction personnel are responsible for reporting and cultural materials, which may be archaeological resources, unearthed during construction to the Construction Supervisor. If the find is believed to be an archaeological resource, the Construction Supervisor will immediately stop work in the vicinity of the find and notify the Departmental Representative.

.2 If an archaeological and/or historically significant item (an archaeological resource) is discovered, work in the area will be stopped immediately and the Departmental Representative will be contacted as well as the provincial Archaeological Services unit:

.1 New Brunswick Department of Tourism, Heritage and Culture - Archaeological Services Branch
– (506) 453-3115.

.3 Work can only resume in the vicinity of the archaeological find when authorized by the Departmental Representative, after approval has been granted by the Archaeological Services Branch.

.4 In the event of the discovery of possible human remains or possible evidence of human burials, the work will immediately cease. If the discovery is potential, but not positively human remains, contact the Departmental Representative as well as the provincial Archaeological Services Unit. If the materials discovered are undoubtedly human remains, the nearest law enforcement agency will be contacted immediately by the Departmental Representative and/or the Construction Supervisor. Until determined

otherwise, the possible human remains should be treated as evidence in a criminal investigation. If the possible human remains are found in the bucket of heavy equipment, the bucket should not be emptied as physical evidence may be destroyed by that action. The area should immediately be designated as "Out of Bounds" to all personnel and the public. Depending on the weather and other conditions, the potential human remains should be provided with non-intrusive protection, such as covering with a cloth or canvas tarp (non-plastic preferred). Curiosity seekers should be kept off the site.