Department of Community Government & Transportation
Government of Nunavut
Iqaluit, Nunavut

SPECIFICATIONS
FOR

SEWAGE LAGOON IMPROVEMENTS
HALL BEACH, NUNAVUT

Prepared For:
Government of Nunavut
Department of Community, Government & Transpo rtation
Iqaluit, Nunavut

Prepared by:
Ferguson Simek Clark
Engineers & Architects
Iqaluit, Yellowknife, Whitehorse

FSC PROJECT NO. 2002-0460
GN Project Number 02-2006

ISSUED FOR TENDER

SET No. _____

July, 2002

END

PART 1 - GENERAL

1.1 LOCATION

.1 Hall Beach is located at 68o 46'N latitude and 81o 12'W longitude. Situated in the Foxe Basin of the Arctic Lowlands, it is 840 air km north-west of Iqaluit.

1.2 CLIMATE

.1 July mean high temperature is 8.4 degrees Celsius, July mean low is 2.3 degrees Celsius.

.2 January mean high temperature is -26.9 degrees Celsius, January mean low temperature is -34.8 degrees Celsius.

.3 Total annual precipitation is 218 mm, consisting of 100 mm of rainfall and 1210 mm of snow.

.4 Prevailing winds are from the north-west at 21.3 km/h.

1.3 POPULATION

.1 Population is approximately 648 people.

.2 Language spoken: Inuktituk and English.

1.4 SERVICES

.1 Commercial accommodations services available.

END OF SECTION 01001

PART 1 - GENERAL

1.1 GENERAL

.1 The CONTRACTOR shall note that the WORKS, as described in the CONTRACT DOCUMENTS, are intended to commence in the Spring of 2002. It is anticipated that all earthworks including the berms and ditch shall be complete by September 30, 2002.

.2 The WORKS are located in the Hamlet of Hall Beach - see Section 01001 for Community Information.

.3 Definitions:

.1 CONTRACTOR: the general contractor for the sewage lagoon upgrade and expansion as described in the GENERAL CONDITIONS of the contract.

.2 ENGINEER: the engineer as described in the GENERAL CONDITIONS of the Contract. This position is normally filled by the GN Project Officer designated as in charge of this work.

.3 CONSULTANT: the design consultant for this work. As directed by the ENGINEER from time to time, correspondence, schedules, shop drawings, progress payments, etc., sent from the CONTRACTOR to the ENGINEER will normally be addressed to the CONSULTANT with a carbon copy to the ENGINEER. The CONSULTANT will provide recommendations to the ENGINEER as to the acceptability of the correspondence and inspect the work for the ENGINEER and provide comments upon the work. The CONSULTANT'S direction to the CONTRACTOR will be sent directly to the CONTRACTOR and carbon copied to the ENGINEER. All instructions, change orders involving a change in the contract will be sent to the ENGINEER and issued directly by the ENGINEER to the CONTRACTOR.

.4 RESIDENT ENGINEER: A representative of the CONSULTANT who may be on site full time during construction. All correspondence will continue to be directed to the CONSULTANT and ENGINEER as directed above with carbon copies given to the RESIDENT ENGINEER. The RESIDENT ENGINEER will provide daily and

1.1 GENERAL (Cont'd)

.3 Definitions: (Cont'd)

.4 RESIDENT ENGINEER: (Cont'd) weekly reports to the ENGINEER on both quantity and quality concerns.

.5 OTHER CONTRACTORS: Another contractor whose work is outside the scope of this contract.

.4 The WORKS to be carried out include but are not limited to:

.1 Mobilization to site of machinery and equipment necessary to perform the WORKS.

.2 Purchase and delivery to site of all materials and equipment for the project, as called for or inferred on the DRAWINGS and in the SPECIFICATIONS other than those specifically pre-purchased.

.3 All earth works, berm construction and liner installation.

.4 Inspection of all works to ensure compliance with all applicable codes and standards as directed in the SPECIFICATIONS.

.5 Should the CONTRACTOR wish to change the scope of work outlined, he shall have to identify the changes with the ENGINEER at the start of the project and prior to proceeding with work. Approval from the ENGINEER is required prior to work commencing.

.6 The CONTRACTOR shall, at the start of the project and prior to proceeding with any field work, arrange with the ENGINEER for the establishment of reference lines and a Bench Mark. Once the base lines and Bench Mark are set, it shall be the responsibility of the CONTRACTOR to protect and safeguard same throughout the constructions period.

.7 The CONTRACTOR shall include in his tender price the costs of transportation/shipping and handling of materials and all associated costs of those materials not pre-purchased for the project.

.8 The CONTRACTOR shall test the installations as described in Section 01410-Documentation, Testing and Acceptance Procedures.

.9 The CONTRACTOR shall prepare and provide all the documentation and test information necessary to comply with Interim Inspection as

1.1 GENERAL (Cont'd)

.9 (Cont'd)
outlined in Section 01410- Documentation, Testing and Acceptance Procedures.

.10 The CONTRACTOR shall carry out any incidental works to make the facilities complete and to the satisfaction of the ENGINEER.

.11 Carry out all clean-up and repair work necessary to existing roadways,ditches,etc. affected by new work and to the satisfaction of the ENGINEER.

.12 The CONTRACTOR shall complete Appendix "D1" and "D2" - List of Unit Prices and the Schedule of Breakdown Prices and return with his Tender Price.

1.2 WORKS

.1 The WORKS to be carried out include but are not limited to :

.1 Remove and dispose of the existing offload sluice.
.2 Push out existing berms and add new material to form new berms as indicated in the DRAWINGS.
.3 Grade ponds to elevations as shown in the DRAWINGS.
.4 Construct new berms with additional material as indicated in DRAWINGS.
.5 Construct new trench as shown in the DRAWINGS.
.6 Supply and install the new offload chutes as shown in the DRAWINGS.
.7 Provide smooth running surface from truck turn around areas and road access.

END OF SECTION 01011

END

1.1 WORK SEQUENCE

.1 The WORK shall be executed in a timely manner to ensure that construction is completed by the completion dates outlined in these documents.

.3 The CONTRACTOR shall consult with the ENGINEER on acceptable methods of carrying out the WORK, the space available for storage of materials and erection of temporary facilities, location of granular borrow areas, and any other information pertinent to the WORK. All costs associated with the foregoing shall be borne by the CONTRACTOR.

.4 Section 01011, Particular Scope of Work, outlines the work sequence and scheduling requirement.

END OF SECTION 01014

1 THE CONSTRUCTION SITE

.1 The OWNER will provide the lands upon which the WORK is to be constructed.

2 CONTRACTOR'S USE OF THE SITE

.1 The CONTRACTOR shall have exclusive use of the site, provided that the CONTRACTOR shall permit access to the OWNER, the ENGINEER and other Contractors on the site for purposes of inspection, reviews, tests and carrying out work related to the WORK.

END OF SECTION 01015

PART 1 - GENERAL

1.1 CONTINGENCY ALLOWANCE

.1 Include in the Contract Price, the contingency allowance as shown in the schedule to provide for changes in work as determined and authorized by the ENGINEER and approved by the OWNER.

.2 Payment of the contingency allowance or portion thereof shall only be made in the event that the ENGINEER authorizes additional work to which the unit or Lump sum prices of the Tender Form do not apply.

Unused portions of the Contingency Allowance will be retained by the OWNER.

END OF SECTION 01201

1.1 SPECIAL PROJECT PROCEDURES

.1 The OWNER reserves the right to let other Contracts on the site of the WORK related to the Project and to work with his own forces on the Project.

.2 The OWNER shall coordinate the work and insurance coverage of OTHER CONTRACTORS insofar as it affects the WORK of this CONTRACT.

.3 The CONTRACTOR shall coordinate his work with that of OTHER CONTRACTORS and tie into works constructed by others as specified or shown in the CONTRACT DOCUMENTS.

.4 The CONTRACTOR shall report to the OWNER or ENGINEER any apparent deficiencies in the work of OTHER CONTRACTORS which would affect the WORK of this CONTRACT as soon as they come to his attention and shall confirm such report in writing. Failure by the CONTRACTOR to file this report shall invalidate any claims against the OWNER by reason of deficiencies in the work of of OTHER CONTRACTORS except as to those of which the CONTRACTOR could not reasonably be aware.

1.2 STORAGE FACILITIES AND USE OF PREMISES

.1 The CONTRACTOR may use such facilities and areas as the OWNER may be willing and able to designate for the storage of MATERIAL and PRODUCT for the WORK, without charge to the CONTRACTOR.

.2 Should the CONTRACTOR require additional facilities or areas he shall make all the necessary arrangements with the owners or occupants of such other facilities or areas and shall pay all rentals and damages caused by such occupancy.

.3 The CONTRACTOR shall confine his apparatus, the storage of MATERIAL and PRODUCT and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the ENGINEER and the Hamlet and shall not unreasonably encumber the premises with his MATERIAL, PRODUCT or PLANT.

.4 The CONTRACTOR shall enforce all regulations regarding signs, advertisements, fires,

1.2 STORAGE FACILITIES AND USE OF PREMISES (Cont'd)

.4 (Cont'd)
smoking and storage of flammable MATERIAL or PRODUCT.

.5 The CONTRACTOR shall not load or permit any part of the WORK or of the OWNER's structures to be loaded in any way that will endanger their safety.

1.3 USE OF COMPLETED PORTIONS OF THE WORK

.1 The OWNER shall have the right to take possession of and use any completed or partially completed portions of the WORK, notwithstanding that the time for completing the WORK or such portions of the WORK may not have expired: but such taking possession of and use shall not be deemed acceptance of the WORK.

.2 If such prior use increases the cost of the WORK, the CONTRACTOR shall be entitled to such **compensation as the ENGINEER in the first** instance may determine.

1.4 DUMPING OF MATERIALS

.1 The CONTRACTOR shall make arrangements for the disposal of all waste material at the Hamlet solid waste disposal facility. This work is considered incidental to the contract and will not be measured separately for payment.

1.5 TRAFFIC RESTRICTIONS

.1 The CONTRACTOR shall make every effort to keep disruptions to traffic flow to a minimum.

1.6 KNOWLEDGE OF THE SITE

.1 The CONTRACTOR shall make himself aware of the available methods of transportation for equipment and personnel to the site. Contractors are cautioned that transportation is by air or sea lift.

.2 The CONTRACTOR shall have no claim on account of his failure to familiarize himself with site conditions prior to bidding on this CONTRACT. He is advised that local availability of construction equipment and labour is limited and other projects may

1.6 KNOWLEDGE OF THE SITE (Cont'd)

.2 (Cont'd)
require the equipment during the short construction season. Early arrangement should be made with the Hamlet Office, Government Liaison Officer and/or local contractors for use of any equipment available.

.3 The CONTRACTOR is responsible for his own accommodations and services at the site as per the GENERAL CONDITIONS of the CONTRACT. For general information, the latest editions of "Northern Canada Business Directory" and the "Canada North Almanac" (published by the Research Institute of Northern Canada, Box 188 Yellowknife) may be consulted.

END OF SECTION 01030

1.1 GENERAL

.1 The ENGINEER with the assistance of the CONTRACTOR shall provide a baseline, reference points and a bench mark.

.2 The CONTRACTOR shall be responsible for the correctness of the elevations and dimensions from the references provided by the ENGINEER.

.3 The layout of the WORK shall be in accordance with the Work Schedule which is prepared by the CONTRACTOR, submitted to the ENGINEER for review and is updated monthly.

.4 If the CONTRACTOR requests a change in layout procedure or sequence, he shall submit the request to the ENGINEER, giving a minimum of 48 hours notice of new or revised activities.

.5 The notice requesting a change shall be extended to 96 hours whenever a long weekend is involved.

1.2 SURVEY ASSISTANCE

.1 The CONTRACTOR shall supply acceptable survey assistants to the ENGINEER to assist in measuring, surveying, driving stakes and such other work as the ENGINEER requires to layout the WORK.

.2 For setting out line and stakes, two assistants shall be provided.

.3 For survey levelling and preparation of grade sheets, one assistant shall be provided.

.4 Survey assistants shall not be changed without the approval of the ENGINEER.

.5 If the CONTRACTOR fails to provide survey assistants that are acceptable to the ENGINEER, the ENGINEER will obtain assistants and deduct the costs and expenses thereof from the Progress Payment Certificates.

1.3 CONSTRUCTION STAKES

.1 Construction stakes including lath and hubs shall be provided by the CONTRACTOR.

END OF SECTION 01050

END

1.1 GENERAL

.1 The Laws and Regulations of Nunavut shall govern.

.2 The standards of the WORK shall conform to or exceed the minimum standards of the Canadian General Standards Board and the Canadian Standards Association.

.3 In the event that a dispute resolution by arbitration is undertaken, the Arbitration Ordinance of Nunavut shall apply.

.4 The CONTRACTOR shall ensure compliance on his part and on the part of all his SUBCONTRACTORS with the Worker's Compensation Ordinance and Regulations thereunder of the Government of Nunavut. The Worker's Compensation Board of the Northwest Territories and Nunavut can be contacted at 1-877-404-4407.

.5 In carrying out the WORK, the CONTRACTOR shall comply with all other Acts and Ordinances and Regulations thereunder the Government of Nunavut as though they had been specifically named in this specification.

1.2 BURNING

.1 No burning shall take place on site.

1.3 REGULATIONS, STANDARDS AND CODES

.1 Codes, Standards and Regulations are specified in other sections of these SPECIFICATIONS and the WORK shall be done in accordance with those Codes, Standards and Regulations where applicable.

.2 The CONTRACTOR shall obtain and pay for all permits, inspections,etc. required by the authorities having jurisdiction, including Local Construction Permits, Quarry Permits, Water Use Permits,etc.

.3 When all work has been completed, tested and placed in operation in accordance with the requirements of the DRAWINGS and SPECIFICATIONS and all governing Codes and Regulations, the CONTRACTOR shall request and obtain a Final Certificate of Approval, without reservations, from the Inspection Department(s) having jurisdiction, when

1.3 REGULATIONS, STANDARDS AND CODES (Cont'd)

.3 (Cont'd)
applicable, and the Certificate(s) shall be provided to the ENGINEER.

.4 The CONTRACTOR shall note that no allowance will be given for modification of the installation to meet requirements of governing Codes or Regulations, unless such Codes or Regulations were modified by legislation after the CONTRACT was awarded.

END OF SECTION 01060

1.1 ABBREVIATIONS - SPECIFICATIONS, METHODS, STANDARDS

.1 General

ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
CAN	National Standards of Canada
CCA	Canadian Construction Association
CSA	Canadian Standards Association
ISO	International Organization for Standardization
WCB	Worker's Compensation Board

.2 Utilities

AWWA	American Water Works Association
CGSB	Canadian General Standards Board
CSPI	Corrugated Steel Pipe Institute
IAO	Insurer's Advisory Organization
ULC	Underwriter's Laboratories of Canada
USA	United States of America Standard(ASA)

.3 Use Of Abbreviations

These abbreviations refer to Specifications, Methods and Standards issued by the respective Association, and the abbreviations are used in the SPECIFICATIONS.

Alphanumeric designations following the abbreviations denote the specification, method or standard.

1.2 ABBREVIATIONS - METRIC

.1 General

The specifications are metric and metric usage is based upon SI units in accordance with CSA Standard CAN/CSA-Z234.1-89 Canadian Metric Practice Guide. In this specification SI units are abbreviated in accordance with the

Metric Units and Abbreviations below.

.2 Linear Measure

Metre	m
Millimeter	mm
Kilometer	km
micrometre	micro-m (um)

.3 Area

Square metre	m2
Square millimeter	mm2
Hectare	ha

1.2 ABBREVIATIONS - METRIC (Cont'd)

.4 Volume

Cubic metre	m3
Litre	L

.5 Mass and Density

Kilogram	kg
Gram	g
Tonne	t
Kilogram per metre	kg/m
Gram per metre	g/m
Kilogram per square metre	kg/m2
Gram per square metre	g/m2
Kilogram per cubic metre	kg/m3

.6 Temperature

Degree Celsius	oC

END OF SECTION 01070

1 ALTERNATIVE MATERIALS

.1 Although bidders are encouraged to submit alternatives whenever same will ensure a quality, performance and serviceability equal to or greater than that inferred by the DRAWINGS and SPECIFICATIONS, they should prepare their bid using the specified materials and procedures, submitting a separate proposal for any suggested alternative. The proposal shall show clearly the alternative details of materials and procedures, and any change in price shall be subject to the ENGINEER'S approval prior to acceptance.

.2 Where PRODUCTS or MATERIALS are specified by Trade Name or Manufacturer's names, this is for the purpose of defining a standard and not for the purpose of limiting selection.

.3 Where PRODUCTS or MATERIALS are specified by Trade Name or Manufacturer's name, the arrangement of equipment shown on the DRAWINGS is generally based on the equipment of the named Manufacturer. Should the CONTRACTOR obtain authorization from the ENGINEER to supply PRODUCT or MATERIALS of equivalent to those specified, he shall bear the costs of modifications to the DRAWINGS, equipment arrangements and ancillaries to suit said PRODUCT.

END OF SECTION 01100

1.1 GENERAL

.1 Payments will be made on the basis of the lump sum prices bid and the unit prices bid in the TENDER and in accordance with the GENERAL CONDITIONS.

.2 The prices bid for various items of work, unless specifically noted otherwise, shall include the supply of all labour, material, plant and equipment necessary to construct the WORK in accordance with the specifications.

.3 The prices bid for supply of materials and installation of materials shall be full compensation of supplying, hauling, installing, cleaning, testing and placing in service together with all other work subsidiary and incidental thereto for which separate payment is not provided elsewhere.

.4 The method of measurement for payment and the basis for payment will be in accordance with the following items of this section. All measurement will be done by the ENGINEER using generally accepted field survey methods.

.5 Where the TENDER shows separate items for supply and installation, the unit prices or lump sum prices bid for supply shall include supplying, delivering, loading, unloading and all allowances for handling, storage, breakage and waste. Payment will be made only for materials actually installed.

.6 All materials on site whether existing structures, vegetation, topsoil, gravel, sand or other excavated, or piled materials are the property of the OWNER or the owner of the land on which the WORK is located. Only those materials specifically noted in the SPECIFICATIONS or on the DRAWINGS as belonging the CONTRACTOR shall become the CONTRACTOR'S property.

.7 Where there are excess excavated materials, unsuitable materials excavated or materials of any kind that are excavated but not used in the WORK, such materials are not the property of the CONTRACTOR unless authorized in writing by the ENGINEER or specified to be disposed of by the CONTRACTOR.

.8 Where WORK is called for in these SPECIFICATIONS and is not specifically

1.1 GENERAL (Cont'd)

.8 (Cont'd)
designated for payment under a pay item, the CONTRACTOR shall deem such WORK as incidental to the most closely associated pay items and make appropriate allowances in his bid price. The CONTRACTOR will not be allowed an additional amount for any items not included in the TENDER BID but which are required to make the WORK complete.

1.2 MEASUREMENT AND DEMOBILIZATION

.1 Mobilization and demobilization shall include the CONTRACTOR'S costs of mobilization at the beginning of the project; and cost of demobilization at the end of the project.

.2 Included in mobilization are such items as:

- bonding, insurance and permits
- moving personnel, materials and equipment to the site, setting up temporary facilities and all preparation for performing the WORK
- inspection and acceptance by the ENGINEER of all materials and equipment received, including as necessary, the opening of crates and recrating by the CONTRACTOR at his expense.
- the storing in an adequate and approved warehouse of those materials and equipment which will not be immediately used for construction
- supply of literature and data for O&M Manuals
- return of Government property in compliance with the CONTRACT DOCUMENTS

.3 Included in demobilization are removal of all personnel, materials and equipment, once work has been completed, tested and accepted by the ENGINEER and general cleanup of the site and the WORK.

.4 The lump sum bid for this work shall be relative to the costs involved.

.5 Upon completion of mobilization as noted above, the CONTRACTOR shall be entitled to claim an amount not exceeding 70% of the lump sum amount stated under this item. Prior to billing for completion of mobilization, the CONTRACTOR will have complied with the

1.2 MEASUREMENT AND DEMOBILIZATION (Cont'd)

.5 (Cont'd)
conditions of Section 01700 in that all required Operations and Maintenance Manual Data and Manufacturer's Literature for material provided will have been provided to the ENGINEER. The remaining 30% shall be paid to the CONTRACTOR only after work for demobilization is completed to the satisfaction of the ENGINEER notwithstanding the holdback amount, in compliance with the SPECIFICATIONS, and the CONTRACT DOCUMENTS and the Record Drawings are turned over to the ENGINEER.

1.3 LUMP SUM CONTRACTS

.1 Payments will be made on the basis of the following:

- Lump sum items in the SCHEDULE OF ITEMS AND PRICES in the TENDER
- Unit prices bid in the SCHEDULE OF UNIT PRICES in the TENDER for provisional items
- Changes in the WORK for items not covered by unit prices, in accordance with Articles GC 46 to 50 of the CONTRACT.

.2 The CONTRACTOR must supply copies of invoices to substantiate claims if requested. Deletions will be proportioned on lump sum items or determined on the basis of unit prices.

.3 For each lump sum item in the SCHEDULE OF BREAKDOWN PRICES, the ENGINEER will, in cooperation with the CONTRACTOR, estimate the percentage of the item completed at the end of the payment period.

END OF SECTION 01150

1.1 PRECONSTRUCTION MEETING

.1 A preconstruction meeting will be arranged by the ENGINEER after the CONTRACT is awarded.

.2 The meeting will be held at the ENGINEER'S office or at an alternate location at or near the site.

.3 The CONTRACTOR shall have in attendance the SUPERINTENDENT, the Project Manager and representatives of the SUBCONTRACTORS if requested by the ENGINEER.

.4 The OWNER may have a representative in attendance.

.5 The ENGINEER will have the CONSULTANT and/or Resident Engineer in attendance, and any other personnel whom the ENGINEER feels may add to a successful meeting.

.6 Minutes will be taken by the ENGINEER and copies will be distributed to attendees.

.7 The preconstruction meeting agenda will include:

.1 Identification of key project personnel and lines of communication:

.1 Role of ENGINEER, CONSULTANT and Resident Inspector.

.2 Contact Authority.

.2 Schedule of WORK:

.1 CONTRACTOR'S schedule and proposed work plan.

.2 Review DRAWINGS and SPECIFICATIONS.

.3 Temporary facilities.

.4 Granular sources.

.5 Equipment.

.6 Resupply.

.7 Shutdowns.

.3 Schedule of values:

1.1 PRECONSTRUCTION MEETING (Cont'd)

.7 (Cont'd)

.3 Schedule of values: (Cont'd)

.1 Progress payments.

.2 Change orders.

.3 Project inspections.

.4 Measurement of unit costs.

.5 Claims/disputes.

.4 Site sign.

.5 Submissions:

.1 WCB certificates and Insurance certificates are required.

.2 Shop drawings.

.3 Mill test certificates.

.4 Weld manual.

.5 Welder's certificates.

.6 Authorities having Jurisdiction:

.1 Fire Marshal.

.2 Department of Sustainable Development.

.3 Nunavut Water Board.

.4 Hamlet.

.5 Electrical/Mechanical Safety.

.6 Weights and Measures Canada.

.7 Water use applications.

.7 GN Policy:

.1 Northern involvement.

.2 Local accommodations.

.3 Local labour.

1.1 PRECONSTRUCTION MEETING (Cont'd)

.7 (Cont'd)

.8 Application for fuel supply credit purchases.

.9 Record drawings.

.10 Maintenance manual information.

.11 Safety:

.1 Disposal of hazardous wastes.

.12 Identification of testing agencies:

.1 Geotechnical consultant.

.2 Radiographic inspections.

.3 Strapping.

.4 Concrete testing agency.

.13 Determination of practical and reasonable time for retesting.

.14 Concrete mix design and trial concrete testing.

.15 Substantial completion inspection.

1.2 PROGRESS MEETINGS

.1 Progress meetings will be held on a regular monthly basis or more frequently if requested by the ENGINEER.

.2 Accommodations for progress meetings shall be provided by the CONTRACTOR at or near the site.

.3 The ENGINEER will give to all parties advance notice of meeting dates, times and locations.

.4 The CONTRACTOR shall have in attendance the SUPERINTENDENT, the Project Manager and representatives of the SUBCONTRACTORS if requested by the ENGINEER.

.5 The ENGINEER will have the Project Manager and/or Resident Engineer in attendance.

.6 The OWNER may have a representative in attendance.

1.2 PROGRESS MEETINGS (Cont'd)

.7 Minutes will be taken by the RESIDENT ENGINEER and copies will be distributed to all attendees.

END OF SECTION 01200

1.1 GENERAL

.1 Submittals are required in accordance with the provisions of this section, to ensure that the specified MATERIAL and PRODUCT are furnished and installed in accordance with the design intent as expressed in the CONTRACT DOCUMENTS.

.2 Individual submittals as required are in other sections of the SPECIFICATIONS.

.3 Until submissions are reviewed, work involving relevant PRODUCT or MATERIAL may not proceed.

.4 Where the phrase "or approved equivalent alternative" occurs in the CONTRACT DOCUMENTS, do not assume that MATERIAL, PRODUCT or methods will be accepted as equal by the ENGINEER unless the item has been specifically accepted for the WORK by the ENGINEER in writing.

1.2 IDENTIFICATION OF SUBMITTALS

.1 Identify each submittal and resubmittal by showing at least the following information:

a) Name, address and telephone number of the submitter, and a name of an individual for contact.

b) Drawing Number and specification number to which the submittal applies.

c) Whether an original submittal or resubmittal.

d) Confirmation of prior review by the CONTRACTOR.

e) Date of submittal or resubmittal.

f) Authorized signature of the Submitter.

1.3 COORDINATION OF SUBMITTALS

.1 Prior to submittal for the ENGINEER's review, coordinate all material:

a) Determine and verify field dimensions and conditions and conformance with the SPECIFICATIONS, including MATERIAL, catalogue numbers, type numbers and similar data.

b) Coordinate requirements between trades.

1.3 COORDINATION OF .1 (Cont'd)

c) Coordinate with requirements under laws, regulations, etc.

d) Secure required approvals of public agencies inspection agencies, and standards agencies and show proof of approvals acquisition.

e) Indicate any deviations from the intent of design as expressed in the CONTRACT DOCUMENTS and request specific review of these deviations.

1.4 TIMING OF SUBMITTALS

.1 Make submittals far enough in advance to allow adequate time for coordination, ENGINEER'S review, revisions and resubmittals, and for supply and delivery in time for the scheduled installation in the WORK.

.2 Allow at least ten (10) calendar days for the ENGINEER'S review after receipt of submittals.

.3 Costs due to delays in submittals shall be borne solely by the CONTRACTOR.

END OF SECTION 01300

1.1 CONSTRUCTION SCHEDULE

.1 Within fourteen (14) days after award of the CONTRACT, the CONTRACTOR shall submit for approval to the ENGINEER a construction schedule in the form of a bar chart showing all the principal phases of the work. No Progress Payment Claim shall be certified until a Construction Schedule has been received by the ENGINEER.

.2 The Construction Schedule shall be updated monthly by the CONTRACTOR.

.3 If, in the opinion of the ENGINEER, any Construction Schedule is inadequate as a control tool or if does not show the WORK being fully completed by the CONTRACT Completion Date, the ENGINEER may reject it and the CONTRACTOR shall provide a Construction Schedule that is acceptable to the ENGINEER.

.4 In scheduling the WORK, the CONTRACTOR shall give due attention to the availability and delivery times for all materials and equipment and to the timing of available transportation facilities. In cases where materials are to be shipped by water, approved licensed carriers shall be used as per Appendix H - Transportation of Materials.

END OF SECTION 01310

1.1 GENERAL

.1 Provide construction photographs in accordance with procedures and submission requirements specified in this Section.

1.2 PROGRESS PHOTOGRAPHS

.1 Sizes: 100 x 125 mm.

.2 Type: glossy colour.

.3 Paper: single weight, unmounted.

.4 Number of prints required: 2 sets.

.5 Identification: typewritten name and number of project and date of exposure on reverse side.

.6 Viewports: interior and exterior locations: Viewports determined by ENGINEER.

.7 Frequency: as directed by ENGINEER.

1.3 FINAL PHOTOGRAPHS

.1 Sizes: 100 x 125 mm.

.2 Type: glossy colour.

.3 Paper: single weight, unmounted.

.4 Number of prints required: 2 sets.

.5 Identification: typewritten name and number of project and date of exposure on reverse side.

.6 Number of viewports:

.1 Locations of viewports determined by ENGINEER.

1.4 NEGATIVES

.1 Submit all negatives of coloured prints before final acceptance of WORK.

.2 Insert negatives in envelopes and identify with name and number of project. Indicate exposure dates and view points of each frame of 35 mm film strips.

1.5 DISTRIBUTION OF PHOTOGRAPHS

.1 One set of progress and final photographs to:

ENGINEER.

.2 One set of progress and final photographs to:

Department of Community Government and Transportation
P.O. Bag 1000, Station 700
Iqaluit, NU
X0A 0H0

Attention: Senior Municipal Planning Engineer

.3 One set of progress and final photographs to:

Ferguson Simek Clark
P.O. Box 1777
Yellowknife, NT
X1A 2P4

Attention: Environmental Engineering

END

1.1 GENERAL

.1 The CONTRACTOR is totally responsible for the quality of MATERIAL and PRODUCT which he provides and for the WORK.

.2 The CONTRACTOR is responsible for quality control and shall perform such inspections and tests as are necessary to ensure that the WORK conforms to the requirements of the CONTRACT DOCUMENTS.

.3 During the progress of the WORK, a sufficient number of tests shall be performed by the CONTRACTOR to determine the MATERIAL, PRODUCT and installation meet the specified requirements.

.4 Minimum requirements regarding quality control are specified in various sections of the SPECIFICATIONS, however, the CONTRACTOR shall perform as many inspections and tests as are necessary to ensure that the WORK conforms to the requirements of the CONTRACT DOCUMENTS.

.5 Testing shall be in accordance with pertinent codes and regulations, and with selected standards of the American Society for Testing Materials (ASTM) and Canadian Standards Association (CSA).

1.2 QUALITY CONTROL TESTING BY THE CONTRACTOR

.1 The CONTRACTOR shall retain the services of an independent testing agency under supervision of a registered professional engineer, and pay the cost of testing services for quality control including, but not limited to the following:

- Sieve analysis of sands and aggregates to be supplied to the WORK
- Modified Proctor Density curves for backfill materials
- Modified Proctor Density curves for approved borrow materials.
- Compaction control tests for backfill and embankment material.
- Any product testing that is required and is specified under various sections of the SPECIFICATIONS.

.2 The CONTRACTOR shall promptly process and distribute all required copies of test reports and test information and related instructions to all of his SUBCONTRACTORS and Suppliers to

1.2 QUALITY CONTROL TESTING BY THE CONTRACTOR (Cont'd)

.2 (Cont'd)
ensure that all necessary retesting and replacement of construction can proceed without delay

.3 The CONTRACTOR shall promptly provide the ENGINEER with copies of all test results.

1.3 QUALITY ASSURANCE TESTING BY THE OWNER

.1 The OWNER may retain and pay for the services of an independent testing agency for quality assurance, for the OWNER'S purposes.

.2 The OWNER'S testing agency and the ENGINEER may inspect and test MATERIALS, PRODUCTS and the WORK for conformance with the requirements of the CONTRACT DOCUMENTS; however, they do not undertake to check the quality of the WORK on behalf of the CONTRACTOR, nor provide quality control.

.3 Inspections and tests by the OWNER'S testing agency and by the ENGINEER do not relieve the CONTRACTOR of his responsibility to supply MATERIALS and PRODUCTS and to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

.4 The ENGINEER, at his discretion, may order or perform any additional inspections and tests for purposes of his own or for purposes of the OWNER.

.5 The CONTRACTOR shall coordinate with the ENGINEER the scheduling of testing and inspection by the OWNER'S testing agencies or by the ENGINEER, to enable testing to be done as necessary, without delay, and the CONTRACTOR shall notify the ENGINEER sufficiently in advance of operations to allow for such inspection and tests by the ENGINEER'S or OWNER'S testing agency.

1.4 CODE COMPLIANCE TESTING

.1 Inspections and tests required by codes or ordinances, or by a plan approval authority, shall be the responsibility of and shall be paid for by the CONTRACTOR.

1.5 INSPECTION AND TESTING

.1 As the WORK progresses, the CONTRACTOR shall arrange to have same inspected, tested and accepted periodically by the ENGINEER in conformity with the CONTRACT DOCUMENTS. A Pre-Interim inspection shall be carried out in accordance with these SPECIFICATIONS prior to requesting an Interim or Final Inspection. The CONTRACTOR shall advise the ENGINEER sufficiently in advance to allow him to get to the site and carry out these inspections.

.2 When the WORK is completed and the CONTRACTOR has complied with the CONTRACT and all orders and directions made pursuant thereto, he may request the Issuance of an Interim or Final Certificate of Completion from the ENGINEER. All requests for the issuance of said certificates shall be made in writing to the ENGINEER at least fourteen (14) days prior to carrying out any tests that warrant the issuance of said certificates. The CONTRACTOR is advised that a maximum of one Interim and one Final Inspection will be allowed. If the WORK is not satisfactorily completed, any additional Interim or Final Inspections shall be at the CONTRACTOR's expense unless specifically requested by the ENGINEER.

.3 Cost of all testing, unless specified otherwise, shall be borne solely by the CONTRACTOR.

.4 All tests for MATERIALS and EQUIPMENT described in these SPECIFICATIONS or elsewhere in the CONTRACT DOCUMENTS shall be the CONTRACTOR'S responsibility. For tests to be valid they shall be made and documented in the presence of the ENGINEER unless otherwise instructed.

.5 Testing performed by or on the behalf of the Government of the Nunavut shall in no way relieve the CONTRACTOR of his responsibility for ensuring that all MATERIALS, EQUIPMENT and workmanship meet the specified standards.

1.6 RETESTING

.1 When tests on PRODUCTS,MATERIALS or completed work carried out by the CONTRACTOR or the CONTRACTOR'S testing agency yield results not meeting the requirements of the CONTRACT

1.6 RETESTING (Cont'd)

.1 (Cont'd)
DOCUMENTS, the CONTRACTOR, in addition to carrying out remedial work or replacement of the PRODUCT or MATERIALS shall provide for retesting of the remedial work and the replacement PRODUCT and MATERIALS. Retesting shall be at the CONTRACTOR'S expense.

.2 In every case where the CONTRACTOR has submitted test results which fail to meet the requirements of the CONTRACT DOCUMENTS, the CONTRACTOR shall submit within a practical and reasonable time, results of a retest showing that the results are in accordance with the requirements of the CONTRACT DOCUMENTS.

1.7 SUPERINTENDENT

.1 The CONTRACTOR must have a qualified and competent superintendent on the project.

END OF SECTION 01400

1.1 GENERAL

.1 As the WORK progresses, the CONTRACTOR shall arrange to have same inspected, tested and accepted periodically by the ENGINEER in conformity with the CONTRACT DOCUMENTS. A Pre-Interim inspection shall be carried out in accordance with these SPECIFICATIONS prior to requesting an Interim or Final Inspection. The CONTRACTOR shall advise the ENGINEER sufficiently in advance to allow him to get to the site and carry out these inspections.

.2 When the WORK is completed and the CONTRACTOR has complied with the CONTRACT and all orders and directions made pursuant thereto, he may request the Issuance of an Interim or Final Certificate of Completion from the ENGINEER. All requests for the issuance of said certificates shall be made in writing to the ENGINEER at least fourteen (14) days prior to carrying out any tests that warrant the issuance of said certificates. The CONTRACTOR is advised that a maximum of one Interim and one Final Inspection will be allowed. If the WORK is not satisfactorily completed, any additional Interim or Final Inspections shall be at the CONTRACTOR's expense unless specifically requested by the ENGINEER.

.3 Cost of all testing, unless specified otherwise, shall be borne solely by the CONTRACTOR.

.4 All tests for MATERIALS and EQUIPMENT described in these SPECIFICATIONS or elsewhere in the CONTRACT DOCUMENTS shall be the CONTRACTOR'S responsibility. For tests to be valid they shall be made and documented in the presence of the ENGINEER unless otherwise instructed.

.5 Testing performed by or on the behalf of the OWNER shall in no way relieve the CONTRACTOR of his responsibility for ensuring that all MATERIALS, EQUIPMENT and workmanship meet the specified standards.

.6 All tests must be witnessed by the ENGINEER or his representatives and shall consist of, but not necessarily be limited to items described herein.

.7 Where tests or inspections by designated testing laboratory reveal work not in

1.1 GENERAL (Cont'd)

.7 (Cont'd)
accordance with contract requirements , the CONTRACTOR shall pay costs for additional tests or inspections as the ENGINEER may require to verify acceptability of corrected work.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

.1 Particular requirements for inspection and testing.

1.3 CONTRACTOR'S RESPONSIBILITIES

.1 Furnish labour and facilities to:

.1 Provide access to work to be inspected and tested.
.2 Facilitate inspections and tests.
.3 Make good work disturbed by inspection and test.
.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify ENGINEER 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.

END OF SECTION 01410

PART 1 - TEMPORARY UTILITIES

1.1 WATER

.1 Provide and pay all costs for all water required for the performance of the WORK, in accordance with governing regulations and ordinances.

.2 Furnish and install all necessary temporary piping and upon completion of the WORK remove all such temporary piping.

1.2 ELECTRICITY AND LIGHTING

.1 Furnish and install all necessary temporary wiring, distribution boxes, panels, etc., and upon completion of the WORK, removal of all such temporary materials.

.2 Provide and pay all costs for electricity and artificial lighting required for the performance of the WORK, in accordance with governing regulations and ordinances.

1.3 TELEPHONE & FAX

.1 Provide, maintain and pay all costs for a telephone and fax for the ENGINEER'S use.

1.4 FIRE PROTECTION

.1 Provide and pay all costs for adequate fire protection of the WORK and adjacent property.

.2 Furnish and install temporary extinguishers, hydrants and other equipment, and upon completion of the WORK remove all such temporary equipment.

PART 2 - TEMPORARY CONTROLS

2.1 NOISE CONTROLS .1 Perform the WORK in conformity with all municipal by-laws with respect to noise, hours of work, night work and holiday work. Night work or holiday work requires the written permission of the ENGINEER.

2.2 DUST CONTROL .1 Perform the WORK in a manner that will not produce an objectionable amount of dust. Dust control measures shall be paid for by the CONTRACTOR.

2.3 POLLUTION CONTROL .1 Perform the WORK in conformance with the applicable sections of the territorial regulations with respect to air,water and terrestrial pollution control requirements.

2.4 DISPOSAL OF WASTES .1 Burying of rubbish and waste on site is not permitted.

.2 Disposal of waste or volatile materials into waterways, storm or sanitary sewers is not permitted.

.3 Pumping or draining water containing silt in suspension into waterways, sewers or drainage systems is prohibited.

PART 3 - TRAFFIC REGULATION

3.1 GENERAL .1 The CONTRACTOR shall be responsible for the regulation of traffic during construction, and shall perform the WORK in a manner that will cause the least disruption of traffic.

.2 The CONTRACTOR shall co-ordinate the WORK with the ENGINEER, and the OWNER to reduce traffic problems.

3.1 GENERAL (Cont'd)

.3 Provision of traffic signs, and other traffic controls shall be the CONTRACTOR'S responsibility and shall be in accordance with the RTAC Manual of Uniform Traffic Control Devices.

.4 The CONTRACTOR shall supply all barriers, barricades, warning signs, detours, fences, and all other devices to protect the public. All applicable safety standards shall be followed.

.5 The CONTRACTOR shall obtain approval to block traffic temporarily if it is necessary to do so to perform the WORK. Obtain the written approval of applicable municipal departments, the OWNER and the ENGINEER. At least 48 hours prior to actually blocking traffic notify the following:

- Public Works Departments (GN & Hamlet)
- Utility Companies
- Hamlet Fire Department
- Police Department (RCMP)

.6 Adequate construction parking meeting local regulations shall be provided by the CONTRACTOR.

.7 Haul routes shall be maintained by the CONTRACTOR. They shall be kept open to traffic and shall be clean at all times.

PART 4 - PROJECT IDENTIFICATION

4.1 GENERAL

.1 Erect and maintain a project sign, as supplied by the OWNER, minimum 1200 x 2400 mm located as directed by the ENGINEER.

.2 Once the WORK is complete, carefully dismantle project sign and deliver to OWNER.

PART 5 - TEMPORARY USE OF OWNER'S FACILITIES AND THE WORK

5.1 GENERAL

.1 If the OWNER permits the CONTRACTOR to make temporary use of the OWNER'S facilities, the CONTRACTOR shall use the facilities with care, providing all maintenance and repair, and shall leave the facilities in good working order when he is finished.

.2 If the OWNER permits the CONTRACTOR to use facilities incorporated into the WORK, the CONTRACTOR shall use them with care and be responsible for all maintenance and repair and for leaving the facilities in good order.

.3 Permanent systems shall not be used by the CONTRACTOR without the written permission of the ENGINEER.

.4 Temporary or trial usage by the OWNER of any mechanical machinery, apparatus, equipment or any other work or materials supplied under the contract before final acceptance by the ENGINEER is not to be construed as evidence of acceptance. The OWNER shall have the privilege of such temporary and trial usage as soon as the CONTRACTOR shall claim that said work is completed.

END OF SECTION 01500

PART 1 - CLEANUP

1.1 CLEANUP

.1 Maintain the working area in a clean and orderly manner as the WORK progresses, and upon completion of construction, remove all waste materials, and all temporary facilities from the site.

.2 Haul surplus or salvage materials that are the property of the OWNER to the OWNER'S storage site.

.3 Remove surplus or salvaged materials belonging to the CONTRACTOR from the site.

.4 Clean haul routes.

PART 2 - RECORD DOCUMENTS

2.1 RECORD DOCUMENTS

.1 As specified in other sections of the SPECIFICATIONS, the CONTRACTOR may be required to prepare RECORD DRAWINGS, to provide survey notes, to supply test results or other documents. Such information shall be turned over to the ENGINEER; as soon as start-up is complete, and before the Construction Completion Certificate is issued.

.2 Record documents shall be neat, legible and accurate.

END OF SECTION 01700

END

PART 1 - GENERAL

1.1 DEFINITIONS

.1 Solid Rock:

.1 Material excavated from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass.

.2 Boulders or rock fragments or concrete having individual volume of one (1) m3 or greater.

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

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

1.2 PROTECTION

.1 Existing buried utilities:

.1 Size, depth and location of existing utilities as indicated on the drawings are for guidance only. The completeness and accuracy of this information is not guaranteed.

.2 Prior to commencing any excavation work, notify applicable owner or authorities, establish location and state of use of buried utilities. Clearly mark such locations to prevent disturbance during work.

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

1.3 SHORING, BRACING AND UNDERPINNING

.1 Whenever underpinning, shoring, sheeting, timbering and bracing of excavations is required engage services of a professional engineer to design and assume responsibility for adequacy of shoring, bracing and underpinning. The Professional Engineer shall be registered in the Northwest Territories or Nunavut.

1.4 SAMPLES

.1 Submit samples in accordance with Section 01300 - Submittals.

.2 At least four (4) weeks prior to commencing work, inform ENGINEER of proposed source of fill materials and provide access for sampling.

1.5 MEASUREMENT FOR PAYMENT

.1 Except for items identified herein for separate payment, Work performed under this Section will be incidental to work involved in other Sections.

.2 Over-excavation, where ordered, will be paid for at the contract unit price per cubic metre in place in trenches. Price will include the cost of over-excavation and disposal, obtaining, hauling, placing and compaction of the replacement material.

Measurement will be taken as the length ordered, multiplied by the depth ordered to be excavated (below the bedding material), multiplied by the width of the combined trench as indicated on the drawings.

.3 Filter cloth shall be paid at the contract unit price per square metre of filter cloth supplied and installed. The price shall include all costs of supplying and installing the filter cloth in trenches where requested or specified.

.4 Disposal of trench material - surplus existing material from trench excavations, unless approved for re-use as trench backfill material, shall be separated and hauled to disposal sites as outlined. These costs shall be considered incidental to the unit price tendered for trench backfill.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Native Material Backfill.
- .1 Native material from roadway excavations or trench excavations, where approved for use by the ENGINEER as trench backfill, shall be free of frozen material, organic material, rock and other debris.
- .2 50 mm Minus Trench Backfill, Contractor supplied.
  - .1 As Per Section 02224 - Site Work.

.2 The order of preferences for trench backfill shall be:
- .1 Native material
- .2 Contractor supplied 50mm Minus Trench Backfill.

2.2 WARNING TAPE

.1 Warning tape shall be Brady Identoline Tape (W.H. Brady Inc.,Rexdale, Ontario) or Allen Markline (Allen Systems, Houston, Texas), polyethylene with a 4-mil minimum thickness, or equal.

.2 Colour Code:
- .1 Sewer: Safety Green

.3 Imprint: Black letters, one side only, repeated continuously.
- .1 Sewer: "Caution Buried Sewer Line Below".

.4 Width: 150mm.

.5 Sewer tape shall be installed above the discharge main.

2.3 GEOTEXTILE

.1 Geotextile specified in the DRAWINGS shall be:
- .1 Non-woven, needle punch polypropylene fabric.
- .2 The geotextile shall be Layfield Plastics LP7 or equivalent.
- .3 Seams shall be lapped in accordance with manufacturer's instructions.

2.3 GEOTEXTILE (Cont'd)

.1 (Cont'd)

.4 Thread for sewn seams shall be equal or better in chemical and biological resistance than the geotextile.

.5 Physical properties:

.1 Grab tensile strength: 800 Newtons minimum (ASTM D4632).

.2 Elongation at break: 50% minimum (ASTM D4632).

.3 Puncture: 445 Newtons minimum (ASTM D4833).

.4 Mullen Burst: 2,275 kPa minimum (ASTM D3786).

.6 Thickness - 2.1 mm minimum.

PART 3 - EXECUTION

3.1 STOCKPILING

.1 Stockpile fill materials in areas designated by ENGINEER. Stockpile granular materials in a manner which prevents segregation.

.2 Protect fill materials from contamination.

3.2 SHORING, BRACING AND UNDERPINNING

.1 Construct temporary works to depths, heights and locations as approved by ENGINEER.

.2 During backfill operation:

.1 Unless otherwise indicated or directed from ENGINEER, remove sheeting and shoring from excavations.

.2 Do not remove bracing until backfilling has reached respective levels of such bracing.

.3 Upon completion of substructure construction:

.1 Remove shoring and bracing.

.2 Remove excess materials from site.

3.3 DEWATERING

.1 Keep excavations dry while work is in progress.

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

.3 Dispose of water in a manner not detrimental to public health, environment, public and

3.3 DEWATERING (Cont'd)

.3 (Cont'd) private property, or any portion of work completed or under construction.

.4 Control grading in areas adjacent to excavation to prevent water runoff into excavated areas or onto public or private property.

3.4 EXCAVATION

.1 Excavate to lines, grades, elevations and dimensions as indicated by ENGINEER.

.2 Remove and dispose concrete, masonry, paving, demolished foundations and rubble and other obstructions encountered during excavation. Do NOT use these materials in backfill.

.3 Where work is stopped for more than 24 hours, backfill all excavations.

.4 Dispose of surplus and unsuitable excavated material as specified.

.5 Do not obstruct flow of surface drainage or natural watercourses.

.6 If maximum trench width is excavated through CONTRACTOR error, provide a better class of bedding to ENGINEER's approval at no additional cost to the OWNER.

3.5 TRENCH BOTTOM PREPARATION

.1 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

.2 Where required due to removal or unsuitable material or unauthorized over-excavation, bring bottom of excavation to design grade with 19 mm diameter granular material. Compact material to a minimum of 95% maximum density ASTM D 698-00a method C unless ordered otherwise.

.3 Granular material must not be placed in water laden trench bottom, water must be removed from excavation for granular placement and compaction.

3.5 TRENCH BOTTOM PREPARATION (Cont'd)

.4 Install filter fabric, where requested in the DRAWINGS, prior to placement of granular material. Provide a minimum of 600 mm overlap at fabric ends. Support fabric to prevent dislodging during backfill.

3.6 PRE-INSTALLATION INSPECTION

.1 Excavations require inspection and approval prior to commencement of installation operations.

3.7 BACKFILLING

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

.2 Ensure trenches are free from debris, snow, ice, water and that ground surfaces are not in a frozen condition.

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

.4 Use approved granular backfill material as indicated or directed.

.5 Do not backfill around or over cast-in place concrete within 24 h after placing of concrete.

.6 Place layers simultaneously on both sides of installed work to equalize loading. Difference not to exceed 200 mm.

.7 Place material by hand under, around and over installations until 300 mm of cover is provided. dumping material directly on installations will not be permitted.

.8 Do not place backfill in freezing weather without written permission of ENGINEER.

.9 Place backfill material in uniform layers not exceeding 300 mm in thickness up to subgrade elevation. compact each layer before placing succeeding layer.

.10 Compaction of Backfill

.1 Compact using approved mechanical tamping devices, or by hand tamping to achieve specified compaction.

3.8 RESTORATION

.1 Upon completion of work, remove surplus materials and debris, trim slopes, and correct defects as directed by the ENGINEER.

.2 Clean and reinstate areas affected by work.

3.9 CLEAN-UP

.1 Clean and re-instate areas affected by work as directed.

3.10 SETTLEMENT

.1 Promptly repair any settlement of backfill which occurs prior to the end of the warranty period.

.2 Re-compact defective areas and place and compact additional backfill up to grade. Use material matching adjacent surface and compact to specified density.

.3 Pay all costs to repair damages to other work cause by such settlement.

END OF SECTION 02223

PART 1 - GENERAL

1.1 RELATED WORK

.1 Particular Scope of the Work Section 01011

1.2 REFERENCE STANDARDS

.1 Specifications for aggregates and soils and the compaction of aggregates and soils refer to ASTM Sieve Analyses and ASTM Tests.

.2 Other materials are specified with reference to CGSB Standards, CSA Standards, ASTM Standards and ASCII Standards.

1.3 SUBMITTALS

.1 At least 2 weeks before beginning work the CONTRACTOR shall submit to the ENGINEER for review, a complete and detailed outline of the procedures and methods that he will employ for this section of the WORK.

.2 The CONTRACTOR shall not begin work until the ENGINEER has reviewed the submittal.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to the site and store in a manner such that granular materials are kept in separate piles and manufactured materials are stored according to the recommendations of the Manufacturer.

.2 Sand and gravel material required shall be selected from available local sources. These sources shall be subject to the ENGINEER'S approval and Land Use Permits must be obtained by the CONTRACTOR for the use of said materials.

.3 The CONTRACTOR is advised that screening of the material, especially for the fine gravel and sand, may be required to meet the SPECIFICATIONS. The CONTRACTOR shall at no additional cost to the OWNER screen and blend materials from one or more sources to achieve the gradations shown and to permit compaction to the required levels called for in this Section.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING (Cont'd)

.4 The OWNER reserves the right to have sampling of granular material compaction tests carried out by an independent material testing firm to satisfy himself the SPECIFICATIONS are met. Should results indicate that the SPECIFICATIONS are not met, all costs related to the sampling, testing and correction of the problem will be charged to the CONTRACTOR, unless the CONTRACTOR can produce proof of compliance.

.5 Frozen material and ice will not be accepted as backfill material.

1.5 JOB CONDITIONS AND REGULATIONS

.1 Perform work under observation of the Safety Act and General Safety Regulations of Nunavut.

.2 Perform work in a manner that will cause the least disruption to traffic.

.3 The CONTRACTOR is responsible for posting of warning and traffic signs; supply and placing of barricades and protective hoarding.

1.6 QUALITY ASSURANCE

.1 Refer to Section 01400 Quality Control.

.2 Submit to the ENGINEER a list of sources of materials including sand, gravel and borrow materials.

.3 Provide samples, test results, sieve analyses and reports for preliminary approval of materials.

1.7 MINIMUM QUALITY CONTROL TEST FREQUENCIES

.1 The following frequencies of testing are the minimum required. The CONTRACTOR shall perform as many tests as are necessary to ensure that the WORK conforms to the requirements of the CONTRACT regardless of the minimum number specified.

.2 Provide moisture/density curves for each type of material from each source of material to be compacted to a specified density.

.3 Field densities:

1.7 MINIMUM QUALITY CONTROL TEST FREQUENCIES (Cont'd)

.3 Field densities: (Cont'd)

- Structures and Embankments (from excavated material) -for each 4000 m2 of compacted layers.
- Subgrade Preparation - one field density for every 2000 m2 of 150 mm compacted layers.

1.8 DISPOSAL

.1 All materials on site whether stockpiled, stored or excavated are the property of the OWNER, and the OWNER reserves the right to keep any part or all of the material.

.2 The CONTRACTOR shall dispose of debris, waste, unsuitable material, rock or excess material in accordance with the SPECIFICATIONS.

.3 The CONTRACTOR is encouraged to reuse materials encountered on site to the extent they comply with the SPECIFICATIONS in this Section.

.4 Disposal sites will be designated by the ENGINEER.

.5 The CONTRACTOR shall dispose of all materials at sites to be located by the CONTRACTOR.

PART 2 - PRODUCTS

2.1 GRANULAR MATERIALS

.1 Fine Gravel shall comply with the following gradation. It shall be native, clean, well graded, organic free gravel.

Sieve Size	Percent Passing
25 mm	100
19 mm	95 - 100
13 mm	65 - 95
No. 4	35 - 65
No. 16	20 - 35
No. 50	10 - 20
No. 200	2 - 8

2.1 GRANULAR MATERIALS (Cont'd)

.2 Coarse Gravel shall comply with the following gradation, except that no more than 10% of the fill material shall pass through the No. 200 sieve. It shall be native, clean, well graded, organic free gravel.

Sieve Size	Percent Passing
100 mm	100
No. 4	35 min.
No. 200	0 - 10

.3 Sand shall comply with the following gradation. It shall be native, clean, salt free, well graded, organic free, rounded or angular pieces containing no more than 4% particles smaller than the No. 200 sieve.

Sieve Size	Percent Passing
10 mm	100
No. 4	80 - 100
No. 16	50 - 75
No. 50	15 - 75
No. 100	2 - 8

Sand shall be used as topping material below and above membranes and where otherwise called for on the DRAWINGS.

2.2 COMMON FILL

.1 Shall be native material found on site or imported, and free of stones larger than 100 mm in size, of frozen matter, of rubbish and organics or vegetation.

2.3 RIP RAP

.1 Use Class 1 Nominal Size 300 mm hand placed rock rip rap.

.2 Rip Rap shall be:

- 100% smaller than 450 mm or 136 kg
- 20% larger than 350 mm or 68 kg
- 50% larger than 300 mm or 36 kg
- 80% larger than 200 mm or 11 kg

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

.1 General

.1 The CONTRACTOR is advised that the DRAWINGS and SPECIFICATIONS are not based on a legal survey of the existing facilities or detailed survey information of existing site conditions.

.2 The elevations and dimensions shown on the DRAWINGS are for the purpose of construction, measurement and evaluating progress payments. The CONTRACTOR shall ensure that final elevations are adhered to.

.3 The OWNER reserves the right to carry out independent testing of backfill materials and concrete as indicated above.

.2 Placing and Compaction of Backfill Material

.1 Backfill material shall be in accordance with the Specifications outlined in 2.1 above.

.2 Throughout the developed areas, coarse gravel material shall be added, as required, in maximum 200 mm lifts to 350 mm from the finished grades shown on the DRAWINGS. Each lift shall be compacted to 95% MPD.

.3 Compaction equipment shall consist of a vibratory roller with an operating weight of not less than 1000 kilograms, or other equipment of similar capacity acceptable to the ENGINEER. Light hand operated compactors, such as Jumping jacks, and tracked equipment will not be considered adequate for compaction of bottom of lagoon and berms. The CONTRACTOR shall control the moisture level in the backfill material so as to achieve the required compaction levels.

.4 Berms

.1 The existing berm material will be used to build the new berms. The existing berms will be pushed out to the area indicated on the DRAWINGS. Additional coarse gravel or fine gravel materials as identified in 2.1 above, shall be used to complete the berms to the details and

3.1 CONSTRUCTION METHODS (Cont'd)

.2 (Cont'd)

.4 (Cont'd)

.1 (Cont'd)
elevations as shown on the DRAWINGS.

.2 The top of the berms shall be not less than indicated on the DRAWINGS. Backfill at the berms shall be compacted in maximum 200 mm lifts to 95%MPD.

.5 Trench

.1 The trench shall be excavated to the depth, length and elevations indicated on the DRAWINGS.

.6 At Areas Outside the Sewage Lagoon

.1 At developed areas adjacent to the sewage lagoon berms, including the Vehicular Traffic Areas, fine gravel material shall be placed on top of the coarse gravel in maximum 200 mm lifts, to the elevations and details shown on the DRAWINGS, and compacted to 90% MPD. The top surface of the fine gravel material shall be uniform and to the grades shown on the DRAWINGS, i.e. sloped to permit surface water runoff as shown.

.3 Drainage of Excavations

.1 The CONTRACTOR shall take all the necessary measures to keep the excavations free of water at all times and to protect the excavations from damage that may be caused by rain, surface water run-off or otherwise. Create low points as required for pumping water out of the excavations or create temporary ditches to direct water away from the excavations.

.2 The CONTRACTOR shall, at his cost, be responsible for any additional excavation and backfill that may be required due to lack of proper drainage of the excavations and which would have as an effect the softening of the ground, and consequently, reducing in its bearing capacity.

3.2 CLEAN-UP

.1 The CONTRACTOR shall clean-up and dispose of all excess material, boulders and other debris as the WORK progresses.

.2 Before the WORK is considered complete, the CONTRACTOR shall remove all construction equipment, appliances, barricades, surplus materials, etc., and do such other work as may be necessary to leave the site or any other premises occupied by him in a neat, workmanlike condition, as required by the ENGINEER.

END OF SECTION 02224