


SPECIFICATION
UPLAND IMPROVEMENTS
BANK HEAD COVE, NL
Project No.: 723439

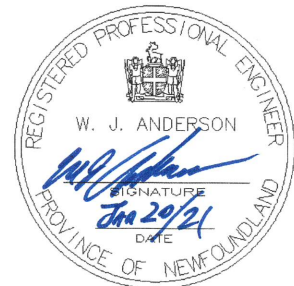
PREPARED FOR:

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Small Craft Harbours
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DATE:

January 2021
Issued for Tender

PROVINCE OF NEWFOUNDLAND PERMIT HOLDER

This Permit Allows
<u>ANDERSON ENGINEERING CONSULTANTS LTD.</u>
To practice Professional Engineering in Newfoundland and Labrador.
Permit No. as issued by APEGN <u>R0092</u>
which is valid for the year <u>2021</u> .



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PART 1 - GENERAL

1.1 SCOPE

- .1 The scope for this project includes, but is not limited to, the provision of upland improvements. The work covered consists of the furnishing of all plant, labour, equipment and materials for the upland improvements at Bank Head Cove, District of Long Range Mountains, Newfoundland and Labrador, in strict accordance with specifications and accompanying drawings and subject to all terms and conditions of the contract.
- .2 Note that the Contractor must incorporate COVID-19 standardized protocols in their site specific Health and Safety Plan. The protocols are to include:
 - .1 Prevention (signage, practices to reduce risk of transmission, encouragement or social distancing, use of PPE, use of individual modes of transportation, monitoring status of workers, construction jobsite and trailer cleaning protocols, etc.)
 - .2 Detection (screening at entry of construction site, unauthorized entry points, etc.)
 - .3 Response measures (shut down procedures, individual case handling, etc.)

1.2 DESCRIPTION OF WORK

- .1 In general, work under this contract consists of, but will not necessarily be limited to, the following:
 - .1 Mass excavation of the existing site as shown on drawings.
 - .2 Supply and placement of new geotextile fabric, 100 minus and Type 2 material to depths as shown on drawings.
 - .3 Ditching, reshaping of existing drainage ditch, and placement of 100 mm minus to elevations as shown on drawings.
 - .4 All as indicated on accompanying drawings and specifications.

1.3 SITE OF WORK

- .1 Work will be carried out at Bank Head Cove, Newfoundland and Labrador in the location as shown on the accompanying drawings.
- .2 Site is not accessible for construction until August 1, 2021.

1.4 DATUM

- .1 Datum used for this project is Lowest Normal Tides (LNT) and is assumed to be +13.391 metres. PWC 1-2013, IP driven in ground as shown on accompanying drawings.
- .2 Bidders are advised to consult the Tide Tables issued by Fisheries and Oceans in order to make sure of the tidal conditions affecting work.

1.5 FAMILIARIZATION
WITH SITE

- .1 Before submitting a bid, bidders can visit the site and its surroundings at their own expense and schedule to review and verify the form, nature and extent of the work, materials needed for the completion of the work, the means of access to the site, severity, exposure and uncertainty of weather, soil conditions, any accommodations they may require, and in general shall obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.
- .2 Contractors, bidders or those they invite to site are to review specification Section 01 35 29 - Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid.

1.6 CODES AND
STANDARDS

- .1 Perform work in accordance with the latest edition of the National Building Code of Canada, FCC Standard 373 - Standard for Piers and Wharves and any other code of provincial or local application including all amendments up to project bid closing date provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

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- 1.7 TERM ENGINEER .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative as defined in the General Conditions of the Contract.
- 1.8 SETTING OUT WORK .1 Set grades and layout work in detail from control points and grades established by Departmental Representative.
- .2 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated or as directed by Departmental Representative.
- .3 Provide devices needed to layout and construct work.
- .4 Supply such devices as GPS, measure tape, straight edges and templates required to facilitate Departmental Representative's inspection of work.
- .5 Supply stakes and other survey markers required for laying out work.
- 1.9 COST BREAKDOWN .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Departmental Representative will provide the required forms for application of progress payment.
- .2 Provide cost breakdown in same format as the numerical and subject title system used in this specification project manual and thereafter sub-divided into major work components as directed by Departmental Representative.
- .3 Upon approval by Departmental Representative, cost breakdown will be used as basis for progress payment.
- .4 All work items not designated in the unit price table as a measurement for payment, are to be included in the lump sum arrangement, as noted on the Bid and Acceptance Form.
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1.10 WORK SCHEDULE

- .1 Submit within 7 work days of notification of acceptance of bid, a construction schedule showing commencement and completion of all work within the time stated on the Bid and Acceptance Form and the date stated in the bid acceptance letter.
- .2 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .3 As a minimum, work schedule to be prepared and submitted in the form of Bar (GANTT) Charts, indicating work activities, tasks and other project elements, their anticipated durations and planned dates for achieving key activities and major project milestones provided in sufficient details and supported by narratives to demonstrate a reasonable plan for completion of project within designated time, e.g., show target dates for the placement of mass excavation, placement of 100 mm minus and Type 2 materials, if applicable. Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .4 Submit schedule updates on a minimum monthly basis and more often, when requested by Departmental Representative, due to frequent changing project conditions. Provide a narrative explanation of necessary changes and schedule revisions at each update.
- .5 The schedule, including all updates, shall be to Departmental Representative's approval. Take necessary measures to complete work within approved time. Do not change schedule without Departmental Representative's approval.
- .6 All work on the project will be completed within the time indicated on the Bid and Acceptance Form.

1.11 ABBREVIATIONS

- .1 Following abbreviations of standard specifications have been used in this specification and on the drawings:

1.11 ABBREVIATIONS
(Cont'd)

CGSB - Canadian Government Specifications Board
CSA - Canadian Standards Association
NLGA - National Lumber Grades Authority
ASTM - American Society for Testing and Materials

- .2 Where these abbreviations and standards are used in this project, latest edition in effect on date of bid call will be considered applicable.

1.12 QUARRY AND EXPLOSIVES

- .1 Make own arrangements with Provincial authorities and owners of private properties, for the quarrying and transportation of rock and all materials and machinery necessary for work over their property, roads or streets as case may be.

1.13 SITE OPERATIONS

- .1 Arrange for sufficient space adjacent to project site for conduct of operations, storage of materials and so on. Exercise care so as not to obstruct or damage public or private property in area. Do not interfere with normal day-to-day operations in progress at site. All arrangements for space and access will be made by Contractor.
- .2 Remove snow and ice as required to maintain safe access in a manner that does not damage existing structures or interfere with the operations of others.

1.14 PROJECT MEETINGS

- .1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.
- .2 Project meetings will take place on site of work unless so directed by the Departmental Representative.
- .3 Departmental Representative will assume responsibility for recording minutes of meetings and forwarding copies to all parties present at the meetings.
- .4 Have a responsible member of firm present at all project meetings.

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- 1.15 PROTECTION
- .1 Store all materials and equipment to be incorporated into work to prevent damage by any means.
 - .2 Repair or replace all materials or equipment damaged in transit or storage to the satisfaction of Departmental Representative and at no cost to Canada.
- 1.16 DOCUMENTS
REQUIRED
- .1 Maintain at job site, one copy of the following:
 - .1 Contract Drawings
 - .2 Specifications
 - .3 Addenda
 - .4 Reviewed Shop Drawing
 - .5 List of outstanding shop drawings
 - .6 Change Orders
 - .7 Other modifications to Contract
 - .8 Field Test Reports
 - .9 Copy of Approved Work Schedule
 - .10 Site specific Health and Safety Plan and other safety related documents
 - .11 Other documents as stipulated elsewhere in the Contract Documents.
- 1.17 PERMITS
- .1 Obtain and pay for all permits, certificates and licenses as required by Municipal, Provincial, Federal and other Authorities.
 - .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
 - .3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.
 - .4 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.
 - .5 Submit to Departmental Representative, copy of quarry permit, if applicable, prior to start of quarry operations.
 - .6 Comply with all requirements, recommendations and advise by all regulatory authorities unless otherwise agreed in writing by Departmental Representative. Make requests for such deviations to these requirements sufficiently in advance of related work.
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- 1.18 ACCEPTANCE .1 Prior to the issuance of the Certificate of Substantial Performance, in company with Departmental Representative, make a check of all work. Correct all discrepancies before final inspection and acceptance.
- 1.19 WORKS COORDINATION .1 Responsible for coordinating the work of the various trades, where the work of such trades interfaces with each other.
- .2 Convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required. Provide each trade with the plans and specifications of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
- .3 Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of those trades not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor and shall be resolved at no extra cost to Canada.
- 1.20 CONTRACTOR'S USE OF SITE .1 Construction operations, including storage of materials for this contract, not to interfere with the fishing activity and/or operations at this harbour facility.
- .2 Responsible for arranging the storage of materials on or off site, and any materials stored at the site which interfere with any of the day to day activities at or near the site will be moved promptly at the Contractor's expense, upon request by Departmental Representative.
- .3 Exercise care so as not to obstruct or damage public or private property in the area.
- .4 At completion of work, restore area to its original condition. Damage to ground and property will be repaired by Contractor. Remove all construction materials, residue, excess, etc., and leave site in a condition acceptable to Departmental Representative.
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1.21 WORK
COMMENCEMENT

- .1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan, unless otherwise agreed by Departmental Representative.
- .2 Project work on site is to commence as soon as possible, with a continuous reasonable work force, unless otherwise agreed by Departmental Representative.
- .3 Weather conditions, short construction season, delivery challenges and the location of the work site may require the use of longer working days and additional work force to complete the project within the specified completion time.
- .4 Make every effort to ensure that sufficient material and equipment is delivered to site at the earliest possible date after acceptance of bid and replenished as required.

1.22 FACILITY
SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.

1.23 INTERPRETATION
OF DOCUMENTS

- .1 Supplementary to the Order of Precedence article of the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

PART 1 - GENERAL

- 1.1 SECTION INCLUDES .1 Inspecting and testing by inspecting firms or testing laboratories designated by Departmental Representative.
- 1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various sections.
- 1.3 APPOINTMENT AND PAYMENT .1 Departmental Representative will appoint and pay for services of testing laboratory except for the following:
.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
.2 Inspection and testing performed exclusively for Contractor's convenience.
.3 Mill tests and certificates of compliance.
.4 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
.5 Tests requested by Departmental Representative to confirm material specifications when the applicable manufacturer's documentation or test results are unavailable.
.6 Additional tests specified in the following paragraph.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.
- 1.4 CONTRACTOR'S RESPONSIBILITIES .1 Provide labour, equipment and facilities to: testing.
.1 Provide access to Work to be inspected and tested.
.2 Facilitate inspections and tests.
.3 Make good Work disturbed by inspection and test.
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1.4 CONTRACTOR'S
RESPONSIBILITIES
(Cont'd)

- .1 (Cont'd)
 - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

1.1 SECTION
INCLUDES

- .1 Shop drawings and product data.
- .2 Samples.
- .3 Certificates.

1.2 SUBMITTAL
GENERAL
REQUIREMENTS

- .1 Submit to Departmental Representative for review submittals listed, including shop drawings, samples, certificates and other data, as specified in other sections of the Specifications.
 - .2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
 - .3 Do not proceed with Work until relevant submissions are reviewed by Departmental Representative.
 - .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
 - .5 Where items or information is not produced in SI Metric units, provide soft converted values.
 - .6 Review submittals prior to submission to Departmental Representative. Ensure during review that necessary requirements have been determined and verified, required field measurements or data have been taken, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.
 - .1 Submittals not stamped, signed, dated and identified as to specific project will be returned unexamined by Departmental Representative and considered rejected.
 - .7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
 - .8 Verify field measurements and affected adjacent Work are co-ordinated.
-

1.2 SUBMITTAL
GENERAL
REQUIREMENTS
(Cont'd)

- .9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .11 Submit format: paper originals, or alternatively clear and fully legible photocopies of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental Representative. Poorly printed non-legible photocopies or facsimiles will not be accepted and be returned for resubmission.
- .12 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.
- .13 Keep one reviewed copy of each submittal document on site for duration of Work.

1.3 SHOP DRAWINGS
AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, product data, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Number of Shop Drawings: submit sufficient copies of shop drawings which are required by the General Contractor and sub-contractors plus (2) copies which will be retained by Departmental Representative. Ensure sufficient numbers are submitted to enable one complete set to be included in each of the maintenance manuals specified, if applicable.
- .3 Shop Drawings Content and Format:
 - .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work have been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.

1.3 SHOP DRAWINGS
AND PRODUCT DATA
(Cont'd)

- .3 (Cont'd)
 - .2 Shop Drawings Format:
 - .1 Opaque white prints or photocopies of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
 - .2 Product Data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
 - .3 Non or poorly legible drawings, photocopies or facsimiles will not be accepted and returned not reviewed.
 - .3 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
 - .4 Delete information not applicable to project on all submittals.
 - .4 Allow 15 calendar days for Departmental Representative's review of each submission.
 - .5 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.
 - .6 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected shop drawings, through same submission procedures indicated above.
 - .7 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .8 Submissions include:
 - .1 Date and revision dates.

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- 1.3 SHOP DRAWINGS .8 (Cont'd)
AND PRODUCT DATA
(Cont'd)
- .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Cross references to particular details of contract drawings and specifications section number for which shop drawing submission addresses.
 - .6 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .9 After Departmental Representative's review, distribute copies.
 - .10 The review of shop drawings by the Departmental Representative or their delegated representative is for sole purpose of ascertaining conformance with general concept. This review shall not mean that the Departmental Representative approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.
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1.4 SCHEDULE,
PERMITS AND
CERTIFICATES

- .1 Upon acceptance of bid, submit to Departmental Representative copy of Work Schedule and various other schedules, permits, certification documents and project management plans as specified in other sections of the Specifications.
- .2 Submit copy of permits, notices, compliance Certificates received by Regulatory Agencies having jurisdiction and as applicable to the Work.
- .3 Submission of above documents to be in accordance with Submittal General Requirements procedures specified in this section

PART 1 - GENERAL

1.1 DEFINITIONS

- .1 COHS: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
 - .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
 - .2 Knowledge about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
 - .3 Knowledgeable about potential or actual danger to health and safety associated with the Work.
- .3 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
- .4 PPE: personal protective equipment.
- .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.

1.2 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
 - .1 Submit within 10 work days of notification of Bid Acceptance. Provide 3 copies. Allow for 5-10 days for Departmental Review and recommendations prior to the commencement of work.
 - .2 Departmental Representative will review Health and Safety Plan and provide comments.
 - .3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
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1.2 SUBMITTALS
(Cont'd)

- .2 (Cont'd)
 - .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
- .3 Submit name of designated Health & Safety Site Representative and support documentation specified in the Safety Plan.
- .4 Submit building permit, compliance certificates and other permits obtained.
- .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
 - .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
- .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit copies of incident reports.
- .8 Submit WHMIS MSDS - Material Safety Data Sheets.

1.3 COMPLIANCE
REQUIREMENTS

- .1 Comply with the Occupational Health and Safety Act for the Province of Newfoundland and Labrador, and the Occupational Health and Safety Regulations made pursuant to the Act.
 - .2 Comply with Canada Labour Code Part II, (entitled Occupational Health and Safety) and the Canada Occupational Safety and Health Regulations (COSH) as well as any other regulations made pursuant to the Act.
 - .1 The Canada Labour Code can be viewed at: <http://laws.justice.gc.ca/eng/L-2/>.
 - .2 COSH can be viewed at: <http://laws.justice.gc.ca/eng/SOR-86-304/ne.html>.
 - .3 A copy may be obtained at: Canadian Government Publishing Public & Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: (819) 956-4800 (1-800-635-7943) Publication No. L31-85/2000 E or F).
 - .3 Treasury Borad of Canada Secretariat (TBS):
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1.3 COMPLIANCE
REQUIREMENTS
(Cont'd)

- .3 (Cont'd)
 - .1 Treasury Board, Fire Protection Standard April 1, 2010
www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316§ion=text.
 - .4 Canadian Standards Association (CSA):
 - .1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.
 - .5 Observe construction safety measures of:
 - .1 Part 8 of National Building Code 2015.
 - .2 Provincial Worker's Compensation Board.
 - .3 Municipal by-laws and ordinances.
 - .6 In case of conflict or discrepancy between any specified requirements, the more stringent shall apply.
 - .7 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter of Good Standing.
 - .8 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.

1.4 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of the Work.
- .2 Comply with and enforce compliance by all workers, sub-contractors and other persons granted access to work site with safety requirements of Contract Documents, applicable Federal, Provincial, and local by-laws, regulations, and ordinances, and with site specific Health and Safety Plan.

1.5 SITE CONTROL
AND ACCESS

- .1 Control the work and entry points to Work Site. Approve and grant access only to workers and authorized persons.
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1.5 SITE CONTROL
AND ACCESS
(Cont'd)

- .1 (Cont'd)
 - .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter onto Work Site and will ensure that such authorized personnel have the required knowledge and training on Health and Safety pertinent to their reason for being at the site, however, Contractor remains responsible for the health and safety of authorized persons while at the Work Site.
 - .2 Isolate work site from other areas of the premises by use of appropriate means.
 - .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment.
 - .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
 - .3 Use professionally made signs with bilingual message in the 2 official languages or international know graphic symbols.
 - .3 Provide safety orientation session to persons granted access to Work site. Advise of hazards and safety rules to be observed while on site.
 - .4 Ensure persons granted site access wear appropriate personal protective equipment (PPE). Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
 - .5 Secure Work Site against entry when inactive or unoccupied and to protect persons against harm. Provide security guard where adequate protection cannot be achieved by other means.

1.6 PROTECTION

- .1 Give precedence to safety and health of persons and protection of environment over cost and schedule considerations for Work.
 - .2 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.
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- 1.7 FILING OF NOTICE
- .1 File Notice of Project with pertinent provincial health and safety authorities prior to beginning of Work.
 - .1 Departmental Representative will assist in locating address if needed.
- 1.8 PERMITS
- .1 Post permits, licenses and compliance certificate, specified in section 01 10 10, at Work site.
 - .2 Where particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed prior to carrying out application portion of work.
- 1.9 HAZARD ASSESSMENTS
- .1 Perform site specific health and safety hazard assessment of the work and its site.
 - .2 Carry out initial assessment prior to commencement of work with further assessments as needed during progress of work, including when new trades and subcontractors arrive on site.
 - .3 Record results and address in Health and Safety Plan.
 - .4 Keep documentation on site for entire duration of the Work.
- 1.10 PROJECT/SITE CONDITIONS
- .1 The following are known or potential project related safety hazards at site:
 - .1 The following are known or potential project related safety hazards at site:
 - .1 Working in close proximity of water.
 - .2 Wet and slippery conditions.
 - .3 Inclement weather.
 - .4 Rock moving activities involving large armour stone.
 - .5 Heavy equipment activity.
 - .6 Heavy lifting.
 - .7 Working at heights.
 - .8 Cutting tools and other construction power tools.
 - .9 Overhead and underground power/utility lines.
 - .10 Risk of electric shock.
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1.10 PROJECT/SITE
CONDITIONS
(Cont'd)

- .1 (Cont'd)
 - .1 (Cont'd)
 - .11 Vehicular and pedestrian traffic.
 - .12 Hot/cold temperature extremes.
 - .13 Work with hazardous products.
 - .2 Above list shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work.
 - .3 Include above items into hazard assessment process.
 - .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.

1.11 MEETINGS

- .1 Attend pre-construction health and safety meeting, convened and chaired by Departmental Representative, prior to commencement of Work, at time, date and location determined by Departmental Representative. Ensure attendance of:
 - .1 Superintendent of work.
 - .2 Designated Health and Safety Site Representative.
 - .3 Subcontractors.
- .2 Conduct regularly schedule tool box and safety meetings during the work in conformance with occupational Health and Safety Regulations.
- .3 Keep documents on site.

1.12 HEALTH AND
SAFETY PLAN

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
- .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified.
 - .3 On-Site Contingency and Emergency Response Plan as specified below.
 - .4 On-Site Communications Plan as specified below.

1.12 HEALTH AND
SAFETY PLAN
(Cont'd)

- .2 (Cont'd)
 - .5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.
 - .6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.
- .3 On-site Contingency and Emergency Response Plan shall include:
 - .1 Operational Procedures, evacuation measures and communication process to be implemented in the event of an emergency.
 - .2 Evacuation Plan: site and floor plan layouts showing escape routes, marshaling areas. Details on alarm notification methods, fire drills, location of fire fighting equipment and other related data.
 - .3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.
 - .4 Emergency Contacts: name and telephone number of officials from:
 - .1 General Contractor and subcontractors.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
 - .5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name or DFO and Facility Management Contacts.
- .4 On-site Communication Plan:
 - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
 - .2 List of critical work activities to be communicated with Facility manager which have a risk of endangering health and safety of Facility users.
- .5 Address all work activities of the work including those of subcontractors.
- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor arrive at Work Site.

1.12 HEALTH AND
SAFETY PLAN
(Cont'd)

- .7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.
- .8 Post copy of Plan and updates, prominently on work site.

1.13 SAFETY
SUPERVISION

- .1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.
- .2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
 - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work.
 - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
 - .3 Conduct site safety orientation session to persons granted access to Work Site.
 - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site of are escorted by a competent person while on the Work Site.
 - .5 Stop the Work as deemed necessary for reasons of health and safety.
- .3 Health & Safety Site Representative must:
 - .1 Be qualified and competent person in occupational health and safety.
 - .2 Have site-related working experience specific to activities of the Work.
 - .3 Be on Work Site at all times during execution of the Work.
 - .4 All supervisory personnel assigned to the Work shall also be competent persons.
 - .5 Inspections:
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
 - .2 Conduct formal inspections on a minimum monthly basis. Use standardized safety inspection forms. Distribute to subcontractors.
 - .3 Follow-up and ensure corrective measures are taken.

-
- 1.13 SAFETY SUPERVISION (Cont'd) .3 (Cont'd)
- .6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
 - .7 Keep inspection reports and supervision related documentation on site.
- 1.14 TRAINING .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
- .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.
 - .3 When unforeseen or peculiar safety-related hazard, or condition occur during performance or Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.
- 1.15 MINIMUM SITE SAFETY RULES .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, ensure the following minimum safety rules are obeyed by persons granted access to Work Site:
- .1 Wear appropriate personnel protective equipment (PPE) pertinent to the work or assigned task; minimum being hard hat, safety footwear, safety glasses and hearing protection.
 - .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
 - .3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
 - .4 Obey warning signs and safety tags.
- .2 Brief persons of disciplinary protocols to be taken for non-compliance. Post rules on site.
- 1.16 CORRECTION OF NON-COMPLIANCE .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
-

- 1.16 CORRECTION OF
NON-COMPLIANCE
(Cont'd)
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
 - .3 Departmental Representative will stop Work if non-compliance of health and safety regulations is not corrected in a timely manner.
- 1.17 INCIDENT
REPORTING
- .1 Investigate and report the following incidents to Departmental Representative:
 - .1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
 - .2 Medical aid injuries.
 - .3 Property damage in excess of \$10,000.00.
 - .4 Interruptions to Facility operations resulting in an operational loss to a Federal Department in excess of \$5000.00.
 - .2 Submit report in writing.
- 1.18 HAZARDOUS
PRODUCTS
- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
 - .2 Keep MSDS data sheets for all products delivered to site.
 - .1 Post on site.
 - .2 Submit copy to Departmental Representative.
- 1.19 TOOLS AND
EQUIPMENT SAFETY
- .1 Routinely check and maintain tools, equipment and machinery for safe operation.
 - .2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.
 - .3 Tag and immediately remove from site items found faulty or defective.
- 1.20 BLASTING
- .1 Blasting or other use of explosives is not permitted on site without prior receipt of written permission and instructions from Departmental Representative.
-

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- 1.20 BLASTING
(Cont'd) .2 Do blasting operations in accordance with local and provincial codes.
- 1.21 POWDER
ACTUATED DEVICES .1 Use powder actuated fastening devices only after receipt of written permission from Departmental Representative.
- 1.22 CONFINED
SPACES .1 Abide by occupational health and safety regulations regarding work in confined spaces.
- .2 Obtain an Entry Permit in accordance with Part XI of the Canada Occupational Health and Safety Regulations for entry into an existing identified confined space located at the Facility of premises of Work.
- .1 Obtain permit from Facility Manager.
- .2 Keep copy of permit issued.
- .3 Safety for Inspectors:
- .1 Provide PPE and training to Departmental Representative and other persons who require entry into confined space to perform inspections.
- .2 Be responsible for efficacy of equipment and safety of persons during their entry and occupancy in the confined space.
- 1.23 SITE RECORDS .1 Maintain on work site a copy of safety regulated documentation and reports stipulated to be produced in compliance with Acts and Regulations of authorities having jurisdiction and of those documents specified herein.
- .2 Upon request, make available to Departmental Representative, or authorized safety officer for inspection.
- 1.24 POSTING OF
DOCUMENTS .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post other documents as specified herein, including:
- .1 Site specific Health and Safety Plan.
- .2 WHMIS data sheets.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 31 23 33.01 - Excavating, Trenching and Backfill.
- 1.2 DEFINITIONS .1 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- 1.3 FIRES .1 Fires and burning of rubbish on site are not permitted.
- 1.4 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS .1 Dispose of construction waste materials and demolition debris, resulting from work, at approved landfill sites only. Carryout such disposal in strict accordance with provincial and municipal rules and regulations. Separate out and prevent improper disposal of items banned from landfills.
- .2 Do not bury rubbish and waste materials on site. Dispose at approved landfill sites.
- .3 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.
- .4 Store, handle and dispose of hazardous materials and hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.
- .5 Communicate with landfill operator prior to commencement of work, to determine what specific construction, demolition and renovation waste materials have been banned from disposal at the landfill and at transfer stations.
-

1.5 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing regulations and requirements.
- .4 Pumped water must meet applicable federal, provincial, and municipal standards before it can be discharged to a surface water body. If regulatory guidelines exceedences are noted, the Departmental Representative has the right to issue stop pumping instructions to the Contractor. Contractor will not be compensated for any delays associated with retrofitting equipment to meet guidelines.
- .5 Provide control devices such as filter fabrics, sediment traps and settling ponds to control drainage and prevent erosion of adjacent land. Maintain in good order for duration of work.

1.6 PERMIT

- .1 All guidelines and instructions stated on permits must be strictly adhered to.

1.7 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
 - .2 Do not use waterway beds for borrow material.
 - .3 Do not dump excavated fill, waste material or debris in waterways.
 - .4 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial and federal environmental regulations.
 - .5 Do not skid logs or construction materials across waterways.
-

1.7 WORK ADJACENT
TO WATERWAYS
(Cont'd)

- .6 Do not refuel any type of equipment within 100 m of a water body. Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.

1.8 POLLUTION
CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and around entire construction site.
- .5 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.
- .6 Have emergency spill response equipment and rapid clean-up kit, appropriate to work, at site. Locate adjacent to work and where hazardous materials are stored. Provide personal protective equipment as required for clean-up.
- .7 Report, to Federal and Provincial Department of the Environment, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment. Also notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

1.9 WILDLIFE
PROTECTION

- .1 Should nests of migratory birds be encountered during work, immediately notify Departmental Representative for directives to be followed.
 - .1 Do not disturb nest site and neighbouring vegetataion until nesting is completed.
 - .2 Minimize work immediately adjacent to such areas until nesting is completed.
 - .3 Protect these areas by following recommendations of Canadian Wildlife Service.

PART 1 - GENERAL

1.1 SECTION
INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.

1.2 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Submittals.

1.3 INSPECTION

- .1 Facilitate Departmental Representative's access to Work. If part of Work is being fabricated at locations other than construction site, make preparations to allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.
- .3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed. Pay costs to uncover and make good such Work.
- .4 In accordance with the General Conditions, Departmental Representative may order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.

1.4 INDEPENDENT
INSPECTION AGENCIES

- .1 Departmental Representative will engage and pay for service of Independent Inspection and Testing Agencies for purpose of inspecting and testing portions of Work except for the following which remain part of Contractor's responsibilities:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations, or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.

1.4 INDEPENDENT
INSPECTION AGENCIES
(Cont'd)

- .1 (Cont'd)
 - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests as specified within various sections designated to be carried out by Contractor under the supervision of Departmental Representative.
 - .6 Additional tests specified in Clause 1.4.2.
- .2 Where tests or inspections by designated Testing Agency reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of corrected work.
- .3 Employment of inspection and testing agencies by Departmental Representative does not relax responsibility to perform Work in accordance with Contract Documents.

1.5 ACCESS TO WORK

- .1 Furnish labour and facility to provide access to the work being inspected and tested.
- .2 Co-operate to facilitate such inspections and tests.
- .3 Make good work disturbed by inspections and tests.

1.6 PROCEDURES

- .1 Notify Departmental Representative sufficiently in advance of when work is ready for tests, in order for Departmental Representative to make attendance arrangements with Testing Agency. When directed by Departmental Representative, notify such Agency directly.
- .2 Submit representative samples of materials specified to be tested. Deliver in required quantities to Testing Agency. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 Provide labour and facilities to obtain and handle samples on site. Provide sufficient space on site for Testing Agency's exclusive use to store equipment and cure test samples.

1.7 REJECTED WORK

- .1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.
- .2 Make good damages to existing or new work, including work of other Contracts, resulting from removal or replacement of defective work.

1.8 TESTING BY CONTRACTOR

- .1 Provide all necessary instruments, equipment and qualified personnel to perform tests designated as Contractor's responsibilities herein or elsewhere in the Contract Documents.
- .2 At completion of test, turn over 2 copies of fully documented test reports to Departmental Representative. Additionally, obtain other copies in sufficient quantities to enable one complete set of test reports to be placed in each of the maintenance manuals specified in Section 01 78 00 - Closeout Submittals.
- .3 Submit mill test certificates and other certificates as specified in various sections.
- .4 Furnish test results as specified in various sections.

PART 1 - GENERAL

1.1 ACCESS

- .1 Provide and maintain adequate access to project site.
- .2 Maintain access roads for duration of contract and make good damage resulting from Contractors' use of roads.

1.2 CONTRACTOR'S
SITE OFFICE

- .1 Be responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Departmental Representative.

1.3 DEPARTMENTAL
REPRESENTATIVE'S
SITE OFFICE

- .1 Provide or construct a separate site office for the use of the Departmental Representative and the Site Representative. The building must be in place prior to commencement of work.
- .2 Provide heating system to maintain 22°C inside temperature at -20°C outside temperature.
- .3 The building will be approximately 2400 mm x 3600 mm. It will have a suitable frame covered with a weatherproof siding and lined with plywood or other approved material. The floor will be of 19 mm thick material. It will be provided with suitable window with at least 1 m² of glass and arranged to provide at least 0.5 m² of screened opening. The door will be fitted with a lockset and 2 keys.
- .4 The office will be equipped with a drafting chair and a 900 mm x 1500 mm table having a hinged, smooth wooden top suitable for drafting.
- .5 Install electrical lighting system to provide minimum 750 lux using surface mounted, shielded commercial fixtures with 10% upward light component.
- .6 Maintain office in clean condition.

1.3 DEPARTMENTAL
REPRESENTATIVE'S
SITE OFFICE
(Cont'd)

- .7 Arrange and pay for telephone, internet and facsimile machine in the Departmental Representative's Office for Site Representative's exclusive use. Long distance calls or faxes placed on this phone by the Departmental Representative or the Site Representative will be paid by the Departmental Representative.
- .8 Contractor may, on approval of Departmental Representative, provide cellular or mobile phone. If approval to use cellular or mobile phone is granted, be responsible for all services, airtime, license and network access fees, and all other fees or charges required to utilize the phone as intended by the manufacturer.

1.4 SANITARY
FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.5 POWER

- .1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.
- .2 Supply and install all temporary facilities for power such as pole lines and underground cables to approval of local power supply authority.

1.6 WATER SUPPLY

- .1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.

1.7 SCAFFOLDING

- .1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with Z797-09 (R2014).
- .2 Erect scaffolding independent of walls. Remove when no longer required.

1.8 CONSTRUCTION
SIGN AND NOTICES

- .1 Contractor or subcontractor advertisement signboards are not permitted on site.
- .2 Only notices of safety or instructions are permitted on site.
- .3 Safety and Instruction Signs and Notices:
 - .1 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321-96 (R2006).
- .4 Maintenance and Disposal of Site Signs:
 - .1 Maintain approved signs and notices in good condition for duration of project and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.9 REMOVAL OF
TEMPORARY
FACILITIES

- .1 Remove temporary facilities from site when directed by Departmental Representative.

PART 1 - GENERAL

- 1.1 SECTION INCLUDES .1 Barriers.
.2 Traffic Controls.
- 1.2 INSTALLATION AND REMOVAL .1 Provide temporary controls in order to execute Work expeditiously.
.2 Remove from site all such work after use.
- 1.3 HOARDING .1 Erect temporary site enclosures using 1.2 m high snow fence wired to rolled steel "T" bar fence posts spaced at 2.4 m centres. Provide one lockable truck gate. Maintain fence in good repair.
- 1.4 ACCESS TO SITE .1 Provide and maintain access to adjacent harbour facilities.
- 1.5 PUBLIC TRAFFIC FLOW .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.
- 1.6 FIRE ROUTES .1 Maintain access to property including overhead clearances for use by emergency response vehicles.
- 1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY .1 Protect surrounding private and public property from damage during performance of Work.
.2 Be responsible for damage incurred.

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for board, lodgings and related services to be provided by the Contractor for the Inspector.
- .2 Due to the location of this site, it is a requirement of this contract that the Contractor provide and pay for all board and lodgings for the Site Inspector's sole use for the duration of the project. Provide for and maintain acceptable living accommodations on site for the Inspector's sole use. The minimum requirement would be a hotel within 5 km of the project site, or other arrangement approved by the Departmental Representative. The minimum daily allowance for the Site Inspector's meals (to be paid for by the contractor), is in accordance with the latest published Treasury Board guidelines for breakfast/lunch/dinner allowances (these can be found on-line at <http://www.njc-cnm.gc.ca/directive/travel-voyage/s-t-dv-a3-eng.php>).

1.2 BOARD AND LODGINGS

- .1 For the purpose of this contract board and lodgings shall include but not necessarily be limited to: sleeping accommodation, meals and dining facilities, washroom facilities, laundry facilities, electrical and heating service, linens and bedding, etc. and any reasonable service as directed by the Inspector.
- .2 Board and lodgings must be approved by the Inspector and Contractor will cooperate in providing all services required to maintain an acceptable standard of living during construction period.
- .3 The Contractor shall include all calendar days, including weekends and statutory holidays in determining the cost.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Comply with any or all applicable Agencies regulation of the Province of Newfoundland and Labrador, relating to the set up, servicing and maintenance of accommodations for the Inspector.

Upland Improvements
Bank Head Cove, NL
PN: 723439

INSPECTOR'S CAMP AND BOARD

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1.4 MEASUREMENT FOR
PAYMENT

.1 No measurement for payment to be made under this section including all cost of this section in the lump sum items of this contract.

PART 1 - GENERAL

1.1 GENERAL

- .1 Use new material and equipment unless otherwise specified.
- .2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
 - .1 name and address of manufacturer;
 - .2 trade name, model and catalogue number;
 - .3 performance, descriptive and test data;
 - .4 manufacturer's installation or application instructions;
 - .5 evidence of arrangements to procure;
 - .6 evidence of manufacturer delivery problems or unforeseen delays.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classifications unless otherwise specified.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 PRODUCT QUALITY
AND REFERENCED
STANDARDS

- .1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.
- .2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions.

1.3 ACCEPTABLE
MATERIALS AND
ALTERNATIVES

- .1 Acceptable Materials: When materials specified include trade names or trade marks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.

1.3 ACCEPTABLE
MATERIALS AND
ALTERNATIVES
(Cont'd)

- .2 Alternative Materials: Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.
- .3 Substitutions: After acceptance of bid, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.4 MANUFACTURERS
INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturers instructions, so that Departmental Representative will designate which document is to be followed.

1.5 AVAILABILITY

- .1 Immediately notify Departmental Representative in writing of unforeseen or unanticipated material delivery problems by manufacturer. Provide support documentation as per Clause 1.1.2 above.

1.6 WORKMANSHIP

- .1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Remove unsuitable or incompetent workers from site as stipulated in General Conditions.
- .3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.
- .4 Coordinate work between trades and subcontractors.

1.7 STORAGE,
HANDLING AND
PROTECTION

- .1 Deliver, handle and store materials in manner to prevent deterioration and soiling and in accordance with manufacturer's instructions when applicable.

1.7 STORAGE,
HANDLING AND
PROTECTION
(Cont'd)

.2 Immediately remove damaged or rejected materials
from site.

PART 1 - GENERAL

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Prevent accumulation of wastes which create hazardous conditions.
- .4 Provide adequate ventilation during use of volatile or noxious substances.

1.2 MATERIALS

- .1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 CLEANING DURING CONSTRUCTION

- .1 Maintain project grounds and public properties in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Provide on-site garbage containers for collection of waste materials and debris.
- .3 Remove waste materials and debris from site on a daily basis.

1.4 FINAL CLEANING

- .1 In preparation for acceptance of the Work perform final cleaning.
- .2 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.
- .3 Broom clean exterior paved and concrete surfaces; rake clean other surfaces of grounds.

PART 1 - GENERAL

1.1 SECTION
INCLUDES

- .1 Project Record Documents as follows:
 - .1 As-built drawings;
 - .2 As-built specifications;
 - .3 Reviewed shop drawings.

1.2 PROJECT RECORD
DOCUMENTS

- .1 Departmental Representative will provide two white print sets of contract drawings and two copies of Specifications Manual specifically for "as-built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative at any time during construction.
- .4 As-Built Drawings:
 - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set (also by use of red ink). Submit both sets to Departmental Representative. All drawings of both sets shall be stamped "As-Built Drawings" and be signed and dated by Contractor.
 - .2 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
 - .3 Record following information:
 - .1 Horizontal and vertical location of various elements in relation to CHS Chart Datum.
 - .2 Field changes of dimension and detail.
 - .3 All design elevations, sections, and details dimensioned and marked-up to consistently report finished installation conditions.
 - .4 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings must also be marked-up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document.

-
- 1.2 PROJECT RECORD DOCUMENTS
(Cont'd)
- .4 (Cont'd)
- .3 (Cont'd)
- .5 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.
- .5 As-built Specifications: legibly mark in red each item to record actual construction, including:
- .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.
- .2 Changes made by Addenda and Change Orders.
- .3 Mark up both copies of specifications; stamp "as-built", sign and date similarly to drawings as per above clause.
- .6 Maintain As-built documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis. Frequency of reviews will be subject to Departmental Representative's discretion. Failure to maintain as-builts current and complete to satisfaction of the Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.
- .7 Record information concurrently with construction progress.
- .1 Do not conceal Work until required information is recorded.
- .8 Provide digital photos, if requested, for site records.
- 1.3 WARRANTIES AND BONDS
BONDS
- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .3 Submit Warranty information made available during construction phase to Departmental Representative for approval prior to each monthly pay estimate.
-

1.3 WARRANTIES AND
BONDS
(Cont'd)

- .4 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier and manufacturer with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Retain warranties and bonds until time specified for submittal.
- .5 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .6 Respond in a timely manner to oral or written notification of required construction warranty repair work.

1.4 REVIEWED SHOP
DRAWINGS

- .1 Compile 2 full sets of all reviewed shop drawings.

PART 1 - GENERAL

- 1.1 SUMMARY .1 This section defines correction to maximum dry density to take into account aggregate particles larger than 19 mm.
- 1.2 REFERENCES .1 American Society for Testing and Materials (ASTM)
.1 ASTM C127-12 (2001), Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
.2 ASTM D698-12a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
.3 ASTM D1557-12, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
.4 ASTM D4253-00 (2006), Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
- 1.3 DEFINITIONS .1 Corrected maximum dry density is defined as:
.1 $D = (D1 \times D2) / ((F1 \times D2) + (F2 \times D1))$
.2 $D = (F1 \times D1) + (0.9 \times D2 \times F2)$
.3 Where: D = corrected maximum dry density kg/m³.
.1 F1 = fraction (decimal) of total field sample passing 19 mm sieve
.2 F2 = fraction (decimal) of total field sample retained on 19 mm sieve (equal to 1.00 - F1)
.3 D1 = maximum dry density, kg/m³ of material passing 19 mm sieve determined in accordance with Method A of ASTM D698.
.4 D2 = bulk density, kg/m³, of material retained on 19 mm sieve, equal to 1000G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127.
.4 For free draining aggregates, determine D1 (maximum dry density) to ASTM D4253 dry method when directed by Departmental Representative.
- 1.4 MEASUREMENT FOR PAYMENT .1 All work covered under this specification is considered to be incidental to the project and will not be measured for payment.

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CORRECTED MAXIMUM DRY
DENSITY FOR FILL

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PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

1.1 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
.1 ASTM D 4791-10, Standard Test Method for Flat
Particles, Elongated Particles, or Flat and
Elongated Particles in Coarse Aggregate.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00
- Submittal Procedures.
- .2 Allow continual sampling by Departmental
Representative during production.
- .3 Provide Departmental Representative with access
to source and processed material for sampling.
- .4 Install sampling facilities at discharge end of
production conveyor, to allow Departmental
Representative to obtain representative samples of
items being produced. Stop conveyor belt when
requested by Departmental Representative to permit
full cross section sampling.
- .5 Pay cost of sampling and testing of aggregates
which fail to meet specified requirements.

1.4 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Divert unused granular materials from landfill to
local quarry facility as approved by Departmental
Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Aggregate quality: sound, hard, durable material
free from soft, thin, elongated or laminated
particles, organic material, clay lumps or
minerals, or other substances that would act in
deleterious manner for use intended.
-

2.1 MATERIALS
(Cont'd)

- .2 Flat and elongated particles of coarse aggregate:
to ASTM D 4791.
 - .1 Greatest dimension to exceed 5 times least
dimension.
- .3 Fine aggregates satisfying requirements of
applicable section to be one, or blend of
following:
 - .1 Natural sand.
 - .2 Manufactured sand.
 - .3 Screenings produced in crushing of quarried
rock, boulders, gravel or slag.
- .4 Coarse aggregates satisfying requirements of
applicable section to be one of or blend of
following:
 - .1 Crushed rock.
 - .2 Gravel and crushed gravel composed of
naturally formed particles of stone.
 - .3 Light weight aggregate, including slag and
expanded shale.

2.2 SOURCE QUALITY
CONTROL

- .1 Inform Departmental Representative of proposed
source of aggregates and provide access for
sampling at least 2 weeks prior to commencing
production.
- .2 If, in opinion of Departmental Representative,
materials from proposed source do not meet, or
cannot reasonably be processed to meet, specified
requirements, locate alternative source or
demonstrate that material from source in question
can be processed to meet specified requirements.
- .3 Advise Departmental Representative 2 weeks in
advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude
future rejection if it fails to conform to
requirements specified, lacks uniformity, or if
its field performance is found to be
unsatisfactory.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Aggregate source preparation:

3.1 PREPARATION
(Cont'd)

- .1 (Cont'd)
 - .1 Prior to excavating materials for aggregate production, clear area to be worked, and strip unsuitable surface materials. Dispose of cleared unsuitable materials as directed by Departmental Representative.
 - .2 Where clearing is required, leave screen of trees between cleared area and roadways as directed.
 - .3 Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
 - .4 When excavation is completed dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.
 - .5 Trim off and dress slopes of waste material piles and leave site in neat condition.
- .2 Processing:
 - .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
 - .2 Blend aggregates, if required to meet specifications. Use only equipment approved by Departmental Representative.
 - .3 Wash aggregates, if required to meet specifications. Use only equipment approved by Departmental Representative.
 - .4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.
- .3 Handling:
 - .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
- .4 Stockpiling:
 - .1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Departmental Representative. Do not stockpile on completed pavement surfaces.
 - .2 Stockpile aggregates in sufficient quantities to meet project schedules.
 - .3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

3.1 PREPARATION
(Cont'd)

- .4 (Cont'd)
- .4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.
 - .5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
 - .6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.
 - .7 Stockpile materials in uniform layers of thickness as follows:
 - .1 Maximum 1.5 m for coarse aggregate and base course materials.
 - .2 Maximum 1.5 m for fine aggregate and sub-base materials.
 - .3 Maximum 1.5 m for other materials.
 - .8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
 - .9 Do not cone piles or spill material over edges of piles.
 - .10 Do not use conveying stackers.
 - .11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.2 CLEANING

- .1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .2 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .3 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies supply, placement and compaction of rockfill as required or as directed by Departmental Representative.
- 1.2 RELATED REQUIREMENTS .1 Section 31 23 33.01 - Excavating, Trenching and Backfilling.
.2 Section 31 32 19.01 - Geotextiles.
- 1.3 REFERENCES .1 ASTM International
.1 ASTM D 698-07e1, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
.2 Underwriters' Laboratories of Canada (ULC)
- 1.4 MEASUREMENT FOR PAYMENT .1 Rock Fill (100 mm minus): Supply, placement of common fill will be measured by the cubic metre (m³) (CMPM). Material required for the backfill will be approved prior to supply and placement. The volume of material will be determined in place from measurements taken prior to and at completion of the work. Include the cost of all plant, equipment, and materials required to complete the work as specified.

PART 2 - PRODUCTS

- 2.1 ROCK FILL .1 Rock fill (100 mm minus) material to following requirements:
.1 Crushed quarry stone consisting of hard durable particles free from clay lumps, frozen material and other deleterious materials, and free from splits, seams or defects likely to impair its soundness during handling or under action of water.
.2 Relative density: to ASTM C127, not less than 2.65.
-

2.1 ROCK FILL
(Cont'd)

- .1 (Cont'd)
- .3 Having gradation which are within limits specified when tested to ASTM C136-84A and ASTM C117-87. Sieve size to CAN/CGSB-8.1-88.
- .4 When tested by means of laboratory sieves, it shall fulfill requirements as follows:
- | Sieve _____ | % by Weight Passing |
|-------------|---------------------|
| 100 mm | 85-100 |
| 75 mm | 55-90 |
| 50 mm | 35-65 |
| 38 mm | 25-40 |
| 25 mm | 15-25 |
| 19 mm | 7-15 |
| 12 mm | 3-15 |
| 10 mm | 3 |

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or are acceptable for rough grading installation.
- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of approval to proceed from Departmental Representative.

3.2 PLACING ROCK FILL

- .1 Only rock fill material approved by Departmental Representative will be placed. Material will be placed uniformly across full cross-section in layers not exceeding 300 mm loose depth.
- .2 Use suitable earth moving and surface grading equipment to place and spread rock fill in continuous and uniform horizontal layers.
- .3 Compact rock fill after each 300 mm lift.
- .4 Place rock fill to 300 mm below bottom of finished grade.

3.2 PLACING ROCK FILL
(Cont'd)

.5 All side slopes to be one (1) vertical to one and one half (1.5) horizontal.

3.3 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Rough grade to following depths below finish grades:
.1 50 mm for finished grader of Type 1 material.
- .3 Slope rough grade as indicated on drawings.
- .4 Grade ditches to depth required for maximum run-off as directed.
- .5 Prior to placing fill over existing ground, scarify surface to depth of 150 mm minimum before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .6 Compact filled and disturbed areas to corrected maximum dry density to ASTM D 698, as follows:
.1 95% under roadway and parking areas.

3.4 TESTING

- .1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by ULC. Costs of tests will be paid by Owner/Departmental Representative in accordance with Sections 01 29 83 - Payment Procedures for Testing Laboratory Services.

3.5 CLEANING

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

3.6 PROTECTION

- .1 Protect bench marks, buildings, surface or underground utility lines which are to remain as directed by Departmental Representative. If damaged, restore to original or better condition unless directed otherwise.
- .2 Maintain access roads to prevent accumulation of construction related debris on roads.

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS
- .1 Section 31 22 13 - Rough Grading.
 - .2 Section 31 32 19.01 - Geotextiles.
- 1.2 MEASUREMENT FOR PAYMENT
- .1 Mass Excavation (Common): Measurements for payment to be made under this section will be measured by the cubic metre (m³). Include costs in unit prices for item for which excavating and backfilling is required (see Section 3.2 - Excavation). Include the cost of all plant, labour, equipment required to complete the work as specified.
 - .2 Mass Excavation (Ditching/Reshading): Measurements for payment under this section will be measured by the LM (linear meters). This includes the mass excavation, reshaping on the new ditching, supply and placement of 100 mm minus rock as indicated on the drawings. Includes the cost of all plant, labour, equipment required to complete the work.
- 1.3 REFERENCES
- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C 117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C 136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D 422-63 2002, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D 698-00a1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³).
 - .5 ASTM D 4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- 1.4 DEFINITIONS
- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
 - .1 Rock: solid material in excess of 0.25 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket. Frozen material not classified as rock.
-

1.4 DEFINITIONS
(Cont'd)

- .1 (Cont'd)
- .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .4 Unsuitable materials:
 - .1 Weak and compressive materials under excavated areas.
 - .2 Frost susceptible materials under excavated areas.
 - .3 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D 4318, and gradation within limits specified when tested to ASTM D 422 and ASTM C 136: Sieve sizes to CAN/CGSB-8.1.
 - .2 Table:

<u>Sieve Designation</u>	<u>% Passing</u>
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45
 - .3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.
- .5 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Type 1 fill: to the following requirements:
 - .1 Crushed, pit run or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to ASTM C 136 . Sieve sizes to CAN/CGSB-8.1.

2.1 MATERIALS
(Cont'd)

- .2 Type 2 fill: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.
.1 Table:

<u>Sieve Designation</u>	<u>% Passing</u>
	Type 1
101.6 mm	100
50 mm	75-100
4.75 mm	25-55
1.2 mm	10-35
0.3 mm	5-20
0.075 mm	0-12

PART 3 - EXECUTION

3.1 SITE PREPARATION

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

3.2 EXCAVATION

- .1 Excavate new parking/laydown area including road access to lines, grades, elevations and dimensions as indicated.
- .2 Excavate for new ditching/reshaping and placement of new 100 mm minus rock material for ditch lining to new grades as indicated on accompanying drawings.
- .3 Excavated material to be used along the edge of the existing access road as directed by the Departmental Representative.
- .4 Contractor is to clear and grub area before placement of materials. Compact in 300 mm lifts.
- .5 Clearing and grubbing materials are to be transported to an approved disposal site.
- .6 Dispose of surplus and unsuitable excavated material in approved location off site.
- .7 Do not obstruct flow of surface drainage.

3.2 EXCAVATION
(Cont'd)

- .8 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .9 Notify Departmental Representative's approval of excavation is reached.
- .10 Obtain Departmental Representative's approval of completed excavation.

3.3 FILL TYPES AND
COMPACTION

- .1 Use fill of types as indicated.

3.4 BACKFILLING

- .1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

3.5 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Clean and reinstate areas affected by Work as directed by Departmental Representative.
- .3 Restore site to its normal state prior to excavation.

PART 1 - GENERAL

1.1 SECTION
INCLUDES

- .1 Materials and installation of polymeric geotextiles used in the new parking/laydown area and new drainage ditching, purpose of which is to:
 - .1 Separate and prevent mixing of granular materials of different grading.
 - .2 Act as hydraulic filters permitting passage of water while retaining soil strength of granular structure.

1.2 RELATED WORK

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

1.3 REFERENCES

- .1 ASTM Society for Testing and Materials (ASTM)
 - .1 ASTM D4491-99a(2004)e1, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D 4595-05, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D 4716-04, Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .4 ASTM D 4751-04, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2-M88, Textile Test Methods.
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Geomembranes.
 - .1 No.2-M85, Mass per Unit Area.
 - .2 No.3-M85, Thickness of Geotextiles.
 - .3 No.7.3-92, Grab Tensile Test for Geotextiles.
 - .4 No. 6.1-93, Bursting Strength of Geotextiles Under No Compressive Load.
- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

-
- 1.4 SAMPLES
- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit to Departmental Representative the following samples at least 2 weeks prior to commencing work.
 - .1 Minimum length of 1 m of roll width of geotextile.
- 1.5 MILL CERTIFICATES
- .1 Submit to Departmental Representative a copy of mill test data and certificate at least 2 weeks prior to start of work.
- 1.6 DELIVERY AND STORAGE
- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.
- 1.7 WASTE MANAGEMENT AND DISPOSAL
- .1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
 - .2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and packaging material, in appropriate on-site bins, for recycling in accordance with Waste Management Plan.
 - .3 Fold up metal banding, flatten and place in designated area for recycling.
- 1.8 MEASUREMENT FOR PAYMENT
- .1 Geotextiles: Measurement for payment to be made under this section will be made in (m²) meters square. Supply and placement include the cost of all plant, labour, equipment and materials to complete the work specified. Include costs in items of work which geotextile is required.

PART 2 - PRODUCTS

- 2.1 MATERIAL
- .1 Non-woven, mechanically bounded, needle punched polyester membrane, suitable for use in seawater environment, with the following material properties:
-

2.1 MATERIAL
(Cont'd)

- .1 (Cont'd)
 - .1 4.7 mm thickness (CAN-148.1, No. 3)
 - .2 1180 N tensile strength (ASTM D4595)
 - .3 530 N Tear propagation (CAN-12.2)
 - .4 3850 Kpa Burst (Mullen) (CAN-4.2 method 11.1)
 - .5 Mass per unit area: to CAN/CGSB-148.1, No. 2, minimum 400 g/m².
 - .6 Elongation at break: 50 to 100 percent.
 - .7 Seam strength: equal to or greater than tensile strength of fabric.
- .2 Hydraulic properties:
 - .1 Apparent opening size (AOS): to ASTM D4751, 50 to 150 micrometres.
 - .2 Permittivity: to ASTM D4491, 0.25 cm per second.
- .3 Securing pins and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m² to CAN/CSA G164.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Place one (1) layer of geotextile material as indicated on drawings.
- .2 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with securing pins and washers.
- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .5 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .6 Join successive strips of geotextile by sewing.
- .7 Pin successive strips of geotextile with securing pins at 300 mm interval at mid point of lap as indicated.
- .8 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.

3.1 INSTALLATION
(Cont'd)

- .9 After installation, cover with overlying layer within 4 hours of placement.
- .10 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .11 Place rock fill and compact soil layers in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.

3.2 CLEANING

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

3.3 PROTECTION

- .1 Vehicular traffic not permitted directly on geotextile.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 01 45 00 - Quality Control.
- 1.2 MEASUREMENT PROCEDURES
- .1 Type 2 Granular Sub Base: will be measured in cubic meters (m³). Supply, placement and compaction of Type 2 base material including the cost of all plant, labour, equipment and materials required to complete the work as specified.
- 1.3 REFERENCES
- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C117-13, Standard Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C117-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregate.
 - .4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .5 ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .6 ASTM D1883, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soil.
 - .7 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
 - .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- 1.4 DELIVERY, STORAGE AND HANDLING
- .1 Divert unused granular material from landfill to local facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Type 2 Granular Sub-Base Material to the following requirements:
- .1 Gradation to be within following limits when tested to ASTM C136-82 and ASTM C117-80. The gradings shall not show marked fluctuations from opposite extremes of the limiting sizes, having a smooth curve without sharp breaks when plotted on a semi-log grading chart to ASTM E11-87.
- | <u>ASTM Sieve Designation</u> | <u>%Passing</u> |
|-------------------------------|------------------------------------|
| 15.9 mm | 45-80 |
| 4.76 mm | 25-55 |
| 1.20 mm | 12-35 |
| 0.300 mm | 7-20 |
| 0.075 mm | 3-6 (Pit Source) 3-8 (Rock Source) |
- .2 Other properties as follows:
- .1 Liquid Limit ASTM D423-66 (1972) Maximum 25.
- .2 Plasticity Index ASTM D424-59 (1971) Maximum 0.
- .3 Los Angeles Abrasion ASTM C131-81 Maximum % Loss by Weight: 35.
- .4 Crushed fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm sieve.
- .5 CBR: AASHTO T180-74 Method D.
- .3 Other properties as follows:
- .1 Liquid Limit: to ASTM D4318 (1972) maximum 25.
- .2 Plasticity Index: to ASTM D4313-59 (1971) maximum 0.
- .3 Los Angeles Abrasion: to ASTM C131-06. Maximum % loss by weight: 35.
- .4 Crushed Fragments: 50%. The percent of crushed particles will be determined by examining the fraction retained on the 4.76 mm sieve and dividing the weight of the crushed particles by the total weight retained on the 4.76 mm sieve.
- .5 CBR:AASSHTO T 193-10 (2010) Min 100 when compacted to 100% of AASSHTO T 180-10 Method D.

PART 3 - EXECUTION

3.1 SEQUENCE OF OPERATIONS

- .1 Place granular base after 100 mm minus rock fill has been placed, compacted, inspected and approved by Departmental Representative. Inspected and approved by Departmental Representative.
- .2 Placing
 - .1 Construct granular base to depth and grade in areas indicated.
 - .2 Ensure no frozen material is placed.
 - .3 Place material only on clean unfrozen surface, free from snow and ice.
 - .4 Place material to full width in uniform layers not exceeding 150mm compacted thickness. Department Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
 - .5 Shape to smooth contour and compact to specified density before succeeding layer is placed.
 - .6 Remove and replace that portion of layer in which material becomes segregated during spreading.
- .3 Compaction Equipment
 - .1 Compaction equipment to be capable of obtaining required material densities.
- .4 Compacting
 - .1 Compact to density not less than 100% corrected maximum dry density ASTM D698.
 - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
 - .3 Apply water as necessary during compacting to obtain specified density.
 - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Department Representative.

3.2 SITE TOLERANCES

- .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.3 PROTECTION

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