The St. Lawrence Seaway Management Corporation

Corporation de Gestion de la Voie Maritime du Saint-Laurent

A-1

SPECIFICATIONS AND DRAWINGS
FOR
REACH 7 BANK EROSION REPAIRS

(2018/19)

WELLAND CANAL, SEAWAY, NIAGARA REGION

CONTRACT No N4/045-39/021

LICENSED PROFESSIONAL ENGINEER
2018-10-30
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APPENDIX A REACH 7 BANK EROSION AREAS

SECTION 1 GENERAL

A1-1.01 SCOPE

1.01.1 This Contract consists generally of repairs to Reach 7 banks at the Welland Canal in the cities of Thorold, Welland and Port Colborne, Ontario.

1.01.2 This work is related to the following projects:

.1 Project № N4/045-39, Reach 7 Bank Erosion Repairs

.2 Project № N4/045-40, Welland Canal Bank Rip-Rap protection

1.01.3 All the bank erosion areas along Reach 7 are shown in Appendix 'A' which is enclosed with the contractual documents. The Contractor shall begin the repair work at the northern most erosion area of Reach 7 near Owner's Old Bridge 10 and shall follow the list of eroded areas provided in Appendix 'A' going southward until the total amount of Contract is consumed.

1.01.4 Invited Bidders shall note that there are two (2) Price Tables: Option A and Option B. For both options Contractor shall follow the list provided in Appendix 'A' to repair eroded areas. However, the scope for Option B is larger than Option A. Thus, under Option B more areas shall be repaired compared to Option A.

1.01.5 Invited Bidders may submit bids for one (1) or both options noted above provided a disclosure letter of the bidder's resource capacity, a detailed description of the proposed method and equipment and a preliminary schedule indicating that the options can be completed in all respects by May 31, 2019 are submitted with the bids. The St. Lawrence Seaway Management Corporation (SLSMC) reserves the right to review the proposed work plan and resources and award the work in a manner that minimizes the risk of non-completion. Therefore, the Contract may not necessarily be awarded to the lowest bidder.

1.01.6 The Owner reserves the right to award any one (1) of the options or none of the options.

1.01.7 The Owner's terms and conditions are the sole governing terms and conditions. Bidder's terms, if submitted, shall be rejected.

1.01.8 The work shall be according to the Specifications, drawings, condition of the premises and the instructions of the Owner's Representative.

1.01.9 All work shall meet the applicable CSA and OPSS standards, and CEC (Canadian Electrical Code) if necessary, unless otherwise specified.

A1-1.02 DOCUMENTS TO BE INCLUDED WITH THE TENDERS

1.02.1 The bidders shall include in their tenders the documentation specified in the A-2 Specifications (General), Subsection A2-1, Instructions to bidders.

A1-1.03 PRECEDENCE OF DOCUMENTS

1.03.1 The General Conditions and A-2 Specifications (General) are part of this Contract and are enclosed with the contractual documents deposited on the Owner's FTP site.

1.03.2 In case of an apparent conflict with respect to a particular item between the requirements of these Specifications and A-2 Specifications, the requirements of A-1 Specifications shall govern.

1.03.3 In case of an apparent conflict with respect to a particular item between the requirements of these Specifications and the drawings, the Specifications govern. For drawings, the drawings drawn with the largest scale govern; and for figured dimensions and scaled dimensions, the figured dimensions govern.

A1-1.04 SUMMARY OF WORK

1.04.1 The Contractor shall control all aspects of work to be carried out under this Contract in order to meet Owner's requirements and communicate the details to the staff that is mobilized for this purpose.

1.04.2 The following work is included in this Contract and shall be executed in compliance with the schedule presented in Subsection A1-1.05, Contract Schedule, of these Specifications.

1.04.3 The Contractor shall meet the requirements of Section 3, Marine Security (Access) including, but not limited to, the control of access to the Owner's facilities and any associated conditions during the execution of the work under this Contract.

1.04.4 The work shall include, but not be limited to, the following:

.1 Contractual and logistic requirements:

.1 The supply and updating of a detailed *Contract Schedule*;

.2 The supply and updating of all sketches, shop drawings, working methods, calculations and data sheets in accordance with the requirements of Section 4, *Drawings*, required for approval by the Owner's Representative before work begins.

.3 Meeting the following requirements at all times throughout the duration of the work:

.1 The Contractor shall furnish all protection and take all steps necessary to ensure the safety of the public, Owner and workers by fences, barricades and traffic control.

.2 The boundaries of the work site shall be laid out by the Contractor at the site in accordance with the drawings and the directions of the Owner's Representative. Once the work site has been defined on site, the Contractor shall have full responsibility for the site.

.3 As such, the Contractor shall supply, install, maintain and subsequently remove all temporary barricades and fencing required to delineate the work site, including boundary delineation on the edge of the lock in order to protect against falls and injuries.

.1 The Contractor shall also define the perimeter of temporary site installations (construction site trailers, sanitary facilities, etc.), and storage areas.

.2 Temporary barriers and fencing shall be made of wire mesh and be at least 1.8m (6') high, with all joints fastened and stands weighted, and shall be identified with the Contractor's name.

.3 If the Contractor needs to leave an access gate to a restricted area open or unlocked, the Contractor shall provide a guard at no extra cost for the Owner in order to control the access.

.4 Without limiting the extent of A-2 Specifications (General), Subsection A2-25, Protection of Existing Services, the Contractor shall protect all public services in the vicinity of work at no extra cost for the Owner.

.5 The Contractor shall identify his normal hours of work to the Owner's Representative.

.4 Supply, maintain and subsequently remove all temporary services from the work site.

.5 Design, supply, install, maintain, provide heat and lighting, and subsequently remove all access devices, scaffoldings, platforms, enclosures and forms required for the work.

.6 Design, supply, build and subsequently remove adequate systems for protecting the existing structures and equipment located in the work area to prevent any damage to them during demolition or other work.

.1 The Contractor shall submit the details of these protective systems to the Owner's Representative for review prior to starting the work.

.2 Any damage caused to the existing structures and equipment during the work shall be repaired to the satisfaction of the Owner's Representative, at no extra cost to the Owner.

.7 Perform all other work required by the drawings, Specifications and instructions of the Owner's Representative.

.8 The application for and receipt of any required Permits.

.9 Provision of new components.

.10 Rehabilitate areas of work to their original state:

.1 Removing and disposing of all waste and debris to an authorized facility.

.11 After completion of site works, the Contractor shall provide the "As built" drawings to reflect the work completed according to the requirements of these Specifications and Section 4.

.12 Completing a pre-construction and post-construction photographic survey of the worksites.

.2 Technical requirements:

.1 Supplying and installing all safety equipment to perform the work safely and effectively and removing the same upon completion.

.2 Clearing and grubbing of banks, as required.

.3 Excavating the existing slope including removal of all vegetation from the excavated area.

.4 Supplying and placing geotextile filter fabric on the slope according to the drawings.

.5 Supplying and placing rip rap material on the slope according to the drawings.

.6 Supplying and placing topsoil.

.7 Seeding of canal banks to the lines and grades according to the drawings. Seeding includes hydro-seeding, fertilizing, erosion control blanket installation and maintenance.

.8 Grading of access road to get access to disposal area, if required.

.9 If the gravel or paved road on top of the bank along Reach 7 is damaged by the activity of the construction work, the Contractor shall restore the gravel road and paved trail to its original condition. The cost for repair shall be paid according to Sections 8 and 10 of A1-Specification.

.10 Supplying and making available all the equipment necessary to permit the Owner forces to carry out the inspection of the work.

.11 Before starting any excavation, demolition, or sub grade/underground installation work, the Contractor shall complete all required service locates (cables and other underground services detection, etc.).

.12 The Contractor shall also coordinate the work with the service locates report(s) issued by the Owner as well as the onsite markings.

.1 The Owner's locates will be provided to the Contractor, prior to the start of the work. The Owner's locates are valid for thirty (30) days.

A1-1.05 CONTRACT SCHEDULE

1.05.1 The Contractor shall start the preparatory work, such as ordering materials, engineering, preparing submissions of drawings, data sheets and other information required related to the supply of materials and equipment specified in this Contract the day after receiving the Contract award notification in writing from the Owner.

1.05.2 It is of the utmost importance that the Contract work in no way interferes with Navigation which is scheduled to close on or about December 31, 2018 and to reopen on or about March 18, 2019.

1.05.3 The Contractor shall schedule the operations under this Contract according to the following requirements and milestone dates:

.1 No construction shall be carried out until Reach 7 is lowered. For dewatering schedule, see A1-2.22, Canal Operation and Water Levels.

.2 The Contractor shall schedule the operations so that all the work below the navigation water level elevation (Elev. 173.3m) is completed in all respects by March 9, 2019.

.3 Placement of geotextile and rip-rap shall be completed in all respects by March 25, 2019.

.4 The Contractor shall schedule the operations so that all the work under this Contract is completed in all respects by May 31, 2019.

1.05.4 Planning and Scheduling

.1 Within seven (7) working days of receipt of written notification of award, the Contractor shall submit a detailed critical path schedule to the Owner's Representative for review, as prescribed in A-2 Specifications (General), Subsection A2-2.1, Planning and Scheduling.

.2 The Contractor shall also submit an updated detailed description of the intended work methods and the resources to be employed on the Contract to meet the schedule.

.3 The detailed Construction Progress Schedule shall be according to A-2 Specifications (General), Subsection A2-2.1, Planning and Scheduling.

.4 The schedule shall include but not be limited to the following activities:

.1 Mobilization;

.2 Repair of eroded areas;

.3 Seeding;

.4 Restoration of existing gravel road located on top of the bank to its original condition;

.5 Demobilization.

.5 The detailed schedule shall be prepared and updated using the project management software MS Project Windows (Version 2010 or more recent). All the schedules shall be submitted to the Owner in the form of an electronic copy.

.6 The Construction Progress Schedule shall be detailed enough so that all Contract activities are clearly identified, showing their start dates, completion dates, interdependencies, including the critical path of the project.

.7 The Contractor shall indicate in the detailed schedule the number of work shifts required to comply with the completion dates of the above-mentioned work.

.8 Duration times indicated for activities shall be in full days only.

.9 The Contractor shall allow for lost days in the schedule due to inclement weather.

.1 The Owner will not provide the Contractor any additional time as a result of inclement weather.

.10 All Owner milestone dates and specified requirements shall be incorporated and met by the detailed schedule.

.11 Upon review of the detailed schedule by the Owner's Representative, the schedule will be deemed the "*Contract Schedule"* for all future comparisons.

.12 All the deadlines, the hold points and specific requirements prescribed by the Owner shall be incorporated in and respected by the Contract Schedule.

.13 The Contractor shall allow in the schedule for delays in accessing the locks due to security rules and restrictions in place.

1.05.5 Progress Updates

.1 Once work has begun, the Contractor shall update the schedule weekly by reporting the status of all activities in progress or modifying the schedule to reflect the actual sequence of construction, as prescribed in A-2 Specifications (General), Subsection A2-2, *Progress Statements*.

.1 All critical activities that indicate lack of satisfactory progress during the course of the work shall be worked on a maximum accelerated basis, at no extra cost to the Owner until such time as they are back on schedule.

.2 The weekly updated schedule shall be delivered to the Owner no later than 10:00 a.m. each Monday.

1.05.6 The Contractor shall inform himself of the applicable safety and security rules which may have an impact on the planning and scheduling of the Contractor's work. The Owner will not allow any additional time to the Contractor due to the imposition of safety and security rules or restrictions.

1.05.7 If the Contractor does not present a Construction Progress Schedule or the updates to the satisfaction of the Owner Representative as prescribed in these Specifications, the Owner Representative will hold back part of or the totality of the payments related to the work already executed, until said schedule has been submitted for review and accepted.

A1-1.06 EXTENSION OF THE 2018 NAVIGATION SEASON (OPTIONAL)

1.06.1 The St. Lawrence Seaway Management Corporation reserves the right to extend the 2018 Navigation Season by seven (7) days from the initial closing date as specified in A-1 Specifications, Subsection, A1-2.22, Canal Operations and Water Level. This decision will be confirmed in writing to the Contractor no later than December 1, 2018.

.1 However, before the closing of the Navigation Season and after obtaining the prior approval of the Owner's Representative the Contractor may mobilize equipment at the construction site and carry out preliminary work on the condition that they do not interfere in any way with navigation in the canal.

1.06.2 The Contractor shall note that the milestone dates for completion of the work as specified in A-1 Specifications, Subsection A1-2.22, Canal Operations and Water Level for the opening date of 2019 Navigation Season will not be altered.

1.06.3 The Contractor shall enter in Item 1, Extension of the 2018 Navigation Season (Optional) of the Price Table, all the additional costs incurred by extending the 2018 Navigation Season by seven (7) days.

1.06.4 The Contractor will not be able to claim afterwards any additional costs associated with this item of payment and any claim in relation to this item of payment will be inadmissible.

1.06.5 The Contractor must take note that Extension of the 2018 Navigation Season (Optional) is dependent on a decision of the Owner to extend or not the 2018 Navigation Season.

1.06.6 The total price, including Item 1 of the Price Table for the Extension of the 2018 Navigation Season (Optional), will be used for determining the lowest tender and will be the price upon which an award decision will be made. In the event that the SLSMC decides not to extend the 2018 Navigation Season, Item 1 will not be paid.

A1-1.07 WORK, MATERIALS AND EQUIPMENT SUPPLIED BY THE OWNER

1.07.1 The Owner will carry out the following work:

.1 Identifying all Owner-owned electrical cables and ducts in the work area Note: the Contractor shall be responsible for all other public utility locates.

.2 De-energize the power transmission line from within the work area before commencement of the construction work.

A1-1.08 CONCURRENT OPERATIONS AND CONTRACTS

1.08.1 The Contractor shall note that other Contracts are scheduled to be carried out in the general vicinity of this Contract and the work will need to be planned so as not to interfere with other Contractors.

1.08.2 The Contractor shall note that the Owner's employees will need to access the construction site to perform contract inspection work. Therefore, the Contractor shall expect occasional disturbances in this Contract.

1.08.3 The Contractor shall provide means to temporarily delineate the Contractor’s work area from others’ work areas. The Contractor’s Superintendent or Safety Representative shall hold a meeting with the other parties to discuss the delineation plan and any other safety, security or other impacts on the work of either party.

1.08.4 Various other Contractors and the Seaway will share the use of the haulage or other routes to and from the worksites with this Contractor.

1.08.5 The Contractor for this work shall not interfere with the operations of other Contractors.

1.08.6 The Contractor shall be fully responsible of all damage caused to a third party directly or indirectly arising from the work of the Contract and shall hold harmless and compensate the Owner of all claims which may arise.

1.08.7 The Contractor shall take into account, in their bid price, the occasional disturbances that might result from the construction work executed by the Owner's employees or by other Contractors.

.1 Any claim by the Contractor for changes to work sequences or the working methods caused by these occasional disturbances will be disallowed.

.2 The Owner commits to act diligently in order to reduce the interruptions as much as possible and to notify the Contractor without delay of disturbances that may impact its work.

A1-1.09 WORKMANSHIP

1.09.1 The Contractor shall follow acknowledged good construction practice in order to attain the finished results prescribed in these Specifications.

1.09.2 Only skilled Tradespersons appropriately trained and certified shall be employed in carrying out this work.

1.09.3 The elements adjacent to the work areas shall not be damaged or soiled by the Contractor. Any element or piece which has been affected by the work shall be repaired, straightened and cleaned by the Contractor to the satisfaction of the Owner's Representative.

1.09.4 Any remedial work required due to faulty workmanship, or by non-adherence to the Specifications shall be carried out by the Contractor to the satisfaction of the Owner's Representative at no additional cost to the Owner.

1.09.5 All work shall be first-class quality.

A1-1.10 WARRANTY

1.10.1 The Contractor shall provide to the Owner a warranty of one (1) year on the new equipment and components installed under this Contract.

.1 For components supplied by the Owner the one (1) year warranty shall only cover the installation work by the Contractor.

1.10.2 During the warranty period, all fees related to parts, labour, travelling and transport shall be covered.

1.10.3 The Contractor shall repair or replace any defective parts utilized under normal use during the whole warranty period, at no cost to the Owner.

1.10.4 The warranty shall start at the date of the final progress payment.

A1-1.11 PROVISIONS FOR COMMUNICATIONS WITH THE OWNER

1.11.1 The Contractor shall have a cellular mobile telephone available at all times during the contract work in order for the Owner to be able to contact the Contractor in case of emergency.

1.11.2 The Contractor shall provide the following communication services over the entire Contract site period:

.1 A telephone number that can be used by the Owner twenty-four (24) hours a day, seven (7) days a week to immediately contact the Contractor's Superintendent or designate.

1.11.3 Prior to the start of the work, the Contractor shall provide the Owner's Representative a list of all the key personnel responsible of the construction site, including the mobile phone numbers where they can be reached at all times.

1.11.4 During the Navigation Season, the Contractor may have to remain in constant communication with the Traffic Control Centre.

A1-1.12 ADDRESS OF OWNER'S REPRESENTATIVE

1.12.1 Unless otherwise specified, correspondence, reports, design briefs, drawings and copies of purchase orders, etc. shall be addressed to:

The St. Lawrence Seaway Management Corporation

Niagara Region :

Andrew Bator, P. Eng.

Senior Contracts Engineer

508 Glendale Avenue | P.O. Box 370

St. Catharines ON L2R 6V8

Tel.: 905-641-1932 ext. 5384

Fax: 905-682-1745

Email: abator@seaway.ca

A1-1.13 CONTRACT ADMINISTRATION

1.13.1 The Project and Contract will be under the administration of the Vice-President, Operations at the address indicated below:

The St. Lawrence Seaway Management Corporation
508 Glendale Avenue | P.O. Box 370
St. Catharines, Ontario L2R 6V8

A1-1.14 MEASUREMENT FOR PAYMENT

1.14.1 All payment items are described under each section specifying the work and as required in the Technical Specifications.

1.14.2 The prices tendered for all the pay items shall include all labour, equipment and materials required for the satisfactory completion of the work according to the Specifications and Drawings, including the following:

.1 Work procedures.

.2 Design, installation, maintenance and removal of the safety features to protect the equipment located in the work area or vicinity, for all duration of work.

.3 The “Contractor’s Drawings”, including the “As Built” drawings, other than those which are mentioned in the other payment items.

.4 Measurements and land surveys which are required on the worksite.

.5 Coordination of work with other Contractors.

.6 Disposal of the demolition materials and other debris resulting from the work as per A1-2.11, Disposal of Materials.

.7 All site coordination work, adjustments and corrections as well as technical work required for the satisfactory completion of the work according to the Specifications.

.8 Measures required for maintaining traffic.

.9 Co-ordinating the work with others.

.10 Inspection of each phase of the work.

.11 Supplying all watchpersons, fencing and all other security measures necessary for the protection of the materials and equipment.

.12 Everything necessary to complete the work according to the Specifications and Drawings whether the specific item is mentioned or not mentioned in the Specifications or shown or not shown on the drawings.

1.14.3 The lump sum and unit prices tendered shall include the cost of all labour, equipment and materials required for the satisfactory completion of the work according to the Specifications and Drawings.

1.14.4 The work included in this contract will be measured for payment according to the following:

.1 Item 1 - Extension of the 2018 Navigation Season (Optional)

.1 The Extension of the 2018 Navigation Season (Optional) will be measured for payment on a lump sum basis.

.2 The price tendered for this item shall include the following:

.1 All costs incurred by the Extension of the Navigation Season, as specified in Subsection A1-1.06, Extension of the 2018 Navigation Season (Optional), of these Specifications.

.2 All costs of labour, equipment, materials, subcontractors, administration and other expenses incurred due to the extension of the Navigation Season as specified in Subsection A1-1.06, Extension of the 2018 Navigation Season (Optional), of these Specifications.

.3 The Contractor shall note that Item 1, Extension of the 2018 Navigation Season (Optional), is dependent on a decision of the Owner to extend or not the Navigation Season. The Owner reserves the right to extend or not the Navigation Season as covered under Item 1.

.4 The dates for completion of the work and for the opening of navigation will not be altered.

.5 The total price, including Item 1, will be used for determining the lowest tender and will be the price upon which an award decision will be made. In the event the Owner decides not to Extend the Navigation Season, Item 1 will not be paid.

.2 Item 2 – Mobilization and Demobilization

.1 Mobilization and Demobilization will be measured for payment on a lump sum basis.

.2 The price tendered for this item shall include the following:

.1 Initial mobilization, move to multiple locations starting at Owner's Old Bridge 10 W side and follow locations shown in Appendix 'A' from North going South towards Port Colborne and demobilization at the end;

.2 All safety and traffic control measures;

.3 Maintenance, clean-up and restoration of the worksite and disposal areas;

.4 Grading of access roads to work site and disposal area, which may be required during the course of this Contract.

.5 Maintenance of haul routes and access roads.

.3 The lump sum tendered for this item will be broken down for payment purposes as follows:

.1 Mobilization - 60% upon full mobilization;

.2 Demobilization - 40% upon full demobilization.

.4 Restoration of gravel road and paved trail located on top of the bank to its original condition shall be measured for payment under Pay Item 9 – Granular A and Pay Item 12 – Reinstatement of Paved Trail.

.3 Item 3 – Contract Schedule

.1 Contract Schedule will be measured for payment on a lump sum basis for a total amount of $7,500.00.

.2 The price tendered for this item shall include the following:

.1 Submission of a detailed critical path schedule, and the detailed description of work methods and resources;

.2 Submission and continuous updating of the Project Schedule;

.3 Compliance with target dates and progress projections as submitted in the weekly schedules.

.3 The lump sum tendered for this item will be broken down for payment purposes as follows:

.1 The Project Schedule upon acceptance by the Owner - 50%;

.2 Submission of and compliance to Project Schedule updates - 5% each to a maximum of 50%.

.4 Failure to submit the detailed critical path schedule and the detailed description of work methods and resources by the specified time will result in the forfeiture of 5% each week to a maximum of 50%.

.5 Failure to submit the schedule updates by the specified time and to comply with the specified requirements will result in the forfeiture of 5% each to a maximum of 50%.

.4 Item 4 – Clearing and Grubbing

.1 Clearing and grubbing will be measured for payment by the m^2 (square metre).

.2 The price tendered for this item shall include all the labour, equipment and material required for the satisfactory completion of the work as specified under Section 5.

.5 Item 5 – Excavation

.1 Excavation will be measured for payment by the cubic metre (m^3) for the calculated number of cubic metre (m^3) of the material excavated and disposed of according to Specifications and Drawings.

.2 The quantity of excavation for which payment will be made will be the volume in cubic metre (m^3) calculated by surveying the disposal area pre and post construction.

.3 The disposal area shall be prepared according to Subsection A1-2.11, Disposal of Materials.

.4 The price tendered for this item shall include all work specified in Section 6.

.6 Item 6 – Silt Curtain

.1 The silt curtain work required will be measured for payment as a lump sum.

.2 The price tendered shall include the supply, installation, removal, cleaning and moving silt curtain to multiple locations and any buoys, stakes, wires or other attachments as may be necessary.

.3 The price tendered for this item shall include all work specified related to silt curtain in Section 6.

.7 Item 7 – Geotextile Filter Fabric

.1 The geotextile will be measured for payment by the number of square metres (m^2) of geotextile filter fabric supplied and placed according to the specifications and drawing.

.2 The price tendered shall also include the supply and installation of steel pins to secure geotextile filter fabric according to the Specifications and Drawing.

.3 The price tendered for this item shall include all work specified in Section 7.

.8 Item 8 – Rip Rap Material

.1 Rip Rap Material will be measured for payment by the metric tonne (1000kg) for the number of metric tonnes of rip rap material supplied and placed according to the Specifications and Drawing.

.2 The quantity measured for payment under this item shall be based on the weigh slips.

.3 The price tendered for this item shall include all work specified related to rip-rap material in Section 8.

.9 Item 9 – Granular A

.1 Granular A will be measured for payment by the metric tonne (1000kg) for the number of metric tonnes of Granular A material supplied, placed and compacted according to the Specifications and Drawings.

.2 Granular A shall be used to restore paved trail or gravel road located on top of the bank after completion of the work.

.3 The quantity measured for payment under this item shall be based on the weigh slips.

.4 The price tendered for this item shall include all work specified related to Granular A in Sections 8 and 10.

.10 Item 10 – Topsoil

.1 Topsoil will be measured for payment by the cubic metre (m^3) for the cubic metre (m^3) of topsoil materials supplied, placed and compacted in all repair zones according to the Specifications and Drawings.

.2 The quantity measured for payment under this item shall be calculated by the truck loads (loose volume measure).

.3 The price tendered for this item shall include all work specified related to topsoil in Section 9.

.11 Item 11 – Seeding

.1 Seeding work will be measured for payment by the square metre (m^2) for the calculated number of square metre (m^2) of seeding work successfully completed according to the Specifications and Drawings and as directed by the Engineer.

.2 The price tendered for this item shall include, but not limited to, surface preparation, fertilizing, hydro-seeding, erosion control blanket installation and maintenance.

.3 The price tendered for this item shall include all work specified related to seeding in Section 9.

.12 Item 12 – Reinstatement of Paved Trail

.1 Reinstatement of Paved Trail will be measured for payment by the m^2 (square metre) for the calculated number of m^2 (square metre) of repair work successfully completed according to the Specifications and Drawings and as directed by the Engineer.

.2 The price tendered for this item shall include all labour, equipment, and materials required for the satisfactory completion of the work as specified in this section, including but not limited to the following:

.1 All safety and traffic control measures to prevent public access;

.2 Removal and disposal of damaged road materials;

.3 Asphalt pavement to the specified thickness.

.3 The price tendered for this item shall include all work specified in Section 10.

.4 The supplying, placing and compacting of Granular A material will be paid under Pay Item 9 – Granular A.

.13 Item 13 – Field Office

.1 The supplying, maintaining and subsequent removal of the field office will be measured for payment on a lump sum basis.

.2 The price tendered for this item shall also include moving field office to multiple locations, as required during course of this Contract.

.3 The price tendered for this item shall include all work specified in Section 11.

1.14.5 The costs that are mentioned in the Specifications and shown on drawings which are not specifically mentioned in the above items, shall be included in these items and be distributed among them.

SECTION 2 WORKSITE ORGANIZATION

A1-2.01 SITE CONDITIONS AND REQUIREMENTS

2.01.1 Prior to submitting tenders, bidders shall thoroughly examine the work site and access roads.

2.01.2 In particular, bidders shall take note of all unusual features which may affect the safe and successful conclusion of the work involved.

2.01.3 Tenderers shall investigate all aspects of the work in order to inform themselves of the following:

.1 The existing site conditions.

.2 The character and extent of the work to be done.

.3 The difficulties in gaining access to the work areas.

.4 The difficulties in carrying out the work.

.5 The devices and equipment required for the work.

2.01.4 The Contractor shall confirm all relevant dimensions by field inspection and field measurement with the Owner's Representative before proceeding with the work.

2.01.5 The Contractor may encounter snow or ice on the banks.

2.01.6 The Contractor shall take care throughout the work to ensure that equipment, stockpiles, excavation and any other items and activities do not overload the slopes.

2.01.7 The Contractor shall take all necessary precautions to prevent slides and sloughing.

2.01.8 Should slides or sloughing occur as a result of the Contractor's operations, the Contractor shall restore these areas, as directed by the Engineer at no additional cost to the Owner.

2.01.9 The location of the Contractor's staging area shall be subject to the approval of the Engineer.

2.01.10 No fires will be allowed for burning of debris, materials or refuse.

A1-2.02 SAFETY & PRECAUTIONS

2.02.1 In addition to the requirements of A-2 Specifications (General), Subsection A2-7, Safety Requirements, the following shall apply:

.1 The Contractor shall furnish all protection and take all steps necessary to ensure the safety of the public, Owner and workers by fences, barricades and traffic control. The Contractor's workforce by fences, barricades and traffic control. The Contractor shall erect security fences to prevent public access to the work areas.

.1 The Contractor shall ensure that the equipment conforms to the provincial and federal safety standards.

.2 The Contractor shall take all the necessary precautions to ensure that no damage is done to public or private property.

.1 The Contractor shall be solely responsible for any claims resulting from the materials being applied (e.g. paint, paint spray or oil, etc.) and inadvertently deposited on adjacent property, passing vehicles or pedestrians.

.3 Vehicular, pedestrian and cyclist traffic shall be protected and kept separately at all times from materials and equipment.

.4 The Contractor shall supply all lighting, supervision, barricades and any other equipment required for the safety of the workers to the satisfaction of the Owner's Representative, and for the night work at no additional cost to the Owner.

.5 The Contractor shall comply with the requirements of the applicable provincial regulations and to the Canada Labour Code (Safety). The Contractor shall ensure that their processes and equipment conform to the provincial and federal safety standards and SLSMC polices & procedures, where applicable.

.6 The Contractor shall obtain all licences and permits necessary for the Contract.

.7 The Contractor shall take all the necessary measures to prevent debris from falling into the lock or channel or on the Owner's property or equipment.

.1 The Contractor shall remove all such debris at no charge to the Owner, to the Owner's Representative's satisfaction.

A1-2.03 ACCIDENT PREVENTION AND WORKSITE SAFETY

2.03.1 In addition to the requirements of A-2 Specifications (General), Subsection A2-7, Safety Requirements, the following shall apply:

.1 The Contractor shall in particular conform to the requirements of the document entitled *Safety Requirements for Contractors* which is enclosed with the contractual documents deposited on the Owner's FTP site.

.1 The Contractor shall note that the term "employee" used in the Safety Requirements for Contractors document shall apply to any person, employee or not of the SLSMC, who works in the territories and structures of the Owner.

.2 The Contractor shall address safety requirements during the periodic work site meetings, in order to ensure compliance with federal, provincial and municipal regulations.

.3 Before beginning the work, the Contractor shall inform himself of the accident prevention practices applied on the Owner's property, and shall consider them in the development of the Contractor's safety program for the work.

.4 By accepting the Contract, the Contractor shall be deemed as the "Constructor" in the Province of Ontario under the Occupational Health & Safety Act, and other related regulations of the province where the work will be performed, for the designated "Workplace(s)"and act as the Work Supervisor.

.5 Before beginning the work, Contractor shall ensure that the workers have received the required training and information to safely execute the work and that all the tools and protection equipment are available and conform to the standards, laws and regulations applicable.

2.03.2 The Contractor shall provide the Owner with a copy of all the documents presented to the MOL, as well as:

.1 The Contractor shall be required to implement the Owner's "Workplace Log and Workplace Permit" process at the designated "Workplaces".

.2 The notice to the Ontario Ministry of Labour, WSIB before commencing any site work, including, but not limited to, the Notice(s) of Project and the Clearance Certificate from the WSIB.

.3 Report the number and description of any accidents involving loss of time, or safety incidents (including the incident report) that have occurred during the previous week to their employees and to those of any Subcontractor on this Contract.

2.03.3 Site Specific Safety Program:

.1 Given the fact that the work site presents a high risk for the health and safety of the workers, the Contractor shall prepare the Contractor's Site-Specific Safety Program for the construction site. This program shall be according to the applicable regulations such as the Canada Labour Code and the Code de sécurité pour les travaux de construction (S-2.1, r.6) of the Government of Quebec or the Occupational Health & Safety Act and Regulations of the Province of Ontario.

.1 The purpose of the Site-Specific Safety Program is to prevent and eliminate at the source the risks to which are exposed the health, safety and physical integrity of the workers.

.2 The Contractor shall perform the work according to the accepted Site-Specific Health and Safety Program.

.2 The Contractor shall become acquainted with the applicable safety regulations that may impact the Contractor’s work planning and schedule.

.3 In order to seek to eliminate crane accidents, hoisting equipment such as cranes shall be sized such that the maximum load lifted shall normally not exceed 75% of the crane's rated capacity. In cases when the 75% limit must be exceeded within the capacity of the load chart of the Crane, the Contractor's Owner’s Representative shall review the layout and subsequently submit details for the information of the Owner. The Contractor shall take extra care when hoisting during heavy winds.

.4 The Contractor will be solely responsible for any delay in the course of the work as well as for any penalty or expense incurred or imposed in case of non-compliance with the applicable health and safety standards.

A1-2.04 ZERO-ENERGY STATE

2.04.1 The Contractor shall consider the energy sources (hydraulic, electric, potential, residual, etc.) that need to be released or controlled on the mechanical and electrical equipment, which could be hazardous for people and for workplaces.

2.04.2 The Contractor shall set all equipment to a zero-energy state (by lockout, blocking, opening circuits, etc.) where the equipment could pose danger to the safety of the individuals during course of the work.

2.04.3 The Contractor shall ensure that the proof of zero-energy is achieved at the end of the lockout procedure.

2.04.4 Where the Contractor is working on or in the vicinity of any operable Owner equipment, the Contractor shall provide and install lock-out devices, locks and tags on the disconnect switches, in order to prevent accidental operation of the equipment.

.1 Tags shall indicate the name of the individual whose lock is installed, the Contractor's name, and the reason for the lock (e.g. "Contractor working near valve").

2.04.5 The Contractor shall check with the Owner’s Representative regarding the appropriate timing for installation and removal of lockout devices.

A1-2.05 SLSMC NO SMOKING DIRECTIVE

2.05.1 Smoking is strictly prohibited within all company buildings, while performing maintenance tasks and servicing vessels. This Directive applies to all employees, clients, contractors and visitors. Smoking is prohibited within three (3) metres of all building entrances, windows and ventilation systems. To discourage smoking around doorways, all ashtrays and garbage receptacles shall be placed beyond the three (3) metre limit at the designated areas.

A1-2.06 PROTECTION FROM FALLS

2.06.1 The Contractor shall manage worksites which are highly subject to risks of falls. Without diminishing any of their other obligations, the Contractor shall, at minimum:

.1 Install guardrails or temporary barricades as required within the Contractor's worksite.

.2 Close all worksite perimeters with construction fencing of at least 1,8m (6') high, with all joints fastened and stands adequately weighted or fastened to the surface, identified with the Contractor's name.

.3 Properly identify the worksite for danger of falls.

.4 Control the accesses at all times.

2.06.2 Any removed covers/equipment shall be stored within the perimeter of the worksite, or any other places, as indicated by the Owner's Representative.

.1 Covers/equipment need to be spaced from the ground and from one another using 6˝ x 6˝ (140mm x 140mm) timber in a safely manner.

A1-2.07 HOUSEKEEPING

2.07.1 The Contractor shall comply with any corrective request from the Owner's Representative regarding the housekeeping, in order to keep the work areas safe for every person inside.

2.07.2 The Contractor shall implement the corrective measures diligently and to the satisfaction of the Owner's Representative.

A1-2.08 MAINTAINING NAVIGATION, CYCLING AND PEDESTRIAN TRAFFIC

2.08.1 During the Navigation Season, navigation shall continue without interruption. The Contractor shall therefore expect, during the course of the work, frequent disturbances to enable marine traffic. The Contractor shall not impede the passage of ships in any way.

2.08.2 The Contractor shall perform the work under this Contract so as not to impede road, cyclist or pedestrian traffic, unless as instructed by the Owner's Representative. The Contractor shall ensure that the equipment and materials used in the course of this work do not impede in any way navigation, and also the railway, cycling and pedestrian traffic.

A1-2.09 ACCESS ROADS, CONTROL OF VEHICULAR AND PEDESTRIAN TRAFFIC

2.09.1 The access roads referred to in this section are generally shown on the Contract drawings.

2.09.2 The Contractor shall construct all additional access roads at the work areas.

2.09.3 The Contractor shall maintain all public trails operational in a safe manner for the whole duration of the work and shall ensure safe passage to pedestrians and cyclists.

2.09.4 The following requirements shall apply to access roads utilized for the work:

.1 Snow and Ice Control:

.1 The Contractor shall plough the access roads adjacent to the work site including all closed road areas clear of all snow within two (2) hours of the start of the snowfall and continuously thereafter until the cessation of the snowfall.

.2 The Contractor shall sand all access road surfaces and access ways where ice has formed so as to provide safe traction for vehicles and pedestrians.

.2 Cleaning and Maintenance Requirements:

.1 The Contractor shall keep the access roads clean of all debris at all times.

.2 During the course of the Contract, the Contractor shall maintain their access roads free of potholes and shall repair potholes as required.

.3 At the completion of the Contract work, the Contractor shall restore all access roads, detours, service, storage and work areas to their original condition upon completion of the use of these facilities unless otherwise directed by the Owner's Representative.

2.09.5 Where necessary but only as directed by the Owner's Representative, the Contractor shall remove any barricades restricting access and reinstall them at their original locations at the completion of the Contract at no additional cost to the Owner.

2.09.6 The work in the Contract shall be so carried out that it shall not interfere with the vehicular traffic on the bridge except what is authorised each day by the Owner's Representative as being necessary due to the nature of the work.

2.09.7 The Contractor shall comply with the directives of the Owner's Representative.

2.09.8 When materials are being hauled to and from the site, the Contractor shall provide traffic signs and flag persons as required by the Provincial Regulations.

2.09.9 Signs, barriers, warning lights and flagpersons shall, at all times throughout the duration of this Contract, be placed and maintained to provide adequate protection both of the public and of the work to the satisfaction of the Owner's Representative.

2.09.10 The Contractor's traffic control and signing measures shall comply with the Ontario Traffic Manual Book 7.

.1 The traffic signs and flashing arrows shall be required in order to allow a better visibility of the work site. A flashing arrow shall be placed before the high point of the superstructure of the main span , the other before the obstruction caused by the work.

.2 The Contractor shall supply and maintain suitable and sufficient signs, the sign posts with the weights required to stabilise them (no sand bags are allowed), the barriers, warning lights, flashing arrows and Jersey type safety barriers, including those required below the spans which are being cleaned and painted.

.3 The Contractor shall maintain such flag persons as are necessary.

A1-2.10 ELECTRICAL POWER

2.10.1 The Contractor shall be responsible for the supply of power required to do the work; no Owner electric power will be available to the Contractor.

A1-2.11 DISPOSAL OF MATERIALS

2.11.1 In addition to the requirements of A-2 Specifications (General), Subsection A2-28, Disposal of Materials, the following shall apply:

.1 All common excavated materials shall be disposed either off Owner's property or at the Owner's disposal sites as shown on the drawing and shall be placed as directed by the Engineer.

.2 Smaller trees, branches and shrubs shall be fed into a wood-chip machine. The wood chips shall be spread evenly in the vicinity along the slope, making sure not to contaminate the roadway, waterway and ditches. The wood chips shall be uniformly spread so that no section receives more than 25mm of debris. Any material not chipped and spread shall be removed from site and properly disposed.

.3 Large trees shall be disposed of off-site.

.4 The disposal areas shall be leveled with a bulldozer, graded to a smooth even slope to provide positive drainage and left in a neat, tidy and safe condition, satisfactory to the Engineer prior to completion of the work.

.5 Upon completion, the areas shall be flattened and sloped to the sides and the side slopes of the resulting pile shall be on a slope of approximately 4:1.

.6 The Contractor shall dispose of all refuse off the Owner's property.

A1-2.12 PROTECTION OF THE ENVIRONMENT

2.12.1 In addition to the requirements of A-2 Specifications (General), Subsection A2-10, Environmental Protection, the following shall apply:

.1 The Contractor shall comply with all the provincial and federal environmental legislation, in particular, the *Fisheries Act* at the federal level and the Regulations on *Waste Management* at the provincial level.

.2 The Contractor shall take all the necessary mitigation measures to protect the aquatic wildlife and fish breeding activities.

.3 The Contractor shall take all the necessary precautions in order to avoid the release of any substance likely to degrade the quality of the water into or near the aquatic environment.

2.12.2 The Contractor shall also comply with the following environmental mitigation measures:

.1 All the emergency materials (absorbent products, tarps, tools, etc.) shall be available at all times on the site in case of a spill of hazardous products (oil, gas oil, etc.).

.2 Have and know how to use emergency equipment in case of an accidental spill. In the event of a spill of hydrocarbons or any other noxious substances, the SPILL ACTION CENTER (SAC) **Environment Canada alert network (1-866-283-2333)** and ***The Ministry of the Environment and Climate Change, Spills Action Centre (1-800-268-6060)***, shall be notified without delay.

.3 The Contractor's machinery and equipment conform to the following conditions:

.1 Restrict vehicle traffic to the traffic areas identified by the Owner's Representative on the worksite.

.2 Place the cans or receptacles containing hydrocarbons and other hazardous products in a bin or between berms with the capacity to collect 110% of the stored reserves.

.3 Do the cleaning maintenance and refuelling of the job site machinery and the vehicles on a site designated for this purpose. Provide for an on-site supply of absorbent materials and clearly identified leak-proof receptacles, intended to receive petroleum products and waste.

.4 Store petroleum products more than thirty metres (30 m) from the shore.

.5 Ship the used oils resulting from use of the machinery and the waste away from the Owner's land and dispose of them at a site provided for this purpose.

.6 Select the machinery and equipment necessary for the performance of the work according to the special conditions and fragility of the environment. Hydraulic systems to be used near the canal shall be filled with biodegradable oils.

.7 Move the machinery away from the canal as soon as it is no longer in use.

.8 Use machinery in good working order in order to avoid any grease or fuel leak.

A1-2.13 TEMPORARY SITE SERVICES

2.13.1 The Contractor shall supply and install at the work site, at their own expense, all the temporary site services, such as water, sanitary installations, heating, Internet/network and telephone, required for the needs of the Contractor's employees and to ensure good progress of the work.

2.13.2 The Contractor shall install a job site trailer at the location designated by the Owner's Representative.

2.13.3 In order to meet their employees' needs and ensure the efficient progress of the work, the Contractor shall supply and install on the job site, at its own expense, all the temporary services, such as:

.1 Drinking water distributors.

.2 Heated sanitary facilities for the use of men and women.

.3 Electrical power.

2.13.4 At the end of the work, the Contractor shall remove their job site trailers and any other temporary service to the job site and restore the sites to their original condition.

A1-2.14 LOAD RESTRICTION ON THE OWNER'S BRIDGES

2.14.1 The Contractor shall take note that some bridge spans (movable or fixed) have limited capacities.

2.14.2 It is the responsibility of the Contractor to assure himself that any construction loads placed on the structure will not overload the structure throughout the construction activities.

2.14.3 The Contractor shall select vehicles and equipment so as to respect the structural integrity of the bridges. The Contractor shall make all the necessary modifications to selection of vehicles and equipment in order to comply with the restrictions at no additional cost for the Owner.

2.14.4 Temporary shoring or other special access equipment may be required to protect the existing structure throughout all stages of construction. The Contractor shall include all necessary equipment to protect the structure.

2.14.5 If the Contractor wishes to use vehicles whose total weight exceeds the displayed capacity or the legal load (Class 1 and Class 6 vehicles according to the SAAQ and MTQ for vehicles operating in Québec and according to the MTO criteria [Ontario Ministry] for Ontario vehicles), they shall submit a written request to the Owner's Representative at least four (4) working days prior to the work to be performed.

.1 The written application shall be accompanied by all relevant details relating to the proposed vehicles (axle loads, axle distributions, overall vehicle dimensions, etc.).

.2 If the vehicle is accepted, the Contractor shall comply with the passage requirements prescribed by the Owner's Representative.

.3 If the vehicle is refused, the Contractor shall use another vehicle or modify the weight of the loads in such a way as to make the passage of the vehicle on the Owner's decks acceptable, at no additional cost to the Owner.

2.14.6 The Contractor shall never store on the mobile or fixed bridge spans materials that might overload the capacity of these spans.

2.14.7 The Contractor shall provide in the tender price the appropriate equipment that will comply with the load restrictions as described in this Subsection, at no additional costs for the Owner.

A1-2.15 OTHER LOAD RESTRICTIONS

2.15.1 The Contractor shall not overload the existing access covers or gratings on the lock coping beyond their capacity. The capacities vary depending on the loads applied to the covers and the current condition of the covers. If the Contractor wishes to apply loads on the access covers, he shall submit a written request to the Owner's Representative at least four (4) working days prior to commencement.

.1 The written application shall be accompanied by full details of the loads that may be applied to the lids (concentrated and uniform loads applied, location of all loads on lids) and any other information requested by the Owner's Representative.

.2 If the proposal is accepted, the Contractor shall comply with the requirements prescribed by the Owner's Representative.

.3 If the proposal is rejected, the Contractor shall use other working methods and other equipment in order to modify the loads and/or their positions in such a way as to respect the capacity of the lids, at no additional cost to the Owner.

2.15.2 It is strictly forbidden to use crane outriggers on top of any cover(s).

2.15.3 No materials shall be stacked or stored on the cover(s).

2.15.4 In addition to the requirements of A-2 Specifications (General), Section A2-11, Loading Restrictions on Bridges and Other Structures, the following shall apply:

.1 The following restrictions shall apply to the vertical live loading on backfill:

.1 The vertical live loading on the backfill at a distance of 3.0m or more behind the back of the concrete Lock wall shall not exceed 1.2 tonnes/m2 at a depth of 3.0m from the surface. A 45° load spread will be allowed in determining this pressure;

.2 The vertical live loading on the backfill within 3.0m of the back of the concrete wall shall not exceed 1.2 tonnes/m2 at the surface, unless the back wall of the cable gallery is braced to accept all of the live load, in which case 1.2 tonnes/m2 at 3.0m depth will be accepted.

A1-2.16 ENCLOSURES, STAGING AND SCAFFOLDING

2.16.1 In addition to the requirements of A-2 Specifications (General), Subsection A2-24, Access Facilities, Temporary Shoring & Formwork of, the following requirements shall apply:

.1 The access facilities provided by the Contractor shall include access facilities such as crane and work platforms, elevating work platforms, staging and hanging platforms, floating barge, ladders, staircases for the inspection of the work by the Owner.

.2 The Contractor shall design, supply, construct and maintain all the staging, scaffolding, hanging platforms, portable ladders, staircases, enclosures and protective covers required to carry out the work safety and expeditiously.

.3 If the initial proposals submitted by the Contractor for the staging, scaffolding, enclosures and other access facilities, with which the Contractor was authorized to proceed with the work, prove ineffective, the Contractor shall make changes to the devices to the satisfaction of the Owner's Representative so that they conform to these Specifications, at no additional cost to the Owner.

.4 The design of the enclosures, scaffolding, staging, platforms and other access facilities as well as concrete forms, including drawings, shall conform to the requirements of all applicable regulations.

.5 The design of the enclosures, scaffolding, staging, platforms, stairways and other access facilities shall conform to the requirements of the National Building Code.

.6 If required for the project, the drawings shall bear the seal and signature of a Professional Engineer registered with Professional Engineers Ontario (PEO) who is responsible for the design of the enclosures, scaffolding, stairways and other access facilities for this Contract. The Contractor will not be given authorisation to start the work before submitting drawings for these, including:

.1 Any field changes made to the enclosures, platforms, scaffolding, stairways and other access facilities after the initial design shall be approved by the Engineer responsible for their design.

.7 In case the scaffolding and enclosures have to be attached to the structure of the lock concrete, the Contractor shall carry this out in such as a manner as to respect the integrity of the structure.

.8 The drawings of the scaffolding and the enclosures shall show the loads transferred to the lock concrete.

.1 The Professional Engineer shall ensure that the lock concrete has the adequate capacity to support all the loads transferred by the scaffolding and the enclosures and the live loads as well.

.2 The Professional Engineer shall submit the stamped design documents to the Owner's Representative for review.

.9 A copy of these drawings shall be kept available at site at all times while the work is being executed.

.10 The enclosures, the work platforms and the scaffoldings shall be constructed in such a manner as to prevent materials and debris from falling due to the work done by the Contractor and to prevent the welding work from catching on fire.

.11 The enclosures and scaffoldings shall be constructed in such a manner as not to obstruct inspections or surveys by the Owner's personnel.

.12 The Contractor shall provide a level of illumination inside the enclosures of at least 50 foot-candles during the work.

.13 The Contractor shall provide the necessary equipment and materials in order to get the required heat level required to heat the enclosures and successfully carry out all the work included in this Contract.

.14 Materials, debris or other waste materials collected or accumulated within the full enclosure shall be removed and contained so as to prevent their escape.

.15 Before moving or removing enclosures, work platforms, scaffolding and staging, the Contractor shall perform whatever clean-up or removal of collected materials may be necessary to prevent their escape.

A1-2.17 SUPPORTS, BRACING AND TEMPORARY REINFORCEMENTS

2.17.1 The Contractor shall ensure that the work methods used for the work do not jeopardize the resistance or the stability of the elements or the structure as a whole.

2.17.2 Before removing the connections which secure the components to be replaced, the Contractor shall supply and install all the temporary bracings required to ensure the continuous resistance and stability of the structure as well as to ensure the efficient control of the forces towards the resistant elements and the foundations.

.1 Those bracings and temporary devices shall stay in place until the new parts are installed, then bolted or welded, as appropriate.

2.17.3 The Contractor is fully responsible for the design, supply, maintenance and removal of all temporary supports and devices.

2.17.4 Upon request, the Contractor shall submit to the Owner's Representative for review the description of the methods and the construction sequence intended to be used for the work, as well as the calculations and details of the proposed temporary supports, devices and reinforcements.

2.17.5 The calculations and drawings of temporary structures, as well as the construction methods and sequences submitted shall bear the signature and stamp of a Professional Engineer licenced by Professional Engineers Ontario (PEO).

2.17.6 The supports and temporary devices shall be designed in conformity with the CAN/CSA-S6, Highway Bridge Design Standard.

2.17.7 The temporary supports for the elements shall be designed to take the dead load of the supported parts and any other load present or susceptible to be applied to the element.

2.17.8 The bracings and temporary reinforcements used to compensate the partial disassembly of the chords shall be designed to offer a resistance which meets the capacity of the disassembled elements (rivets, bolts, plates and others).

A1-2.18 PROTECTION OF NEW AND EXISTING EQUIPMENT

2.18.1 The Contractor shall take every precautionary measure to protect the equipment, materials, accessories and components supplied by the Owner.

2.18.2 The Contractor shall take all necessary precautions to ensure that the structural and mechanical components are in good working order and kept clean and free from environmental contamination, sand, dust, dirt and other substances arising from the operations under this Contract throughout the course of the work.

2.18.3 The Contractor shall take full responsibility for the damages that may be caused to the Owner's equipment, and shall promptly clean or repair any damage to any such machinery or parts used during this Contract to the satisfaction of the Owner's Representative, at no additional cost to the Owner.

A1-2.19 CLEAN-UP

2.19.1 The Contractor shall clean up and tidy the worksite on a daily basis and permit no undue amounts of debris, trash, and/or garbage to accumulate.

2.19.2 At the completion of the work, remove all surplus materials, tools, plant, rubbish and debris and dispose of them in an approved manner off Owner's property.

2.19.3 Perform final clean-up with power sweeper and power washer to ensure all work areas are free of rubbish and debris such as nails.

A1-2.20 TEMPORARY INSTALLATIONS

2.20.1 The Contractor shall supply, installation, maintenance and subsequent removal of all shoring and hoarding required for the protection of mechanical and electrical systems, including utility services;

2.20.2 Should any material of any nature become deposited in the navigation channel, the Contractor shall immediately notify the Owner's Representative and the SLSMC Traffic Control Centre and shall take immediate steps as directed by the Owner Representative to remove the material at no additional cost to the Owner.

2.20.3 The channel shall be freed of any equipment during the periods of inactivity, more particularly at the end of each day of work, or when the Contractor is not effectively working in the channel.

2.20.4 The Owner will not be responsible for any damage to the Contractor's plant, equipment, personnel and material caused by or as a result of shipping operations in the channel.

A1-2.21 USE OF EXPLOSIVES

2.21.1 Explosives shall not be used to do the work included in this Contract.

A1-2.22 CANAL OPERATION AND WATER LEVELS

2.22.1 The water level at Reach 7 will be lowered approximately 0.9 metres to elevation 172.4 metres (IGLD'85 Datum) between January 7, 2019 and March 13, 2019.

A1-2.23 CONTROL OF ICE, WATER AND SNOW

2.23.1 The Contractor shall be responsible for the removal of snow and ice on the accesses to the work trailer.

2.23.2 The Contractor shall also be responsible for the removal of snow and ice required locally to allow the performance of the work and along the access roads. The Contractor shall regularly place sand on the passageways from the work trailers to the work sites or on slippery passages.

2.23.3 Damage to the works, loss of production, additional overhead, or additional costs of any kind that may be attributable to the Contractor not complying with the present Subsection shall be the Contractor's responsibility at no additional cost to the Owner.

2.23.4 The Contractor shall supply, install, maintain and subsequently remove all the materials required for the removal of snow and ice.

2.23.5 At the end of the work, remaining ice and snow shall be removed to the satisfaction of the Owner's Representative as not to affect the proper functioning of the equipment.

2.23.6 The Contractor shall supply, install, maintain and subsequently remove all the materials required for the removal of snow and ice.

SECTION 3 MARINE SECURITY (ACCESS)

A1-3.01 GENERAL

3.01.1 For the term of this Contract, the Contractor shall comply with the requirements of Section A2-8, *Security Requirements*, of Specifications A-2 (General), and the specifications set out in this Section.

3.01.2 The Contractor shall at all times be in compliance with *Transport Canada Marine Transport Security Regulations (MTSR)*, as applicable.

3.01.3 In this context and in order to comply with the *MTSR*, the Contractor shall meet the following security requirements at all times:

.1 In order to have access to the Owner's properties, the Contractor's employees and those of its subcontractors shall possess a valid security pass, issued at no cost by the Owner. In the *Marine Security Awareness Guide – St. Lawrence Seaway Management Corporation,* each type of security pass is detailed according to its access rights and limitations.

.1 The "R1" pass holder with photo shall be able to identify himself to the Owner's operator by means of a valid piece of photo identification issued by a government agency, and may:

.1 Have an access card or keys giving access to certain areas of the Owner's properties.

.2 Escort "T" pass holders.

.1 If the "R1" pass holder who is escorting one or more workers with a "T" pass must leave his team of workers, the Contractor shall immediately assign another person with an "R1" pass to escort the worker or workers with a "T" pass.

.2 The "R1" pass holder shall not be more than six metres (6m) away from "T" pass holders.

.2 The "T" pass may be provided by the Contractor's representative to a person without an "R1" pass who must access the work site including, without being limited to, the driver of a cement mixer truck, crane or delivery truck, skilled workers and technical representatives.

.1 The pass shall be issued before accessing the Owner's facilities.

.2 The "T" pass holder shall be able to identify himself by means of a valid piece of photo identification issued by a government agency.

.3 "T" pass holders shall be accompanied at all times by an "R1" pass holder while inside restricted areas.

.4 Only Contractor's representatives trained in the issuance of "T" passes may do so.

3.01.4 Any person without a security pass will not be authorised to enter a restricted area.

.1 It is advisable for the Contractor to obtain more than one "R1" pass for its personnel and for its subcontractors' personnel in order to have greater autonomy.

.2 Each "R1" pass carries a unique number and is not transferable from one person to another.

.3 All security pass holders are required to wear it on their outer clothing above the waist and so the pass information is visible at all times when they enter or remain in a restricted area.

.4 The validity periods of the passes are the following:

.1 "R1": Maximum of one (1) year from the date of issue.

.2 "T": Issued daily by the Contractor's representative, valid for twenty four (24) hours only. All "T" passes shall be stored on site and inventoried daily.

3.01.5 The Contractor shall return all "R1" and "T" passes to the Owner at the completion of the work. The Owner will store valid security passes for reissue for future work, if applicable.

3.01.6 Any non-compliance with the Owner's requirements may result in the expulsion from the Owner's restricted areas of the infringer who shall only re-enter the premises once the situation has been corrected and with the approval of the Owner's Representative.

3.01.7 The specific requirements for marine security shall be covered during work site meetings to ensure compliance with the rules and directives in place at the Owner's properties.

3.01.8 The Owner will not accept any claim for additional costs from the Contractor arising from delays or loss of productivity caused in any way whatsoever relating to the security instructions mentioned in these Specifications.

.1 The Contractor shall also prepare its schedule taking into account the security instructions mentioned in these Specifications. The Owner will not give the Contractor additional time to perform the work due to time lost in order to comply with the security instructions.

A1-3.02 ACCESS AND CIRCULATION ON THE LOCKS AND THE OWNER'S OTHER FACILITIES

3.02.1 This subsection does not apply to this contract.

A1-3.03 WORKERS AND VISITORS LOG FOR THE CONTRACTOR

3.03.1 The person responsible for the Contractor's teams at the work site shall keep a ***Workers and Visitors Log for the Contractor*** with the names of the workers, the "R1" and "T" pass numbers as well as the signatures of all entrants, including Contractor's workers, its subcontractors' workers as well as the visitors at the work site.

.1 The *Workers and Visitors Log* shall be completed and signed by all the persons present at the work site every day.

.2 The *Workers and Visitors Log* shall be managed by the person responsible for the Contractor's teams at the work site and be available in a binder at the work site at all times.

.1 At any time, the Owner's or Transport Canada's Representative may ask the Contractor to provide him with the *Workers and Visitors Log for the Contractor*.

.2 All of the Contractor's personnel are subject to observation and verification and consequently shall have a valid government issued piece of ID with photo available for identity check purposes in addition to their "R1" or "T" pass.

.3 Holders of access cards and keys may also be checked by the Owner's or Transport Canada's Representative(s).

.3 The form to use for the *Workers and Visitors Log for the Contractor* will be given to the Contractor by the Owner's Representative.

.4 Before each payment to the Contractor, a .pdf version of the *Workers and Visitors Log for the Contractor,* duly filled and signed on the date on which the work has been completed for payment shall be returned to the Owner's Representative.

.1 The Owner shall hold any payment due to the Contractor until the *Workers and Visitors Log* is provided.

.5 At the end of the work and before the final payment, the original *Workers and Visitors Log for the Contractor,* duly filled and signed at the end of the work shall be returned to the Owner's Representative.

.1 The Owner shall hold the final payment due to the Contractor until all completed Workers and Visitors Logs are returned.

A1-3.04 ISSUANCE CONDITIONS OF "R1" PASSES, "T" PASSES, KEYS AND ACCESS CARDS

3.04.1 Issuance Conditions for "R1" and "T" passes

.1 Every "R1" pass applicant shall read the ***Marine Security Awareness Guide – Saint Lawrence Seaway Management Corporation*** in order to comply with the Owner's requirements for marine security.

.1 This guide is available on the FTP site with the tender documents.

.2 Every "R1" pass applicant shall fill out and sign (before a witness) the form Commitment to Meet the Requirements of the Marine Security Awareness Guide / Consent for the use of a Personal Identification – St. Lawrence Seaway Management Corporation.

.1 This form is available on the FTP site with the tender documents.

.3 Each "R1" requestor shall submit electronically a passport-style photo, "jpeg" format. Note: Jpeg Photos must be similar to a passport picture, it must be a clear colour photo ranging from the shoulders to the head. (no hardhats, no safety glasses)

.4 Only "R1" pass holders can request "T" passes.

.1 A maximum of 10 "T" passes can be issued to a "R1" pass holder.

.5 The passes carry a unique number and are not transferable from one person to another.

.6 All "R1" and "T" passes shall be returned to the Owner's Representative at the end of the contract.

.7 All "T" passes are valid for a period of twenty four (24) hours only.

3.04.2 Issuance Conditions of Access Cards

.1 The Owner may make access cards available to the Contractor which will allow the Contractor to open certain gates to controlled areas and certain buildings or rooms in which the Contractor will be required to perform work.

.1 The Contractor shall note that access cards will not allow the Contractor to open any gates to restricted areas.

.2 An access card has a unique number and may only be given to an "R1" pass holder. <u>It cannot be used by anyone other than the assignee.</u>

.3 There is no cost to obtain an access card, but the loss or deterioration of an access card shall follow the requirements of Clause A1-3.05.5.2.

.4 The expiration date of the access cards will be the end of the work.

.1 The expiry date of the passes will be updated by the Owner's Representative if the Owner extends the duration of the work beyond the completion date prescribed by the contractual documents.

3.04.3 Issuance of Keys for Access to Padlocked Gates (Non-Motorised) for Niagara Region Structures Using Key Dispensing Machines

.1 This subsection does not apply to this contract.

3.04.4 Issuance of Keys for Access to Padlocked Gates (Non-Motorised) for Niagara Region Structures Not Using Key Dispensing Machines

.1 The following applies to lock structures where key dispensing machines are not utilized:

.1 If the Contractor is required to open padlocked gates (non-motorized) to enter worksites located in restricted areas, the Contractor make arrangements with the Owner's Representative for the Contractor to sign out a particular key from the OCC (Operations Control Center).

.2 All keys shall be returned to the OCC by the end of the shift.

A1-3.05 PROCEDURE FOR ISSUANCE AND MANAGEMENT OF PASSES, KEYS AND ACCESS CARDS AND OBLIGATIONS OF THE PERSON RESPONSIBLE FOR THE CONTRACTOR'S TEAMS AT THE WORK SITE

3.05.1 The person responsible for the work on site designated by the Contractor shall fill out the ***Access Request Form*** with the list of its employees and its subcontractors' employees along with all required information, in order to request "R1" and "T" passes, as well as access cards and keys, if required.

.1 The person designate by the Contractor as representative responsible for the work shall hold a "R1" pass or request one.

.2 These forms shall be provided to the Awardee by the Owner's Representative.

3.05.2 **At least 48 hours in advance**, the person responsible for the Contractor's teams at the work site ("R1 pass holder) shall send, **by email** to the Owner's Representative (who will be designated during the pre-award meeting), the following:

.1 Access Request Form, duly filled.

.2 For the each "R1" applicant: picture from the shoulders up in .JPEG format.

.1 The picture shall be similar to those required for passports.

.1 No copy from an identity card will be allowed.

.2 Only one (1) "jpeg" photo per file shall be submitted.

Commitment to Meet the Requirements of the Marine Security Awareness Guide / Consent for the Use of a Personal Identification – St. Lawrence Seaway Management Corporation, duly filled and signed before a witness for each "R1" applicant.

3.05.3 Each "R1" applicant shall then make an appointment with the Owner's Representative (who will be designated during the pre-award meeting) to take possession of the "R1" and "T" passes, as well as the keys and access cards, if required.

.1 The Owner's Representative is located at St. Catharines for Niagara Region and at St-Lambert for Maisonneuve Region. During this appointment, the person responsible for the Contractor's teams at the work site shall:

.1 Show the original of his valid driver's licence.

.2 Sign ***Access Request Form*** previously provided by email, as proof of reception of the access card and key(s), if required.

.2 Once these requirements are met, the Owner's Representative will provide the applicant with the passes, access cards and key(s) requested and approved.

.3 Each individual to be issued with pass, access card or key(s) shall come to the Owner's offices to receive their pass, card or key(s).

3.05.4 Return of the passes, keys and access cards by the Contractor at the end of the work:

.1 At the completion of all deficiencies corrections, the person responsible for the Contractor's teams at the work site shall return to the Owner's Representative (designated during the pre-award meeting and located at the administration office of the Owner) keys and access cards issued for the contract, as well as all the passes issued for the contract, and, if applicable any fees for the loss of a pass, key or access card, prior to the Owner's Representative releasing the holdback of the construction contract or purchase order.

3.05.5 Loss or deterioration of a pass, key or access card

.1 The loss of a pass shall be immediately reported to the Owner's Representative.

.1 The responsibility for the loss or deterioration of a pass will be undertaken by the company whose name appears on the pass (either it is a contractor or subcontractor).

.1 $75 fee will be required for the replacement of a pass.

.2 The holder of the lost pass shall cooperate with the Owner's Representative to fill in a *Security Breach Report*.

.2 The responsibility for the loss or deterioration of an access card will be undertaken by the Contractor.

.1 $50 fee will be required for any lost or deterioration of an access card.

.2 The holder of a lost access card shall cooperate with the Owner's Representative to fill in a *Security Breach Report*.

.3 The responsibility for the loss or deterioration of a key will be undertaken by the Contractor.

.1 $150 fee will be required for deteriorated key. For lost or stolen keys the individual may be charged up to $1,000 to rekey all keys in that series of locks.

.2 The holder of a lost key shall cooperate with the Owner's Representative to fill in a *Security Breach Report*.

A1-3.06 SERVICE VEHICLES ON THE OWNER'S FACILITIES AND PARKING FOR WORKERS

3.06.1 This subsection does not apply to this Contract.

SECTION 4 DRAWINGS

A1-4.01 CONSTRUCTION DRAWINGS

4.01.1 The following drawings are issued with and form part of the Contract documents for this work. They are provided in PDF format only and are enclosed with the contractual documents deposited on the Owner's ftp site.

.1 Construction Drawings

Number	Original Date	Revision # or Date	Title
NIAGARA REGION, LONG REACH 7, BANK EROSION REPAIRS			
4120-01	2018-10-19	2018-10-19 Rev. 1	Location Plan
4120-02	2018-10-19	2018-10-19 Rev. 1	Location Condition profiles – Sheet 1
4120-03	2018-10-19	2018-10-19 Rev. 1	Location Condition profiles – Sheet 2

A1-4.02 INFORMATION DRAWINGS

4.02.1 The following drawings are issued for information purposes only and do not form part of the Contract documents for this work. The reference drawing package is enclosed with the bid documents on the Owner's ftp site and is provided only in PDF format.

.1 Information Drawings

Number	**Original Date**	**Date/ Rev. No.**	**Title**
NIAGARA REGION			
847-8	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 489+00 to Station 520+00
847-9	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 540+00 to Station 590+00
847-10	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 600+00 to Station 629+00
847-11	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 640+00 to Station 680+00
847-12	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 690+00 to Station 740+00
847-13	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 750+00 to Station 780+00
847-14	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 790+00 to Station 825+00
847-8	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 489+00 to Station 520+00
847-20	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 1050+00 to Station 1110+00

847-21	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 1130+00 to Station 1232+00
Number	**Original Date**	**Date/ Rev. No.**	**Title**
NIAGARA REGION			
847-22	1938-01-01	1938-01-01 As-Built	Typical Cross-Sections of Canal Prism Station 1240+00 to Station 1280+00

4.02.2 Information drawings are historical drawings which have not been reviewed by the Owner.

.1 These drawings may however help to understand the existing installation and the dismantling work, replacement work or modification work to be done.

4.02.3 The Owner shall not be liable to the Contractor concerning the interpretation of the information drawings, as the Owner does not guarantee their accuracy.

4.02.4 The exhibited drawings show the work to be executed in the present Contract or the existing structures for reference.

A1-4.03 ELECTRONIC FORMATS USED BY THE OWNER

4.03.1 The drawings supplied by the Owner are under the following formats:

.1 **PDF Format:** sealed drawings, copies of original drawings “Raster”, sketches;

.2 Autocad 2017, DWG Format: used for 2D Geometry;

.3 Autodesk Inventor v. 2017 3D: used for 3D Geometry.

A1-4.04 ELECTRONIC FORMATS FOR THE CONTRACTOR’S DRAWINGS

4.04.1 The drawings supplied by the Contractor shall be under the formats required by the Owner:

.1 **PDF Format:** drawings and sketches sealed by Consigno (Notarius);

.2 Autocad 2012, DWG Format for 2D Geometry;

.3 Autodesk Inventor v. 2012 3D for 3D Geometry.

A1-4.05 CONTRACTOR’S DRAWINGS

4.05.1 All the drawings mentioned in this Subsection shall be deemed the **Contractor’s Drawings**, as defined in Paragraph A2-14, *Contractor’s Drawings*, of A-2, Specifications (*General*).

4.05.2 The *Contractor’s Drawings* shall be computer-assisted drawings (CAD), prepared according to the Owner's CAD standards (“template”) which will be provided to the Contractor by the Owner’s Representative along with the project’s series of numbers.

4.05.3 The Contractor shall, however not limited to, prepare the *Contractor’s Drawings* based on the Specifications, exhibited drawings, site conditions and following the directions of the Owner’s Representative.

.1 The first or “General” drawing shall a list of all *Contractor’s Drawings* and drawing numbers pertaining to this Contract.

.2 The *Contractor’s Drawings* shall show complete details of all components including dimensions, types and locations of all materials, welds and other connections and tolerances.

.3 All the shop drawings shall clearly show the shades of the materials, their thermic treatment and aimed properties, as well as the moulding and mounting details, the tolerances and the functional quotes.

.1 This includes the cuts, notches, assemblies, holes, assembly bolts, rock bolts and all welds, even though they are indicated in Contractor's welding procedures.

.4 The Contractor shall incorporate the Owner's Representative's comments in the submitted drawings.

.5 The Contractor shall submit these drawings as many times as necessary, until the Owner's Representative is satisfied that these drawings accurately reflect the condition of the work.

.6 The Contractor shall also submit to the Owner's Representative the description of the work methods and the mounting order of the elements and the materials which he intends to use.

4.05.4 If required by Ontario Regulation 213/91 regarding construction project under the Occupational Health and Safety Act, the drawings shall bear the signatures and stamps of a licensed *Professional Engineers of Ontario* (PEO).

4.05.5 The Contractor shall submit to the Owner's Representative for review all the Contractor's Drawings within four (4) weeks following the contract award notification in writing.

4.05.6 All modifications to these *Contractor's Drawings* shall be previously approved by the Owner's Representative.

4.05.7 The Contractor shall submit one (1) copy of the *Contractor's drawings* for review to the Owner's Representative before the fabrication and in accordance with the Contract Calendar, and shall allow two (2) weeks for the review by the Owner's Representative.

4.05.8 The Contractor shall execute all the required changes noted on the reviewed drawings or diagrams. After doing so, the Contractor shall submit new copies of the revised drawings or diagram for the Owner's Representative to review.

4.05.9 The Contractor shall not execute any fabrication work before receiving the reviewed drawings. No changes to the drawings shall be made through out the review process unless accepted otherwise by the Owner's Representative.

4.05.10 All work started before receiving the Owner's Representative reviewed drawings will be at the Contractor's own risk. The Contractor shall execute all necessary work to comply with the reviewed drawings at its own expense.

4.05.11 The review process by the Owner's Representative does not remove the obligations and responsibilities of the Contractor regarding the present Contract.

4.05.12 Once the review process is complete, the Contractor shall supply to the Owner's Representative a reproducible copy of all the examined drawings, as well as calculation notes and effort diagrams when required.

4.05.13 After the acceptance of the *Contractor's Drawings* from the Owner's Representative, the Contractor shall proceed with the execution of the work.

4.05.14 The Contractor shall also keep available for the Owner's Representative, on site, an up to date copy of all of the construction drawings of the Contract and the Specifications.

A1-4.06 LIFTING PLAN

4.06.1 The Contactor shall systematically prepare the detailed plans:

.1 Of the lifting and rigging for the charges to be displaced;

.2 Of the shoring.

4.06.2 In order to seek to eliminate crane accidents, hoisting equipment such as cranes shall be sized such that the maximum load lifted shall normally not exceed 75% of the crane's rated capacity. In cases when the 75% limit must be exceeded within the capacity of the load chart of the Crane, the Contractor's Engineer shall review the layout and subsequently submit details for the information of the Owner. The Contractor shall take extra care when hoisting during heavy winds.

A1-4.07 NOMENCLATURE OF FILES FOR MODELLING

4.07.1 For the use with Autodesk Inventor, each part shall be drawn individually, and named as represented on the original drawings of the Owner. For instance:

.1 Part nomenclature : Q-1265-514-16-GIRDER-FLG:

.1 Q-1265 is the drawing number.

.2 514-16 is the information in the bubble about this part in the original assembly drawing.

.3 GIRDER-FLG is the name given to this part.

4.07.2 The Owner's Representative will verify these nomenclatures and shall be consulted in case of any doubt.

4.07.3 All the parts shall be put together in a file which shall be named after the original nomenclatures, the drawing number and the title in the footer.

A1-4.08 DATA SHEETS

4.08.1 The Contractor shall include, in the drawings, the data sheets of all procurement, parts and supplies which are standard equipment installed by itself or under its supervision.

4.08.2 The Consultant shall incorporate the data sheets to the "Maintenance Guide" or to the "Part Index", as the case may be.

4.08.3 When prescribed by the law, all the Safety Data Sheets "SDS" sheets shall be supplied for all workplace chemicals brought to the work site as per WHMIS 2015 regulations.

A1-4.09 "AS BUILT" DRAWINGS

4.09.1 The Contractor shall prepare the "As built" drawings as follows:

.1 All the requirements of the *Contractor's Drawings* shall be met.

.2 Within 30 days of issuance of the Final Certificate of Completion and their acceptance by the Owner's Representative, the Contractor shall submit the detailed "As built" drawings including the calculation notes and the effort diagrams when required for all the structures and work included in the Contract in which all corrections and changes will be marked in red. (Indicate whether the drawings are 'red-lined' or updated.)

.3 The drawings shall be submitted to the Owner's Representative for review.

.4 The other conditions of this Contract notwithstanding, the Owner shall hold back any payment owed the Contractor until the final "As built" drawings are as mentioned above.

.5 The drawings shall bear the Contractor's logo and signature under the statement to the effect that:

.1 The information on the drawings accurately reflects the condition and dimensions of the work built;

.2 The drawings are signed "without modification".

A1-4.10 INTELLECTUAL OWNERSHIP AND COPYRIGHT

4.10.1 All drawings produced by the Contractor and paid under the present Contact are and remain the property of the Owner or its designee, without restriction.

4.10.2 No clause shall be added to the drawings to invalidate or abate this right, neither to claim the sponsorship or the intellectual ownership.

4.10.3 The Contractor pledges itself to cede its copyright on the whole products supplied and paid under this Contract.

SECTION 5 CLEARING AND GRUBBING

A1-5.01 SCOPE

5.01.1 This section specifies requirements for the clearing and grubbing included in this Contract.

5.01.2 The work includes but is not limited to the following:

.1 The canal banks shall be cleared and grubbed only as required to provide access to repair areas;

.2 The cleared and grubbed materials shall be disposed of according to Subsection A1-2.11, Disposal of Materials.

A1-5.02 CLEARING

5.02.1 Clearing shall consist of cutting all standing trees, stumps, bushes and other vegetation at the heights as approved by the Engineer.

5.02.2 Clearing shall also consist of the removal of all windfalls and other fallen timber, fallen branches and other surface litter.

5.02.3 The Contractor will not be required to cut off stumps lower than 0.4m above the ground unless required to execute the work.

A1-5.03 GRUBBING

5.03.1 Grubbing shall consist of removal and disposal of all stumps, roots, embedded logs and other debris.

SECTION 6 EXCAVATION

A1-6.01 SCOPE

6.01.1 This section specifies requirements for the excavation work, which is included in this Contract.

6.01.2 The work shall be according to the Specifications and Drawings and as directed by the Engineer.

6.01.3 The work shall include but not be limited to the following:

.1 Excavating to the lines and grades at specified areas according to the drawing and as directed by the Engineer;

.2 Disposing of excavated materials;

.3 Environmental control measures.

A1-6.02 TYPES OF EXCAVATION

6.02.1 The type of excavation materials generally consist of the following:

.1 Topsoil, grass and other vegetation;

.2 Silty clay and clayey silt;

.3 Rockfill, rip rap and concrete rubble.

A1-6.03 EXCAVATION REQUIREMENTS

6.03.1 The excavation shall be trimmed to the lines and grades according to the drawing and as directed by the Engineer.

6.03.2 At a minimum, the Contractor shall strip vegetation and topsoil from the repair areas before placing any geotextile filter fabric or backfill material.

6.03.3 Where the Contractor over-excavates beyond the specified limit on the drawing, the Contractor shall backfill such over-excavated areas with Granular “A” road base material placed and compacted to a minimum of 90% of its Standard Proctor Maximum Dry Density, at no additional cost to the Owner and the areas returned to the specified lines and grades.

6.03.4 All common excavated materials shall be disposed of according to Subsection A1-2.11, Disposal of Materials.

6.03.5 During excavation at or below water level, the Contractor shall take care to minimize the effect of his operations on the environment. The Contractor shall take steps to minimize the release of sediment into the water caused by the excavation. In particular, the impact on water quality shall be minimized by encompassing each active work area with a silt curtain positioned to intercept the sediment. The Contractor shall provide and use buoys, stakes, weights, wires or other devices as may be necessary to ensure the effectiveness of the silt curtain. The curtain shall not be washed in the Canal nor shall water from any washing of the silt screen be allowed to enter the Canal.

6.03.6 The Contractor shall take all necessary precautions to prevent slope failures during the course of the work.

6.03.7 The final slopes shall be prepared according to the Specifications and Drawings as required.

SECTION 7 GEOTEXTILE FILTER FABRIC

A1-7.01 SCOPE

7.01.1 This section specifies requirements for the geotextile filter fabric, which is included in this Contract.

7.01.2 The work shall be according to the Specifications and Drawings and as directed by the Engineer.

7.01.3 The work shall include, but not be limited to, the placement of geotextile filter fabric between rip-rap stones and the in situ soil to prevent soil loss and to prevent hydraulic uplift pressure.

A1-7.02 MATERIAL

7.02.1 For geotextile, either woven or non-woven, needle-punched fabrics shall be used. If a non-woven fabric is used, it must have a mass density greater than 400 g/m^2 (12 oz/yd^2). Spun-bond or slit-film fabrics will not be allowed.

7.02.2 The geotextile filter fabrics shall meet the requirements of following table:

Property	ASTM Test Method	Allowable Value	
		Elongation < 50% (1)	Elongation ≥ 50% (1)
Grab Strength	D 4632	> 1112 N	> 712 N
Sewn Seam Strength (2)	D 4632	> 980 N	> 623 N
Tear Strength (3)	D 4533	> 400 N	> 400 N
Puncture Strength	D 4833	> 400 N	> 400 N
Apparent Opening Size	D 4751	≤ 0.2mm (#70 Sieve)	
Permeability	D 4491	> 10^{-4}cm/s	
Ultraviolet Stability	D 4355	50 % after 500 hours of exposure	
Clogging Resistance		Woven: Percent Open Area > 4 % by area. Non-Woven: Porosity > 30 % by volume.	

NOTES:

(1) As measured in accordance with ASTM D 4632.

(2) When sewn seams are required.

(3) The required minimum Average Roll Value (MARV) tear strength for woven monofilament geotextiles is 245 N.

7.02.3 The Contractor shall provide to the Engineer a certificate stating the name of the manufacturer, product name, style number and other pertinent information to fully describe the geotextile.

7.02.4 The manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the Specification. Documentation describing the quality control program shall be made available upon request.

7.02.5 The manufacturer's certificate shall state the furnished geotextile meets MARV requirements of the Specification as evaluated under the manufacturer's quality control program.

7.02.6 Either misleading or misrepresentation of materials shall be reason to reject those geotextile products.

A1-7.03 SHIPMENT AND STORAGE

7.03.1 Geotextile labeling, shipment, and storage shall follow ASTM D 4873. Product labels shall clearly show the manufacturer or supplier name, style number, and roll number. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.

7.03.2 Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants. The protective wrapping shall be maintained during periods of shipment and storage.

7.03.3 During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, temperatures in excess of 71℃, and any other environmental condition that may damage the physical property values of the geotextile.

A1-7.04 PLACEMENT OF GEOTEXTILE

7.04.1 The geotextile shall be placed directly on the prepared area, in intimate contact with the subgrade. When placing a geotextile, it should be rolled or spread out directly on the prepared area without folds or wrinkles and anchored using securing pins on a smooth graded surface. The rolls shall not be dragged, lifted by one end, or dropped. The geotextile should be placed in a manner that placement of the overlying material (rip rap) will not excessively stretch or tear the geotextile.

7.04.2 The geotextile shall be placed parallel to the slope direction. Adjacent rolls of geotextile shall be overlapped a minimum of 300mm, unless specified otherwise. The geotextile shall be placed so that upstream strips overlap downstream strips. Overlaps shall be stapled or pinned to hold the overlap in place during placement of stones. Steel pins shall be 5mm in diameter, 500m long, pointed at one end, and fitted with 40mm diameter washers at the other end. Pins shall be spaced along all overlap alignments at a distance of approximately 1m center to center. The Contractor may use an alternate anchoring system. The Contractor shall submit to the Engineer the product information and data sheets for an alternate anchoring system well in advance for approval of the product use. The geotextile should be pinned loosely so it can easily conform to the ground surface and give when stones are placed.

7.04.3 Care shall be taken during installation so as to avoid damage occurring to the geotextile as a result of the installation process. Should the geotextile be damaged during installation, a geotextile patch shall be placed over the damaged area extending 1m beyond the perimeter of the damage.

7.04.4 After geotextile placement, the work area shall not be trafficked or disturbed in a manner that might result in a loss of intimate contact between the rip rap stone, the geotextile, and the subgrade.

7.04.5 The geotextile shall not be left exposed longer than the manufacturer's recommendation to minimize potential damage due to ultraviolet radiation; therefore placement of the overlying materials should be conducted as soon as practicable.

SECTION 8 BACKFILL

A1-8.01 SCOPE

8.01.1 This section specifies requirements for the backfill work that is included in this Contract.

8.01.2 The work shall be according to the Specifications and Drawing.

8.01.3 The work shall include supplying and placing rip rap stones on the slopes.

8.01.4 The work shall include supplying, placing and compacting Granular A material for the restoration of paved trail and gravel road.

A1-8.02 MATERIALS

8.02.1 Rip Rap Material

.1 The rock to be used for rip rap shall be hard, dense, sound and durable, angular in shape, free of deleterious materials such as shale, chert and cherty or shaley layers.

.2 The Contractor shall indicate at the time of tendering the intended source of materials for approval of the quality and nature.

.3 Preliminary approval will not constitute general acceptance of all material in the deposit or source of supply.

.4 Any material of a quality or nature not conforming to these specifications will be rejected.

.5 The rock or stone shall be strongly resistant to deterioration by exposure to air and water, and to the effects of freezing and thawing.

.6 A favourable performance record for ten (10) years exposure at the waterline is required.

.7 The rock shall be of uniform and massive structure and shall be subject to the approval of the Engineer.

.8 With respect to freezing and thawing, the rock shall also satisfy the following requirements when tested by the U.S. Army Corps of Engineer's Method CRD-C144-92.

.1 Five (5) specimens, duly prepared and tested, must have an average mass loss of 1% or less after the completion of twenty (20) cycles of freezing and thawing.

.2 In addition to satisfying the abovementioned freezing and thawing requirements, rock with a planar structure, that is rock that is bedded or jointed, for the five (5) specimens which were duly prepared and tested, not more than one (1) specimen shall have separated along planar structures after the completion of the twenty (20) cycles of freezing and thawing.

.9 The gradation of the rock fragments should meet following gradation limits:

ROCK SIZE mm (inches)	**PERCENTAGE OF RIP RAP SMALLER THAN**
MEDIAN PARTICLE SIZE (D_{50}) = 0.4m (16")	
550mm (22")	100%
400mm (16")	50%
120mm (5")	10%

.10 Neither breadth nor thickness of a single stone should be less than one-third its length. Rounded stone or boulders will not be accepted unless authorized by the Engineer.

.11 Each load of rip rap shall be reasonably well-graded from the smallest to the maximum size specified. Stones smaller than the specified 10 percent size and spalls will not be permitted in an amount exceeding 10 percent by weight of each load.

8.02.2 Granular A Material

.1 This material shall be according to OPSS 1010 and satisfy all requirements of OPSS Table 1 and Table 2.

.2 The Owner will send at least three (3) representative samples of Granular A material to Owner's approved Soil Testing Laboratory for approval of its quality and nature.

.3 Preliminary approval of the quality and nature of the material submitted will not constitute general acceptance of all material in the deposit or source of supply.

.4 Any material of quality or nature not conforming to the specifications will be rejected.

.5 All materials shall be handled and stockpiled in a manner, which shall prevent segregation and contamination by other materials, as approved by the Engineer.

.6 Material, which does not conform to the requirements of these specifications, shall be removed from the site at no cost to the Owner.

A1-8.03 PLACEMENT OF RIP RAP MATERIAL

8.03.1 The Contractor shall place rip rap on the slopes in accordance with the thicknesses according to the drawing measured perpendicular to the slope.

8.03.2 Rip rap material shall be placed over the geotextile by methods that do not stretch, tear, puncture or reposition the fabric. Rip rap shall not be dropped from height of more than 300mm.

8.03.3 The rip rap material may be placed by dumping.

8.03.4 The Contractor shall ensure that in general, a uniform mix of large and small fragments is placed over the length and width of the slope being covered with rip rap.

8.03.5 Placing shall be done in such a manner that the finished rip rap will have a uniform even surface.

8.03.6 Following placement of rip rap, grading of the slope shall not be permitted if the grading results in movement of the stone directly above the geotextile.

A1-8.04 PLACEMENT OF GRANULAR A MATERIAL FOR GRAVEL ROAD

8.04.1 The Contractor shall compact the subgrade after the bottom of the excavation has been approved by the Engineer.

8.04.2 Granular material shall not be placed over frozen subsoil.

8.04.3 Granular materials shall be free of frost and frozen clumps.

8.04.4 All granular materials for gravel road shall be compacted to a minimum of 95% of its Standard Proctor Maximum Dry Density.

8.04.5 Once overall material thickness has been attained, the surface shall be further shaped and compacted so as to be smooth, true to proposed grade and be free from ruts or waves.

A1-8.05 GENERAL REQUIREMENT OF BACKFILL

8.05.1 If, during the progress of the work, tests indicate that backfill does not meet the requirements according to the specifications, defective fills shall be removed, replaced and re-tested at no extra cost to the Owner.

A1-8.06 WEIGH SLIPS

8.06.1 In addition to the requirements of A-2 Specifications, Section A2-30, Weigh Slips, the following shall apply to this contract:

.1 The weigh slips shall show the specific area to which the materials are delivered.

SECTION 9 SEEDING

A1-9.01 SCOPE

9.01.1 This section specifies requirements for the seeding work that is included in this Contract.

9.01.2 The work includes seeding of canal bank repair zones above Elevation 174.5 metres (IGLD'85 Datum) according to the Specifications and Drawings.

9.01.3 The work shall also be according to OPSS standards.

9.01.4 The seeding work include but not be limited to the following:

.1 Re-use of stripped topsoil;

.2 Supply of additional topsoil;

.3 Placement of topsoil;

.4 Hydroseeding;

.5 Fertilizing;

.6 Installation of erosion control blanket;

.7 Watering;

.8 Maintenance in order to meet performance requirements.

A1-9.02 MATERIALS

9.02.1 The topsoil shall be stockpiled and supplied in accordance with OPSS 570.

9.02.2 The pH value for topsoil must be 5.5 or higher.

9.02.3 Following other materials shall be supplied and applied in accordance with OPSS 804:

.1 Seed Mixture: Crown Vetch Mix.

.2 Nurse Crop: Fall Rye Grain.

.3 Fertilizers for Crown Vetch Mix.

.4 Cover: Erosion Control Blanket with Staples.

.5 Herbicide.

.6 Water.

A1-9.03 EXECUTION

9.03.1 The topsoil shall be placed in accordance with OPSS 570.

9.03.2 The seeding work shall be carried out in accordance with OPSS 804. The work shall include surface preparation, hydro-seeding, erosion control blanket and maintenance.

A1-9.04 QUALITY ASSURANCE

9.04.1 PRODUCT

.1 The Contractor shall provide seed mix specification to the Owner per OPSS 804.

.2 The Contractor shall provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

9.04.2 PERFORMANCE

.1 All seeded areas will be inspected by the Owner to ensure compliance with this Specification at 30, 60, and 90-Day periods following the seed and cover operation.

.2 The Contractor shall meet performance requirements in accordance with OPSS 804.

SECTION 10 REINSTATEMENT OF PAVED TRAIL

A1-10.01 SCOPE

10.01.1 This section specifies the requirements for the reinstatement of paved trail located on top of the canal bank, damaged by the contractor's operations in carrying out the work, to original or better condition.

10.01.2 The work shall be according to the Specifications and Drawings.

A1-10.02 REFERENCES

10.02.1 OPSS 310 - Construction Specification for Hot Mix Asphalt and references therein.

10.02.2 OPSS 311 - Construction Specification for Asphalt Sidewalk, Driveway and Boulevard, and for Sidewalk Resurfacing and references therein.

10.02.3 OPSS 314 - Construction Specification for Untreated Granular, Subbase, Base, Surface Shoulder, And Stockpiling and references therein.

10.02.4 OPSS 501 – Compaction and references therein.

10.02.5 OPSS 1010 - Material Specification for Aggregates, Granular A, B, M and Select Subgrade Material and references therein.

10.02.6 OPSS 1150 - Material Specification for Hot Mixed, Hot Laid Asphalt Concrete and references therein.

A1-10.03 QUALITY ASSURANCE

10.03.1 The Contractor shall perform Work in accordance with OPSS 310, OPSS 311, OPSS 314 and OPSS 501 and maintain one (1) copy of all documents on site.

A1-10.04 MATERIALS

10.04.1 Aggregate for base: Granular A per Section 8 of A1-Specification.

10.04.2 Hot Mix Asphalt: HL3 per OPSS 1150.

A1-10.05 EXECUTION

10.05.1 Line and Grade

.1 The line and grade shall match original. The Contractor shall ensure adequate information regarding original location, alignment and grade is obtained prior to covering or destroying any sections of existing roadway. The Contractor shall lay out proposed line and grade of roadway reinstatement and verity with Owner's Representative prior to commencement of work.

10.05.2 Preparation for Reconstruction

The Contractor shall:

.1 Install appropriate barricade, fences and signage to prevent public access.

.2 Remove and dispose of damaged road materials, including granular base and asphalt, off the Owner's property.

10.05.3 Placement of Materials

The Contractor shall:

.1 Place granular base in lifts of maximum 150mm thickness and compact to 100% of its Standard Proctor Maximum Dry Density.

.2 Place hot mix asphalt per OPSS 310 and compact to 93% of its Maximum Relative Density (M.R.D).

.3 Installed Thickness:

.1 Granular A Base: 150mm minimum.

.2 HL3 Hot Mix Asphalt: 60mm minimum.

SECTION 11 FIELD OFFICE

A1-11.01 SCOPE

11.01.1 This section specifies requirements for supplying and maintaining a field office for the exclusive use of the Owner personnel.

11.01.2 The work shall be according to the Specifications.

A1-11.02 FIELD OFFICE

11.02.1 The floor space in the office shall have an area of not less than 23m2 with typical dimensions of 2.44m wide by 9.14m long with 2.44m high ceiling height.

11.02.2 The office shall be insulated so that uniform temperature can be provided throughout.

11.02.3 Windows and doors shall be furnished with screens and locks, and the minimum window area shall be 10% of the floor area.

11.02.4 The Contractor shall maintain the field office in a clean condition to the satisfaction of the Engineer. The Contractor shall sweep the floor and remove refuse daily, and shall wash the floors twice each week.

11.02.5 The Contractor shall be responsible for the supply of electric power to the field office.

11.02.6 The office shall be furnished with the following equipment:

.1 One (1) – 750mm wide by 1.5m long office desk;

.2 One (1) – 800mm wide by 2.4m long drafting table;

.3 Two (2) – desk chairs;

.4 Three (3) – stools;

.5 One (1) – four (4) drawer legal size steel filing cabinet with lock;

.6 One (1) – plan rack;

.7 Four (4) – full height lockers;

.8 One (1) – 4A 40 BC fire extinguisher.

11.02.7 The office shall be equipped with an internal heating system sufficient to uniformly heat and properly ventilate the office comfortably to at least 22℃, and suitable lighting for night-time operations.

11.02.8 In addition to the above, each office shall have necessary shelves and closets with locks for storing equipment to the satisfaction of the Engineer.

11.02.9 The Contractor will be required to pay for all costs to properly maintain the office as specified.

11.02.10 The field office shall be provided at the site before the date of the Contractor's actual commencement of work and shall remain at the site if the Engineer so requires, for a period of up to one (1) month after the completed work is accepted by the Owner.

11.02.11 The location of the field office shall be as determined by the Engineer.

11.02.12 The Contractor shall supply, install and maintain sanitation facilities such as toilets and cleanup facilities throughout the construction period in accordance with the latest Ontario Health and Safety Act and Regulations for Construction Projects and Guidelines, and shall allow Owner personnel the use of such facilities.

11.02.13 The Contractor shall supply a water dispenser and an adequate supply of potable bottled drinking water.