



Fort Liard, NT

Water Treatment Plant Upgrade

The Hamlet of Fort Liard

SPECIFICATIONS

Issued for Tender, March 2025

Prepared by:



Hamlet Project No. 25-890100

CCDC 2

Stipulated Price Contract

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Water Treatment Plant Upgrades

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CCDC 2 STIPULATED PRICE CONTRACT

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AGREEMENT BETWEEN OWNER AND CONTRACTOR

For use when a stipulated price is the basis of payment.

This Agreement made on _____ day of _____ in the year _____.
by and between the parties

Hamlet of Fort Liard

hereinafter called the "Owner"

and

hereinafter called the "Contractor"

The Owner and the Contractor agree as follows:

ARTICLE A-1 THE WORK

The Contractor shall:

- 1.1 perform the *Work* required by the *Contract Documents* for (insert below the description or title of the Work)

Water Treatment Plant Upgrades

located at (insert below the Place of the Work)

Water Treatment Plant, Fort Liard, Northwest Territories

for which the Agreement has been signed by the parties, and for which (insert below the name of the Consultant)

Dillon Consulting Limited

is acting as and is hereinafter called the "Consultant" and

- 1.2 do and fulfill everything indicated by the *Contract Documents*, and

- 1.3 commence the *Work* by the 30th day of May in the year 2025 and, subject to adjustment in *Contract Time* as provided for in the *Contract Documents*, attain *Ready-for-Takeover*, by the _____ day of _____ in the year _____.

ARTICLE A-2 AGREEMENTS AND AMENDMENTS

- 2.1 The *Contract* supersedes all prior negotiations, representations or agreements, either written or oral, relating in any manner to the *Work*, including the bid documents that are not expressly listed in Article A-3 of the Agreement – CONTRACT DOCUMENTS.
- 2.2 The *Contract* may be amended only as provided in the *Contract Documents*.

ARTICLE A-3 CONTRACT DOCUMENTS

3.1 The following are the *Contract Documents* referred to in Article A-1 of the Agreement – THE WORK:

- Agreement between *Owner* and *Contractor*
- Definitions
- General Conditions

*

Supplementary Specifications

Drawings

Division 01 Specifications- General Requirements

Technical Specifications

Appendices

Addenda

Site Instructions

Change Orders

* (Insert here, attaching additional pages if required, a list identifying all other Contract Documents e.g. supplementary conditions; Division 01 of the Specifications – GENERAL REQUIREMENTS; Project information that the Contractor may rely upon; technical Specifications, giving a list of contents with section numbers and titles, number of pages and date; material finishing schedules; Drawings, giving drawing number, title, date, revision date or mark; addenda, giving title, number, date; time schedule)

ARTICLE A-4 CONTRACT PRICE

4.1 The *Contract Price*, which excludes *Value Added Taxes*, is:

/100 dollars \$

4.2 *Value Added Taxes* (of _____ %) payable by the *Owner* to the *Contractor* are:

/100 dollars \$

4.3 Total amount payable by the *Owner* to the *Contractor* for the *Work* is:

/100 dollars \$

4.4 These amounts shall be subject to adjustments as provided in the *Contract Documents*.

4.5 All amounts are in Canadian funds.

ARTICLE A-5 PAYMENT

5.1 Subject to the provisions of the *Contract Documents* and *Payment Legislation*, and in accordance with legislation and statutory regulations respecting holdback percentages, the *Owner* shall:

- .1 make progress payments to the *Contractor* on account of the *Contract Price* when due in the amount certified by the *Consultant* unless otherwise prescribed by *Payment Legislation* together with such *Value Added Taxes* as may be applicable to such payments,
- .2 upon *Substantial Performance of the Work*, pay to the *Contractor* the unpaid balance of the holdback amount when due together with such *Value Added Taxes* as may be applicable to such payment, and
- .3 upon the issuance of the final certificate for payment, pay to the *Contractor* the unpaid balance of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payment.

5.2 Interest

- .1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by adjudication, arbitration or court, interest at the following rates on such unpaid amounts shall also become due and payable until payment:
 - (1) 2% per annum above the prime rate for the first 60 days.
 - (2) 4% per annum above the prime rate after the first 60 days.Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by
(Insert name of chartered lending institution whose prime rate is to be used)

for prime business loans as it may change from time to time.

- .2 Interest shall apply at the rate and in the manner prescribed by paragraph 5.2.1 of this Article on the settlement amount of any claim in dispute that is resolved either pursuant to Part 8 of the General Conditions – DISPUTE RESOLUTION or otherwise, from the date the amount would have been due and payable under the *Contract*, had it not been in dispute, until the date it is paid.

ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

6.1 *Notices in Writing* will be addressed to the recipient at the address set out below.

6.2 The delivery of a *Notice in Writing* will be by hand, by courier, by prepaid first class mail, or by other form of electronic communication during the transmission of which no indication of failure of receipt is communicated to the sender.

6.3 A *Notice in Writing* delivered by one party in accordance with this *Contract* will be deemed to have been received by the other party on the date of delivery if delivered by hand or courier, or if sent by mail it will be deemed to have been received five calendar days after the date on which it was mailed, provided that if either such day is not a *Working Day*, then the *Notice in Writing* will be deemed to have been received on the *Working Day* next following such day.

6.4 A *Notice in Writing* sent by any form of electronic communication will be deemed to have been received on the date of its transmission provided that if such day is not a *Working Day* or if it is received after the end of normal business hours on the date of its transmission at the place of receipt, then it will be deemed to have been received at the opening of business at the place of receipt on the first *Working Day* next following the transmission thereof.

6.5 An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this Article.

Owner

Hamlet of Fort Liard

*name of Owner**

Fort Liard, Northwest Territories

address

email address

Contractor

*name of Contractor**

address

email address

Consultant

Dillon Consulting Limited

*name of Consultant**

Dillon Consulting Limited

Suite #403, 4920 – 50th Street, Yellowknife. NT, X1A 3T1

address

Vania Chivers, vchivers@dillon.ca

email address

** If it is intended that a specific individual must receive the notice, that individual's name shall be indicated.*

ARTICLE A-7 LANGUAGE OF THE CONTRACT

- 7.1 When the *Contract Documents* are prepared in both the English and French languages, it is agreed that in the event of any apparent discrepancy between the English and French versions, the English / ~~French~~ # language shall prevail.
Complete this statement by striking out inapplicable term.
- 7.2 This Agreement is drawn in English at the request of the parties hereto. La présente convention est rédigée en anglais à la demande des parties.

ARTICLE A-8 SUCCESSION

- 8.1 The *Contract* shall enure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors, and assigns.

In witness whereof the parties hereto have executed this Agreement by the hands of their duly authorized representatives.

SIGNED AND DELIVERED
in the presence of:

WITNESS

OWNER

Hamlet of Fort Liard

name of Owner

signature

signature

name of person signing

name and title of person signing

WITNESS

CONTRACTOR

name of Contractor

signature

signature

name of person signing

name and title of person signing

- N.B. Where legal jurisdiction, local practice or Owner or Contractor requirement calls for:*
- (a) proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership; or*
 - (b) the affixing of a corporate seal, this Agreement should be properly sealed.*

DEFINITIONS

The following Definitions shall apply to all *Contract Documents*.

Change Directive

A *Change Directive* is a written instruction prepared by the *Consultant* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents* prior to the *Owner* and the *Contractor* agreeing upon adjustments in the *Contract Price* and the *Contract Time*.

Change Order

A *Change Order* is a written amendment to the *Contract* prepared by the *Consultant* and signed by the *Owner* and the *Contractor* stating their agreement upon:

- a change in the *Work*;
- the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and
- the extent of the adjustment in the *Contract Time*, if any.

Construction Equipment

Construction Equipment means all machinery and equipment, either operated or not operated, that is required for preparing, fabricating, conveying, erecting, or otherwise performing the *Work* but is not incorporated into the *Work*.

Consultant

The *Consultant* is the person or entity engaged by the *Owner* and identified as such in the Agreement. The *Consultant* is the Architect, the Engineer or entity licensed to practise in the province or territory of the *Place of the Work*.

Contract

The *Contract* is the undertaking by the parties to perform their respective duties, responsibilities and obligations as prescribed in the *Contract Documents* and represents the entire agreement between the parties.

Contract Documents

The *Contract Documents* consist of those documents listed in Article A-3 of the Agreement – CONTRACT DOCUMENTS and amendments agreed upon between the parties.

Contract Price

The *Contract Price* is the amount stipulated in Article A-4 of the Agreement – CONTRACT PRICE.

Contract Time

The *Contract Time* is the time from commencement of the *Work* to the date of *Ready-for-Takeover* as stipulated in paragraph 1.3 of Article A-1 of the Agreement – THE WORK.

Contractor

The *Contractor* is the person or entity identified as such in the Agreement.

Drawings

The *Drawings* are the graphic and pictorial portions of the *Contract Documents*, wherever located and whenever issued, showing the design, location and dimensions of the *Work*, generally including plans, elevations, sections, details, and diagrams.

Notice in Writing

A *Notice in Writing*, where identified in the *Contract Documents*, is a written communication between the parties or between them and the *Consultant* that is transmitted in accordance with the provisions of Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

Owner

The *Owner* is the person or entity identified as such in the Agreement.

Other Contractor

Other Contractor means a contractor, other than the *Contractor* or a *Subcontractor*, engaged by the *Owner* for the *Project*.

Payment Legislation

Payment Legislation means such legislation in effect at the *Place of the Work* which governs payment under construction contracts.

Place of the Work

The *Place of the Work* is the designated site or location of the *Work* identified in the *Contract Documents*.

Product

Product or Products means material, machinery, equipment, and fixtures forming part of the *Work*, but does not include *Construction Equipment*.

Project

The *Project* means the total construction contemplated of which the *Work* may be the whole or a part.

Ready-for-Takeover

Ready-for-Takeover shall have been attained when the conditions set out in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER have been met, as verified by the *Consultant* pursuant to paragraph 12.1.4.2 of GC 12.1 – READY-FOR-TAKEOVER.

Shop Drawings

Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, *Product* data, and other data which the *Contractor* provides to illustrate details of portions of the *Work*.

Specifications

The *Specifications* are that portion of the *Contract Documents*, wherever located and whenever issued, consisting of the written requirements and standards for *Products*, systems, workmanship, quality, and the services necessary for the performance of the *Work*.

Subcontractor

A *Subcontractor* is a person or entity having a direct contract with the *Contractor* to perform a part or parts of the *Work* at the *Place of the Work*.

Substantial Performance of the Work

Substantial Performance of the Work is as defined in the lien legislation applicable to the *Place of the Work*.

Supplemental Instruction

A *Supplemental Instruction* is an instruction, not involving adjustment in the *Contract Price* or *Contract Time*, in the form of *Specifications*, *Drawings*, schedules, samples, models, or written instructions, consistent with the intent of the *Contract Documents*. It is to be issued by the *Consultant* to supplement the *Contract Documents* as required for the performance of the *Work*.

Supplier

A *Supplier* is a person or entity having a direct contract with the *Contractor* to supply *Products*.

Temporary Work

Temporary Work means temporary supports, structures, facilities, services, and other temporary items, excluding *Construction Equipment*, required for the execution of the *Work* but not incorporated into the *Work*.

Value Added Taxes

Value Added Taxes means such sum as shall be levied upon the *Contract Price* by the Federal or any Provincial or Territorial Government and is computed as a percentage of the *Contract Price* and includes the Goods and Services Tax, the Quebec Sales Tax, the Harmonized Sales Tax, and any similar tax, the collection and payment of which have been imposed on the *Contractor* by tax legislation.

Work

The *Work* means the total construction and related services required by the *Contract Documents*.

Working Day

Working Day means a day other than a Saturday, Sunday, statutory holiday, or statutory vacation day that is observed by the construction industry in the area of the *Place of the Work*.

GENERAL CONDITIONS

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

- 1.1.1 The intent of the *Contract Documents* is to include the labour, *Products* and services necessary for the performance of the *Work* by the *Contractor* in accordance with these documents. It is not intended, however, that the *Contractor* shall supply products or perform work not consistent with, not covered by, or not properly inferable from the *Contract Documents*.
- 1.1.2 The *Contract Documents* are complementary, and what is required by one shall be as binding as if required by all. Performance by the *Contractor* shall be required only to the extent consistent with the *Contract Documents*.
- 1.1.3 The *Contractor* shall review the *Contract Documents* for the purpose of facilitating co-ordination and execution of the *Work* by the *Contractor*.
- 1.1.4 The *Contractor* is not responsible for errors, omissions or inconsistencies in the *Contract Documents*. If there are perceived errors, omissions or inconsistencies discovered by or made known to the *Contractor*, the *Contractor* shall promptly report to the *Consultant* and shall not proceed with the work affected until the *Contractor* has received corrected or additional information from the *Consultant*.
- 1.1.5 If there is a conflict within the *Contract Documents*:
- .1 the order of priority of documents, from highest to lowest, shall be
 - the Agreement between *Owner* and *Contractor*,
 - the Definitions,
 - Supplementary Conditions,
 - the General Conditions,
 - Division 01 of the *Specifications*,
 - technical *Specifications*,
 - material and finishing schedules,
 - the *Drawings*.
 - .2 *Drawings* of larger scale shall govern over those of smaller scale of the same date.
 - .3 dimensions shown on *Drawings* shall govern over dimensions scaled from *Drawings*.
 - .4 amended or later dated documents shall govern over earlier documents of the same type.
 - .5 noted materials and annotations shall govern over graphic indications.
- 1.1.6 Nothing contained in the *Contract Documents* shall create any contractual relationship between:
- .1 the *Owner* and a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
 - .2 the *Consultant* and the *Contractor*, a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
- 1.1.7 Words and abbreviations which have well known technical or trade meanings are used in the *Contract Documents* in accordance with such recognized meanings.
- 1.1.8 References in the *Contract Documents* to the singular shall be considered to include the plural as the context requires.
- 1.1.9 Neither the organization of the *Specifications* nor the arrangement of *Drawings* shall control the *Contractor* in dividing the work among *Subcontractors* and *Suppliers*.
- 1.1.10 *Specifications*, *Drawings*, models, and copies thereof furnished by the *Consultant* are and shall remain the *Consultant's* property, with the exception of the signed *Contract* sets, which shall belong to each party to the *Contract*. All *Specifications*, *Drawings* and models furnished by the *Consultant* are to be used only with respect to the *Work* and are not to be used on other work. These *Specifications*, *Drawings* and models are not to be copied or altered in any manner without the written authorization of the *Consultant*.
- 1.1.11 Physical models furnished by the *Contractor* at the *Owner's* expense are the property of the *Owner*.

GC 1.2 LAW OF THE CONTRACT

- 1.2.1 The law of the *Place of the Work* shall govern the interpretation of the *Contract*.

GC 1.3 RIGHTS AND REMEDIES

- 1.3.1 Except as expressly provided in the *Contract Documents*, the duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

- 1.3.2 No action or failure to act by the *Owner*, the *Consultant* or the *Contractor* shall constitute a waiver of any right or duty afforded any of them under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

GC 1.4 ASSIGNMENT

- 1.4.1 Neither party to the *Contract* shall assign the *Contract* or a portion thereof without the written consent of the other, which consent shall not be unreasonably withheld.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.1 AUTHORITY OF THE CONSULTANT

- 2.1.1 The *Consultant* will have authority to act on behalf of the *Owner* only to the extent provided in the *Contract Documents*, unless otherwise modified by written agreement as provided in paragraph 2.1.2.
- 2.1.2 The duties, responsibilities and limitations of authority of the *Consultant* as set forth in the *Contract Documents* shall be modified or extended only with the written consent of the *Owner*, the *Consultant* and the *Contractor*.

GC 2.2 ROLE OF THE CONSULTANT

- 2.2.1 The *Consultant* will provide administration of the *Contract* as described in the *Contract Documents*.
- 2.2.2 The *Consultant* will visit the *Place of the Work* at intervals appropriate to the progress of construction to become familiar with the progress and quality of the work and to determine if the *Work* is proceeding in general conformity with the *Contract Documents*.
- 2.2.3 If the *Owner* and the *Consultant* agree, the *Consultant* will provide at the *Place of the Work*, one or more project representatives to assist in carrying out the *Consultant's* responsibilities. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in writing to the *Contractor*.
- 2.2.4 Based on the *Consultant's* observations and evaluation of the *Contractor's* applications for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 of the Agreement – PAYMENT, GC 5.3 – PAYMENT and GC 5.5 – FINAL PAYMENT.
- 2.2.5 The *Consultant* will not be responsible for and will not have control, charge or supervision of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs required in connection with the *Work* in accordance with the applicable construction safety legislation, other regulations or general construction practice. The *Consultant* will not be responsible for the *Contractor's* failure to perform the *Work* in accordance with the *Contract Documents*.
- 2.2.6 Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER, the *Consultant* will be, in the first instance, the interpreter of the requirements of the *Contract Documents*.
- 2.2.7 Matters in question relating to the performance of the *Work* or the interpretation of the *Contract Documents* shall be initially referred in writing to the *Consultant* by the party raising the question for interpretations and findings and copied to the other party.
- 2.2.8 Interpretations and findings of the *Consultant* shall be consistent with the intent of the *Contract Documents*. In making such interpretations and findings the *Consultant* will not show partiality to either the *Owner* or the *Contractor*.
- 2.2.9 The *Consultant's* interpretations and findings will be given in writing to the parties within a reasonable time.
- 2.2.10 With respect to claims for a change in *Contract Price*, the *Consultant* will make findings as set out in GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.
- 2.2.11 The *Consultant* will have authority to reject work which in the *Consultant's* opinion does not conform to the requirements of the *Contract Documents*. Whenever the *Consultant* considers it necessary or advisable, the *Consultant* will have authority to require inspection or testing of work, whether or not such work is fabricated, installed or completed. However, neither the authority of the *Consultant* to act nor any decision either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the *Consultant* to the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees, or other persons performing any of the *Work*.
- 2.2.12 During the progress of the *Work* the *Consultant* will furnish *Supplemental Instructions* to the *Contractor* with reasonable promptness or in accordance with a schedule for such instructions agreed to by the *Consultant* and the *Contractor*.
- 2.2.13 The *Consultant* will review and take appropriate action upon *Shop Drawings*, samples and other submittals by the *Contractor*, in accordance with the *Contract Documents*.

- 2.2.14 The *Consultant* will prepare *Change Orders* and *Change Directives* as provided in GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 2.2.15 The *Consultant* will conduct reviews of the *Work* to determine the date of *Substantial Performance of the Work* and verify that *Ready-for-Takeover* has been attained.
- 2.2.16 All certificates issued by the *Consultant* will be to the best of the *Consultant's* knowledge, information and belief. By issuing any certificate, the *Consultant* does not guarantee the *Work* is correct or complete.
- 2.2.17 The *Consultant* will receive and review written warranties and related documents required by the *Contract* and provided by the *Contractor* and will forward such warranties and documents to the *Owner* for the *Owner's* acceptance.
- 2.2.18 If the *Consultant's* engagement is terminated, the *Owner* shall immediately engage a *Consultant* against whom the *Contractor* makes no reasonable objection and whose duties and responsibilities under the *Contract Documents* will be that of the former *Consultant*.

GC 2.3 REVIEW AND INSPECTION OF THE WORK

- 2.3.1 The *Owner* and the *Consultant* shall have access to the *Work* at all times. The *Contractor* shall provide sufficient, safe and proper facilities at all times for the review of the *Work* by the *Consultant* and the inspection of the *Work* by authorized agencies. If parts of the *Work* are in preparation at locations other than the *Place of the Work*, the *Owner* and the *Consultant* shall be given access to such work whenever it is in progress.
- 2.3.2 If work is designated for tests, inspections or approvals in the *Contract Documents*, by the *Consultant's* instructions, or by the laws or ordinances of the *Place of the Work*, the *Contractor* shall give the *Consultant* reasonable notification of when the work will be ready for review and inspection. The *Contractor* shall arrange for and shall give the *Consultant* reasonable notification of the date and time of inspections by other authorities.
- 2.3.3 The *Contractor* shall furnish promptly to the *Consultant* two copies of certificates and inspection reports relating to the *Work*.
- 2.3.4 If the *Contractor* covers, or permits to be covered, work that has been designated for special tests, inspections or approvals before such special tests, inspections or approvals are made, given or completed, the *Contractor* shall, if so directed, uncover such work, have the inspections or tests satisfactorily completed, and make good covering work at the *Contractor's* expense.
- 2.3.5 The *Consultant* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction. If the work is in accordance with the requirements of the *Contract Documents*, the *Owner* shall pay the cost of examination and restoration.
- 2.3.6 The *Contractor* shall pay the cost of making any test or inspection, including the cost of samples required for such test or inspection, if such test or inspection is designated in the *Contract Documents* to be performed by the *Contractor* or is required by the laws or ordinances applicable to the *Place of the Work*.
- 2.3.7 The *Contractor* shall pay the cost of samples required for any test or inspection to be performed by others if such test or inspection is designated in the *Contract Documents*.

GC 2.4 DEFECTIVE WORK

- 2.4.1 The *Contractor* shall promptly correct defective work that has been rejected by the *Consultant* as failing to conform to the *Contract Documents* whether or not the defective work was incorporated in the *Work* or the defect is the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the *Contractor*.
- 2.4.2 The *Contractor* shall make good promptly *Other Contractors' work* destroyed or damaged by such corrections at the *Contractor's* expense.
- 2.4.3 If in the opinion of the *Consultant* it is not expedient to correct defective work or work not performed as provided in the *Contract Documents*, the *Owner* may deduct from the amount otherwise due to the *Contractor* the difference in value between the work as performed and that called for by the *Contract Documents*. If the *Owner* and the *Contractor* do not agree on the difference in value, they shall refer the matter to the *Consultant* for a finding.

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

- 3.1.1 The *Contractor* shall have total control of the *Work* and shall effectively direct and supervise the *Work* so as to ensure conformity with the *Contract Documents*.

- 3.1.2 The *Contractor* shall be solely responsible for construction means, methods, techniques, sequences, and procedures and for co-ordinating the various parts of the *Work* under the *Contract*.

GC 3.2 CONSTRUCTION BY THE OWNER OR OTHER CONTRACTORS

- 3.2.1 The *Owner* reserves the right to award separate contracts in connection with other parts of the *Project* to *Other Contractors* and to perform work with own forces.
- 3.2.2 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Owner* shall:
- .1 provide for the co-ordination of the activities and work of *Other Contractors* and the *Owner*'s own forces with the *Work* of the *Contract*;
 - .2 enter into separate contracts with *Other Contractors* under conditions of contract which are compatible with the conditions of the *Contract*;
 - .3 ensure that insurance coverage is provided to the same requirements as are called for in GC 11.1 – INSURANCE and co-ordinate such insurance with the insurance coverage of the *Contractor* as it affects the *Work*; and
 - .4 take all reasonable precautions to avoid labour disputes or other disputes on the *Project* arising from the work of *Other Contractors* or the *Owner*'s own forces.
- 3.2.3 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Contractor* shall:
- .1 afford the *Owner* and *Other Contractors* reasonable opportunity to store their products and execute their work;
 - .2 co-ordinate and schedule the *Work* with the work of *Other Contractors* or the *Owner*'s own forces that are identified in the *Contract Documents*;
 - .3 participate with *Other Contractors* and the *Owner* in reviewing their construction schedules when directed to do so; and
 - .4 report promptly to the *Consultant* in writing any apparent deficiencies in the work of *Other Contractors* or of the *Owner*'s own forces, where such work affects the proper execution of any portion of the *Work*, prior to proceeding with that portion of the *Work*.
- 3.2.4 Where a change in the *Work* is required as a result of the co-ordination and integration of the work of *Other Contractors* or *Owner*'s own forces with the *Work*, the changes shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 3.2.5 Disputes and other matters in question between the *Contractor* and *Other Contractors* shall be dealt with as provided in Part 8 of the General Conditions – DISPUTE RESOLUTION provided the *Other Contractors* have reciprocal obligations. The *Contractor* shall be deemed to have consented to arbitration of any dispute with any *Other Contractor* whose contract with the *Owner* contains a similar agreement to arbitrate. In the absence of *Other Contractors* having reciprocal obligations, disputes and other matters in question initiated by the *Contractor* against *Other Contractors* will be considered disputes and other matters in question between the *Contractor* and the *Owner*.
- 3.2.6 Should the *Owner*, the *Consultant*, *Other Contractors*, or anyone employed by them directly or indirectly be responsible for ill-timed work necessitating cutting or remedial work to be performed, the cost of such cutting or remedial work shall be valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

GC 3.3 TEMPORARY WORK

- 3.3.1 The *Contractor* shall have the sole responsibility for the design, erection, operation, maintenance, and removal of *Temporary Work* unless otherwise specified in the *Contract Documents*.
- 3.3.2 The *Contractor* shall engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform those functions referred to in paragraph 3.3.1 where required by law or by the *Contract Documents* and in all cases where such *Temporary Work* is of such a nature that professional engineering skill is required to produce safe and satisfactory results.
- 3.3.3 Notwithstanding the provisions of GC 3.1 – CONTROL OF THE WORK, paragraphs 3.3.1 and 3.3.2 or provisions to the contrary elsewhere in the *Contract Documents* where such *Contract Documents* include designs for *Temporary Work* or specify a method of construction in whole or in part, such designs or methods of construction shall be considered to be part of the design of the *Work* and the *Contractor* shall not be held responsible for that part of the design or the specified method of construction. The *Contractor* shall, however, be responsible for the execution of such design or specified method of construction in the same manner as for the execution of the *Work*.

GC 3.4 CONSTRUCTION SCHEDULE

3.4.1 The *Contractor* shall:

- .1 prepare and submit to the *Owner* and the *Consultant* prior to the first application for payment, a construction schedule that indicates the timing of the major activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time*;
- .2 monitor the progress of the *Work* relative to the construction schedule and update the schedule on a monthly basis or as stipulated by the *Contract Documents*; and
- .3 advise the *Consultant* of any revisions required to the schedule as the result of extensions of the *Contract Time* as provided in Part 6 of the General Conditions – CHANGES IN THE WORK.

GC 3.5 SUPERVISION

3.5.1 The *Contractor* shall provide all necessary supervision and appoint a competent representative who shall be in attendance at the *Place of the Work* while the *Work* is being performed. The appointed representative shall not be changed except for valid reason.

3.5.2 The appointed representative shall represent the *Contractor* at the *Place of the Work*. Information and instructions provided by the *Consultant* to the *Contractor's* appointed representative shall be deemed to have been received by the *Contractor*, except with respect to Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

GC 3.6 SUBCONTRACTORS AND SUPPLIERS

3.6.1 The *Contractor* shall preserve and protect the rights of the parties under the *Contract* with respect to work to be performed under subcontract, and shall:

- .1 enter into contracts or written agreements with *Subcontractors* and *Suppliers* to require them to perform their work as provided in the *Contract Documents*;
- .2 incorporate the applicable terms and conditions of the *Contract Documents* into all contracts or written agreements with *Subcontractors* and *Suppliers*; and
- .3 be as fully responsible to the *Owner* for acts and omissions of *Subcontractors*, *Suppliers* and any persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the *Contractor*.

3.6.2 The *Contractor* shall indicate in writing, if requested by the *Owner*, those *Subcontractors* or *Suppliers* whose bids have been received by the *Contractor* which the *Contractor* would be prepared to accept for the performance of a portion of the *Work*. Should the *Owner* not object before signing the *Contract*, the *Contractor* shall employ those *Subcontractors* or *Suppliers* so identified by the *Contractor* in writing for the performance of that portion of the *Work* to which their bid applies.

3.6.3 The *Owner* may, for reasonable cause, at any time before the *Owner* has signed the *Contract*, object to the use of a proposed *Subcontractor* or *Supplier* and require the *Contractor* to employ one of the other subcontract bidders.

3.6.4 If the *Owner* requires the *Contractor* to change a proposed *Subcontractor* or *Supplier*, the *Contract Price* and *Contract Time* shall be adjusted by the difference occasioned by such required change.

3.6.5 The *Contractor* shall not be required to employ as a *Subcontractor* or *Supplier*, a person or firm to which the *Contractor* may reasonably object.

3.6.6 The *Owner*, through the *Consultant*, may provide to a *Subcontractor* or *Supplier* information as to the percentage of the *Subcontractor's* or *Supplier's* work which has been certified for payment.

GC 3.7 LABOUR AND PRODUCTS

3.7.1 The *Contractor* shall maintain good order and discipline among the *Contractor's* employees engaged on the *Work* and employ only workers that are skilled in the tasks assigned.

3.7.2 The *Contractor* shall provide and pay for labour, *Products*, tools, *Construction Equipment*, water, heat, light, power, transportation, and other facilities and services necessary for the performance of the *Work* in accordance with the *Contract*.

3.7.3 Unless otherwise specified in the *Contract Documents*, *Products* provided shall be new. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*.

GC 3.8 SHOP DRAWINGS

3.8.1 The *Contractor* shall provide *Shop Drawings* as required in the *Contract Documents*.

3.8.2 The *Contractor* shall provide *Shop Drawings* to the *Consultant* to review in accordance with an agreed schedule, or in the absence of an agreed schedule, in orderly sequence and sufficiently in advance so as to cause no delay in the *Work* or in the work of *Other Contractors* or the *Owner's* own forces.

- 3.8.3 The *Contractor* shall review all *Shop Drawings* before providing them to the *Consultant*. The *Contractor* represents by this review that:
- .1 the *Contractor* has determined and verified all applicable field measurements, field construction conditions, *Product* requirements, catalogue numbers and similar data, or will do so, and
 - .2 the *Contractor* has checked and co-ordinated each *Shop Drawing* with the requirements of the *Work* and of the *Contract Documents*.
- 3.8.4 The *Consultant's* review is for conformity to the design concept and for general arrangement only.
- 3.8.5 At the time of providing *Shop Drawings*, the *Contractor* shall expressly advise the *Consultant* in writing of any deviations in a *Shop Drawing* from the requirements of the *Contract Documents*. The *Consultant* shall indicate the acceptance or rejection of such deviation expressly in writing.
- 3.8.6 The *Consultant's* review shall not relieve the *Contractor* of responsibility for errors or omissions in the *Shop Drawings* or for meeting all requirements of the *Contract Documents*.
- 3.8.7 The *Consultant* will review and return *Shop Drawings* in accordance with the schedule agreed upon, or, in the absence of such schedule, with reasonable promptness so as to cause no delay in the performance of the *Work*.

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

- 4.1.1 The *Contract Price* includes the cash allowances, if any, stated in the *Contract Documents*. The scope of the *Work* or costs included in such cash allowances shall be as described in the *Contract Documents*.
- 4.1.2 The *Contract Price*, and not the cash allowances, includes the *Contractor's* overhead and profit in connection with such cash allowances.
- 4.1.3 Expenditures under cash allowances shall be authorized by the *Owner* through the *Consultant*.
- 4.1.4 Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, at the *Consultant's* direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the *Contract Price* for overhead and profit. Only where the actual cost of the *Work* under all cash allowances exceeds the total amount of all cash allowances shall the *Contractor* be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the *Contract Documents*.
- 4.1.5 The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order* without any adjustment for the *Contractor's* overhead and profit on such amount.
- 4.1.6 The value of the *Work* performed under a cash allowance is eligible to be included in progress payments.
- 4.1.7 The *Contractor* and the *Consultant* shall jointly prepare a schedule that shows when the items called for under cash allowances must be ordered to avoid delaying the progress of the *Work*.

GC 4.2 CONTINGENCY ALLOWANCE

- 4.2.1 The *Contract Price* includes the contingency allowance, if any, stated in the *Contract Documents*.
- 4.2.2 The contingency allowance includes the *Contractor's* overhead and profit in connection with such contingency allowance.
- 4.2.3 Expenditures under the contingency allowance shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 4.2.4 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the expenditures authorized under paragraph 4.2.3 and the contingency allowance.

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

- 5.1.1 The *Owner* shall, at the request of the *Contractor*, before signing the *Contract*, and promptly from time to time thereafter, furnish to the *Contractor* reasonable evidence that financial arrangements have been made to fulfill the *Owner's* obligations under the *Contract*.
- 5.1.2 The *Owner* shall give the *Contractor Notice in Writing* of any material change in the *Owner's* financial arrangements to fulfil the *Owner's* obligations under the *Contract* during the performance of the *Contract*.

GC 5.2 APPLICATIONS FOR PAYMENT

- 5.2.1 Applications for payment on account as provided in Article A-5 of the Agreement – PAYMENT shall be submitted monthly to the *Owner* and the *Consultant* simultaneously as the *Work* progresses.
- 5.2.2 Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties.
- 5.2.3 The amount claimed shall be for the value, proportionate to the amount of the *Contract*, of *Work* performed and *Products* delivered to the *Place of the Work* as of the last day of the payment period.
- 5.2.4 The *Contractor* shall submit to the *Consultant*, at least 15 calendar days before the first application for payment, a schedule of values for the parts of the *Work*, aggregating the total amount of the *Contract Price*, so as to facilitate evaluation of applications for payment.
- 5.2.5 The schedule of values shall be made out in such form as specified in the *Contract* and supported by such evidence as the *Consultant* may reasonably require.
- 5.2.6 Applications for payment shall be based on the schedule of values accepted by the *Consultant* and shall comply with the provisions of *Payment Legislation*.
- 5.2.7 Each application for payment shall include evidence of compliance with workers' compensation legislation at the *Place of the Work* and after the first payment, a declaration by the *Contractor* as to the distribution made of the amounts previously received using document CCDC 9A 'Statutory Declaration'.
- 5.2.8 Applications for payment for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall be supported by such evidence as the *Consultant* may reasonably require to establish the value and delivery of the *Products*.

GC 5.3 PAYMENT

- 5.3.1 After receipt by the *Consultant* and the *Owner* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 – APPLICATIONS FOR PAYMENT:
 - .1 The *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 10 calendar days after the receipt of the application for payment, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due. If the *Consultant* certifies a different amount, or rejects the application or part thereof, the *Owner* shall promptly issue a written notice to the *Contractor* giving reasons for the revision or rejection, such written notice to be in compliance with *Payment Legislation*.
 - .2 The *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement – PAYMENT on or before 28 calendar days after the receipt by the *Owner* and the *Consultant* of the application for payment, and in any event, in compliance with *Payment Legislation*.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

- 5.4.1 The *Consultant* will review the *Work* to certify or verify the validity of the application for *Substantial Performance of the Work* and will promptly, and in any event, no later than 20 calendar days after receipt of the *Contractors* application:
 - .1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or
 - .2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.
- 5.4.2 Where the holdback amount required by the applicable lien legislation has not been placed in a separate lien holdback account, the *Owner* shall, no later than 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.
- 5.4.3 Subject to the requirements of any *Payment Legislation*, all holdback amount prescribed by the applicable lien legislation for the *Work* shall become due and payable to the *Contractor* no later than 10 *Working Days* following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*.
- 5.4.4 The *Contractor* shall submit an application for payment of the lien holdback amount in accordance with GC 5.3 – PAYMENT.
- 5.4.5 Where legislation permits progressive release of the holdback for a portion of the *Work* and the *Consultant* has certified or verified that the part of the *Work* has been performed prior to *Substantial Performance of the Work*, the *Owner* hereby agrees to release, and shall release, such portion to the *Contractor* in accordance with such legislation.

- 5.4.6 Notwithstanding any progressive release of the holdback, the *Contractor* shall ensure that such parts of the *Work* are protected pending the issuance of a final certificate for payment and be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when the holdback was released.

GC 5.5 FINAL PAYMENT

- 5.5.1 When the *Contractor* considers that the *Work* is completed, the *Contractor* shall submit an application for final payment.
- 5.5.2 The *Consultant* will, no later than 10 calendar days after the receipt of an application from the *Contractor* for final payment, review the *Work* to verify the validity of the application and when the *Consultant* finds the *Contractor's* application for final payment valid, the *Consultant* will promptly issue a final certificate for payment to the *Owner*, with a copy to the *Contractor*.
- 5.5.3 If the *Consultant* rejects the application or part thereof, the *Owner* will promptly issue a written notice to the *Contractor* giving reasons for the revision or rejection, such written notice to be in compliance with *Payment Legislation*.
- 5.5.4 Subject to the provision of paragraph 10.4.1 of GC 10.4 – WORKERS' COMPENSATION, and any legislation applicable to the *Place of the Work*, the *Owner* shall, no later than 5 calendar days after the issuance of a final certificate for payment, pay the *Contractor* as provided in Article A-5 of the Agreement – PAYMENT and in any event, in compliance with *Payment Legislation*.

GC 5.6 DEFERRED WORK

- 5.6.1 If because of climatic or other conditions reasonably beyond the control of the *Contractor*, or if the *Owner* and the *Contractor* agree that, there are items of work that must be deferred, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such deferred *Work*.

GC 5.7 NON-CONFORMING WORK

- 5.7.1 No payment by the *Owner* under the *Contract* nor partial or entire use or occupancy of the *Work* by the *Owner* shall constitute an acceptance of any portion of the *Work* or *Products* which are not in accordance with the requirements of the *Contract Documents*.

PART 6 CHANGES IN THE WORK

GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

- 6.1.1 The *Owner*, through the *Consultant*, without invalidating the *Contract*, may make:
- .1 changes in the *Work* consisting of additions, deletions or other revisions to the *Work* by *Change Order* or *Change Directive*, and
 - .2 changes to the *Contract Time* for the *Work*, or any part thereof, by *Change Order*.
- 6.1.2 The *Contractor* shall not perform a change in the *Work* without a *Change Order* or a *Change Directive*.

GC 6.2 CHANGE ORDER

- 6.2.1 When a change in the *Work* is proposed or required, the *Consultant* will provide the *Contractor* with a written description of the proposed change in the *Work*. The *Contractor* shall promptly present to the *Consultant*, in a form that can be reasonably evaluated, a method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, if any, for the proposed change in the *Work*.
- 6.2.2 When the *Owner* and the *Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a *Change Order*. The value of the work performed as the result of a *Change Order* shall be included in the applications for progress payment.

GC 6.3 CHANGE DIRECTIVE

- 6.3.1 If the *Owner* requires the *Contractor* to proceed with a change in the *Work* prior to the *Owner* and the *Contractor* agreeing upon the corresponding adjustment in *Contract Price* and *Contract Time*, the *Owner*, through the *Consultant*, shall issue a *Change Directive*.
- 6.3.2 A *Change Directive* shall only be used to direct a change in the *Work* which is within the general scope of the *Contract Documents*.
- 6.3.3 A *Change Directive* shall not be used to direct a change in the *Contract Time* only.

- 6.3.4 Upon receipt of a *Change Directive*, the *Contractor* shall proceed promptly with the change in the *Work*.
- 6.3.5 For the purpose of valuing *Change Directives*, changes in the *Work* that are not substitutions or otherwise related to each other shall not be grouped together in the same *Change Directive*.
- 6.3.6 The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined on the basis of the cost of the *Contractor's* actual expenditures and savings attributable to the *Change Directive*, valued in accordance with paragraph 6.3.7 and as follows:
- 1 If the change results in a net increase in the *Contractor's* cost, the *Contract Price* shall be increased by the amount of the net increase in the *Contractor's* cost, plus the *Contractor's* percentage fee on such net increase.
 - 2 If the change results in a net decrease in the *Contractor's* cost, the *Contract Price* shall be decreased by the amount of the net decrease in the *Contractor's* cost, without adjustment for the *Contractor's* percentage fee.
 - 3 The *Contractor's* fee shall be as specified in the *Contract Documents* or as otherwise agreed by the parties.
- 6.3.7 The cost of performing the work attributable to the *Change Directive* shall be limited to the actual cost of the following in as much as it contributes directly to the implementation of the *Change Directive*:

Labour

- 1 rates that are listed in the schedule or as agreed by the *Owner* and the *Contractor* including wages, benefits, compensation, contributions, assessments, or taxes incurred for such items as employment insurance, provincial or territorial health insurance, workers' compensation, and Canada or Quebec Pension Plan for:
 - (1) trade labour in the direct employ of the *Contractor*;
 - (2) the *Contractor's* personnel when stationed at the field office;
 - (3) the *Contractor's* personnel engaged at shops or on the road, in expediting the production or transportation of materials or equipment; and
 - (4) the *Contractor's* office personnel engaged in a technical capacity, or other personnel identified in Article A-3 of the Agreement – CONTRACT DOCUMENTS for the time spent in the performance of the *Work*;

Products, Construction Equipment and Temporary Work

- 2 cost of all *Products* including cost of transportation thereof;
- 3 in the absence of agreed rates, cost less salvage value of *Construction Equipment*, *Temporary Work* and tools, exclusive of hand tools under \$1,000 owned by the *Contractor*;
- 4 rental cost of *Construction Equipment*, *Temporary Work* and tools, exclusive of hand tools under \$1,000;
- 5 cost of all equipment and services required for the *Contractor's* field office;

Subcontract

- 6 subcontract amounts of Subcontractor with pricing mechanism approved by the *Owner*;

Others

- 7 travel and subsistence expenses of the *Contractor's* personnel described in paragraph 6.3.7.1;
- 8 deposits lost provided that they are not caused by negligent acts or omissions of the *Contractor*;
- 9 cost of quality assurance such as independent inspection and testing services;
- 10 charges levied by authorities having jurisdiction at the *Place of the Work*;
- 11 royalties, patent license fees, and damages for infringement of patents and cost of defending suits therefor subject always to the *Contractor's* obligations to indemnify the *Owner* as provided in paragraph 10.3.1 of GC 10.3 – PATENT FEES;
- 12 premium for all contract securities and insurance for which the *Contractor* is required, by the *Contract Documents*, to provide, maintain and pay in relation to the performance of the *Work*;
- 13 losses and expenses sustained by the *Contractor* for matters which are the subject of insurance under the policies prescribed in GC 11.1 – INSURANCE when such losses and expenses are not recoverable because the amounts are in excess of collectible amounts or within the deductible amounts;
- 14 taxes and duties, other than *Value Added Taxes*, income, capital, or property taxes, relating to the *Work* for which the *Contractor* is liable;
- 15 charges for voice and data communications, courier services, expressage, transmittal and reproduction of documents, and petty cash items;
- 16 cost for removal and disposal of waste products and debris;
- 17 legal costs, incurred by the *Contractor*, in relation to the performance of the *Work* provided that they are not:
 - (1) relating to a dispute between the *Owner* and the *Contractor* unless such costs are part of a settlement or awarded by arbitration or court,
 - (2) the result of the negligent acts or omissions of the *Contractor*, or
 - (3) the result of a breach of this *Contract* by the *Contractor*;
- 18 cost of auditing when requested by the *Owner*; and
- 19 cost of *Project* specific information technology in accordance with the method determined by the parties.

- 6.3.8 Notwithstanding any other provisions contained in the General Conditions of the *Contract*, it is the intention of the parties that the cost of any item under any cost element referred to in paragraph 6.3.7 shall cover and include any and all costs or liabilities attributable to the *Change Directive* other than those which are the result of or occasioned by any failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor's* attention to the *Work*. Any cost due to failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor's* performance of the *Work* attributable to the *Change Directive* shall be borne by the *Contractor*.
- 6.3.9 The *Contractor* shall keep full and detailed accounts and records necessary for the documentation of the cost of performing the *Work* attributable to the *Change Directive* and shall provide the *Consultant* with copies thereof.
- 6.3.10 For the purpose of valuing *Change Directives*, the *Owner* shall be afforded reasonable access to all of the *Contractor's* pertinent documents related to the cost of performing the *Work* attributable to the *Change Directive*.
- 6.3.11 Pending determination of the final amount of a *Change Directive*, the undisputed value of the *Work* performed as the result of a *Change Directive* is eligible to be included in progress payments.
- 6.3.12 If the *Owner* and the *Contractor* do not agree on the proposed adjustment in the *Contract Time* attributable to the change in the *Work*, or the method of determining it, the adjustment shall be referred to the *Consultant* for a finding.
- 6.3.13 When the *Owner* and the *Contractor* reach agreement on the adjustment to the *Contract Price* and to the *Contract Time*, this agreement shall be recorded in a *Change Order*.

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- 6.4.1 If the *Owner* or the *Contractor* discover conditions at the *Place of the Work* which are:
- .1 subsurface or otherwise concealed physical conditions which existed before the commencement of the *Work* and differ materially from those indicated in the *Contract Documents*; or
 - .2 physical conditions, other than conditions due to weather, that are of a nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the *Contract Documents*,
- then the observing party shall give *Notice in Writing* to the other party of such conditions before they are disturbed and in no event later than 5 *Working Days* after first observance of the conditions.
- 6.4.2 The *Consultant* will promptly investigate such conditions and make a finding. If the finding is that the conditions differ materially and this would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Owner*, through the *Consultant*, shall issue appropriate instructions for a change in the *Work* as provided in GC 6.2 – CHANGE ORDER or GC 6.3 – CHANGE DIRECTIVE.
- 6.4.3 If the *Consultant* finds that the conditions at the *Place of the Work* are not materially different or that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* will promptly inform the *Owner* and the *Contractor* in writing.
- 6.4.4 If such concealed or unknown conditions relate to toxic and hazardous substances and materials, artifacts and fossils, or mould, the parties will be governed by the provisions of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, GC 9.3 – ARTIFACTS AND FOSSILS and GC 9.5 – MOULD.

GC 6.5 DELAYS

- 6.5.1 If the *Contractor* is delayed in the performance of the *Work* by the *Owner*, the *Consultant*, or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.
- 6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or any person employed or engaged by the *Contractor* directly or indirectly, resulting in the failure of the *Contractor* to attain *Ready-for-Takeover* by the date stipulated in Article A-1 of the Agreement – THE WORK, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.
- 6.5.3 If the *Contractor* is delayed in the performance of the *Work* by:
- .1 labour disputes, strikes, lock-outs (including lock-outs decreed or recommended for its members by a recognized contractors' association, of which the *Contractor* is a member or to which the *Contractor* is otherwise bound),
 - .2 fire, unusual delay by common carriers or unavoidable casualties,
 - .3 abnormally adverse weather conditions, or

- .4 any cause beyond the *Contractor's* control other than one resulting from a default or breach of *Contract* by the *Contractor*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as the result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from actions by the *Owner*, the *Consultant* or anyone employed or engaged by them directly or indirectly.

6.5.4 No extension shall be made for delay unless *Notice in Writing* of the cause of delay is given to the *Consultant* not later than 10 *Working Days* after the commencement of the delay. In the case of a continuing cause of delay only one *Notice in Writing* shall be necessary.

6.5.5 If no schedule is made under paragraph 2.2.12 of GC 2.2 – ROLE OF THE CONSULTANT, then no request for extension shall be made because of failure of the *Consultant* to furnish instructions until 10 *Working Days* after demand for such instructions has been made.

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

6.6.1 If the *Contractor* intends to make a claim for an increase to the *Contract Price*, or if the *Owner* intends to make a claim against the *Contractor* for a credit to the *Contract Price*, the party that intends to make the claim shall give timely *Notice in Writing* of intent to claim to the other party and to the *Consultant*.

6.6.2 Upon commencement of the event or series of events giving rise to a claim, the party intending to make the claim shall:

- .1 take all reasonable measures to mitigate any loss or expense which may be incurred as a result of such event or series of events, and
- .2 keep such records as may be necessary to support the claim.

6.6.3 The party making the claim shall submit within a reasonable time to the *Consultant* a detailed account of the amount claimed and the grounds upon which the claim is based and the *Consultant* will make a finding upon such claim.

6.6.4 Where the event or series of events giving rise to the claim has a continuing effect, the detailed account submitted under paragraph 6.6.3 shall be considered to be an interim account and the party making the claim shall, at such intervals as the *Consultant* may reasonably require, submit further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.

6.6.5 The *Consultant's* findings, with respect to a claim made by either party, will be given by *Notice in Writing* to both parties within 30 *Working Days* after receipt of the claim by the *Consultant*, or within such other time period as may be agreed by the parties.

6.6.6 If such finding is not acceptable to either party, the claim shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION.

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

7.1.1 If the *Contractor* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Contractor's* insolvency, or if a receiver is appointed because of the *Contractor's* insolvency, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, terminate the *Contractor's* right to continue with the *Work*, by giving the *Contractor* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.

7.1.2 If the *Contractor* neglects to perform the *Work* properly or otherwise fails to comply with the requirements of the *Contract* to a substantial degree and if the *Consultant* has given a written statement to the *Owner* and *Contractor* which provides the detail of such neglect to perform the *Work* properly or such failure to comply with the requirements of the *Contract* to a substantial degree, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, give the *Contractor Notice in Writing*, containing particulars of the default including references to applicable provisions of the *Contract*, that the *Contractor* is in default of the *Contractor's* contractual obligations and instruct the *Contractor* to correct the default in the 5 *Working Days* immediately following the receipt of such *Notice in Writing*.

7.1.3 If the default cannot be corrected in the 5 *Working Days* specified or in such other time period as may be subsequently agreed in writing by the parties, the *Contractor* shall be in compliance with the *Owner's* instructions if the *Contractor*:

- .1 commences the correction of the default within the specified time,
- .2 provides the *Owner* with an acceptable schedule for such correction, and
- .3 corrects the default in accordance with the *Contract* terms and with such schedule.

- 7.1.4 If the *Contractor* fails to correct the default in the time specified or in such other time period as may be subsequently agreed in writing by the parties, without prejudice to any other right or remedy the *Owner* may have, the *Owner* may by giving *Notice in Writing*:
- .1 correct such default and deduct the cost thereof from any payment then or thereafter due the *Contractor* for the *Work* provided the *Consultant* has certified such cost to the *Owner* and the *Contractor*, or
 - .2 terminate the *Contractor*'s right to continue with the *Work* in whole or in part or terminate the *Contract*.
- 7.1.5 If the *Owner* terminates the *Contractor*'s right to continue with the *Work* as provided in paragraphs 7.1.1 and 7.1.4, the *Owner* shall be entitled to:
- .1 take possession of the *Work* and *Products* at the *Place of the Work*; subject to the rights of third parties, utilize the *Construction Equipment* at the *Place of the Work*; finish the *Work* by whatever method the *Owner* may consider expedient, but without undue delay or expense,
 - .2 withhold further payment to the *Contractor* until a final certificate for payment is issued,
 - .3 charge the *Contractor* the amount by which the full cost of finishing the *Work* as certified by the *Consultant*, including compensation to the *Consultant* for the *Consultant*'s additional services and a reasonable allowance as determined by the *Consultant* to cover the cost of corrections to work performed by the *Contractor* that may be required under GC 12.3 – WARRANTY, exceeds the unpaid balance of the *Contract Price*; however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference, and
 - .4 on expiry of the warranty period, charge the *Contractor* the amount by which the cost of corrections to the *Contractor*'s work under GC 12.3 – WARRANTY exceeds the allowance provided for such corrections, or if the cost of such corrections is less than the allowance, pay the *Contractor* the difference.
- 7.1.6 The *Contractor*'s obligation under the *Contract* as to quality, correction and warranty of the work performed by the *Contractor* up to the time of termination shall continue in force after such termination of the *Contract*.

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

- 7.2.1 If the *Owner* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Owner*'s insolvency, or if a receiver is appointed because of the *Owner*'s insolvency, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.
- 7.2.2 If the *Work* is suspended or otherwise delayed for a period of 20 *Working Days* or more under an order of a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or of anyone directly or indirectly employed or engaged by the *Contractor*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* *Notice in Writing* to that effect.
- 7.2.3 The *Contractor* may give *Notice in Writing* to the *Owner*, with a copy to the *Consultant*, that the *Owner* is in default of the *Owner*'s contractual obligations if:
- .1 the *Owner* fails to furnish, when so requested by the *Contractor*, reasonable evidence that financial arrangements have been made to fulfill the *Owner*'s obligations under the *Contract*,
 - .2 the *Consultant* fails to issue a certificate as provided in Part 5 of the General Conditions – PAYMENT,
 - .3 the *Owner* fails to pay the *Contractor* when due the amounts certified by the *Consultant* or awarded by adjudication, arbitration or court, or
 - .4 the *Owner* fails to comply with the requirements of the *Contract* to a substantial degree and the *Consultant*, except for GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER, gives a written statement to the *Owner* and the *Contractor* that provides detail of such failure to comply with the requirements of the *Contract* to a substantial degree.
- 7.2.4 The *Contractor*'s *Notice in Writing* to the *Owner* provided under paragraph 7.2.3 shall advise that if the default is not corrected within 5 *Working Days* following the receipt of the *Notice in Writing*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, suspend the *Work* or terminate the *Contract*.
- 7.2.5 If the *Contractor* terminates the *Contract* by giving a *Notice in Writing* to the *Owner* under the conditions set out above, the *Contractor* shall be entitled to be paid for all work performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*.

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

- 8.1.1 Differences between the parties to the *Contract* as to the interpretation, application or administration of the *Contract* or any failure to agree where agreement between the parties is called for, herein collectively called disputes, which are not resolved

in the first instance by findings of the *Consultant* as provided in GC 2.2 – ROLE OF THE CONSULTANT, shall be settled in accordance with the requirements of Part 8 of the General Conditions – DISPUTE RESOLUTION.

- 8.1.2 If a dispute arises under the *Contract* in respect of a matter in which the *Consultant* has no authority under the *Contract* to make a finding, the procedures set out in paragraph 8.1.3 and paragraphs 8.3.3 to 8.3.8 of GC 8.3 – NEGOTIATION, MEDIATION AND ARBITRATION, and in GC 8.4 – RETENTION OF RIGHTS apply to that dispute with the necessary changes to detail as may be required.
- 8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instructions as in the *Consultant's* opinion are necessary for the proper performance of the *Work* and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim the party may have. If it is subsequently determined that such instructions were in error or at variance with the *Contract Documents*, the *Owner* shall pay the *Contractor* costs incurred by the *Contractor* in carrying out such instructions which the *Contractor* was required to do beyond what the *Contract Documents* correctly understood and interpreted would have required, including costs resulting from interruption of the *Work*.

GC 8.2 ADJUDICATION

- 8.2.1 Nothing in this *Contract* shall be deemed to affect the rights of the parties to resolve any dispute by adjudication as may be prescribed by applicable legislation.

GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

- 8.3.1 In accordance with the rules for mediation as provided in CCDC 40 ‘Rules for Mediation and Arbitration of Construction Industry Disputes’ in effect at the time of bid closing, the parties shall appoint a Project Mediator
- .1 within 20 *Working Days* after the *Contract* was awarded, or
 - .2 if the parties neglected to make an appointment within the 20 *Working Days*, within 10 *Working Days* after either party by *Notice in Writing* requests that the Project Mediator be appointed.
- 8.3.2 A party shall be conclusively deemed to have accepted a finding of the *Consultant* under GC 2.2 – ROLE OF THE CONSULTANT and to have expressly waived and released the other party from any claims in respect of the particular matter dealt with in that finding unless, within 15 *Working Days* after receipt of that finding, the party sends a *Notice in Writing* of dispute to the other party and to the *Consultant*, which contains the particulars of the matter in dispute and the relevant provisions of the *Contract Documents*. The responding party shall send a *Notice in Writing* of reply to the dispute within 10 *Working Days* after receipt of such *Notice in Writing* setting out particulars of this response and any relevant provisions of the *Contract Documents*.
- 8.3.3 The parties shall make all reasonable efforts to resolve their dispute by amicable negotiations and agree to provide, without prejudice, frank, candid, and timely disclosure of relevant facts, information and documents to facilitate these negotiations.
- 8.3.4 After a period of 10 *Working Days* following receipt of a responding party’s *Notice in Writing* of reply under paragraph 8.3.2, the parties shall request the Project Mediator to assist the parties to reach agreement on any unresolved dispute. The mediated negotiations shall be conducted in accordance with the rules for mediation as provided in CCDC 40 in effect at the time of bid closing.
- 8.3.5 If the dispute has not been resolved at the mediation or within such further period as is agreed by the parties, the Project Mediator will terminate the mediated negotiations by giving *Notice in Writing* to the *Owner*, the *Contractor* and the *Consultant*.
- 8.3.6 By giving a *Notice in Writing* to the other party and the *Consultant*, not later than 10 *Working Days* after the date of termination of the mediated negotiations under paragraph 8.3.5, either party may refer the dispute to be finally resolved by arbitration under the rules of arbitration as provided in CCDC 40 in effect at the time of bid closing. The arbitration shall be conducted in the jurisdiction of the *Place of the Work*.
- 8.3.7 On expiration of the 10 *Working Days*, the arbitration agreement under paragraph 8.3.6 is not binding on the parties and, if a *Notice in Writing* is not given under paragraph 8.3.6 within the required time, the parties may refer the unresolved dispute to the courts or to any other form of dispute resolution, including arbitration, which they have agreed to use.
- 8.3.8 If neither party, by *Notice in Writing*, given within 10 *Working Days* of the date of *Notice in Writing* requesting arbitration in paragraph 8.3.6, requires that a dispute be arbitrated immediately, all disputes referred to arbitration as provided in paragraph 8.3.6 shall be:
- .1 held in abeyance until:
 - (1) *Ready-for-Takeover*,
 - (2) the *Contract* has been terminated, or
 - (3) the *Contractor* has abandoned the *Work*,whichever is earlier; and

- .2 consolidated into a single arbitration under the rules governing the arbitration under paragraph 8.3.6.

GC 8.4 RETENTION OF RIGHTS

- 8.4.1 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses, provided the party has given the *Notice in Writing* required under Part 8 of the General Conditions – DISPUTE RESOLUTION and has carried out the instructions as provided in paragraph 8.1.3 of GC 8.1 – AUTHORITY OF THE CONSULTANT.
- 8.4.2 Nothing in Part 8 of the General Conditions – DISPUTE RESOLUTION shall be construed in any way to limit a party from asserting any statutory right to a lien under applicable lien legislation of the jurisdiction of the *Place of the Work* and the assertion of such right by initiating judicial proceedings is not to be construed as a waiver of any right that party may have under paragraph 8.3.6 of GC 8.3 – NEGOTIATION, MEDIATION AND ARBITRATION to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

- 9.1.1 The *Contractor* shall protect the *Work*, the *Owner's* property and property adjacent to the *Place of the Work* from damage which may arise as the result of the *Contractor's* operations under the *Contract*, and shall be responsible for such damage, except damage which occurs as the result of:
- .1 errors or omissions in the *Contract Documents*; or
 - .2 acts or omissions by the *Owner*, the *Consultant*, *Other Contractors*, or their agents and employees.
- 9.1.2 Before commencing any work, the *Contractor* shall determine the location of all underground utilities and structures indicated in the *Contract Documents* or that are reasonably apparent in an inspection of the *Place of the Work*.
- 9.1.3 Should the *Contractor* in the performance of the *Contract* damage the *Work*, the *Owner's* property or property adjacent to the *Place of the Work*, the *Contractor* shall be responsible for making good such damage at the *Contractor's* expense.
- 9.1.4 Should damage occur to the *Work* or the *Owner's* property for which the *Contractor* is not responsible, as provided in paragraph 9.1.1, the *Contractor* shall make good such damage to the *Work* and, if the *Owner* so directs, to the *Owner's* property. The *Contract Price* and *Contract Time* shall be adjusted as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

- 9.2.1 For the purposes of applicable legislation related to toxic and hazardous substances, the *Owner* shall be deemed to have control and management of the *Place of the Work* with respect to existing conditions.
- 9.2.2 Prior to the *Contractor* commencing the *Work*, the *Owner* shall,
- .1 take all reasonable steps to determine whether any toxic or hazardous substances are present at the *Place of the Work*, and
 - .2 provide the *Consultant* and the *Contractor* with a written list of any such substances that are known to exist and their locations.
- 9.2.3 The *Owner* shall take all reasonable steps to ensure that no person's exposure to any toxic or hazardous substance exceeds the time weighted levels prescribed by applicable legislation at the *Place of the Work* and that no property is damaged or destroyed as a result of exposure to, or the presence of, toxic or hazardous substances which were at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.2.4 Unless the *Contract* expressly provides otherwise, the *Owner* shall be responsible for taking all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to dispose of, store or otherwise render harmless any toxic or hazardous substance which was present at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.2.5 If the *Contractor*
- .1 encounters toxic or hazardous substances at the *Place of the Work*, or
 - .2 has reasonable grounds to believe that toxic or hazardous substances are present at the *Place of the Work*, which were not brought to the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible and which were not disclosed by the *Owner* or which were disclosed but have not been dealt with as required under paragraph 9.2.4, the *Contractor* shall
 - .3 take all reasonable steps, including stopping the *Work*, to ensure that no person's exposure to any toxic or hazardous substance exceeds any applicable time weighted levels prescribed by applicable legislation at the *Place of the Work*, and
 - .4 immediately report the circumstances to the *Consultant* and the *Owner* in writing.

- 9.2.6 If the *Owner* and the *Contractor* do not agree on the existence, significance of, or whether the toxic or hazardous substances were brought onto the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.
- 9.2.7 If the *Owner* and the *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were not brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall promptly at the *Owner's* own expense:
- .1 take all steps as required under paragraph 9.2.4;
 - .2 reimburse the *Contractor* for the costs of all steps taken pursuant to paragraph 9.2.5;
 - .3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in 9.2.6 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay; and
 - .4 indemnify the *Contractor* as required by GC 13.1 – INDEMNIFICATION.
- 9.2.8 If the *Owner* and the *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Contractor* shall promptly at the *Contractor's* own expense:
- .1 take all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to safely remove and dispose the toxic or hazardous substances;
 - .2 make good any damage to the *Work*, the *Owner's* property or property adjacent to the place of the *Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY;
 - .3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.2.6; and
 - .4 indemnify the *Owner* as required by GC 13.1 – INDEMNIFICATION.
- 9.2.9 If either party does not accept the expert's findings under paragraph 9.2.6, the disagreement shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraph 9.2.7 or 9.2.8 it being understood that by so doing, neither party will jeopardize any claim that party may have to be reimbursed as provided by GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.

GC 9.3 ARTIFACTS AND FOSSILS

- 9.3.1 Fossils, coins, articles of value or antiquity, structures and other remains or things of scientific or historic interest discovered at the *Place or Work* shall, as between the *Owner* and the *Contractor*, be deemed to be the absolute property of the *Owner*.
- 9.3.2 The *Contractor* shall take all reasonable precautions to prevent removal or damage to discoveries as identified in paragraph 9.3.1, and shall advise the *Consultant* upon discovery of such items.
- 9.3.3 The *Consultant* will investigate the impact on the *Work* of the discoveries identified in paragraph 9.3.1. If conditions are found that would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Owner*, through the *Consultant*, shall issue appropriate instructions for a change in the *Work* as provided in GC 6.2 – CHANGE ORDER or GC 6.3 – CHANGE DIRECTIVE.

GC 9.4 CONSTRUCTION SAFETY

- 9.4.1 The *Contractor* shall be responsible for establishing, initiating, maintaining, and supervising all health and safety precautions and programs in connection with the performance of the *Work* in accordance with the applicable health and safety legislation.
- 9.4.2 The *Owner* and the *Contractor* shall comply with all health and safety precautions and programs established at the *Place of the Work*.
- 9.4.3 The *Owner* and the *Contractor* shall comply with the rules, regulations and practices required by the applicable health and safety legislation.
- 9.4.4 The *Owner* shall cause the *Consultant*, *Other Contractors* and the *Owner's* own forces to comply with all health and safety precautions and programs established by the *Contractor* at the *Place of the Work*.
- 9.4.5 Nothing in this *Contract* shall affect the determination of liability under the applicable health and safety legislation.

GC 9.5 MOULD

- 9.5.1 If the *Contractor* or the *Owner* observes or reasonably suspects the presence of mould at the *Place of the Work*, the remediation of which is not expressly part of the *Work*,
- .1 the observing party shall promptly report the circumstances to the other party in writing,
 - .2 the *Contractor* shall promptly take all reasonable steps, including stopping the *Work* if necessary, to ensure that no person suffers injury, sickness or death and that no property is damaged as a result of exposure to or the presence of the mould, and

- .3 if the *Owner* and the *Contractor* do not agree on the existence, significance or cause of the mould or as to what steps need be taken to deal with it, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.
- 9.5.2 If the *Owner* and the *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was caused by the *Contractor*'s operations under the *Contract*, the *Contractor* shall promptly, at the *Contractor*'s own expense:
- .1 take all reasonable and necessary steps to safely remediate or dispose of the mould,
 - .2 make good any damage to the *Work*, the *Owner*'s property or property adjacent to the *Place of the Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY,
 - .3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.5.1.3, and
 - .4 indemnify the *Owner* as required by GC 13.1 – INDEMNIFICATION.
- 9.5.3 If the *Owner* and the *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was not caused by the *Contractor*'s operations under the *Contract*, the *Owner* shall promptly, at the *Owner*'s own expense:
- .1 take all reasonable and necessary steps to safely remediate or dispose of the mould,
 - .2 reimburse the *Contractor* for the cost of taking the steps under paragraph 9.5.1.2 and making good any damage to the *Work* as provided in paragraph 9.1.4 of GC 9.1 – PROTECTION OF WORK AND PROPERTY,
 - .3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in paragraph 9.5.1.3 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay, and
 - .4 indemnify the *Contractor* as required by GC 13.1 – INDEMNIFICATION.
- 9.5.4 If either party does not accept the expert's finding under paragraph 9.5.1.3, the disagreement shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraphs 9.5.2 or 9.5.3, it being understood that by so doing neither party will jeopardize any claim the party may have to be reimbursed as provided by GC 9.5 – MOULD.

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

- 10.1.1 The *Contract Price* shall include all taxes and customs duties in effect at the time of the bid closing except for *Value Added Taxes* payable by the *Owner* to the *Contractor* as stipulated in Article A-4 of the Agreement – CONTRACT PRICE.
- 10.1.2 Any increase or decrease in costs to the *Contractor* due to changes in taxes and duties after the time of the bid closing shall increase or decrease the *Contract Price* accordingly.

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

- 10.2.1 The laws of the *Place of the Work* shall govern the *Work*.
- 10.2.2 The *Owner* shall obtain and pay for development approvals, building permit, permanent easements, rights of servitude, and all other necessary approvals and permits, except for the permits and fees referred to in paragraph 10.2.3 or for which the *Contract Documents* specify as the responsibility of the *Contractor*.
- 10.2.3 The *Contractor* shall be responsible for the procurement of permits, licences, inspections, and certificates, which are necessary for the performance of the *Work* and customarily obtained by contractors in the jurisdiction of the *Place of the Work* after the issuance of the building permit. The *Contract Price* includes the cost of these permits, licences, inspections, and certificates, and their procurement.
- 10.2.4 The *Contractor* shall give the required notices and comply with the laws, ordinances, rules, regulations, or codes which are or become in force during the performance of the *Work* and which relate to the *Work*, to the preservation of the public health, and to construction safety.
- 10.2.5 The *Contractor* shall not be responsible for verifying that the *Contract Documents* are in compliance with the applicable laws, ordinances, rules, regulations, or codes relating to the *Work*. If the *Contract Documents* are at variance therewith, or if, subsequent to the time of bid closing, changes are made to the applicable laws, ordinances, rules, regulations, or codes which require modification to the *Contract Documents*, the *Contractor* shall advise the *Consultant* in writing requesting direction immediately upon such variance or change becoming known. The *Consultant* will issue the changes required to the *Contract Documents* as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

- 10.2.6 If the *Contractor* fails to advise the *Consultant* in writing; fails to obtain direction as required in paragraph 10.2.5; and performs work knowing it to be contrary to any laws, ordinances, rules, regulations, or codes; the *Contractor* shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations, or codes.
- 10.2.7 If, subsequent to the time of bid closing, changes are made to applicable laws, ordinances, rules, regulations, or codes of authorities having jurisdiction which affect the cost of the *Work*, either party may submit a claim in accordance with the requirements of GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.

GC 10.3 PATENT FEES

- 10.3.1 The *Contractor* shall pay the royalties and patent licence fees required for the performance of the *Contract*. The *Contractor* shall hold the *Owner* harmless from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention by the *Contractor* or anyone for whose acts the *Contractor* may be liable.
- 10.3.2 The *Owner* shall hold the *Contractor* harmless against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention in executing anything for the purpose of the *Contract*, the physical model, plan or design of which was supplied to the *Contractor* as part of the *Contract*.

GC 10.4 WORKERS' COMPENSATION

- 10.4.1 Prior to commencing the *Work*, and again with the *Contractor*'s applications for payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation at the *Place of the Work*.

PART 11 INSURANCE

GC 11.1 INSURANCE

- 11.1.1 Without restricting the generality of GC 13.1 – INDEMNIFICATION, the *Contractor* shall provide, maintain and pay for the following insurance coverages, the requirements of which are specified in CCDC 41 'CCDC Insurance Requirements' in effect at the time of bid closing except as hereinafter provided:
- .1 General liability insurance in the name of the *Contractor* and include, or in the case of a single, blanket policy, be endorsed to name, the *Owner* and the *Consultant* as insureds but only with respect to liability, other than legal liability arising out of their sole negligence, arising out of the operations of the *Contractor* with regard to the *Work*. General liability insurance shall be maintained from the date of commencement of the *Work* until one year from the date of *Ready-for-Takeover*. Liability coverage shall be provided for completed operations hazards from the date of *Ready-for-Takeover* on an ongoing basis for a period of 6 years following *Ready-for-Takeover*.
 - .2 Automobile Liability Insurance from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.
 - .3 Unmanned aerial vehicle aircraft, manned aircraft or watercraft Liability Insurance when owned or non-owned manned or unmanned aircraft or watercraft are used directly or indirectly in the performance of the *Work*.
 - .4 "Broad form" property insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The "Broad form" property insurance shall be provided from the date of commencement of the *Work* until the earliest of:
 - (1) 10 calendar days after the date of *Ready-for-Takeover*;
 - (2) on the commencement of use or occupancy of any part or section of the *Work* unless such use or occupancy is for construction purposes, habitational, office, banking, convenience store under 465 square metres in area, or parking purposes, or for the installation, testing and commissioning of equipment forming part of the *Work*; and
 - (3) when left unattended for more than 30 consecutive calendar days or when construction activity has ceased for more than 30 consecutive calendar days.
 - .5 Boiler and machinery insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The coverage shall be maintained continuously from commencement of use or operation of the boiler and machinery objects insured by the policy and until 10 calendar days after the date of *Ready-for-Takeover*.
 - .6 The "Broad form" property and boiler and machinery policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. In the event of loss or damage:
 - (1) the *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except

that the *Contractor* shall be entitled to such reasonable extension of *Contract Time* relative to the extent of the loss or damage as the *Consultant* may recommend in consultation with the *Contractor*;

- (2) the *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount which the *Owner's* interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds in accordance with the progress payment provisions. In addition the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor's* interest in the restoration of the *Work*; and
- (3) to the *Work* arising from the work of the *Owner*, the *Owner's* own forces or *Other Contractors*, the *Owner* shall, in accordance with the *Owner's* obligations under the provisions relating to construction by the *Owner* or *Other Contractors*, pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as in accordance with the progress payment provisions.

- .7 *Contractors' Equipment Insurance* from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.
- .8 *Contractors' Pollution Liability Insurance* from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.

11.1.2 Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements applicable to the *Work*.

11.1.3 The parties shall pay their share of the deductible amounts in direct proportion to their responsibility in regards to any loss for which the above policies are required to pay, except where such amounts may be excluded by the terms of the *Contract*.

11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right to provide and maintain such insurance and give evidence to the *Contractor* and the *Consultant*. The *Contractor* shall pay the cost thereof to the *Owner* on demand or the *Owner* may deduct the cost from the amount which is due or may become due to the *Contractor*.

11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*.

11.1.6 If a revised version of CCDC 41 is published, which specifies reduced insurance requirements, the parties shall address such reduction, prior to the *Contractor's* insurance policy becoming due for renewal, and record any agreement in a *Change Order*.

11.1.7 If a revised version of CCDC 41 is published, which specifies increased insurance requirements, the *Owner* may request the increased coverage from the *Contractor* by way of a *Change Order*.

11.1.8 A *Change Directive* shall not be used to direct a change in the insurance requirements in response to the revision of CCDC 41.

PART 12 OWNER TAKEOVER

GC 12.1 READY-FOR-TAKEOVER

12.1.1 The prerequisites to attaining *Ready-for-Takeover* of the *Work* are limited to the following:

- .1 The *Consultant* has certified or verified the *Substantial Performance of the Work*.
- .2 Evidence of compliance with the requirements for occupancy or occupancy permit as prescribed by the authorities having jurisdiction.
- .3 Final cleaning and waste removal at the time of applying for *Ready-for-Takeover*, as required by the *Contract Documents*.
- .4 The delivery to the *Owner* of such operations and maintenance documents reasonably necessary for immediate operation and maintenance, as required by the *Contract Documents*.
- .5 Make available a copy of the as-built drawings completed to date on site.
- .6 Startup, testing required for immediate occupancy, as required by the *Contract Documents*.
- .7 Ability to secure access to the *Work* has been provided to the *Owner*, if required by the *Contract Documents*.
- .8 Demonstration and training, as required by the *Contract Documents*, is scheduled by the *Contractor* acting reasonably.

12.1.2 If any prerequisites set forth in paragraphs 12.1.1.3 to 12.1.1.6 must be deferred because of conditions reasonably beyond the control of the *Contractor*, or by agreement between the *Owner* and the *Contractor* to do so, *Ready-for-Takeover* shall not be delayed.

12.1.3 When the *Contractor* considers that the *Work* is *Ready-for-Takeover*, the *Contractor* shall deliver to the *Consultant* and to the *Owner* a comprehensive list of items to be completed or corrected, together with a written application for *Ready-for-Takeover* for review. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.

12.1.4 The *Consultant* will review the *Work* to verify the validity of the application and will promptly, and in any event, no later than 10 calendar days after receipt of the *Contractor's* list and application:

- .1 advise the *Contractor* in writing that the *Work* is not *Ready-for-Takeover* and give reasons why, or
- .2 confirm the date of *Ready-for-Takeover* in writing to each of the *Owner* and the *Contractor*.

12.1.5 Immediately following the confirmation of the date of *Ready-for-Takeover*, the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for finishing the *Work*.

12.1.6 The provision of GC 12.1 – READY-FOR-TAKEOVER shall be subject to GC 12.2 – EARLY OCCUPANCY BY THE OWNER.

GC 12.2 EARLY OCCUPANCY BY THE OWNER

12.2.1 The *Owner* may take occupancy of a part or the entirety of the *Work* before *Ready-for-Takeover* has been attained only as agreed by the *Contractor* which agreement shall not be unreasonably withheld.

12.2.2 The *Owner* shall not occupy a part or the entirety of the *Work* without prior approval by authorities having jurisdiction.

12.2.3 If the *Owner* takes occupancy of a part of the *Work* before *Ready-for-Takeover* has been attained:

- .1 The part of the *Work* which is occupied shall be deemed to have been taken over by the *Owner* as from the date on which it is occupied.
- .2 The *Contractor* shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the *Owner*.
- .3 The warranty period specified in paragraph 12.3.1 of GC 12.3 – WARRANTY for that part of the *Work* shall start from the date on which it is occupied.

12.2.4 If the *Owner* takes occupancy of the entirety of the *Work* before all the prerequisites are met as described in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER, the *Work* shall, subject to the requirements of the applicable lien legislation, be deemed to achieve *Ready-for-Takeover*. This shall not relieve the *Contractor*'s responsibility to complete the *Work* in a timely manner.

GC 12.3 WARRANTY

12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is one year from the date when *Ready-for-Takeover* has been attained.

12.3.2 The *Contractor* shall be responsible for the proper performance of the *Work* to the extent that the design and *Contract Documents* permit such performance.

12.3.3 The *Owner*, through the *Consultant*, shall promptly give the *Contractor Notice in Writing* of observed defects and deficiencies which occur during the one year warranty period.

12.3.4 Subject to paragraph 12.3.2, the *Contractor* shall correct promptly, at the *Contractor*'s expense, defects or deficiencies in the *Work* which appear prior to and during the one year warranty period.

12.3.5 The *Contractor* shall correct or pay for damage resulting from corrections made under the requirements of paragraph 12.3.4.

12.3.6 Any extended warranties required beyond the one year warranty period as described in paragraph 12.3.1, shall be as specified in the *Contract Documents*. Extended warranties shall be issued by the warrantor to the benefit of the *Owner*. The *Contractor*'s responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibilities of the warrantor.

PART 13 INDEMNIFICATION AND WAIVER

GC 13.1 INDEMNIFICATION

13.1.1 Without restricting the parties' obligation to indemnify respecting toxic and hazardous substances, patent fees and defect in title claims all as described in paragraphs 13.1.4 and 13.1.5, the *Owner* and the *Contractor* shall each indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by them or in respect to claims by third parties that arise out of, or are attributable in any respect to their involvement as parties to this *Contract*, provided such claims are:

- .1 caused by:
 - (1) the negligent acts or omissions of the party from whom indemnification is sought or anyone for whose negligent acts or omissions that party is liable, or
 - (2) a failure of the party to the *Contract* from whom indemnification is sought to fulfill its terms or conditions; and
- .2 made by *Notice in Writing* within a period of 6 years from the *Ready-for-Takeover* date or within such shorter period as may be prescribed by any limitation statute of the Province or Territory of the *Place of the Work*.

The parties expressly waive the right to indemnity for claims other than those provided for in this *Contract*.

- 13.1.2 The obligation of either party to indemnify as set forth in paragraph 13.1.1 shall be limited as follows:
- .1 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is to be provided by either party pursuant to GC 11.1 – INSURANCE, the minimum liability insurance limit for one occurrence, of the applicable insurance policy, as referred to in CCDC 41 in effect at the time of bid closing.
 - .2 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is not required to be provided by either party in accordance with GC 11.1 – INSURANCE, the greater of the *Contract Price* as recorded in Article A-4 – CONTRACT PRICE or \$2,000,000, but in no event shall the sum be greater than \$20,000,000.
 - .3 In respect to indemnification by a party against the other with respect to losses suffered by them, such obligation shall be restricted to direct loss and damage, and neither party shall have any liability to the other for indirect, consequential, punitive or exemplary damages.
 - .4 In respect to indemnification respecting claims by third parties, the obligation to indemnify is without limit.
- 13.1.3 The obligation of either party to indemnify the other as set forth in paragraphs 13.1.1 and 13.1.2 shall be inclusive of interest and all legal costs.
- 13.1.4 The *Owner* and the *Contractor* shall indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of their obligations described in GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.
- 13.1.5 The *Owner* shall indemnify and hold harmless the *Contractor* from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings:
- .1 as described in paragraph 10.3.2 of GC 10.3 – PATENT FEES, and
 - .2 arising out of the *Contractor*'s performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work*.
- 13.1.6 In respect to any claim for indemnity or to be held harmless by the *Owner* or the *Contractor*:
- .1 *Notice in Writing* of such claim shall be given within a reasonable time after the facts upon which such claim is based become known; and
 - .2 should any party be required as a result of its obligation to indemnify another to pay or satisfy a final order, judgment or award made against the party entitled by this contract to be indemnified, then the indemnifying party upon assuming all liability for any costs that might result shall have the right to appeal in the name of the party against whom such final order or judgment has been made until such rights of appeal have been exhausted.

GC 13.2 WAIVER OF CLAIMS

- 13.2.1 Subject to any lien legislation applicable to the *Place of the Work*, the *Contractor* waives and releases the *Owner* from all claims which the *Contractor* has or reasonably ought to have knowledge of that could be advanced by the *Contractor* against the *Owner* under the *Contract*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the *Ready-for-Takeover* date, except as follows:
- .1 claims arising prior to or on the *Ready-for-Takeover* date for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* no later than 5 calendar days before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work* or 20 calendar days following the *Ready-for-Takeover* date, whichever is later;
 - .2 indemnification for claims advanced against the *Contractor* by third parties for which a right of indemnification may be asserted by the *Contractor* against the *Owner* pursuant to the provisions of this *Contract*;
 - .3 claims respecting toxic and hazardous substances, patent fees and defect in title matters for which a right of indemnity could be asserted by the *Contractor* pursuant to the provisions of paragraphs 13.1.4 or 13.1.5 of GC 13.1 – INDEMNIFICATION; and
 - .4 claims resulting from acts or omissions which occur after the *Ready-for-Takeover* date.
- 13.2.2 The *Contractor* waives and releases the *Owner* from all claims resulting from acts or omissions which occurred after the *Ready-for-Takeover* date except for:
- .1 indemnification respecting third party claims, and claims respecting toxic and hazardous substances, patent fees and defect in title matters, all as referred in paragraphs 13.2.1.2 and 13.2.1.3; and
 - .2 claims for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* within 395 calendar days following the *Ready-for-Takeover* date.
- 13.2.3 Subject to any lien legislation applicable to the *Place of the Work*, the *Owner* waives and releases the *Contractor* from all claims which the *Owner* has or reasonably ought to have knowledge of that could be advanced by the *Owner* against the *Contractor* under the *Contract*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the *Ready-for-Takeover* date, except as follows:
- .1 claims arising prior to or on the *Ready-for-Takeover* date for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* no later than 20 calendar days following the *Ready-for-Takeover* date;

- .2 indemnification for claims advanced against the *Owner* by third parties for which a right of indemnification may be asserted by the *Owner* against the *Contractor* pursuant to the provisions of this *Contract*;
 - .3 claims respecting toxic and hazardous substances for which a right of indemnity could be asserted by the *Owner* against the *Contractor* pursuant to the provisions of paragraph 13.1.4 of GC 13.1 – INDEMNIFICATION;
 - .4 damages arising from the *Contractor*'s actions which result in substantial defects or deficiencies in the *Work*. "Substantial defects or deficiencies" mean those defects or deficiencies in the *Work* which affect the *Work* to such an extent or in such a manner that a significant part or the whole of the *Work* is unfit for the purpose intended by the *Contract Documents*;
 - .5 claims arising pursuant to GC 12.3 – WARRANTY; and
 - .6 claims arising from acts or omissions which occur after the *Ready-for-Takeover* date.
- 13.2.4 Respecting claims arising upon substantial defects and deficiencies in the *Work*, as referenced in paragraph 13.2.3.4, and notwithstanding paragraph 13.2.3.5, the *Owner* waives and releases the *Contractor* from all claims except claims for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* within a period of six years from the *Ready-for-Takeover* date, provided that any limitation statute of the Province or Territory of the *Place of the Work* permit such agreement. If the applicable limitation statute does not permit such agreement, the time within which any such claim may be brought shall be such shorter period as may be prescribed by any limitation statute of the Province or Territory of the *Place of the Work*.
- 13.2.5 The *Owner* waives and releases the *Contractor* from all claims arising from acts or omissions which occur after the *Ready-for-Takeover* date, except for:
- .1 indemnification for claims advanced against the *Owner* by third parties, as referenced in paragraph 13.2.3.2;
 - .2 claims respecting toxic and hazardous substances for which a right of indemnity could be asserted by the *Owner* against the *Contractor*, as referenced in paragraph 13.2.3.3;
 - .3 claims arising under GC 12.3 – WARRANTY; and
 - .4 claims for which *Notice in Writing* has been received by the *Contractor* from the *Owner* within 395 calendar days following the *Ready-for-Takeover* date.
- 13.2.6 "Notice in Writing of claim" as provided for in GC 13.2 – WAIVER OF CLAIMS to preserve a claim or right of action which would otherwise, by the provisions of GC 13.2 – WAIVER OF CLAIMS, be deemed to be waived, must include the following:
- .1 a clear and unequivocal statement of an intention to claim;
 - .2 a statement as to the nature of the claim and the grounds upon which the claim is based; and
 - .3 a statement of the estimated quantum of the claim.
- 13.2.7 A claim for lien asserted under the lien legislation prevailing at the *Place of the Work* shall qualify as notice of claim for the purposes of this *Contract*.
- 13.2.8 The party giving the *Notice in Writing* of claim as provided for in GC 13.2 – WAIVER OF CLAIMS shall submit within a reasonable time a detailed account of the amount claimed.
- 13.2.9 Where the event or series of events giving rise to a claim made under paragraphs 13.2.1 or 13.2.3 has a continuing effect, the detailed account submitted under paragraph 13.2.8 shall be considered to be an interim account and the party making the claim shall submit further interim accounts, at reasonable intervals, giving the accumulated amount of the claim and any further grounds upon which such claim is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.
- 13.2.10 Nothing in GC 13.2 – WAIVER OF CLAIMS shall be deemed to affect the rights of the parties under any lien legislation or limitations legislation prevailing at the *Place of the Work*.

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Page numbers listed for convenience only. In the event of a discrepancy between the number of pages listed herein and the actual specification, the specification shall govern.

END OF SECTION

Part 1 General

1.1 INVITATION

.1 Bid Call

- .1 Ensure offers are signed under seal, executed, and dated and are sent to Owner via email at:

SAO@fortliard.com

Before 3:00 pm local time (Northwest Territories) on Tuesday April 22, 2025

- .2 Offers will be opened privately immediately after time for receipt of Bids.
.3 Amendments to submitted offer will be permitted if received by email prior to Bid closing and if endorsed by same party or parties who signed and sealed offer.

1.2 INTENT

- .1 Intent of this Bid call is to obtain an offer to perform Work to complete upgrades to the water treatment plant (WTP), which includes temporary access, confined space rescue, confined space entry equipment and monitoring equipment, cleaning of three buried concrete cells, piping/instrumentation replacement, and maintain confined space setup for structural condition assessment by a Engineer retained by the Owner, and in accordance with Contract Documents.
.2 Perform Work within time stated in 01 11 00 Summary of Work.
.3 Initiate Work within time stated in 01 11 00 Summary of Work.

1.3 CONTRACT DOCUMENTS IDENTIFICATION

- .1 Contract Documents are identified as Hamlet of Fort Liard Water Treatment Plant Upgrades as prepared by Engineer.

1.4 CONTRACT/BID DOCUMENTS

- .1 Agreement Form.
.2 Definitions:
.1 Contract Document: defined CCDC2e.
.2 Bid Document: Contract Documents supplemented with Instructions to Bidders and Bid Form.
.3 Bid, Offer, or Bidding: act of submitting an offer under seal.
.4 Bid Price: monetary sum identified in Bid Form as an offer to perform Work.
.3 Availability
.1 Bid Documents may be obtained from

- .1 Electronic versions of Bid Documents can be downloaded from Northwest Territories & Nunavut Construction Association (nnca.ca) and <https://www.fortliard.com/tenders>.
- .2 Bid Documents are made available only for purpose of obtaining offers for this project. Their use does not confer licence or grant for other purposes.
- .4 Examination
 - .1 Electronic versions of Bid Documents are available for viewing at Northwest Territories & Nunavut Construction Association <https://nnca.ca/> and <https://www.fortliard.com/tenders>.
 - .2 Upon receipt of Bid Documents verify that documents are complete.
 - .3 Immediately notify Engineer upon finding discrepancies or omissions in Bid Documents.
- .5 Queries/Addenda
 - .1 Direct questions to:
Vania Chivers, P.Eng.
Project Manager
Dillon Consulting Limited
Ph: (403) 702-4257
Email: vchivers@dillon.ca
[CC: rpascal@dillon.ca](mailto:rpascal@dillon.ca)
 - .2 Addenda may be issued during Bidding period. Addenda will become part of Contract Documents. Include costs in Bid Price.
 - .3 Verbal answers are only binding when confirmed by written addenda.
 - .4 Clarifications requested by Bidders must be in writing by 3:00 pm local time (Northwest Territories) on Tuesday April 16, 2025. Reply will be in form of an addendum. Copy of addendum will be forwarded to known bidders via the email they provide and posted at <https://www.fortliard.com/tenders> no later than 4:00 pm local time (Northwest Territories) on Thursday, April 17, 2025.
- .6 Product Options
 - .1 Substituted products will be considered if submitted as an attachment to Bid Form, Appendix A.
 - .2 Ensure submission provides sufficient information to enable Engineer to determine acceptability of such products.
 - .3 Provide complete information on required revisions to other work to accommodate each substitution, dollar amount of additions to or reductions from Bid Price, including revisions to other work.
 - .4 Provide specified products unless substitutions are submitted as noted and subsequently accepted.
 - .5 Approval to submit substitutions prior to submission of Bids is not required.

1.5 SITE ASSESSMENTS

- .1 Site Examination

- .1 Bidders may choose to visit project site and surrounding area before submitting Bid.
- .2 Contact Owner at following phone number to arrange date and time to visit place of Work:

Ph: (867) 770-4104, Ext. 104

.2 Bidders Briefing

- .1 Optional Bidders briefing has been scheduled for 11 am local time (NWT) on Tuesday April 01, 2025 and will be held virtually.
- .2 General Contractor and major subtrade(s) are invited.
- .3 Representatives of Owner and Engineer will be in attendance.
- .4 Summarized minutes of briefing meeting will not be circulated.
- .5 Information relevant to Bid Documents will be recorded in Addendum.

1.6 QUALIFICATIONS

.1 Subcontractors:

- .1 Owner reserves right to reject proposed subcontractor for reasonable cause.

1.7 BID SUBMISSION

.1 Bid Ineligibility

- .1 Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared informal at Owner's discretion.
- .2 Bids with Bid Forms and enclosures which are improperly prepared may be declared informal at Owner's discretion.
- .3 Bids that fail to include security deposit, bonding or insurance requirements maybe declared informal at Owner's discretion.

.2 Submissions

- .1 Bidders are solely responsible for delivery of their Bids in manner and time prescribed.
- .2 Submit one copy of executed offer on Bid Forms provided, signed and with corporate seal together with required security and Bid Bond via email, clearly identified with Bidder's name and project name both in the subject line and body of the email.
- .3 Improperly completed information, irregularities in Bid Bond, may be cause to declare Bid informal.

1.8 BID ENCLOSURES/REQUIREMENTS

.1 Security Deposit:

- .1 Bids are to be accompanied by security deposit in amount of not less than 10% of Bid price as follows : Certified Bid Bond; Certified cheque or cash payable to The Hamlet of Fort Liard; or Irrevocable letter of credit payable to The Hamlet of Fort Liard

- .2 Endorse Bid Bond or certified cheque in name of Owner as obligee, signed and sealed by principal Contractor and surety.
- .3 Security deposit will be returned after delivery to Owner of required Performance and Labour and Materials Payment Bonds by accepted Bidder.
- .4 If no contract is awarded, security deposits will be returned.
- .2 Consent of Surety :
 - .1 Submit with Bid Form and Bid Bond, Consent of Surety, stating that surety providing Bid Bond is willing to supply Performance and Labour and Materials Payment Bond specified.
 - .2 Include cost of bonds in Bid Price.
- .3 Performance Assurance
 - .1 Accepted Bidder must provide Performance and Labour and Materials Payment Bond as described in Supplementary Conditions.
 - .2 Include cost of bonds in Bid Price.
- .4 WSCC Clearance Letter
 - .1 Bidders will be responsible for submitting a WSCC clearance letter (Bidding Clearance Letter) with their tender submission
- .5 Insurance:
 - .1 Provide signed "Undertaking of Insurance" on standard form provided by insurance company stating intention to provide insurance to Bidder in accordance with insurance requirements of Contract Documents.
- .6 Bid Form Requirements:
 - .1 Bid Form to be signed under seal by Bidder.
 - .2 Sole Proprietorship: signature of sole proprietor in presence of witness who shall also sign. Insert words "Sole Proprietor" under signature. Affix seal.
 - .3 Partnership: signature of all partners in presence of witness who shall also sign. Insert word 'Partner' under each signature. Affix seal to each signature.
 - .4 Limited Company: signature of duly authorized signing officer(s) in normal signatures. Insert officer's capacity in which signing officer acts, under each signature. Affix corporate seal. If Bid is signed by officials other than President and Secretary of company, or President-Secretary-Treasurer of company, copy of by-law resolution of Board of Directors authorizing them to do so must also be submitted with Bid in Bid envelope.
 - .5 Incorporated Company: signature of duly authorized signing officer(s) in normal signatures. Insert officer's capacity in which signing officer acts, under each signature. Affix corporate seal. If Bid is signed by officials other than President and Secretary of company, or President-Secretary-Treasurer of company, copy of by-law resolution of Board of Directors authorizing them to do so must also be submitted with Bid in Bid envelope.
 - .6 Joint Venture: each party of joint venture must execute [Bid] under respective seals in manner appropriate to such party as described above, similar to requirements of Partnership.

- .7 Appendices to Bid Form:
 - .1 Appendix A - BIDDERS PROPOSED SUBSTITUTIONS.
 - .2 Appendix B - CONSENT OF SURETY.
 - .3 Appendix C - LABOUR AND EQUIPMENT HOURLY RATES.
 - .4 Appendix D - EQUIPMENT LIST.
 - .5 Appendix E - PRODUCT SUPPLIERS.
 - .6 Appendix F - LIST OF SUB-CONTRACTORS.
 - .7 Appendix G - SCHEDULE OF PRICES.

1.9 OFFER ACCEPTANCE/ REJECTION

- .1 Duration of Offer:
 - .1 Bids to remain open to acceptance, and irrevocable for 60 days after Bid closing date.
- .2 Acceptance of Offer:
 - .1 Owner reserves right to accept or reject any or all offers.
 - .2 After acceptance by Owner, the Engineer will issue to successful Bidder , written Bid acceptance .
 - .3 After Bid has been accepted, unsuccessful Bidders will be notified.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

TO: **Hamlet of Fort Liard**
Works and Services Department
Fort Liard, NT

FROM:
(Name of Contractor)
.....
(Street Address or P. O. Box No.)
.....
(City, Province or Territory, Postal Code)
.....
(Telephone No.) (Fax No.)
.....
(Email address)

Having carefully examined all the Bid and Contract Documents listed with the Bid Proposal for the:

PROJECT NAME: Water Treatment Plant Upgrades

PROJECT ADDRESS: Fort Liard, Northwest Territories

TENDER PACKAGE NO: **25-890100**

Including the drawings, specifications, schedules, general conditions, supplementary conditions, instruction to bidders, and including:

Addendum No. dated.. ..
Addendum No. dated.....
Addendum No. dated.....
Addendum No. dated.....
Addendum No. dated.....

and having visited and examined the site and examined all the conditions affecting the work, we do hereby offer to furnish all labour, materials, accessories, hoisting, tools, plant, equipment, transportation and services necessary, including all applicable taxes, duties and levies in force', permits, licenses, etc. for the proper execution and completion of the works referred to herein within both the completion date for the work of this contract and the project completion date, for the stipulated price as shown in the unit price table

Tenderer's Initials and Date

The undersigned Tenderer, having carefully examined the Contract Documents and the locality of the proposed work, and having full knowledge of the work required and of the materials, to be furnished and used, hereby agrees to provide all necessary materials, supervision, labour, and equipment and perform and complete all work and fulfill everything as set forth and in the prices stated in the Tender Form, Unit Price Contract, Schedule of Quantities and Unit Price Table.

The undersigned also agrees:

1. That the Owner is in no way obligated to accept this Tender;
2. That the Owner may elect at its sole discretion to accept any Tender or part thereof or waive any defect, irregularity, mistake or insufficiency and accept any Tender or alternative proposal, in whole or in part, which is deemed by the Owner to be most favourable to its interest;
3. That all applicable taxes and duties are included in the Tender price;
4. That the estimate of quantities shown in the Tender Form serves only to provide a basis for comparing Tenders and that no representations have been made by either the Owner or the Engineer that the actual quantities will even approximately correspond therewith, and further, that the Owner has the right to increase or decrease the quantities in any or all items and to eliminate items entirely from the work;
5. That this Tender is made without knowledge of the Tender prices to be submitted for this work by any other company, firm or person;
6. That this Tender is made without connection or arrangement with any company, firm or person submitting a Tender for this work;
7. That this Tender is made without any undisclosed connection or arrangement with any other company, firm or person having an interest in this Tender or in the proposed contract;
8. That this Tender is irrevocable for a period of sixty (60) days after the closing date for receipt of Tenders and that the Owner may at any time within such a period accept this Tender whether any other Tender has previously been awarded or not and whether acceptance of another Tender has been given or not;
9. To execute the Articles of Agreement and to present to the Owner the required contract security within the time specified;
10. That payment for the work done will be made on the basis of the quantities measured by the Engineer and at the Tender prices shown in the Tender Form which shall be compensation in full for the work done under the terms of the Contract;

Tenderer's Initials and Date

11. That payment of the Contingency Allowance or portion thereof will only be made in the event that the Engineer authorizes work, in which case the amount of payment will be determined as specified in the General Conditions. Any unused portion thereof will be retained by the Owner.
12. To commence and proceed actively with the Work by **May 30, 2025** and to complete all work under the contract by **June 8, 2025** subject to the provisions of Section 6.0 of the General Conditions for extension of contract time;
13. That should they fail to complete the work in the time specified above, they shall compensate the Owner in accordance with Section 6.0 of the General Conditions;
14. That to the extent a Tender call contains provisional items as part of the Scope of Work, the Owner, in its sole discretion, reserves the right, prior to the award of a Contract, to include or exclude any provisional item or items in its evaluation of the acceptability of a Tender. Following acceptance of a Tender and award of the Contract, the Owner may, in its sole discretion, include or exclude in the Contract the same or different provisional items and the unsuccessful bidders shall have no recourse against the Owner for any resulting revisions to the total scope of the Work or the Contract price. It shall be open to the Owner to call for new Tenders for provisional items so excluded and the successful Tenderer for the project may submit a Tender if they so choose.
15. The undersigned submits that immediately upon notification of intent to award a Contract, or upon notification of an award of a Contract, they shall apply themselves to the work with all diligence, place all orders for labour and products in such time that delays will not occur.

Tenderer's Initials and Date

The undersigned agrees that this Bid shall remain open for acceptance by the Owner and shall be irrevocable for a period of sixty (60) days from the day of closing Tenders.

We agree to complete the project by June 8, 2025

The undersigned agrees that the Owner has the right to reject any or all bids without explanation.

Submitted with: (as attachments)

- Bid Bond.
- Agreement to bond for 50% Labour and Materials Payment and 50% Performance bonds.
- Proof of Insurance.
- WSCC Bidder Clearance Letter.

Signed, Sealed and Submitted on behalf of:

COMPANY:
(Name)

.....
(Street Address or P. O. Box No.)

.....
(City, Province, Postal Code)

.....
(Telephone No.) (Fax No.)

SIGNATURE:
(Apply Seal Above)

.....
(Type or Print Name)

.....
(Type or Print Title)

WITNESS:
(Signature)

.....
(Type or Print Name and Title)

DATED AT:this.....day of.....2025

Tenderer's Initials and Date

APPENDIX A: BIDDERS PROPOSED SUBSTITUTIONS

Select:

☐

Not Applicable

OR

☐

. Attach proposed substituted products for consideration.
Provide complete information on required revisions to other work to accommodate each substitution, dollar amount of additions to or reductions from Bid Price, including revisions to other work.

Prices to include all applicable taxes, duties and levies in force (excluding Goods and Services Tax).

Indicate any impact on construction schedule that is associated with the proposed substitution.

Tenderer's Initials and Date

APPENDIX B: CONSENT OF SURETY

Herewith is the Consent of Surety of the Tender submitted:

By

.....

To the Hamlet of Fort Liard

Dated, 2025 and which is an integral part of the Tender

CONSENT OF SURETY COMPANY

Should they be required, the undersigned Surety Company hereby consents and agrees with the Owner to become bound as Surety in all Performance Assurance Bonds required by the Contract Documents, all for the fulfillment of the Contract for the Work covered by the annexed Tender, which may be awarded to:

.....
(Name of Company)

.....
(Address)

.....
At prices set forth in the attached Tender. The said company is legally entitled to do business in the Northwest Territories.

.....
Name of Company

.....
Address

Per:
(Executed under Seal)

Per:

Tenderer's Initials and Date

[illegible]

<i>Tenderer's Initials and Date</i>

APPENDIX D: EQUIPMENT LIST

Equipment	Size	Model	Make	Year

Tenderer's Initials and Date

Herewith is the list of Product Suppliers from whom the appropriate products or materials will be purchased for the execution of the work. No Product Supplier will be changed without written approval from the Owner.

[illegible]

Tenderer's Initials and Date

APPENDIX F: LIST OF SUB-CONTRACTORS

The following is a list of Sub-Contractors and/or major suppliers who will be engaged by the General Contractor for this project if awarded.

If the work will be performed by the General Contractors’ own forces, write in “OWN FORCES” in the space provided.

Section of Work	NAME
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
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<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>

Proposed GC Site Superintendent

Tenderer’s Initials and Date

APPENDIX G: SCHEDULE OF PRICES

Item No.	Description	Amount**
A-1	WTP Cell Upgrades and Associated Work	\$
Schedule A Sub-Total		\$
Contingency Allowance*		\$125,000
Estimated Contract Price (Excluding GST)		\$
GST		\$
TOTAL TENDERED PRICE*		\$

*The Tenderer agrees that no part of Allowances, contingency or provisional sums shall be expended without the written direction of the Engineer, and any part not so expended shall be deducted in whole from the Total Tendered Price.

**The Engineer reserves the right to reject or re-distribute unit amounts which they deem are unbalanced or unevenly distributed.

Tenderer's Initials and Date

1.1 INTENT

- .1 These Supplementary Specifications modify the specification sections to which they refer. The work of this contract is to be constructed in accordance with the General Conditions of the Stipulated Price Contract CCDC 2e-2020. Where a portion of the Document is modified or deleted by these Supplementary General Conditions, the unaltered portions of the Document shall remain in effect.
- .2 These Supplementary Specifications modify the specification sections to which they refer.
- .3 These Supplementary Specifications take precedence over the Specification to which they refer.

1.2 DEFINITIONS

- .1 Not modified.

Part 1 General Provisions

GC 1.1 CONTRACT DOCUMENTS

- .1 Page 8, add new Clause 1.1.12 as follows:

The Contractor shall review the Contract Documents and shall promptly report to the Engineer any error, inconsistency or omission they may discover. If they do discover any error, inconsistency or omission in the Contract Documents, they shall not proceed with the work affected until they have received correct or missing information from the Engineer.”

Part 2 Administration of the Contract

GC 2.2 ROLE OF THE CONSULTANT

- .1 Page 9, in Clause 2.2.5, line 2, after “techniques,” add “schedules,”
- .2 Page 9, Clause 2.2.9, add the following sentence at end of paragraph:

“The Owner and the Contractor shall waive any claims against the Consultant arising out of the making of such interpretations and findings.”

Part 3 Execution of the Work

GC 3.1 CONTROL OF THE WORK

- .1 Page 11, Clause 3.1.2, after “techniques,” add “schedules,”

GC 3.4 CONSTRUCTION SCHEDULE

- .1 Page 12, in Clause 3.4.1.1, delete “prior to the first application for payment” and replace with “not later than two (2) weeks after receipt of the Letter of Acceptance”.
- .2 Page 12, add new Clause 3.4.1.4 as follows:

“3.5.1.4 Two (2) weeks prior to start-up and commissioning, provide a detailed plan, including a schedule of all start-up and commissioning related activities as specified in the Contract Documents.”

GC 3.6 SUBCONTRACTORS AND SUPPLIERS

- .1 Page 12, Clause 3.6.6, delete “through the Consultant,”

GC 3.8 SHOP DRAWINGS

- .1 Page 13, delete Clause 3.8.2 and replace with the following:
- .2 “3.8.2 The Contractor shall prepare and submit to the Consultant for review, a schedule of the dates for provision, review and return of Shop Drawings. This submission shall be prior to the project Start-Up meeting.”
- .3 Page 13, delete Clause 3.10.12 in its entirety, and add the following:
- .4 “3.8.7 The Consultant will review and return Shop Drawings in accordance with the schedule agreed in Sub-Clause 3.8.2.”

Part 5 Payment

GC 5.2 APPLICATIONS FOR PAYMENT

- .1 Page 14, After Clause 5.2.8 add the following:
- “5.2.9 Applications for payment shall be emailed to ap@fortliard.com and quote the project number, 25-890100, in the subject line of the email.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

- .2 Page 14, After Clause 5.4.6 add the following:
- “5.4.7 Fifteen days before the Contractor submits their application for Substantial Performance of the Work, all Operations and Maintenance Manual materials shall be submitted in accordance with the Contract Documents. The Certificate of Substantial Performance will not be issued until this requirement is met.”
- .3 Page 15, after Clause 5.4.6, add the following:
- “5.4.6.1 If, within sixty (60) days after the issue of the Certificate of Substantial Performance, the Contractor has not corrected all the documented deficiencies, the Owner shall retain sufficient monies, as determined by the Consultant, to cover the cost of completing said deficiencies. These monies shall be held in addition to holdback monies retained in accordance with the provisions of the Contract and subject to the terms of the Builders’ Lien Act.”

GC 5.5 FINAL PAYMENT

- .1 Page 14, after Clause 5.5.1.1, add the following:
- “5.5.1.1 Contractor’s application for final payment will only be considered when the following have been performed:
- .1 Work has been completed and inspected for compliance with the Contract Documents, and the Consultant has agreed that all the requirements of the Contract have

been fulfilled by the Contractor.

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

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational, and written reports as outlined in the Contract Documents have been provided to the Consultant.

.4 Certificates required by utility companies, manufacturer's and inspectors have been submitted.

.5 Spare parts, maintenance materials, record drawings, warranties and bonds have been provided.

.2 5.7.1.2 If, in the opinion of the Consultant, the above requirements are not complete, then the Consultant will not accept the application, and request resubmission."

.3 Page 15, Clause 5.5.4, in line 2, change "5 calendar days" to "20 calendar days".

.4 Page 15, after Clause 5.5.4, add the following:

"5.5.5 After issuance of substantial performance of the work and accompanying the application for final payment, the Contractor shall submit a clearance letter from the Workers' Compensation Board and CCDC 9A 'Statutory Declaration' to state that all accounts for labour, subcontracts, products, Construction Equipment and other indebtedness which may have been incurred by the Contractor in the Substantial Performance of the Work and for which the Owner might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute"

.5 5.5.1.2 All such documents shall be dated not earlier than the expiry of the Lien Period."

Part 6 Changes in the Work

GC 6.2 CHANGE ORDER

.1 Page 15, after Sub-Clause 6.2.2, add the following:

"6.2.3 The Consultant shall determine the amount, if any, to be added to the Contract Price in respect of any extra or additional work done or deducted for work omitted by Consultant's order.

6.2.4 The prices for any extra or additional work or work method carried out by the Contractor shall be based on the sum of the following five items:

- (a) Direct basic wages paid for labour including machine operators and foremen (excluding on site or office supervisory staff) required to perform the work in accordance with directions and devoting their exclusive attention to this work.
- (b) Forty (40) percent of item (a) which shall be considered to cover the cost of small tools, on site or office supervisory staff, Worker's Compensation, holiday pay, welfare fund payments, unemployment insurance, insurance premiums, and all other payroll overheads.
- (c) The necessary cost to the Contractor of the material required for the Works as

furnished by the Contractor and delivered to the Site.

- (d) Fifteen (15) percent of the sum of items (a), (b), and (c), which shall be considered as covering the Contractor's overhead expense, profit, head office and site office overhead, including salaries of time keeping, clerical, accounting, warehousing and other administrative personnel and all costs associated therewith.
- (e) Rental of construction equipment (including operators).

6.2.5 The price for extra, additional or amended work shall be based on the sub-contractor's approved invoice plus 10 percent (10%) of the amount of this invoice, which shall be considered as covering all the Contractor's expenses and profit. A Sub-Contractor who enters into an agreement with the Contractor to furnish labour and equipment and/or to perform work, which normally would be performed by the Contractor, shall not be considered as an approved Sub-Contractor for the purpose of evaluation of variations, and the Contractor shall not be entitled to ten percent (10%) of the Contractor's invoice.

6.2.6 No compensation for extra work or material shall be allowed unless such work or material is ordered in writing by the Consultant.

6.2.7 Whenever any extra work or claim for extra work is in progress, the Contractor shall, each working day, report to the Consultant in writing and in full detail, the amount and cost of the labour and materials used in carrying out such work on the preceding working day and no claim for compensation for such work or materials shall be considered or allowed unless such report shall have been made. The Consultant shall not allow any compensation for the cost of repairs to equipment or in respect of construction equipment of any kind idle on the Site except as directed by the Consultant in writing or for damage to anything used in performing any such extra work or making any such alteration.

6.2.8 The price applicable to any work omitted from the Contract, which shall be deducted from the Contract Price, shall be mutually agreed upon by the Contractor and the Consultant in which case the price shall be comparable to prices quoted on work of similar nature."

GC 6.3 CHANGE DIRECTIVE

- .1 Page 17, Clause 6.3.12, add the following sentence at end of paragraph:
"If the Consultant determination is not accepted by either party, then the matter shall be settled in accordance with the requirements of PART 8 DISPUTE RESOLUTION."

GC 6.5 DELAYS

- .1 Page 18, after Clause 6.5.5, add the following new Clauses:
"6.5.6 Time shall be construed as being the essence of the Contract.
6.5.7 Should the Contractor fail to obtain Substantial Performance of the Work by the date indicated in Article A-1, Clause 1.3 in the AGREEMENT BETWEEN OWNER AND CONTRACTOR, the period of time from this agreed date to the actual Date on the Certificate of Substantial Performance of the Work as determined by the Consultant, shall be termed the Period of Delay.

6.5.8 In the event of there being a Period of Delay, the Contractor shall be liable for and shall pay to the Owner the maximum of either: two thousand five hundred dollars (\$2,500) for each seven calendar days or part thereof, or the cost of continuance of supervision during the Period of Delay, and all additional fees, disbursements and costs incurred by the Owner by reason of there being such Period of Delay for each and every day that the work or works remain unfinished after the time so specified. The Owner may deduct the amount of such delay charges from each progress payment following the event until the project reaches Substantial Performance as certified by the Consultant.”

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

- .1 Page 18, delete Clause 6.6.5 in its entirety and add the following:

“6.6.5 The Consultant’s findings, with respect to a claim made by either party, will be given by Notice in Writing to both parties within reasonable time after receipt of the claim information noted in Sub-Clause 6.6.3.”

- .2 Page 18, add the following new Clause 6.6.7:

“6.6.7 The Owner may make claims arising out of the costs incurred for additional services provided by the Consultant resulting from the Contractor’s failure to reasonably perform the Work in accordance with the terms and conditions of the Contract, including the Contractor’s issuance of unnecessary Requests for Information (RFI’s). The Consultant will notify the Owner and Contractor where it has been determined that additional services will be required or have been provided in order not to cause a delay. The Owner shall make claims based on the Consultant’s invoices.”

Part 10 Governing Regulations

GC 10.1 TAXES AND DUTIES

- .1 Page 23, Clause 10.1.2, add the following at the end of paragraph:

“and in accordance with the Contract Documents”

- .2 Page 23, after Clause 10.1.2, add new Clause 10.1.3 as follows:

“10.1.3 The Contractor shall indicate on each application for payment as a separate amount, the appropriate Harmonized Sales Tax the Owner is legally obliged to pay. This amount will be paid to the Contractor in addition to the amount certified for payment under the Contract.”

Part 12 Owner Takeover

GC 12.3 WARRANTY

- .1 Page 26, Clause 12.3.4, add the following to end of paragraph:

“All work of repair or replacement carried out during the Warranty Period shall be maintained for a period of one (1) year from the date of the Consultant’s acceptance of the work of repair or replacement notwithstanding that the Warranty Period expires before the expiration of the said year. This clause shall not apply to normal operation maintenance, which shall be carried out by the Owner.”

Part 13 Indemnification and Waiver

GC 13.1 INDEMNIFICATION

- .1 Page 26, Clause 13.1.1, in lines 2 and 3, after “hold harmless the other” replace with “hold harmless the other and the Consultant”

END OF SECTION 00 73 00

Part 1 General

1.0 GENERAL

1.1 1.1 SCOPE OF WORK

- .1 The following is a brief and general summary of project work:
 - .1 Cell Drainage: Bypass treated water to truck fill and drain each of the three cells
 - .2 Concrete Cleaning: Clean and pressure wash and dry the concrete walls, floors and ceilings in all cells to prepare for Structural Inspection. Remove and dispose of any sludge at the bottom of cells. Cleaning must be completed before the Structural Inspection that is scheduled to start on June 3, 2025.
 - .3 Temporary Piping for Truck Filling Operations: The water treatment plant must remain operational throughout the construction period. Contractor will provide, install and connect temporary piping between the treated water line and existing truck fill arm to bypass the cells. Contractor will provide orientation for the water treatment plant operator regarding temporary water supply conditions.
 - .4 Temporary Tank: Contractor will provide a temporary tank or water bladder along with a pump for use by the Fire Department in the event of a fire. Contractor will set up the temporary tank, fill it with water and verify its working condition before commencing maintenance and valve replacement. Instruct the water treatment operator on how to use the pump effectively in the event of a fire.
 - .5 Valve Replacement: Remove and replace the existing Clow gate valves and associated components within the cells as per the drawings. Provide new pipe supports under each valve.
 - .6 Radar Level Sensors: Remove existing level sensors/wiring and install new radar level sensors in Cell #1 and Cell #2, including local display and analog integration into the PLC system.
 - .7 Structural Inspection:
 - .1 Inspection shall be completed by an Engineer retained by the Owner.
 - .2 Provide temporary access, confined space rescue, confined space entry equipment and monitoring equipment.
 - .8 Post Installation Procedures: After completing the inspection and installation, fully flush, clean, disinfect, and conduct bacteria testing in all cells and newly installed appurtenances (minimum of 2 tests per cell, 24 hours apart) as per specifications.
 - .9 To limit disruption and risk to the community, a maximum downtime of eight (8) calendar days for the concrete cells is preferred.

1.2 WORK BY OTHERS

- .1 Not applicable.

1.3 FIRE HYDRANTS

- .1 Not applicable.

1.4 INCIDENTAL WORK

- .1 When performing work adjoining property lines, Contractor is responsible for making good fences, landscaping, driveways, etc. affected by his operations.
- .2 Contractor must dispose of removed equipment, piping and all other materials as directed by the Hamlet.

1.5 CONTINUITY OF ACCESS TO PROPERTIES

- .1 The water treatment plant must be fully operational during the work.
- .2 Contractor will provide access to service vehicles and fire truck to the site for regular water services and emergency response services. Water services are provided to the Hamlet from 7 am to 6pm, from Monday to Saturday.
- .3 Work must be scheduled to minimize the length of disruption of access to the building and the truck fill arm.
- .4 Emergency fire lanes must be maintained where required by the Fire Chief.

1.6 SCHEDULE

- .1 Work on this contract must be completed so that:
 - .1 All three (3) concrete cells are offline, drained, cleaned and confined space entry is available upon Engineer's arrival onsite June 3, 2025, for the Structural Inspection.
 - .2 The Structural Inspection is expected to last three (3) days.
 - .3 All three (3) concrete cells are returned to service (Substantial Completion) by June 8, 2025.
- .2 To limit disruption and risk to the community, a maximum downtime of eight (8) calendar days for the concrete cells is preferred

1.7 SALVAGE

- .1 The Hamlet reserves the right to retain any removed pieces of equipment at no additional cost.

1.8 CONTRACT DOCUMENTS

- .1 It is the Contractor's responsibility to familiarize themselves with the full specifications when preparing his Tender.

1.9 CUTTING & PATCHING

- .1 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of any element of Project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of any operational element.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor
- .2 Inspection
 - .1 Inspect existing conditions, including elements subject to damage or movement during work.
 - .2 After uncovering, inspect conditions affecting performance of work.
 - .3 Beginning of cutting or patching means acceptance of existing conditions.
- .3 Execution
 - .1 Perform cutting, fitting and patching including excavation and fill, to complete the Work.
 - .2 Remove and replace defective and non-conforming work.
 - .3 Perform work to avoid damage to other work.
 - .4 Prepare proper surfaces to receive patching and finishing.
 - .5 Restore work with new products in accordance with Contract Documents.
 - .6 Fit work to pipes, sleeves and other penetrations through surfaces.

1.10 DEFINITION OF TRADES/JURISDICTION

- .1 For convenience of reference only, the specifications are separated into titled sections (see Table of Contents). Sections are identified by title and a six digit numbering system.
- .2 In the case of a dispute, the General Contractor shall decide which Subcontractor supplies and installs required materials or equipment. Extras will not be considered on the grounds of differences in interpretation of the specifications as to which Subcontractor does which work.

END OF SECTION

1.0 General

1.1 GENERAL

- .1 Unit prices and Lump Sum prices bid are full compensation for the work necessary to complete each item in the Contract in combination with all other work necessary to the completion of the work as a whole and not bid as a separate item.
- .2 Include all of the following as required where individual quantities are not provided in the Form of Tender: overhead and management, applying for and receiving all permitting, supply of all equipment, labour, materials, appurtenances, excavation, disposal, shoring, dewatering, bedding, backfilling, compaction, testing and disinfection, reinstatement and all incidentals.
- .3 All measurements shall be along a horizontal plane unless otherwise indicated.
- .4 The numbers of the items described below correspond to the numbers of the items in Section 00 30 00 – Bid Forms.
- .5 Additional instructions for measurement and/or payment for items of the Work may be contained in specific sections of the Technical Specifications where appropriate. In the case of a conflict between the instructions for measurement and payment contained in this section and another section, the requirements of this section shall govern.

1.2 SCHEDULE A ITEMS

- .1 A-1 Water Treatment Plant Upgrades and Associated Work
 - .1 Unit of Measure: Lump Sum
 - .2 Method of Measurement: % of project complete
 - .3 Item Includes: Supply of all materials, equipment, labour, administration, permitting, bonding, insurance, profit, overhead and implied or associated work based on the scope of work described in the contract documents.

1.3 CONTINGENCIES/CASH ALLOWANCES

- .1 Items listed as contingency or cash allowances are for the sole convenience of the Owner and require expressed written authorization via change order to use. Any amount not used will be subtracted from the total contract price.

END OF SECTION

1.0 General

1.1 CONTINGENCY ALLOWANCE

1. Include in the Contract Price, value as indicated, a Contingency Allowance to provide for changes in the Work as determined and authorized by the Engineer under the General Conditions of the Contract.
- .2 The unexpended portion of the Contingency Allowance is to be credited to the Owner upon Completion of the Work.

END OF SECTION

1. GENERAL

1.1. Related Requirements

- .1 Submittals: Section 01 33 00

2. ELEVATIONS AND LINES

- .1 Contractor shall complete all layout and will be responsible for all detailed layout and elevations measured from the Engineer's baseline.
- .2 Reference points should not be disturbed. If reference points are displaced or removed, the Contractor must pay for any required resetting.
- .3 The Contractor shall, from baselines and benchmarks established, provide all survey resources necessary for the work.

3. SURVEY REFERENCE POINTS

- .1 Not applicable.

4. RECORDS

- .1 The Contractor will maintain a complete, accurate log of control work as it progresses.

5. SUBSURFACE CONDITIONS

- .1 Promptly notify the Engineer, in writing, if subsurface conditions at the place of the Work differ materially from those indicated, or a reasonable assumption of probable conditions based thereon.
- .2 After investigation, should the Engineer determine that the conditions do differ materially; instructions will be issued for changes in the Work as provided in the General Conditions.

END OF SECTION

1.0 SITE CONDITIONS/LIMITS

1.1 EXAMINATION OF SITE

- .1 Prior to commencing actual construction work, inspect field conditions, obtain and confirm actual site and building dimensions, examine surface conditions as required to ensure correct execution of the Work.
- .2 Commencement of construction constitutes acceptance of existing conditions and means dimensions have been considered, verified and are acceptable.
- .3 Recording of existing conditions: If construction activities may interfere with foundations of adjacent buildings, roads, fences, retaining walls, driveways or other structures, take photographs to record existing conditions and review with Engineer before construction is started.

2.0 DOCUMENTS/INSTRUCTIONS

2.1 DISCREPANCIES/OMISSIONS

- .1 Notify the Engineer immediately of any doubt as to the meaning or intent of any instructions.

2.2 DOCUMENTS ON THE SITE

- .1 Maintain one copy of all current Contract Documents and all shop drawings on site, in good order and available to the Engineer or his representatives.
- .2 This requirement does not include the executed Contract Documents.

2.3 CHANGES TO WORK

- .1 Refer to General Terms and Conditions

END OF SECTION

1.0 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Project Co-ordination.

2.0 MEETINGS

2.1 PRECONSTRUCTION MEETING

- .1 Within ten (10) days after award of Contract, the Engineer may request a pre-construction meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Representatives of the Owner, Engineer, Contractor, Major Subcontractors, Field Inspectors and Supervisors must be in attendance.
- .3 After time and location of this meeting has been established, the Contractor shall notify all parties concerned a minimum five (5) days before the meeting.
- .4 The meeting will allow for virtual attendance (either by video- or tele-conference)
- .5 The Engineer will chair and record discussions and decisions and circulate the minutes to all parties concerned.
- .6 Agenda to include the following:
 - Appointment of official representatives of participants in the Work
 - Regulatory Requirements, including needs of utility companies for resident inspectors (Section 01 41 00).
 - Schedule of the Work, progress scheduling (Section 01 32 18)
 - Schedule of submission of shop drawings, samples (Section 01 33 00)
 - Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences (Section 01 50 00)
 - Delivery schedule of specified equipment (Section 01 32 18)
 - Review of off-site fabrication delivery schedule.
 - Site security (Section 01 50 00)
 - Contemplated change notices and change order, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements (GC).
 - Record drawings (Section 01 33 00 and 01 22 00)
 - Take-over procedures, acceptance, warranties (Section 01 77 00)

- Monthly progress claims, administrative procedures, photographs, holdbacks (GC)
- Appointment of inspection and testing agencies or firms (Section 01 45 00)
- Insurances, transcript of policies (GC)

Record mutually agreed variations to Contract Documents (Bid Revisions, refer to Section 01 23 00).

2.2 PROGRESS MEETINGS

- .1 The Engineer will schedule and administer progress meetings throughout the progress of the Work at a frequency of the Engineer's choosing. At the Engineer's discretion, meetings may be by telephone.
- .2 Agenda for progress meetings to include the following:
 - Review and approval of minutes of previous meeting.
 - Review of Work progress since previous meeting.
 - Field observations, problems, conflicts
 - Problems which impede construction schedule.
 - Corrective measures and procedures to regain projected schedule.
 - Revisions to construction schedule.
 - Progress, schedule, during succeeding work period.
 - Review submittal schedules: expedite as required.
 - Maintenance of quality standards.
 - Pending changes and substitutions.
 - Review proposed changes for effect on construction schedule and on completion date.
 - Other business.
- .3 The Engineer will distribute written notice of the first meeting four (4) days in advance of meeting date to contractors and other interested parties.
- .4 The Contractor will provide physical space, table, chairs and shelter for all participants of meeting.
- .5 The Engineer will preside at progress meetings and record the minutes of progress meetings, including significant proceedings and decisions. Minutes will identify "action by" parties and date for completion of duty.
- .6 Copies of minutes will be distributed within forty-eight (48) hours after each meeting, to meeting participants, affected parties not in attendance and the Owner.

- .7 Any amendments to the minutes shall be distributed within five (5) working days of the date of the generation of the amendment.
- .8 Representatives of Contractor, Subcontractor and Suppliers attending meetings must be qualified and authorized to act on behalf of the party each represents.

END OF SECTION

1.0 SCHEDULE

- .1 Within ten (10) days after acceptance of Tender, the contractor shall prepare and submit a schedule for review to the Engineer.
- .2 Schedule shall show dates of commencement and completion of various parts of the Work, ordering and delivery dates of Products, phasing and timing for various subcontracts and all other detailed information to the satisfaction of the Engineer.
- .3 All orders for materials shall be placed in ample time for adherence to the schedule.
- .4 Substantial Completion Date for the project must be on or before June 8, 2025.
- .5 Make special note of those times when installation could affect other infrastructure systems (such as water operation and site access).
- .6 Project schedule reporting.

The Project Schedule shall be updated by the Contractor as required due to changes in the Work or as requested by the Engineer reflecting activity changes and completions, as well as activities in progress.
- .7 Prepare definitive schedules, including specific progress points and dates for achievements, for the following specific items:
 - .1 Award
 - .2 Shop drawings
 - .3 Permits
 - .4 Mobilization and material deliveries
 - .5 Schedule of construction phases
 - .6 Final Completion

2.0 MANPOWER/OVERTIME

- .1 For the Work to progress according to the approved progress schedule, work such as additional time (including weekends) is anticipated.
- .2 Night work will be permitted. The contractor shall provide sufficient lighting to permit night work to be performed safely and satisfactorily.
- .3 If overtime and night time work occurs, it must follow the Occupational Health and Safety Regulations, Northwest Territories.

3.0 PROPERTIES AFFECTED BY THE WORK

- .1 The contractor shall advise, in writing, the Owner of all affected residents and businesses of the expected time and location of construction.

END OF SECTION

1.0 RECORD DRAWINGS

- .1 After award of Contract, accurately record significant deviations from Contract Documents caused by site conditions and changes ordered by the Engineer; these records will be updated daily.
- .2 The Contractor shall record locations of concealed elements of mechanical and electrical services.
- .3 The contractor shall identify drawings as "Project Record Copy". Maintain in good condition and make available for inspection on site by Engineer at all times.
- .4 At application for a Certificate of Substantial Performance, the Contractor shall submit record drawings to Engineer for review.

2.0 PHOTOGRAPHS AND PUBLICITY

- .1 No press or publicity releases will be permitted without prior approval of the Engineer.

3.0 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract and prior to final payment the contractor shall submit Workers' Safety and Compensation Commission status and Transcript of insurance.

4.0 QUALITY CONTROL REPORTING

- .1 Quality control reporting requirements are detailed in Section 01 45 00.

5.0 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow five (5) business days for Engineer's review of each submission.
- .4 Adjustments made on shop drawings by Engineer are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Engineer prior to proceeding with Work.
- .5 Make changes in shop drawings as the Engineer may require, consistent with Contract Documents. When resubmitting, notify Engineer in writing of any revisions other than those requested.

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- .6 The contractor shall accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .7 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of Subcontractor, Supplier and Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .8 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 Engineer's review, the contractor shall distribute copies to applicable Subcontractors.
 - .10 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as Engineer may reasonably request.
 - .11 Submit one electronic copy of product data sheets or brochures for requirements requested in specification Sections, or one clear .pdf file, and as requested by Engineer where shop drawings will not be prepared due to standardized manufacture of product.
 - .12 Delete information not applicable to project. Solely submitting generic "sales brochures" is not acceptable.
 - .13 Supplement standard information to provide details applicable to project.
 - .14 If upon review by Engineer, no errors or omissions are discovered or if only minor corrections are made, the transparency will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

END OF SECTION

1.0 General

1.1 REFERENCE STANDARDS

- .1 Northwest Territories and Nunavut
 - .1 Safety Act, S.N.W.T. - Updated [2023].
 - .2 Occupational Health and Safety Regulations, Northwest Territories, R-090-2024

1.2 CONSTRUCTION SAFETY MEASURES

- .1 Safety is the Contractor's responsibility.
- .2 Observe and enforce construction safety measures of National Building Code, latest edition, Part 8, Territorial Government, Workplace Safety & Insurance Board, municipal statutes, WHMIS and local authorities.
- .3 Before any work at the site is started, the Contractor shall have prepared a Health and Safety Plan and Manual for project specific health and safety precautions and programs, safety of property on site, and for protection of persons adjacent to site and environment to the extent that they may be affected by conduct of Work. The plan shall be complete with respect to procedures and actions that the Contractor needs to follow in order for the Contractor and all others to comply with all applicable laws and regulations.
- .4 Contractor to comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan and Manual and all other specific Owner's requirements.
- .5 The Contractor shall designate a qualified and experienced safety representative at the site.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan and Manual to Owner: Not later than 30 days following the Commercial Close Date, within seven days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan and Manual must include:
 - .1 Results of site-specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Owner and authority having jurisdiction, weekly.
- .4 Submit copies of reports or directions issued by Provincial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Contractor to maintain up-to-date WHMIS MSDS - Material Safety Data Sheets on site in an area accessible to working staff, the Engineer, and the Owner.

- .7 Owner's Engineer will review Contractor's site-specific Health and Safety Plan and Manual and provide comments to Contractor within ten business days of receipt. Revise plan as appropriate and resubmit plan to Owner's Engineer for acceptance.
- .8 Owner's Engineer review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Engineer.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 FILING OF NOTICE

- .1 File Notice of Project with Territorial authorities prior to beginning of Work.

1.5 SAFETY ASSESSMENT AND MEETINGS

- .1 Perform site specific safety hazard assessment related to project.
- .2 Schedule and administer Health and Safety meeting with staff and Engineer prior to commencement of Work.
- .3 Do Work in accordance with Regulatory Requirements.

1.6 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Engineer may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.7 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with Safety Act, General Safety Regulations, Northwest Territories, S.N.W.T.

1.9 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in

accordance with Acts and Regulations of Province having jurisdiction and advise Engineer verbally and in writing.

- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety coordinator or Safety Officer and follow procedures in accordance with Acts and Regulations of Territory having jurisdiction and advise Engineer verbally and in writing.

1.10 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with water treatment facility and confined space entry.
 - .2 Have working knowledge of Occupational Health and Safety Regulations, Northwest Territories.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to site supervisor.

1.11 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Territory] having jurisdiction, and in consultation with Engineer.

1.12 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Engineer.
- .2 Provide Engineer with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Engineer may stop Work if non-compliance of health and safety regulations is not corrected.

1.13 FIRE SAFETY REQUIREMENTS

- .1 Comply with requirements of FCC No. 301 Standard for Construction Operations, latest edition, issued by Fire Commissioner of Canada (FC).
- .2 Comply with local standards and regulations including any requirements set by the Northwest Territories Office of Fire Marshal
- .3 Comply with requirements of NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations, latest edition.

1.14 OVERLOADING

- .1 Ensure no part of Work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.15 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1 1975, latest edition and Division 3 of these Specifications.
- .2 All falsework design shall be certified by a Professional Engineer licensed to practice in the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG)..

1.16 SCAFFOLDING

- .1 Design and construct scaffolding in accordance with CSA S269.2 M87 (R2003), latest edition.
- .2 The Shop Drawings shall be submitted to the Engineer and shall include Detail Drawings and Design Calculations for scaffolding. The Engineer will not be responsible for review of scaffolding.
- .3 The Detail Drawings and Design Calculations for scaffolding shall bear the signature and stamp of a Professional Engineer registered in the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG), and experienced in scaffolding design.
- .4 The Professional Engineer, whose signature and seal appear on the Detail Design Drawings and Design Calculations, shall inspect and check the completed scaffolding and certify in writing that the scaffolding is in accordance with Calculations and Drawings submitted to the Engineer.
- .5 The scaffolding shall be re-inspected after any change in detail or placement to ensure that it is properly placed, rigid, and secure before commencing work. Each re-inspection will be certified by the Professional Engineer whose signature and seal appear on the Calculations and Drawings.
- .6 Submit such certifications to the Engineer before commencing work.

1.17 MATERIALS ON SITE

- .1 Comply with WHMIS requirements regarding all materials stored on site. Submit safety data sheets to Contractor prior to shipping materials.

1.18 CONFINED SPACE ENTRY

- .1 In a confined space in which there is likely to exist a hazardous gas, vapour, dust, fumes or oxygen deficiency, the worker must first test and record atmosphere conditions in the confined space, wear breathing apparatus and safety harness when entering and monitor atmosphere at all times while working in the confined space.

- .2 At no time will an employee enter a confined space where a hazardous condition exists, without first notifying the supervisor and following the adopted procedure.
- .3 The following procedures will apply to all confined spaces and/or areas where a potential hazard could exist:
 - .1 Do not enter confined space areas where the safety equipment supplied is not suitable or available.
 - .2 Comply with Regional Safety Specifications.
- .4 Contractor shall be responsible for providing confined space entry and rescue equipment/personnel, including atmospheric monitoring.

2.0 Products

2.1 THIS SECTION IS NOT APPLICABLE.

3.0 Execution

3.1 THIS SECTION IS NOT APPLICABLE.

END OF SECTION

1.0 General

1.1 FIRES

- .1 Fires and burning of rubbish on site is not permitted.
- .2 A fire extinguisher shall be carried and available for use on each machine or vehicle in the event of any fire to prevent the fire from burning the unit or spreading to other fuels in the immediate area.
- .3 Machinery and equipment shall be operated in accordance with all original manufacturer's safety devices to prevent ignition of flammable materials in the area.
- .4 Care shall be taken when extinguishing or disposing of any potential fire ignition source.
- .5 In case of fire, the Contractor (or any staff present) shall follow their own emergency response plan and take immediate action to extinguish the fire provided it is safe to do so and will notify the local fire department and Owner immediately.

1.2 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways.
- .3 Dispose of all waste and remove material and equipment off-site.
- .4 Dispose of hazardous waste according to regulations and Health and Safety requirements in the Northwest Territories.

1.3 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep site free from water.
- .2 The Liard River is located 10m from the site. Do not pump water containing suspended materials into waterways
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with required environmental regulations and permits.

1.4 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 into waterways.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.

1.6 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.

END OF SECTION

1.0 General

1.1 CONTRACTOR SAFETY DOCUMENTATION REQUIREMENTS

- .1 The Contractor and all subcontractors shall provide to the Owner, before the start of work onsite:
 - .1 Safety Plan including procedures for:
 - .1 Hazard assessments for each task.
 - .2 Safe work practices/procedures.
 - .3 Supervision of workers.
 - .4 Safety equipment that is provided by the employer vs. what the employee is responsible for.
 - .5 Ensuring the safety of the public.
 - .6 Incident reporting
 - .2 Training Records
 - .1 Employees working on site must have their training records submitted to the Owner before working onsite.
 - .3 Training records must indicate what training the employee has and where they received it (i.e. who gave the training – WSCC, employer, other).
 - .4 Sample Information:
 - .1 Flag Persons Training
 - .2 Fall Arrest Training
 - .3 Confined Space Training
 - .4 WSCC Supervisor's Course
 - .5 Heavy Equipment Operation
 - .6 Driver's License
 - .7 First Aid
 - .5 The training records for new hires, during the course of construction, shall be forwarded to the Owner before the new hire works onsite.
 - .6 The Contractor shall provide to the Owner, on a weekly basis:
 - .1 A copy of the toolbox talks or tailgate meeting sheets signed by those in attendance.
 - .2 A copy of the signage log which conform to the submitted traffic plan(s).
 - .7 The Contractor shall provide to the Owner, on request:
 - .1 Job instructions provided to the workers signed by the workers performing the tasks.

1.2 PERMITS/INSPECTIONS

- .1 The Contractor shall obtain and pay for all permits, licences, certificates and governmental inspections required for the performance of the Work in force at the Tender closing date.
- .2 The contractor shall give all required notices and comply with all local, territorial and federal laws, ordinances, rules, regulations, codes and orders relating to the Work, which are or become in force during the performance of the Work.

1.3 APPLICABLE CODES/STANDARDS

- .1 Where specified codes/standards are not dated, the work shall conform to latest issue of specified codes/standards as amended and revised to the Tender closing date.
- .2 Confine apparatus, the storage of Products and the operations of workers to limits indicated by laws, ordinances, and permits; and by directions of the Engineer. Do not unreasonably encumber the premises with Products.

1.4 SAFETY

- .1 The contractor shall observe and enforce all construction safety measures required by code, Workers' Safety and Compensation Commission, The Northwest Territories Safety Act, General Safety Regulations and all applicable statutes.
- .2 Appoint a suitably qualified employee who has sole responsibility on site on behalf of the Contractor, for compliance with the requirements and so advise the Owner in writing with a copy to the Engineer.
- .3 In the event of discrepancy between such provisions, the most stringent provision shall apply.
- .4 The Contractor shall employ a qualified specialty Engineer for the design of all shoring and falsework for the temporary supports of all structural elements, earth banks, roads, etc.
- .5 The burning of refuse is strictly forbidden.
- .6 If "NO SMOKING" regulations are in effect in areas of the Work, ensure that all workers comply with the regulations.
- .7 The contractor shall ensure that all workers comply with the Owner's safety regulations where such regulations are in effect.
- .8 Do not load or permit to be loaded any part of the Work with a weight, load or force that will exceed the design load and/or endanger its safety.

1.5 CLEANING OF STREETS

- .1 Conform to local ordinances and by-laws relating to littering of streets.
- .2 Take precautions to prevent depositing mud or debris on public or private roadways adjacent to the Work. Clean up immediately, otherwise the Engineer will direct necessary cleanup with all costs back charged to the Contractor.

1.6 WORKING LIMITS/TEMPORARY EASEMENTS

- .1 Confine all operations within the Owner's property limits.

1.7 EXISTING UTILITIES

- .1 Conform to Territorial and Municipal regulations during construction in proximity to utility structures.
- .2 The Contractor shall notify appropriate utility companies and municipal departments minimum one week in advance of commencing such work:
 - .1 For water work, the Hamlet of Fort Liard.
 - .2 For electrical power and street lighting, NWT Power Corporation.
 - .3 For telephone, internet, not applicable.
- .3 The Contractor shall make arrangements with utility companies and municipal department for protection of pipelines, conduits, drainlines, wiring and other structures, whether underground, on the surface or overhead, and satisfy the company or department that the methods or operations are effective. The contractor shall pay any inspection charges for utility company inspectors if inspection of work is deemed necessary by utility company.
- .4 The Contractor shall indemnify and save harmless the Owners of these existing utilities from any loss or damage which may be suffered by reason of the operations of the Contractor in the performance of this Contract.

1.8 NOISE BYLAW

- .1 Adhere to the requirements of the Owner's Nuisance Bylaw.

END OF SECTION

Part 1 INSPECTION AND TESTING OF WORK

1.1 INSPECTION

- .1 Allow Engineer access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Engineer instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 The Engineer may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, the Owner shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 The Contractor is solely responsible for all Quality Control (QC) testing so that the work is completed according to the Contract requirements. The Contractor must utilize materials testing procedures approved by the Engineer.
- .2 For Quality Assurance (QA) purposes only, Independent Inspection/Testing Agencies will be engaged by the Engineer for purpose of inspecting and/or testing portions of Work. The Cost of such services will be borne by the Engineer. This excludes water sampling procedures during flushing, cleaning and disinfection which shall be borne by the Contractor.
- .3 Provide equipment required for executing inspection and testing by appointed agencies.
- .4 Employment of Quality Assurance inspection/testing agencies by the Owner does not relax responsibility to perform Work in accordance with Contract Documents.
- .5 If defects are revealed during a QC or QA inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Engineer at no cost to the Owner. The Contractor shall pay costs for retesting and re-inspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off-site manufacturing and fabrication plants.
- .2 Cooperate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate agency and Engineer a minimum of five business days in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. 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 and materials on site. Provide sufficient space to store and cure test samples.
- .4 If defects are revealed during inspection and/or testing notify the Engineer immediately. The Engineer may issue instructions for removal or correcting defective work and irregularities. The Contractor shall notify the Engineer within two (2) working days if such instructions are in error or at variance with the Contract Documents.

1.5 REJECTED WORK

- .1 Remove defective Work, whether a result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by the Engineer as failing to conform to Contract Documents. Replace or re-execute in accordance with the Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in the opinion of the Engineer that it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the Owner may deduct from the Contract Price the difference in value between Work performed and that called for by Contract Documents, the amount of which shall be determined by the Engineer.

1.6 REPORTS

- .1 If requested, submit copies of inspection and test reports to the Engineer with each monthly progress claim. The monthly reports shall be in a format as detailed in Section 01 78 00.

- .2 Sketches in addition to written descriptions of test locations are required. Illegible reports will not be accepted. Test locations shall reference the project stationing.
- .3 Provide copies to the Subcontractor of work being inspected or tested.
- .4 A complete project QC summary will be required upon completion of the work and prior to final progress payment.
- .5 All QC tests and test results shall be calculated, recorded and submitted on industry standard worksheets. The test and test results shall be certified for correctness by a Northern registered Engineer and shall be signed by the Contractor's representative.
- .6 The QC firm shall provide written endorsement that the materials produced and utilized in the work meet the requirements of the technical specification.

1.7 DESIGN STANDARDS CODE REQUIREMENTS

- .1 Inspection and/or testing will be performed in accordance with the latest edition of the following:
 - .1 Compacted fill materials to ASTM D698 for Standard Proctor Density
 - .2 Concrete to CSA A23.2 and mix designs to CSA A23.1, Part 14.
 - .3 Welding to CSA W59.1 and ASTM E109.
 - .4 Bolted connections to CSA S16 or S16.1.

1.8 PAYMENT REDUCTION FOR NON-COMPLIANCE

- .1 If the Contractor does not meet the requirements of the Quality Control they will be subject to a 50% payment reduction towards each contract item in which they do not meet the Quality Control reporting requirements.

Part 2 PRODUCTS

This section is not applicable.

Part 3 REFERENCE STANDARDS

- .1 Within the text of the specifications reference may be made to the following standards:

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association

CCA	Canadian Construction Association
CEC	Canadian Electrical Code (published by CSA)
CEMA	Canadian Electrical Manufacturers Association
CGSB	Canadian Government Specification Board
CSA	Canadian Standards Association
NBC	National Building Code
NEMA	National Electrical Manufacturers Association
ULC	Underwriters Laboratories of Canada

Conform to such standards, in whole or in part, as specified.

- .2 If there is question as to whether any product or system is in conformance with applicable standards, the Engineer reserves the right to have such products or systems tested to prove or disprove conformance. The cost for such testing will be borne by the Owner in the event of conformance with Contract Documents or by the Contractor in the event of non- conformance.
- .3 Where specified standards are not dated, conform to latest issue of specified standards as amended and revised to the Tender closing date.

END OF SECTION

1.0 ACCESS

- .1 Provide and maintain adequate access to project site.

2.0 CONTRACTOR'S SITE OFFICE

- .1 Contractors and Sub Contractors may provide their own offices as necessary.

3.0 SANITARY FACILITIES

- .1 The sanitary facilities must meet the Occupational Health and Safety (OHS) requirements for the Northwest Territories.
- .2 Sanitary facilities are not available on site. Contractor to make arrangements with the Owner so that adequate sanitary facilities are available for personnel on-site.

4.0 CONSTRUCTION SIGNAGE

- .1 Review any proposed signage with the Owner in advance of erecting any signage.
- .4 No other signs or advertisements, other than warning signs, are permitted on site.
- .5 Maintain approved signs and notices in good condition for duration of project and dispose of off-site on completion of project or earlier if directed by Consultant.
- .6 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN3 Z321.

5.0 SECURITY

- .1 Site security measures in accordance with the Project Agreement, and as agreed by the Owner.

6.0 SITE ENCLOSURES

- .1 Provide temporary enclosures as required to maintain site security and protection for the general public.

8.0 ENCLOSURE OF STRUCTURES

- .1 Provide temporary weather-tight enclosures and protection for exterior openings until permanently enclosed.
- .2 Erect enclosures to allow access for installation of materials and working inside enclosure.
- .3 Design enclosures to withstand wind pressure and snow loading.

9.0 CONTRACTOR ACCOMMODATIONS

- .1 The Owner will not be providing accommodations during construction to the contractor and C. Local accommodation can be used to supplement contractor accommodations, however, access is to be maintained for the community to use the hotels during construction.

10.0 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work as required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

12.0 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by the Engineer. All site facilities will be the property of Contractor when the Contract is complete.
- .2 Remove from site all such work after use.

END OF SECTION

1.0 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities in order to execute work expeditiously.
- .2 Provided temporary utilities to field offices (if using).
- .3 Remove from site all such work after use.

2.0 WATER SUPPLY

- .1 Provide continuous supply of water for construction use.
- .2 Maintain continuous potable water supply to the community.

3.0 TEMPORARY FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Provide, maintain and operate (as needed) a temporary fire water storage system for the duration of work.
 - .1 Products are to be certified to NSF 61 *Drinking Water System Components*. The system shall be installed outside of the WTP within the property line. Field locate with Owner prior to installing. The material shall be suitable for direct sunlight exposure. System shall be suitable to contain chlorinated potable water.
 - .2 Total storage volume shall not be less than 65 m³ (65,000 L). Contractor shall provide interconnecting piping/manifold, vents, bedding/base material/prep, decommissioning and removal following completion work.
 - .3 Supply, install and maintain a dedicated pump to fill trucks from the temporary bladder tank system. Design flow rate shall be 1,000 L/min. Provide 150 mm temporary hosing/piping between the pump and existing truck fill location. Contractor shall either provide a diesel generator with sufficient fuel to operate the pump continuously if needed, or provide a temporary electrical connection from the WTP at no extra cost to the Owner.
 - .4 Standard of acceptance: SEI Industries Terra Tank or approved equal. Shop drawings required.

4.0 TEMPORARY HEATING COOLING AND VENTILATING

- .1 Provide temporary heating as required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be vented to outside or be of the flameless (vent free) type. Solid fuel salamanders are not permitted.

-
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and Products against dampness and cold.
 - .3 Prevent moisture and condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation, and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
 - .4 Maintain minimum temperatures of 10 °C in areas where construction is in progress.
 - .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours, or gases in occupied areas during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in a manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 Continue operating ventilation and exhaust system after cessation of work process until complete removal of harmful contaminants is ensured.
 - .6 Permanent heating, ventilating, and air conditioning system of building, may be used. Be responsible for damage to systems if use is permitted.
 - .7 On completion of Work for which permanent heating system is used, replace filters and clean.
 - .8 Pay costs for maintaining temporary heat when using permanent heating system.
 - .9 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.

- .5 Vent direct-fired combustion units to outside.
- .10 Be responsible for damage to Work due to failure to provide adequate heat and protection during construction.

END OF SECTION

1.0 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.2 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .2 Provide as required by an Authority Having Jurisdiction.

1.3 WEATHER ENCLOSURES

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3 Design enclosures to withstand wind pressure and snow loading.

1.4 DUST TIGHT SCREENS

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.5 ACCESS TO SITE

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
- .2 Maintain site access for the Hamlet's water filling trucks.

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.

1.8 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Engineer locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.9 PROTECTION OF WATER SOURCE

- .1 Protect the water source from contamination during performance of the Work.
- .2 Be responsible for damage incurred due to lack of or improper protection.

END OF SECTION

1.0 General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Engineer reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be covered by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .4 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.

1.3 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Engineer of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Engineer at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Engineer reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

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

- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 . Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .5 Remove and replace damaged products at own expense and to satisfaction of the Engineer.
- .6 Touch-up damaged factory finished surfaces to Engineer's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

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

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in the specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Engineer in writing, of conflicts between specifications and manufacturer's instructions, so that Engineer will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Engineer to require removal and re-installation at no increase in Contract Price or Contract Time.
- .4 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Engineer if required Work is such as to make it impractical to produce required results.
- .5 Do not employ anyone unskilled in their required duties. Engineer reserves right to require dismissal from site, workers deemed incompetent or careless.
- .6 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Engineer, whose decision is final.

1.7 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.8 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

- .2 Before installation inform Engineer if there is interference.

1.9 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Engineer of conflicting installation. Install as directed.

1.11 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Use No. 304 stainless steel fasteners for interior work.
- .5 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .6 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .7 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.13 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Engineer.

2.0 Products

2.1 NOT USED

3.0 Execution

3.1 NOT USED

END OF SECTION

1.0 General

1.1 WORK INCLUDED

- .1 This section specifies requirements for cleaning and disposal of waste at the site.

1.2 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws of the Northwest Territories.
- .2 Store volatile waste in covered metal containers. There is a small, lockable shed on the site that can be used for storage until the end of the project.
- .3 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .4 Take care not to contaminate the water treatment plant facility or processes.

1.3 MATERIALS

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

1.4 CLEANING DURING CONSTRUCTION

- .1 Concrete walls, floors and ceilings in all cells to be thoroughly cleaned prior to the structural inspection which includes but not limited to:
 - .1 Remove and dispose the sediments from the bottom of three cells
 - .2 Pressure washing of three cells
 - .3 Cleaning of three cells
 - .4 Drying of three cells
- .2 Following completion of inspection and installation of valves and other appurtenances, all cells as well as the connections to be flushed, rinsed, shock disinfected and bacteria tested (minimum 2 tests per cell, 24 hours apart) and filled with potable water.
- .3 Provide on-site containers for collection of waste materials, and debris.
- .4 Dispose of waste materials off-site during demobilization.
- .5 Hazardous waste must be shipped to designated facility. Make arrangements with an approved contractor for the safe pickup and disposal of hazardous waste materials. The nearest facilities are located in Fort Nelson, B.C.
- .6 Schedule cleaning operations so that resulting dust, debris and other contaminants will not contaminate building systems.

1.5 FINAL CLEANING

- .1 Remove grease, dust dirt, stains, labels, fingerprints, and other foreign materials, from interior and exterior finished surfaces including glass, piping, equipment and other polished surfaces.
- .2 Clean lighting reflectors, lenses, and other lighting surfaces.
- .3 Broom clean paved surfaces; rake clean other surfaces of grounds.
- .4 Remove debris and surplus materials from crawl areas and accessible concealed spaces.
- .5 Remove snow and ice from access to building.

END OF SECTION

1.0 General

1.1 RELATED REQUIREMENTS

- .1 Submission of Record Drawings: Section 01 33 00
- .2 General Conditions of the Contract: fiscal provisions, legal submittals and other administrative requirements.

1.2 FINAL CLEANING

- .1 When the Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for the performance of the remaining Work.
- .2 Remove waste products and debris and leave the Work clean and suitable for occupancy by Owner.
- .3 When the Work is Totally Performed, remove surplus products, tools, construction machinery, equipment, waste products and debris.
- .4 Leave the Work room clean before the final inspection process commences.
- .5 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .6 Sweep and wash clean site paved areas and sidewalks.

1.3 DOCUMENTS

- .1 Collect reviewed submittals (Section 01 33 00) and assemble documents executed by Subcontractors, Suppliers and Manufacturers.
- .2 Provide warranties and bonds fully executed and notarized.
- .3 Execute transition of Performance and Labour and Materials Payment Bond to warranty period requirements.
- .4 Submit a final statement of accounting giving total adjusted Contract Sum, previous payments and monies remaining due.
- .5 Engineer will issue a final change order reflecting approved adjustments to Contract Sum not previously made.

1.4 REMOVAL OF TEMPORARY FACILITIES

- .1 Prior to application for Certificate of Substantial Performance, remove all temporary offices and furniture, hoardings, fencing, tree and plant protection and all other items used to aid the performance of the Work. Make good surfaces and features to original condition or better.

1.5 PROJECT COMMISSIONING

- .1 Expedite and complete deficiencies and defects identified by the Engineer.
- .2 Review cash and contingency allowances in relation to contract prices, change orders, retainage, hold-backs and other contract price adjustments.
- .3 Submit required documentation such as statutory declarations, Workers' regulating bodies.
- .4 Review inspection and testing reports to verify conformance to the intent of the documents and that changes, repairs or replacements have been completed.
- .5 When partial use of uncompleted project is required by the Owner, coordinate Owner's uses, requirements, access, with Contractor's requirements to complete the Project.
- .6 Coordinate Owner's initiating use of system with Contractor's and Subcontractor's cleaning-up and completion activities all to suit Owner's work schedule and not disrupt Owner's productivity.

1.6 INSPECTION/TAKEOVER PROCEDURES

- .1 Prior to application for certificate of Substantial Performance, carefully inspect the Work and ensure it is complete, that major and minor construction deficiencies are complete and/or corrected and the building is clean and in condition for occupancy. Notify the Engineer in writing, of satisfactory completion of the Work and request a final inspection.
- .2 During the final inspection, a list of deficiencies and defects will be tabulated. Correct same.
- .3 When the Engineer considers deficiencies and defects have been corrected and it appears all requirements of the Contract have been performed, make application for final payment. Refer to General Conditions for specifics to application.

END OF SECTION

1.0 General

1.1 SUBMISSION

- .1 Collect reviewed submittals (Section 01 33 00) and assemble documents executed by Subcontractors, Suppliers and Manufacturer's.

2.0 Documents

2.1 GENERAL

- .1 The Contractor shall compile all QC testing documents produced throughout the project and submit in a format as outlined herein.
- .2 If requested, furnish evidence as to type, source and quality of products provided.
- .3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .4 Submit material prior to final Application for Payment. For equipment put into use with Owner's permission during construction, submit within ten (10) days after start-up. For items of Work delayed materially beyond date of Substantial Completion provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.
- .5 Submit a final statement of accounting giving a total adjusted contract sum, previous payments and monies remaining due.
- .6 The Engineer will issue a final change order reflecting approved adjustments to contract sum not previously made.

2.2 FORMAT

- .1 Electronic file (PDF) format will be accepted. Submissions can be made via email or through a secure file-sharing platform

2.3 CONTENTS

- .1 Table of Contents: provide title of project;
 - .1 Date of submission; names,
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties;
 - .3 Schedule of products, indexed to content of volume.
- .2 For each product, system or subject:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

- .2 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .3 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .4 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality of Work.
- .5 Quality Control Testing Results: submit broken down by the area of work as outlined in the Tender Form. The QC Testing results shall be summarized and submitted in its own binder.

3.0 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain for the Engineer and Owner one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Engineer.

4.0 RECORDING ACTUAL SITE CONDITIONS

- .1 Record As-Built information on a set of construction drawings.

- .2 Provide felt tip marking pens, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded and photographed.
- .4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .3 Field changes of dimension and detail.
 - .4 Changes made by change orders.
 - .5 Details not on original Contract Drawings.
 - .6 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

5.0 SUBMISSION BEFORE SUBSTANTIAL COMPLETION

- .1 Prior to the Engineer issuing a Certificate of Substantial Completion of the Work, the following submissions shall be completed by the Contractor as expressly specified under respective sections of the Specifications:
 - .1 Extra materials, products and finishes.
 - .2 Spare parts, tools and products.
 - .3 All maintenance manuals, manufacturer's instructions, parts lists and shop drawings for site furnishings.
 - .4 Monthly maintenance records for trees, shrubs, perennials, sodded and seeded areas.

6.0 WARRANTIES AND BONDS

- .1 Compile each warranty or bond into one document.

- .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 the applicable item of work.
- .4 Except for items put into use with Owner's permission, leave date of beginning of time of warrant until the Date of Substantial Completion is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.
- .8 Execute transition of Performance and Labour and Materials Payment Bond to warranty period requirements.

END OF SECTION

1.0 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.1, Canadian Electrical Code, Part 1 (Latest Edition), Safety Standard for Electrical Installations.
 - .2 CAN3-C235, Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
- .2 Electrical and Electronic Manufacturer's Association of Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
- .3 Canada (EEMAC)
 - .1 EEMAC 2Y-1, Light Gray Colour for Indoor Switch Gear.
 - .2 IEEE SP1122, The Authoritative Dictionary of IEEE Standards Terms
- .4 Territorial Electrical Code Regulations.
- .5 All references to be latest edition.

1.2 DEFINITIONS

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.3 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
 - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates and labels for control items in English.

1.4 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data: submit WHMIS MSDS in accordance with Section 01 33 00.
- .3 Single line electrical diagrams shall be in glazed frames and locate in:
 - .1 Electrical distribution system in main electrical rooms and
 - .2 Electrical power generation and distribution systems in power plant rooms.

- .4 Shop drawings:
 - .1 Submit drawings and where required stamped and signed by professional engineer registered or licensed in project's region.
 - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.
 - .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
 - .5 Submit one copy of drawings and product data to Engineer.
 - .6 If changes are required, notify Engineer of these changes before they are made.
- .5 Quality Control: in accordance with Section 01 45 00 - Quality of Work.
 - .1 Provide CSA certified equipment and material. Where CSA certified equipment and material is not available, submit such equipment and material to inspection authorities for special CSA approval before delivery to site.
 - .2 Submit test results of installed electrical systems and instrumentation.
 - .3 Permits and fees: in accordance with Project Agreement.
 - .4 Submit, upon completion of Work, load balance report as described in PART 3 - LOAD BALANCE.
 - .5 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Engineer.
- .6 Manufacturer's Field Reports: submit to Engineer manufacturer's written report, within 5 days of review, verifying compliance of Work and electrical system and instrumentation testing , as described in PART 3 - FIELD QUALITY CONTROL.

1.5 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality of Work.
- .2 Qualifications: electrical Work to be carried out by qualified, licensed electricians or apprentices in accordance with authorities having jurisdiction and as per the conditions of Territorial Act respecting manpower vocational training and qualification.
 - .1 Employees registered in regional apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.
- .3 Site Meetings:
 - .1 Site Meetings: as part of Manufacturer's Field Services described in Part 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
 - .1 After delivery and storage of products, and when preparatory Work is complete but before installation begins.
 - .2 Upon completion of Work, after cleaning is carried out.
- .4 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Material Delivery Schedule: provide Engineer with schedule within 2 weeks of the start of construction.
- .2 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Sections 01 35 43 and 01 74 23.

1.7 SYSTEM STARTUP

- .1 Instruct Departmental Representative and operating personnel in operation, care and maintenance of systems, system equipment and components.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

1.8 OPERATING INSTRUCTIONS

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
- .3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.
- .4 Post instructions where directed.
- .5 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
- .6 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

2.0 Products

2.1 MATERIALS AND EQUIPMENT

- .1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 All material and equipment to be CSA certified. Where CSA certified material and equipment are not available, obtain special approval from inspection authorities and Engineer before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.
- .3 Factory assemble control panels and component assemblies.

2.2 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

- .1 Verify installation and co-ordination responsibilities related to motors, equipment and controls, as indicated.
- .2 Control wiring and conduit: in accordance with Section 26 29 03 - Control Devices except for conduit, wiring and connections below 50 V which are related to control systems specified in mechanical sections and as shown on mechanical drawings.
- .3 Contractor must perform any wiring according to the manufacturer's specifications.

2.3 WARNING SIGNS

- .1 Warning Signs: in accordance with requirements of authority having jurisdiction or inspection authorities or Departmental Representative and Engineer.
- .2 Decal signs, minimum size 175 x 250 mm.

2.4 WIRING TERMINATIONS

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.5 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates and labels as follows:
 - .1 Nameplates: lamicoid 3 mm matt white finish face, black core, lettering accurately aligned and engraved into core mechanically attached with self-tapping screws.
 - .2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters

NAMEPLATE SIZES

Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on nameplates and labels to be approved by Departmental Representative and Engineer prior to manufacture.
- .4 Allow for minimum of twenty-five (25) letters per nameplate and label.
- .5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .6 Disconnects, starters and contactors: indicate equipment being controlled and voltage.
- .7 Terminal cabinets and pull boxes: indicate system and voltage.
- .8 Transformers: indicate capacity, primary and secondary voltages.

2.6 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, numbered coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 . The labels must be affixed using an adhesive specifically designed for high-moisture environments.
- .3 Maintain phase sequence and colour coding throughout.
- .4 Colour coding: to CSA C22.1.
- .5 Use colour coded wires in communication cables, matched throughout system.

2.7 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 5 m intervals.
- .3 . The labels must be affixed using an adhesive specifically designed for high-moisture environments.
- .4 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	Prime	Auxiliary
up to 250 V	Yellow	
up to 600 V	Yellow	Green
up to 5 kV	Yellow	Blue
up to 15 kV	Yellow	Red
Telephone	Green	
Other Communication Systems	Green	Blue
Fire Alarm	Red	
Emergency Voice	Red	Blue
Other Security Systems	Red	Yellow

2.8 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
 - .1 Paint outdoor electrical equipment light gray to EEMAC 2Y-1.
 - .2 Paint indoor switchgear and distribution enclosures light gray to EEMAC 2Y-1 or ASA-61.

3.0 Execution

3.1 INSTALLATION

- .1 All work to be in accordance with the Canadian Electrical Code.
- .2 Do complete installation in accordance with CSA C22.1 except where specified otherwise.
- .3 Do overhead and underground systems in accordance with CSA C22.3 No.1 and No. 7 except where specified otherwise.

3.2 NAMEPLATES AND LABELS

- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.3 CONDUIT AND CABLE INSTALLATION

- .1 Install conduit and sleeves prior to pouring of concrete.
 - .1 Sleeves through concrete: plastic, sized for free passage of conduit, and protruding 50 mm.
- .2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .3 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

3.4 LOCATION OF OUTLETS

- .1 Locate outlets in accordance with Section 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.
- .2 Do not install outlets back-to-back in wall; allow minimum 150 mm horizontal clearance between boxes.
- .3 Change location of outlets at no extra cost or credit, providing distance does not exceed 3000 mm, and information is given before installation.
- .4 Locate light switches on latch side of doors.

3.5 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation. Install electrical equipment at following heights unless indicated otherwise.
 - .1 Local switches: 1400 mm.
 - .2 Wall receptacles:
 - .1 General: 450 mm.
 - .2 Above top of continuous baseboard heater: 200 mm.
 - .3 Above top of counters or counter splash backs: 175 mm.
 - .4 In mechanical rooms: 1400 mm.
 - .3 Panelboards: as required by Code or as indicated.
 - .4 Telephone and data/computer outlets: 450 mm or as indicated.
 - .5 Wall mounted telephone and interphone outlets: 1500 mm.
 - .6 Fire alarm stations: 1500 mm.
 - .7 Fire alarm bells: 2100 mm.

3.6 CO-ORDINATION OF PROTECTIVE DEVICES

- .1 The scope of the work under this item shall include all devices and equipment supplied and installed under this project including Contractor purchased equipment and equipment pre-purchased by the Owner or supplied by others as part of the work.
- .2 The Contractor shall engage the services of a recognized independent testing firm to perform short circuit and protective device co-ordination studies as required. All studies shall be reviewed and stamped by a professional engineer in the Province of Nova Scotia.
- .3 The testing firm shall evaluate the adequacy of all equipment including but not limited to power circuit breakers, load interrupter switches, molded case breakers, automatic transfer switches and fuses. Any areas or inadequacies in the equipment shall be reported to the Engineer.

- .4 The protective device co-ordination study shall be performed to select the final fuse sizing, protective relay characteristics and settings. The object of the study is to obtain optimum protective and co-ordination performance for these devices. The phase and ground overcurrent protection, protective relay settings, and utility interface protections shall be included.
- .5 Complete study to be reviewed and approved by the Owner, Engineer and the Electrical Safety Authority prior to settings being applied to the equipment.

3.7 FIELD QUALITY CONTROL

- .1 The scope of the work under this item shall include all devices and equipment supplied and installed under this project including Contractor purchased equipment and equipment pre-purchased by the Owner or supplied by others.
- .2 The Contractor shall engage the services of a recognized independent testing firm for the purposes of protective device testing and inspections. The testing firm shall be experienced with this type of project and selection is subject to the approval of the Owner.

Included are visual and mechanical testing of all equipment to insure that the equipment has been installed per the manufacturer's specifications, the meggering and high-potential testing of cables and equipment, any adjustments to the equipment in the field application of the final relay settings and testing of all relays during commissioning.

- .3 Load Balance:
 - .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
 - .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
 - .3 Provide upon completion of work, load balance report as directed in PART 1 - SUBMITTALS: phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.
- .4 Conduct following tests in accordance with Section 01 45 00 - Quality Control. Testing shall include all Contractor purchased equipment, Owner Pre-purchased equipment or equipment supplied by others as part of this work.
 - .1 Power generation and distribution systems including phasing, voltage, grounding and load balancing.
 - .2 Circuits originating from branch distribution panels.
 - .3 Lighting and its control.
 - .4 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
 - .5 Systems: fire alarm system and communications.
 - .6 Insulation resistance testing:
 - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
 - .2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.

- .3 Check resistance to ground before energizing.
- .4 Check potential difference between ground and neutral. Potential difference between ground and neutral shall not exceed 2V.
- .5 The testing firm shall maintain written records of all tests, calibrations and settings and upon completion of the project, assemble and certify final test reports. Submit six (6) copies of all test reports to the Engineer.
- .6 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.
- .7 Carry out tests in presence of Departmental Representative or Engineer.
- .8 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .9 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.8 CLEANING

- .1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

END OF SECTION

1.0 General

1.1 SECTION INCLUDES

- .1 Materials and installation for wire and box connectors.

1.2 RELATED SECTIONS

- .1 Section 26 05 00 – Common Work Results- Electrical.

1.3 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-C22.2 No.18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.
 - .2 CSA C22.2 No.65, Wire Connectors.
- .2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)
 - .1 EEMAC 1Y-2, 1961 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).
- .3 National Electrical Manufacturers Association (NEMA).
- .4 All references to be latest edition.

2.0 Products

2.1 MATERIALS

- .1 Pressure type wire connectors to: CSA C22.2 No.65, with current carrying parts of copper alloy sized to fit copper conductors as required.
- .2 Fixture type splicing connectors to: CSA C22.2 No.65, with current carrying parts of copper or copper alloy sized to fit copper conductors 10 AWG or less.
- .3 Bushing stud connectors: to EEMAC 1Y-2 to consist of:
 - .1 Connector body and stud clamp for stranded round copper conductors or bar.
 - .2 Clamp for stranded round copper conductors or bar.
 - .3 Stud clamp bolts.
 - .4 Bolts for copper conductors or bar.
 - .5 Sized for conductors or bars as indicated.
- .4 Clamps or connectors for armoured cable, and flexible conduit, as required to: CAN/CSA-C22.2 No.18.

3.0 Execution

3.1 INSTALLATION

- .1 Remove insulation carefully from ends of conductors and:

- .1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.
- .2 Install fixture type connectors and tighten. Replace insulating cap.
- .3 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

1.0 General

1.1 RELATED SECTIONS

- .1 N/A

1.2 REFERENCES

- .1 CSA C22.2 No .0.3, Test Methods for Electrical Wires and Cables.
- .2 CSA C22.2 No. 239 Control and Instrumentation Cables
- .3 CAN/CSA-C22.2 No. 131, Type TECK 90 Cable.
- .4 All references to be latest edition.

1.3 PRODUCT DATA

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

2.0 Products

2.1 BUILDING WIRES

- .1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.
- .2 Copper conductors: size as indicated, with 600 V or 1000V insulation of chemically cross-linked thermosetting polyethylene material rated RW 90 or RWU 90.
- .3 Use RW90 for building installations in above ground applications
- .4 Use RWU90 for grade slab in embedded conduits systems or for underground installations.
- .5 Neutral supported cable: 3 phase insulated conductors of aluminium and one neutral conductor of aluminium steel reinforced, size as indicated. Insulation: Type NSF-2 flame retardant rated 600 V.

2.2 TECK CABLE

- .1 Cable: to CAN/CSA-C22.2 No. 131.
- .2 Conductors:
 - .1 Grounding conductor: copper.
 - .2 Circuit conductors: copper, size as indicated.

- .3 Insulation:
 - .1 Chemically cross-linked thermosetting polyethylene rated type RW90, 600 V.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Armour: interlocking galvanized steel.
- .6 Overall covering: polyvinyl chloride material.
- .7 Fastenings:
 - .1 One hole steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.
 - .2 Channel type supports for two or more cables at 300 mm centers.
 - .3 Threaded rods: 6 mm dia. to support suspended channels.
- .8 Connectors:
 - .1 Watertight, approved for TECK cable.
 - .2 Explosion proof for hazardous locations, approved for TECK cable

2.3 ARMOURED CABLES

- .1 Conductors: insulated, copper, size as indicated.
- .2 Type: AC90.
- .3 Armour: interlocking type fabricated from galvanized steel strip.

2.4 CONTROL CABLES

- .1 Low energy 300 V control cable: stranded annealed copper conductors sized as indicated, with PVC insulation type polyethylene insulation with shielding of metallized tapes over each pair and over all conductors and overall covering of PVC jackets interlocked armour of flat galvanized steel.
- .2 600 V type: stranded annealed copper conductors, sizes as indicated with cross-linked polyethylene type RW90 (x-link).

3.0 Execution

3.1 INSTALLATION OF BUILDING WIRES

- .1 Install wiring as follows:
 - .1 Install conduit systems in accordance with specifications and National Code.
 - .2 Install underground ducts in accordance with Section 26 05 44.

3.2 INSTALLATION OF TECK CABLE 0 -1000 V

- .1 Install cables.
 - .1 Group cables wherever possible on channels.
- .2 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

3.3 INSTALLATION OF ARMOURED CABLES

- .1 Group cables wherever possible.
- .2 Armoured cable not to be used in corrosive environments. Use in control building only.
- .3 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

3.4 INSTALLATION OF CONTROL CABLES

- .1 Install control cables in conduit or underground ducts.
- .2 Ground control cable shield at one end only.

END OF SECTION

1.0 General

1.1 SECTION INCLUDES

- .1 Switches, receptacles, wiring devices, cover plates and their installation.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3 Section 26 05 00 - Common Work Results for Electrical.

1.3 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-C22.2 No.42 (Latest Edition), General Use Receptacles, Attachment Plugs and Similar Devices.
 - .2 CSA-C22.2 No.42.1 (Latest Edition), Cover Plates for Flush-Mounted Wiring Devices (Bi-national standard, with UL 514D).
 - .3 CSA-C22.2 No.55-M1986 (Latest Edition), Special Use Switches.
 - .4 CSA-C22.2 No.111 (Latest Edition), General-Use Snap Switches (Bi-national standard, with UL 20, twelfth edition).

1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 – Submittal Procedures.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with governing legislation.

2.0 Products

2.1 SWITCHES

- .1 15 or 20 A, 120 V, single pole, double pole, three-way, four-way switches to: CSA-C22.2 No.55 and CSA-C22.2 No.111.
- .2 Manually-operated general purpose ac switches with following features:
 - .1 Terminal holes approved for No. 10 AWG wire.
 - .2 Silver alloy contacts.
 - .3 Urea or melamine moulding for parts subject to carbon tracking.
 - .4 Suitable for back and side wiring.
 - .5 Ivory toggle.
- .3 Toggle operated fully rated for tungsten filament and fluorescent lamps, and up to 80% of rated capacity of motor loads.
- .4 Switches of one manufacturer throughout project.

2.2 RECEPTACLES

- .1 Duplex receptacles, CSA type 5-15 R, 125 V, 15 A, U ground, to: CSA-C22.2 No.42 with following features:
 - .1 Ivory urea moulded housing.
 - .2 Suitable for No. 10 AWG for back and side wiring.
 - .3 Break-off links for use as split receptacles.
 - .4 Eight back wired entrances, four side wiring screws.
 - .5 Triple wipe contacts and rivetted grounding contacts.
- .2 Single receptacles CSA type 5-15 R, 125 V, 15 A, U ground with following features:
 - .1 Ivory urea moulded housing.
 - .2 Suitable for No. 10 AWG for back and side wiring.
 - .3 Four back wired entrances, 2 side wiring screws.
- .3 Other receptacles with ampacity and voltage as indicated.
- .4 Receptacles of one manufacturer throughout project.

2.3 COVER PLATES

- .1 Cover plates for wiring devices to: CSA-C22.2 No.42.1.
- .2 Cover plates from one manufacturer throughout project.
- .3 Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.
- .4 Stainless steel, vertically brushed, 1 mm thick cover plates for wiring devices mounted in flush-mounted outlet box.
- .5 Sheet metal cover plates for wiring devices mounted in surface-mounted FS or FD type conduit boxes.
- .6 Weatherproof double lift spring-loaded cast aluminum cover plates, complete with gaskets for duplex receptacles as indicated.
- .7 Weatherproof spring-loaded cast aluminum cover plates complete with gaskets for single receptacles or switches.

3.0 Execution

3.1 INSTALLATION

- .1 Switches:
 - .1 Install single throw switches with handle in "UP" position when switch closed.
 - .2 Install switches in gang type outlet box when more than one switch is required in one location.
 - .3 Mount toggle switches at height in accordance with Section 26 05 00 - Common Work Results for Electrical as indicated.
- .2 Receptacles:

- .1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.
 - .2 Mount receptacles at height in accordance with Section 26 05 00 - Common Work Results for Electrical as indicated.
 - .3 Where split receptacle has one portion switched, mount vertically and switch upper portion.
- .3 Cover plates:
- .1 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.
 - .2 Install suitable common cover plates where wiring devices are grouped.
 - .3 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

END OF SECTION

1.0 General

1.1 RELATED REQUIREMENTS

- .1 Section 26 05 00 - Common Work Results for Electrical

1.2 REFERENCES

- .1 CSA Group (CSA)
 - .1 CSA C22.2 No.14-10, Industrial Control Equipment.
- .2 National Electrical Manufacturers Association (NEMA)
 - .1 NEMA ICS 1-2000(R2008), Industrial Control and Systems: General Requirements.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for control devices and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings as per Section
 - .2 Include schematic, wiring, interconnection diagrams.

1.4 QUALITY ASSURANCE

- .1 Conduct tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

1.5 CLOSEOUT SUBMITTALS

- .1 Submittals: in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for control.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

- .2 Store and protect control devices from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 SYSTEM STARTUP

- .1 Instruct Departmental Representative and operating personnel in operation, care and maintenance of systems, system equipment and components.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

2.2 OPERATING INSTRUCTIONS

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
- .3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.
- .4 Post instructions where directed.
- .5 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
- .6 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

2.0 Products

2.3 AC CONTROL RELAYS

- .1 Control Relays: to CSA C22.2 No.14.
- .2 Fixed contact plug-in type: general purpose heavy duty with 2 poles. Coil rating: 120 V, 1800 VA. Contact rating: 240V, 15 A.

2.4 RELAY ACCESSORIES

- .1 Standard contact cartridges: normally-open - convertible to normally-closed in field.

2.5 OILTIGHT LIMIT SWITCHES

- .1 Snap action type: roller rod fork lever, [top] [side] push wobble stick actuator, CSA type 4 enclosure. Contact rating 240 V, 15 A @ 120V AC.

2.6 SOLID STATE TIMING RELAYS

- .1 Construction: AC operated electronic timing relay with solid-state timing circuit to operate output contact. Timing circuit and output contact completely encapsulated to protect against vibration, humidity and atmospheric contaminants.
- .2 Operation: on-delay or off-delay.
- .3 Potentiometer: self contained to provide time interval adjustment.
- .4 Supply voltage: 120 V, AC, 60 Hz.
- .5 Temperature range: minus 20 degrees C to plus 60 degrees C.
- .6 Output contact rating: maximum voltage 300 V AC or DC. Current: 2 A.
- .7 Timing ranges: minimum 0 s, maximum 1800 s.
 - .1 Field adjustable or as shown on the drawings

2.7 OPERATOR CONTROL STATIONS

- .1 Enclosure: CSA Type 4, surface mounting:

2.8 PUSHBUTTONS

- .1 Illuminated, Heavy duty Oil tight. Operator extend type, as indicated. Black, with 1-NO and 1-NC operating contacts rated at 240 V, 10 A, AC, labels as indicated. Stop pushbuttons coloured red, provision for padlocking in depressed position labelled "emergency stop".

2.9 SELECTOR SWITCHES

- .1 Maintained, [2] [or 3] position, operators standard, contact arrangement as indicated, rated 120 V, 10 A, AC.

2.10 INDICATING LIGHTS

- .1 Heavy duty Oil tight, full voltage, LED type, push-to-test, lens colour: as indicated, supply voltage: 120 V AC, lamp voltage: 120 V AC, labels as indicated.

2.11 CONTROL AND RELAY PANELS

- .1 CSA Type 1 sheet steel enclosure with hinged padlockable access door, accommodating relays timers, labels, as indicated, factory installed and wired to identified terminals.

2.12 CONTROL CIRCUIT TRANSFORMERS

- .1 Single phase, dry type.
- .2 Primary: 600, 208 or 240v V, 60 Hz ac.
- .3 Secondary: 120 V, AC.
- .4 Rating: 150 VA.
- .5 Secondary fuse: Ampacity as required A.
- .6 Close voltage regulation as required by magnet coils and solenoid valves.

2.13 THERMOSTAT (LINE VOLTAGE)

- .1 Wall mounted, for exhaust fan control.
- .2 Full load rating: 8 A at 120 V AC.
- .3 Temperature setting range: 0 degrees C to 30 degrees C.
- .4 Thermometer Range: 0 degrees C to 30 degrees C.
- .5 Markings in 5 degrees increments.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for control devices installation in accordance with manufacturer's written instructions.
 - .1 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .2 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 INSTALLATION

- .1 Install pushbutton stations, control and relay panels, control devices and interconnect as shown.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.

- .2 Depending upon magnitude and complexity, divide control system into convenient sections, energize one section at time and check out operation of section.
- .3 Upon completion of sectional test, undertake group testing.
- .4 Check out complete system for operational sequencing.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - 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 00 - Cleaning

END OF SECTION

1.0 General

1.1 PRODUCT DATA

- .1 Submit product data in accordance with Division 26 and 01 33 00 – Submittals.

1.2 RELATED WORK

- .1 Section 01 33 00 – Submittals.
- .2 Section 26 05 00 – Common Work Results – For Electrical.
- .3 Section 26 05 21 – Wires and Cables 0 - 1000V

1.3 INSPECTION

- .1 Provide adequate notice to the Engineer so that all cable installations can be inspected prior to energizing equipment.

1.4 STANDARDS

- .1 All wire and cable shall be CSA approved.

2.0 Products

2.1 TWISTED PAIR SHIELDED CABLES (TPSH)

- .1 TPSH shall be constructed as follows:
 - .1 Two (2) copper conductors, stranded, minimum #18 AWG, PVC insulated, twisted in nominal intervals of 50 mm
 - .2 Insulated for 600 V, 90°C
 - .3 100 percent coverage aluminum foil or tape shield
 - .4 Separate bare stranded copper drain wire, minimum #18 AWG
 - .5 Overall flame retardant PVC jacket to CSA-C22.2
 - .6 The entire cable assembly to be suitable for pulling in conduit or laying in cable tray.
 - .7 Interlocked aluminum armour and outer PVC jacket.
 - .8 Shaw Type 1751-CSA or Beldon equivalent
- .2 Where multi-conductor TPSH cables are called for, each pair shall be individually shielded, continuous number coded, and the cable assembly shall have an overall shield and overall flame retardant PVC jacket.

2.2 RTD AND MULTI CONDUCTOR SHIELDED CABLE

- .1 RTD cables shall be CSA approved and shall be constructed as follows:
 - .1 Three or more copper conductors, stranded, minimum # 18 AWG
 - .2 PVC insulated for 600 V
 - .3 100 percent coverage aluminum foil or tape shield
 - .4 Separate bare stranded copper drain wire
 - .5 Interlocked aluminum armour and outer PVC jacket.

- .6 Overall flame retardant PVC jacket to CSA-C22.2

2.3 TECK CABLES

- .1 In accordance with Section 26 05 21 – Wires and Cables 0 - 1000V

2.4 WIRE

- .1 In accordance with Section 26 05 21 – Wires and Cables 0 - 1000V.

2.5 100 BASE TX CATEGORY 5E COMMUNICATION CABLE

- .1 Category 5E cable shall be CSA approved and constructed as follows:
 - .1 4 bonded pairs, solid stranded, #24 AWG
 - .2 Interlocked aluminum armour
 - .3 Rip cord
 - .4 PVC inner and outer jackets
 - .5 UL verified to Category 5E
 - .6 Insulated for 300 V
 - .7 Belden 121700A or approved equal

2.6 FIBRE OPTIC CABLE

- .1 Multimode Fibre Optic cable shall be CSA approved and constructed as follows:
 - .1 12 strand, colour coded
 - .2 Wavelength: 50/125 μ m
 - .3 Maximum attenuation: 3dB/km
 - .4 Interlocked aluminum armour
 - .5 PVC inner and outer jackets
 - .6 Insulated for 300 V

3.0 Execution

3.1 ANALOG SIGNALS

- .1 Use TPSH cable for all low level analog signals such as 4-20 mA, pulse type circuits 24 VDC and under, and other signals of a similar nature.
- .2 Use RTD cable for connections between RTDs and transmitters or control system RTD inputs.

3.2 DIGITAL SIGNALS

- .1 Use TPSH cable for all low level input (24 V and below) and output signals to the control system.

3.3 INSTRUMENT POWER

- .1 Use Teck cable or wire and conduit for power to instruments, for 120 V signals other than those mentioned above and as otherwise indicated on the Drawings. Use stranded wire and cable to supply power to instruments.

3.4 INSTALLATION

- .1 Install instrumentation cables in conduit systems or in cable trays. Use a minimum of 300 mm and a maximum of 1000 mm length of liquid tight flexible conduit to connect the field sensors to the conduit.
- .2 Where instrumentation cables are installed in cable trays, provide barriers in the tray to separate instrumentation cables from power cables.
- .3 At each end of the run leave sufficient cable length for termination.
- .4 Do not make splices in any of the instrumentation cable runs.
- .5 Cable shields shall be terminated on insulated terminals and carried through to the extent of the cable.
- .6 Ground cable shields at one end only. Unless otherwise specified, ground the shields at the PLC control panel.
- .7 Protect all conductors against moisture during and after installation.

3.5 CAT 5E INSTALLATION:

- .1 Always follow the Manufacturer's guidelines for minimum bend radius and tension.
- .2 All installations and terminations shall be performed by personnel experienced in Cat 5E cable installation.
- .3 Perform cable testing with time domain reflectometer instrument and provide complete detailed test report. Test all runs upon completion of permanent terminations, using instrumentation acceptable to Engineer. Before commencing testing, submit sample test data sheets and information with respect to test instrumentation to be used.
 - .1 Test for the following:
 - .1 Continuity.
 - .2 Pair placement and polarity.
 - .3 DC resistance.
 - .4 Characteristics at highest contemplated frequency:
 - .1 Attenuation - data cable.
 - .2 Mutual Capacitance - data cable.
 - .3 Near-end crosstalk (NEXT) - data cable.
 - .5 Run length.
 - .2 Tests to be conducted to Cat 5E standards
 - .3 Reconnect or re-install and retest as necessary to correct excessive variations.

3.6 CONDUCTOR TERMINATIONS

- .1 All equipment supplied shall be equipped with terminal blocks to accept conductor connections.
- .2 Instrumentation conductors, where terminated at equipment terminals other than clamping type terminal blocks, shall be equipped with Burndy-YAE-2 or STA-KON, self-insulated, locking type terminators, sized as required to fit conductors and screw terminals.

3.7 TESTING

- .1 Test all conductors for opens, shorts, or grounds. Resistance values shall not be less than those recommended by the cable manufacturer.

3.8 IDENTIFICATION

- .1 Identify all instrumentation cables.
- .2 Identify each conductor with wire numbers using a machine printed Raychem TMS heat shrink wire marker or approved equal in accordance with B6.

END OF SECTION

1.0 General

1.1 SCOPE

- .1 Supply, delivery, installation and testing of valves and valve operators for yard and process piping systems.
- .2 This section refers to the supply and installation of all valves both manually and power actuated types.
- .3 Valves and actuators for specialized piping systems including plumbing are as specified in the appropriate section hereinafter.
- .4 Have valves for all systems supplied by the same or a limited number of suppliers.

1.2 VALVE IDENTIFICATION CODES

- .1 Refer to the Contract Drawings for a listing of symbols for valves that are applicable to this project.
- .2 Valves, which are covered in this specification, are in a generalized format, which may not cover all specific project requirements as shown on the drawings. Comply with the more stringent requirements.
- .3 Prepare valve schedule sheets based on the information provided from the drawings to indicate the type of valve and actuator to be supplied and installed including the design operating pressure used. Submit this information with the Shop Drawings for review.
- .4 Supply and install all valves and operators detailed or inferred by the drawings and specifications and as required to provide a complete, secure and functional process system.

1.3 REFERENCES

- .1 American Water Works Association (AWWA), American National Standards Institute (ANSI)/American society of Mechanical Engineers (ASME).
- .2 ASNI/ASME B1.20.1, Pipe Threads, General Purpose (Inch).
- .3 All references to be latest edition.

1.4 EXTRA MATERIALS

- .1 Furnish following spare parts:
 - .1 Valve seats: one for every 10 valves each size. Minimum 1.
 - .2 Discs: one for every 10 valves, each size. Minimum 1.
 - .3 Stem packing: one for every 10 valves, each size. Minimum 1.
 - .4 Valve handles: 2 of each size. If only one handle of certain size is supplied, provide one spare only. Do not provide spare chain wheels.
 - .5 Gaskets for flanges: one for every 10 flanged joints.

1.5 SHOP DRAWINGS

- .1 Submit Shop Drawings for review in accordance with Section 01 33 00 – Submittal Procedures.

1.6 RECORD DRAWINGS

- .1 Maintain Project Record Drawings.

2.0 Products

2.1 VALVE OPERATORS

- .1 Supply valve operators or actuators for all types of valves specified as follows:
- .2 Supply removable lever handles (¼ turn type) or hand wheels (gate valves) for valves ≤150 mm diameter. Provide chain levers (¼ turn type) for valves mounted ≥1700mm above the floor. Should space preclude the use of a chain lever, provide a chain operated geared handwheel operator. Provide a chain operated geared hand-wheel operator for all gate valves mounted ≥ 1700 mm above the floor regardless of size. Manual operators are allowed for knife gate valves up to 600mm diameter if space is sufficient and the allowable pull on the operator does not exceed 270N (60lb) as specified in Clause 2.1.6.
- .3 Provide gear actuated hand wheels for all valves ≥200 mm diameter regardless of type and mounting height. Manual operators are allowed for knife gate valves up to 600mm diameter if space is sufficient and the allowable pull on the operator does not exceed 270N (60lb) as specified in Clause 2.1.6.
- .4 Mount all valves, regardless of size, with operators orientated having due regard to the ease of access and operation. Electrical or pneumatic actuators are specified below.
- .5 Ensure that each valve and operator is of suitable construction and rating for the long term service with the fluid or product being conveyed and at the pressure and operating frequencies required by the relevant service.
- .6 The allowable pull on a manual operator to open or close the valve shall be ≤270 N (60 lb. force). Manual operators shall operate in a clockwise motion to close the valve. Provide gate valves ≥ 400 mm diameter with a 50 mm manual by-pass valve arrangement to allow for the relief of excess pressure.
- .7 Supply cast iron hand wheels clearly marked with a flow directional arrow and the word "open" cast in relief on the rim. Provide hand wheels >300 mm in diameter for all valves >200 mm and 450 mm in diameter for larger valves as required to allow for manual operation. In confined areas, furnish smaller hand wheels with higher ratio gearing of the valve to compensate.
- .8 Supply steel pipe Tee wrenches with socket to suit nut dimensions. In cases of valves in tanks requiring extension stems and Tee wrenches, the wrench shall be secured in place.
- .9 Furnish chain operators where noted and where required. They shall consist of cast iron chain wheels with chain guide and zinc coated chain. Provide means, by split pins or other locking devices to positively prevent the chains or wheels coming off the shaft.

2.2 GENERAL VALVE REQUIREMENTS

- .1 Where there is an applicable recommended standard for the design, construction, and testing of a valve and/or actuator, e.g. AWWA, CGA, CSA etc., equipment to be supplied under this section will refer to this standard. Comply with these requirements for all equipment supplied in all regards. Where specifically requested, provide certificates of compliance with the applicable standards.
- .2 Where it is not intended to supply equipment or valves to a specific standard, the specification will indicate a reference product. Provide flanges as specified for all flanged valves for the line into which they are to be installed. As a minimum standard a Class 150# rating will be required.
- .3 The Contractor shall ensure that the valve end connections are compatible with pipe material in which the valve is installed.
- .4 Do not install valves dissimilar with piping to avoid galvanic corrosion.
- .5 All packing, gaskets, seats, diaphragms, lubricants, etc., shall be suitable for the intended operating conditions.
- .6 Supply all valves free of asphalt varnish or other non-potable protective coatings if it is intended for potable water service. Mark valves with size, pressure rating and manufacturer on a corrosion resistant nameplate mounted on the body.
- .7 Equip the valve with a disc position indicator and a direction of flow indicator where applicable.
- .8 Valves to be by a single manufacturer. Variances may be allowed, if approved by the Consultant, if a particular valve is not available by the preferred supplier.

2.3 GATE VALVE

- .1 Construction
 - .1 Ductile Iron
 - .2 To AWWA C509/C515
 - .3 Operating nut: 50 mm square.
 - .4 Non-rising stem, 316 stainless steel
 - .5 NSF 61 Approved epoxy coating for use in potable water applications.
 - .6 Provide centering disc.
 - .7 Flanged connections
- .2 Rating: All valves shall be suitable for bi-directional service. All valves shall be rated 1050 kPa (150 psi).
- .3 Provide flanged connection complete with new NSF61 gasket and stainless steel bolts.
- .4 Acceptable manufacturers:
 - .1 Clow
 - .2 Mueller

- .3 Approved equal.

3.0 Execution

3.1 GENERAL

- .1 Supply all necessary labour and tools for the complete installation of all valves.
- .2 Install all valves in strict accordance with the manufacturer's instructions and as specified.

3.2 INSTALLING VALVES

- .1 Field align all valves prior to installation. Notify Engineer of any discrepancies or conflicts.
- .2 Construct foundations for valves (as applicable) in accordance with Division 3 and as directed by the Contract Administrator. Temporarily support the equipment as may be required. All temporary supports shall be rigid and so constructed as not to subject the equipment to any undue stresses or cause any damage.
- .3 Properly align the valves and adjacent piping with the stem truly vertical unless otherwise shown and flange bolts carefully tightened to prevent overstressing or distortion of the valve flanges or body.

3.3 HANDLING OF VALVES

- .1 Do not place chains, cables and ropes through valve ports or attached to operating cylinders or hand wheels. Use slings either around the valve body or with bolts or rods through the flange bolt holes.
- .2 Store valves in a cool location clear of moving vehicles or other objects. Dirt and debris shall be prevented from entering the valve internals. Do not rest valves on cylinders, hand wheels or operating shafts.
- .3 Cover valves to shield them from dirt and to avoid exposing the seats to sunlight or mercury arc light.

3.4 PIPE SUPPORTS, ANCHORS AND GUIDES

- .1 Adequately support all piping, fittings and valves either from the floor on concrete piers or approved supports or from above with approved hangers.
- .2 Design and place supports so that no weight will be taken directly on the equipment, sleeve coupling or sleeves through walls, and will be satisfactory for the service intended.
- .3 Provide pipe hangers and supports in accordance with specifications and drawings.
- .4 Adequately brace pipes and fittings cast into concrete floors, walls, etc. at each joint, to resist all buoyant or lateral forces imposed on the piping during concrete pours. Replace any piping or fittings found to yield from their intended position.

- .5 Attach hangers to steelwork with approved clamps or welded tabs. Submit the proposed method of attaching pipe hangers to structural steelwork for approval.
- .6 Attach hangers to concrete with approved threaded rod sockets cast into the concrete. Cinch anchor sockets may be permitted by the Engineer in light duty service.
- .7 Isolate supports and pipes of dissimilar materials using neoprene sheet or other approved material.
- .8 Contractor to size and provide reinforcing saddles (re-pad) at all pipe support locations of similar material.
- .9 Locate anchors and guides as shown on the Drawings and install elsewhere, as required by the piping systems. Design shall be adequate so that no stress is imposed on equipment and allowable stress in piping is not exceeded. Contractor to provide pipe support Drawings for Engineer's review. Details to include location, size and type of supports.

3.5 VALVE IDENTIFICATION

- .1 In accordance with and Owner's standards.
- .2 Provide one valve chart for each Operations and Maintenance manual and one chart framed and wall mounted.
- .3 Valves in systems to be numbered consecutively.

END OF SECTION

1.0 General

1.1 SCOPE

- .1 The work specified under this Section includes, but is not limited to, the following:
 - .1 Supply, assembly, installation, calibration and satisfactory start-up of all instrumentation equipment as specified on any Instrument Data Sheets, Contract Drawings and as specified herein.
 - .2 Assembly, installation, calibration, and satisfactory start-up of instrumentation.
 - .3 Adjustments, calibration and satisfactory start-up of all instrumentation and control components associated with all valves and package systems specified under equipment packages.
 - .4 Start-up assistance as may be necessary to ensure the instrumentation systems function as specified and to train Owner's personnel on calibration procedures and operating procedures.
- .2 All work performed under this Section shall be by skilled instrumentation technicians and in strict accordance with the manufacturer's recommendations, good engineering practices and in accordance with standards established by the Instrument Society of America (ISA).

1.2 ELECTRICAL REQUIREMENTS

- .1 The work shall be carried out in accordance with the latest regulations of the Electrical Safety Code and all applicable local Codes and Regulations. In no instance, however, shall the standards established by the Drawings and Specifications be reduced by any of the Codes referred to above.

1.3 STANDARDS

- .1 All equipment shall comply with the latest edition of applicable codes and regulations including but not limited to following:
 - .1 Canadian Standards Association (CSA).
 - .2 Canadian Electrical Manufacturers Association (CEMA).
 - .3 National Electrical Manufacturers Association (NEMA).
 - .4 Electrical and Electronic Manufacturers Association of Canada (EEMAC).
- .2 Have all electrical equipment comply in every respect to the applicable rules and regulations identified above, including CSA, cUL, or the local Power Authority and be acceptable to their local inspector.
- .3 In case of any conflict between these specifications and any of the above standards, the most stringent standard will have precedence.

1.4 SHOP DRAWINGS

- .1 Submit detailed Shop Drawings in accordance with Section 01 33 00.
- .2 Catalogues, manuals or price lists are not acceptable as Shop Drawings, but properly marked-up cuts from manufacturer's catalogues may be used to supplement information contained in the Shop Drawings.
- .3 Logic Diagrams, Control Diagrams, and Instrument Loop Diagrams form part of the Shop Drawings. All components shall be tagged and listed. All logic shall be cross-referenced and documented. All symbols shall follow ISA format with all non-standard symbols identified in a key legend.

1.5 OPERATION AND MAINTENANCE DATA

- .1 Provide maintenance data to incorporate into manual specified in Section 01 78 00.

1.6 LOCATION OF EQUIPMENT

- .1 The Contractor shall alter the location of equipment if directed by the Engineer. Relocation shall be at no extra charge, provided that the distance does not exceed 3 metres and the request for relocation is made before the equipment is installed.
- .2 Equipment such as panels, instruments, switches, mounting hardware, etc. are shown in a general location on the Contract Drawings unless otherwise specified. The Contractor shall mount equipment within 200mm in plan, of the area shown or as directed by the Engineer to suit actual arrangements and interferences.
- .3 Displays, gauges, readouts and indicators unless otherwise specified shall be mounted at eye level and in accordance with good engineering practices and/or as directed by the Engineer.
- .4 Electrical and/or communication cables and conduits shall be installed as to minimize interferences with equipment and to allow easy access. Placement of conduits on flooring is not permitted without the permission of the Engineer.

1.7 IDENTIFICATION

- .1 Provide identification of all instrumentation components and systems as follows:
 - .1 Wiring with heat shrink pre-marked wire markers each end of conductor bearing the same identification tag.
 - .2 Terminal blocks using pre-marked snap-in markers.
 - .3 Relay using lamicoid nameplates with white letters 6 mm high on black background.
 - .4 Control panels using lamicoid nameplates with white letters 12 mm high on black background.
 - .5 Instruments using 316 SS engraved nameplates permanently secured.
 - .6 Switches: lamicoid nameplates with white letters 6 mm high (unless otherwise specified) on black background.
- .2 All nameplates and identification shall be installed after painting is completed.
- .3 Manufacturers' nameplates shall be clean and legible and shall NOT be painted.

1.8 QUALITY ASSURANCE

- .1 The equipment and material covered by these specifications shall be standard products of proven reliability and manufactured by manufacturers regularly engaged in the production of such equipment.

2.0 Products

2.1 INSTRUMENTATION – GENERAL

- .1 All instruments, components and systems shall be as specified herein and shall be considered as part of this Contract and unless otherwise specified, shall be supplied, assembled, installed, calibrated and started at no additional cost.
- .2 Equipment supplied shall meet all requirements of specifications and shall be a complete component of the instrumentation system. It is the intent of the specifications to define service, performance and optional accessories. Any items required for the proper operation of equipment and not included in the specification shall be provided at no additional cost.
- .3 Contractor to review equipment specifications for instrumentation specifications included in their scope of supply. No additional payment shall be made for connection of instrumentation associated with the equipment not included in the contractors tender.

2.2 RADAR LEVEL TRANSDUCER

- .1 Supply and install a liquid level radar sensor(s) for measurement of the liquid level in the wetwell.
- .2 Quantity: As indicated on Drawings
- .3 Level transmitter shall be 120V power supply, with level transducer power supply from the transmitter.
- .4 Provide local display/controller and hardwire connection into existing PLC.
- .5 Output: 4-20 mA signal
- .6 Approvals: CSA, suitable for use in intended environment.
- .7 Sensors may be required to meet Class 1 Zone 1 or Zone 2 requirements. Conduit/cable access holes to match.
- .8 Installation: Locate and install the device in a manner that will optimize performance across desired measuring range without interference from other objects or turbulent flows.
- .9 Acceptable Manufacturers, or approved equal:
 - .1 Siemens Sitrans LR110
 - .2 Vega Vegapuls C21
 - .3 Approved equal

3.0 Execution

3.1 GENERAL INSTRUCTIONS

- .1 The Contractor shall be responsible for verifying all measurements and details of the equipment and structures necessary for the proper fitting and connecting of the new work to it, before proceeding with the work. Any discrepancies between the Drawings and work shall be referred to the Engineer. The Contractor is responsible for the proper fitting of the work and shall make such changes as necessary and directed by the Engineer without additional cost to the Contract.
- .2 Instrumentation
 - .1 For each device follow the manufacturers recommended installation procedures for the process and electrical connections.
 - .2 Ensure that each device is calibrated to its specified range. Provide to the Engineer a copy of calibration reports for each device.

3.2 CO-ORDINATION OF THE WORK

- .1 The work of this Section shall be arranged in co-operation with other Divisions of this Contract in such a manner as not to interfere with other work.
- .2 Underground conduit installation shall be coordinated with underground work of the general contract.
- .3 Equipment, conduit, etc., installed but not coordinated with the work of other trades shall be relocated as directed by the Engineer without extra cost to the Owner.
- .4 All equipment, material, wiring and devices shall conform to the Canadian Electrical Code for the purpose for which they are to be used and shall bear the approval of the CSA, or have special approval of the Inspection Authority. All equipment shall be designed and manufactured in accordance with applicable CEMA and NEMA Specifications.
- .5 Install equipment and apparatus requiring maintenance, adjustment or eventual replacement with due allowance thereof.
- .6 Include in the work, requirements of manufactures shown on the Shop Drawings.
- .7 Replace work unsatisfactory to the Engineer without extra cost.
- .8 Obtain the approval of the Engineer before doing any cutting. Supporting members of any floor, wall or building structure shall be cut only in such a manner as approved by the Engineer. Arrange to have all patching work done by the trades whose work is affected. This work shall be performed in accordance with the requirements of the corresponding Division of these Specifications.
- .9 Arrange for regular inspections and a final inspection with the local electrical inspector.

3.3 CABLES AND WIRING

- .1 Unless indicated otherwise, all wiring and cables shall be installed in conduit, wireways, or in underground ducts in accordance with the electrical specifications and drawings.
- .2 Contractor is responsible for the layout of the conduit runs from the PLC to the instrumentation contact points and from contact points to device.

- .3 Contractor to provide wiring schedule referenced to the field generated I/O list.
- .4 Branch circuits may be indicated on the Drawings for all lighting, power and other outlets. Identify the circuits in the lighting panels and power panels and at points of termination with cable markers. If the wiring is installed with a different circuit, revise the As-Built Drawings to show the new circuit number which has been given to the respective lighting or other appliance circuit.
- .5 Shielded cables shall be terminated so that the shield is no more than 25 mm from the connection point. The shield shall be taped to the cable to prevent inadvertent connections.

3.4 SYSTEM TESTING AND DEMONSTRATION

- .1 The Contractor shall arrange for a qualified manufacturer's representative to inspect, operate, test and adjust equipment. Such testing shall prove the equipment to be in a suitable condition for the service intended. The above activities shall include, but not be limited to the following (as applicable).
 - .1 Soundness, i.e., without damaged parts.
 - .2 Completeness in all respects as specified.
 - .3 Correctness of setting, alignment and relative arrangement.
- .2 Demonstrate to the Engineer's satisfaction proper operation, calibration, and installation of all systems (loops, control circuits, monitoring, etc.).
- .3 At time of completion, the Contractor is to provide six copies of test results as previously described.
- .4 The Contractor will inform the Engineer in writing three weeks in advance of his intent to demonstrate completed work. With the written notice, the Contractor shall supply one copy of all Calibration Certificates. Incomplete or missing certificates will result in delay of the system demonstration.
- .5 Demonstration of loops, control circuits, etc., is to be done in a logical order (no partial checkouts will be acceptable).
- .6 All demonstrations shall be attended by the Engineer's specialist inspector over an agreed-upon period of normally two days. When the Contractor provides the three week written notice, travel arrangements will be made for the inspector.
- .7 The Contractor will make arrangements at time of system demonstration that all required test equipment (meters, scopes, calibrators, communication equipment, etc.) be present and that competent technician(s) be available on site to assist.
- .8 Any failure of individual system components will result in a complete recheck after failure is corrected.
- .9 On completion of the testing and examination, the representative shall submit three signed copies of his report showing the results of his inspection, operation, adjustment and testing. The report shall also detail the methods and adjustments made, give quantitative results where applicable, and make recommendations to ensure proper maintenance. A copy of this report shall be included with each copy of the Maintenance Manual.

3.5 TRIAL OPERATION

- .1 The Owner has the privilege of the trial operation of systems or parts thereof for the purposes of testing and learning the operational procedures.
- .2 Carry out the trial operation as specified by the Owner.
- .3 Carry out the operations only with the express knowledge and under supervision of the Contractor who shall not waive any responsibility because of trial operation.
- .4 Trial operation shall not be construed as acceptance by the Owner.

3.6 PROTECTION OF EQUIPMENT

- .1 After installation and before operation, protect equipment against weather, dust, dirt and dampness in a manner satisfactory to the Owner and in accordance with the manufacturer's instruction, if any.

END OF SECTION