



**NRC-CNRC**

Administrative Services and Property Management

## SPECIFICATIONS

**SOLICITATION #:** 17-22017

**BUILDING:** WIN  
435/445 Ellice Avenue  
Winnipeg, MB

**PROJECT:** WIN – Fire Alarm Replacement

**PROJECT #:** WIN-A1-011387-01

**Date:** May 2017



National Research  
Council Canada

Conseil national de  
recherches Canada

Canada

# **SPECIFICATION**

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National Research Council    Conseil national de recherches  
Canada                            Canada

Administrative Services        Direction des services  
& Property management       administratif et gestion  
Branch (ASPM)                    de l'immobilier (SAGI)

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## Construction Tender Form

**Project Identification**      **WIN- Remove/Replace fire alarm system**

**Tender No.:**      **17-22017**

**1.2    Business Name and Address of Tenderer**

**Name** \_\_\_\_\_

**Address** \_\_\_\_\_

**Contact Person(Print Name)** \_\_\_\_\_

**Telephone** (\_\_\_\_\_) \_\_\_\_\_      **Fax:** (\_\_\_\_\_) \_\_\_\_\_

**1.3 Offer**

I/We the Tenderer, hereby offer to Her Majesty the Queen in Right of Canada (hereinafter referred to as "Her Majesty") represented by the National Research Council Canada to perform and complete the work for the above named project in accordance with the Plans and Specifications and other Tender Documents, at the place and in the manner set out therein for the Total Tender Amount (to be expressed in numbers only) of: \$\_\_\_\_\_. \_\_\_\_\_ **in lawful money of Canada (excluding GST/HST)**

The above amount is inclusive of all applicable (\*) Federal, Provincial and Municipal taxes except that in the event of a change in any tax imposed under the Excise Act, the Excise Tax Act, the Old Age Security Act, the Customs Act, the Customs Tariff or any provincial sales tax legislation imposing a retail sales tax on the purchase of tangible personal property incorporated into Real Property, that occurs

- .1      after the date this tender was mailed or delivered, or
- .2      if this tender is revised, after the date of the last revision

the amount of this offer shall be decreased or decreased in the manner provided for in GC22 of the General Conditions of the Contract Documents.

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### **1.3.1 Offer (continued)**

(\*) For the purpose of this tender, the Goods and Services Tax (GST) is not to be considered as an applicable tax.

In the province of Quebec, the Quebec Sales Tax is not to be included in the tender amount because the Federal Government is exempt from this tax. Tenderers shall make arrangements directly with the provincial Revenue Department to recover any tax they may pay on good and services acquired in the performance of this contract. However, tenderers should include in their tender amount Quebec Sales Tax for which an Input Tax Refund is not available.

### **1.4 Acceptance and Entry into Contract**

I/We undertake, within fourteen (14) days of notification of acceptance of my/our offer, to sign a contract for the performance of the work provided I/we are notified, by the Department, of the acceptance of my/our offer within 30 days of the tender closing date.

### **1.5 Construction Time**

I/We Agree to complete the work within the time stipulated in the specification from the date of notification of acceptance of my/our offer.

### **1.6 Bid Security**

I/We herewith enclose tender security in accordance with Article 5 of the General Instruction to Tenderers.

I/We understand that if a security deposit is furnished as tender security and if I/we refuse to enter into a contract when called upon to do so, my/our security deposit shall be forfeited but the Minister may, if it is in the public interest, waive the right of Her Majesty to forfeit the security deposit.

I/We understand that if the security furnished is not in the approved form as described in Article 5 of the General Instructions to Tenderers, my/our tender is subject to disqualification.

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**1.7 Contract Security**

Within fourteen (14) days after receipt of written notification of the acceptance of my/our offer, I/we will furnish contract security in accordance with the Contract Conditions "F" of the Contract Documents.

I/We understand that the contract security referred to herein, if provided in the form of a bill of exchange, will be deposited into the Consolidated Revenue Fund of Canada.

**1.8 Appendices**

This Tender Form includes Appendix No. \_\_\_\_N/A\_\_\_\_\_.

**1.9 Addenda**

The Total Tender Amount provides for the Work described in the following Addenda:

NUMBER	DATE	NUMBER	DATE

**(Tenderers shall enter numbers and dates of addenda)**

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National Research Council Canada	Conseil national de recherches Canada
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Administrative Services & Property management Branch (ASPM)	Direction des services administratif et gestion de l'immobilier (SAGI)
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**1.10 Execution of Tender**

The Tenderer shall refer to Article 2 of the General Instructions to Tenderers.

**SIGNED, ATTESTED TO AND DELIVERED on the \_\_\_\_\_ day of  
\_\_\_\_\_ on behalf of**

\_\_\_\_\_  
(Type or print the business name of the Tenderer)

AUTHORIZED SIGNATORY (IES)

\_\_\_\_\_  
(Signature of Signatory)

\_\_\_\_\_  
(Print name & Title of Signatory)

\_\_\_\_\_  
(Signature of Signatory)

\_\_\_\_\_  
(Print name & Title of Signatory)

**SEAL**

## BUYANDSELL NOTICE

### VIC – Re-Roof

The National Research Council Canada, 435/445 Ellice Avenue , Winnipeg, MB has a requirement for a project that includes:

Remove/Replace fire alarm system to bring up to code, located at WPG01 & WPG02 of the NRC.

#### 1. GENERAL:

Questions regarding any aspect of the project are to be addressed to and answered only by the Departmental Representative (or his designate) or the Contracting Authority.

Any information received other than from the Departmental Representative (or his designate) or the Contracting Authority will be disregarded when awarding the contract and during construction.

Firms intending to submit tenders on this project should obtain tender documents through the Buyandsell.gc.ca TMA services provider. Addenda, when issued, will be available from the Buyandsell.gc.ca TMA service provider. Firms that elect to base their bids on tender documents obtained from other sources do so at their own risk and will be solely responsible to inform the tender calling authority of their intention to bid. Tender packages are not available for distribution on the actual day of tender closing.

#### 2. MANDATORY SITE VISIT:

It is mandatory that the bidder attends one of the site visits at the designated date and time.

At least one representative from proponents that intend to bid must attend.

The site visits will be held on June 14<sup>th</sup> and June 16<sup>th</sup> , 2017 at **10:00** . Meet Jose Vara at WIN Building , 435 Ellice Avenue, Winnipeg, MB. Bidders who, for any reason, cannot attend at the specified date and time will not be given an alternative appointment to view the site and their tenders, therefore, will be considered as non-responsive. **NO EXCEPTIONS WILL BE MADE.**

As proof of attendance, at the site visit, the Contracting Authority will have an Attendance Form which **MUST** be signed by the bidder's representative. It is the responsibility of all bidders to ensure they have signed the Mandatory Site Visit Attendance form prior to leaving the site. Proposals submitted by bidders who have not attended the site visit or failed to sign the Attendance Form will be deemed non-responsive.

#### 3. TENDER CLOSING DATE:

Tender closing date is July 11<sup>th</sup> , 2017 at 14:00.

#### 4. TENDER RESULTS

Following the Tender closing, the tender results will be sent by facsimile to all Contractors who submitted a tender



## 5. SECURITY REQUIREMENT FOR CANADIAN CONTRACTORS

### 5.1 MANDATORY SECURITY REQUIREMENT:

- .1 All personnel that will be involved with the project must be security screened to **RELIABILITY** status level as defined in the security policy of Canada.

### 6.0 WBCM (WORKERS COMPENSATION BOARD OF MANITOBA)

- .1 All Bidders must provide a valid WSBC certificate with their Tender or prior to contract award.

### 7.0 OFFICE OF THE PROCUREMENT OMBUDSMAN

- .1 **Dispute Resolution Services**  
The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will, on request or consent of the parties to participate in an alternative dispute resolution process to resolve any dispute between the parties respecting the interpretation or application of a term and condition of this contract and their consent to bear the cost of such process, provide to the parties a proposal for an alternative dispute resolution process to resolve their dispute. The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at [boa.opo@boa-opo.gc.ca](mailto:boa.opo@boa-opo.gc.ca).
- .2 **Contract Administration**  
The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will review a complaint filed by [*the supplier or the contractor or the name of the entity awarded this contract*] respecting administration of this contract if the requirements of Subsection 22.2(1) of the *Department of Public Works and Government Services Act* and Sections 15 and 16 of the *Procurement Ombudsman Regulations* have been met, and the interpretation and application of the terms and conditions and the scope of the work of this contract are not in dispute. The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at [boa.opo@boa-opo.gc.ca](mailto:boa.opo@boa-opo.gc.ca).
- .3 **The Office of the Procurement Ombudsman (OPO) was established by the Government of Canada to provide an independent avenue for suppliers to raise complaints regarding the award of contracts under \$25,000 for goods and under \$100,000 for services. You have the option of raising issues or concerns regarding the solicitation, or the award resulting from it, with the OPO by contacting them by telephone at 1-866-734-5169 or by e-mail at [boa.opo@boa-opo.gc.ca](mailto:boa.opo@boa-opo.gc.ca). You can also obtain more information on the OPO services available to you at their website at [www.opo-boa.gc.ca](http://www.opo-boa.gc.ca).**

The Departmental Representative or his designate for this project is: **Jose Vara**  
Telephone: **204 984-6557**

Contracting Authority for this project is: **Alain Leroux** [alain.leroux@nrc-cnrc.gc.ca](mailto:alain.leroux@nrc-cnrc.gc.ca)  
Telephone: **613 991-9980**

## INSTRUCTIONS TO BIDDERS

### Article 1 – Receipt of Tender

- 1a) Tenders must be received not later than the specified tender closing time. Tenders received after this time are invalid and shall not be considered, regardless of any reason for their late arrival.
- 1b) A letter of printed telecommunication from a bidder quoting a price shall not be considered as a valid tender unless a formal tender has been received on the prescribed Tender Form.
- 1c) Bidders may amend their tenders by letter or printed telecommunication provided that such amendments are received not later than the specified tender closing time.
- 1d) Any amendments to the tender which are transmitted by telefax must be signed and must clearly identify the tenderer.

All such amendments are to be addressed to:  
National Research Council of Canada  
Marc Bedard, Senior Contracting Officer  
Building M-22  
Montreal Road, Ottawa, Ontario  
K1A 0R6

Fax: (613) 991-3297

### Article 2 – Tender Form & Qualifications

- 1) All tenders must be submitted on the Construction Tender Form and the tender must be signed in compliance with the following requirements:
  - a) Limited Company: The full names of the Company and the name(s) and status of the authorized signing officer(s) must be printed in the space provided for that purpose. The signature(s) of the authorized officer(s) and the corporate seal must be affixed.
  - b) Partnership: The firm name and the name(s) of the person(s) signing must be printed in the space provided. One or more of the partners must sign in the presence of a witness who must also sign. An adhesive coloured seal must be affixed beside each signature.
  - c) Sole Proprietorship : The business name and the name of the sole proprietor must be printed in the space provided. The sole proprietor must sign in the presence of a witness who must also sign. An adhesive coloured seal must be affixed beside each signature.
- 2) Any alterations in the printed part of the Construction Tender Form or failure to provide the information requested therein, may render the tender invalid.
- 3) All space in the Construction Tender Form must be completed and any handwritten or typewritten corrections to the parts so completed must be initialed immediately to the side of the corrections by the person or persons executing the tender on behalf of the the tenderer.
- 4) Tenders must be based on the plans, specifications and tender documents provided.

### Article 3 - Contract

- 1) The Contractor will be required to sign a contract similar to the Standard Contract Form for Fixed Price Construction Contracts, a blank specimen of which is enclosed in the package for reference purposes.

### Article 4 – Tender Destination

- 1a) Tenders are to be submitted in sealed envelopes to:  
National Research Council Canada  
Administrative Services and Property Management Branch  
VIC Building  
5071 West Saanich Road  
Victoria, BC  
V9E 2E7

Endorsed “Tender for (insert title of work as it appears in the drawings and specifications)” and must bear the name and address of the tenderer.

- 1b) Unless otherwise specified, the only documents required to be submitted with the tender are the Tender form and the Bid Security.

### Article 5 - Security

- 1a) Bid Security is required and must be submitted in one of the following forms:
  - i) a certified cheque payable to the Receiver General for Canada and drawn on a member of the Canadian Payments Association or a local cooperative credit society that is a member of a central cooperative credit society having membership in the Canadian Payments Association; **OR**
  - ii) bonds of the Government of Canada, or bonds unconditionally guaranteed as to principal and interest by the Government of Canada; **OR**
  - iii) a bid bond.
- 1b) Regardless of the Bid Security submitted, it should never be more than \$250,000 maximum, calculated at 10% of the first \$250,000 of the tendered price, plus 5% of any amount in excess of \$250,000.
- 2a) Bid Security shall accompany each tender or, if forwarded separately from the tender, shall be provided not later than the specified tender closing time. Bid Security must be in the **ORIGINAL** form. Fax or photocopies and **NOT** acceptable. **FAILURE TO PROVIDE THE REQUIRED BID SECURITY SHALL INVALIDATE THE TENDER.**
- 2b) If the tender is not accepted, the Bid Security submitted pursuant to Article 8 shall be returned to the tenderer.
- 3a) The successful tenderer is required to provide security within 14 days of receiving notice of tender acceptance. The tenderer must furnish **EITHER**:
  - i) a Security Deposit as described in 1(b) above together with a Labour and Material Payment Bond in the amount of at least 50% of the amount payable under the contract, **OR**

- ii) a Performance Bond and a Labour and Material Payment Bond – each in the amount of 50% of the amount payable under the contract.
- 3b) Should it not be possible to obtain a Labour Material Payment Bond as required under 3(a) above, on making application thereof to at least two acceptable Bonding Companies, an additional Security Deposit of a straight 10% of the amount payable under the contract must be furnished.
- 3c) Where a tender has been accompanied by a Security Deposit, as described in 1(b) above, the amount of the Security Deposit required under 3(a) above may be reduced by the amount of the Security Deposit which accompanied the tender.
- 3d) Bonds must be in an approved form and from the companies whose

bonds are acceptable to the Government of Canada. Samples of the approved form of Bid Bond, Performance Bond and Labour and Material Payment Bond and a list of acceptable Bonding Companies may be obtained from the Contracting Officer, National Research Council, Building M-22, Montreal Road, Ottawa, Ontario, K1A 0R6.

#### Article 6 – Interest On Security Deposits

- 1) Tenderers are notified that they must make their own arrangements with their bankers as to the interest, if any, on the amount of the certified cheque accompanying their tender. The Council will not pay interest on said cheque pending the awarding of the contract nor be responsible for the payments of interest under any arrangement made by the tenderers.

#### Article 7 – Sales Tax

- 1) The amount of the tender shall include all taxes as levied under the Excise Act, the Excise Tax Act, the Old Age Security Act, the Customs Act or the Customs Tariff, in force or applicable at the time.
- 2) In Quebec, the Provincial Sales Tax should not be included in the Tender Price as the Federal Government is exempt. Tenderers should contact the Provincial Revenue Minister to recover all taxes paid for goods and services rendered under this contract.

Tenderers must include in their Tender Price the amount of Provincial Sales Tax for which the exemption does not apply.

#### Article 8 – Examination of Site

- 1) All parties tendering shall examine the sites of the proposed work before sending in their tender and make themselves thoroughly acquainted with the same and obtain for themselves any and all information that may be necessary for the proper carrying out of the Contract. No after claim will be allowed or entertained for any work or material that may be requisite and necessary for the proper execution and completion of this Contract with the exception of that provided for under GC 35 in the General Conditions of the General Specification.

Article 9 – Discrepancies, Omissions, Etc.

- 1a) Bidders finding discrepancies in, or omissions from, drawings, specifications or other documents, or having any doubt as to the meaning or intent of any part thereof, should at once notify the Engineer who will send written instructions or explanation to all bidders.
- 1b) Neither the Engineer nor the Council will be responsible for oral instructions.
- 1c) Addenda or corrections issued during the time of the bidding shall be covered in the proposal. However, the contract supersedes all communications, negotiations and agreements, either written or oral, relating to the work and made prior to the date of the contract.

Article 10 – No additional Payments for Increased Costs

- 1) The only other adjustments in the contract price allowed are those specified in the General Conditions of the General Specification. The contract price will not be amended for change in freight rates, exchange rates, wage rates or cost of materials, plant or services.

Article 11 – Awards

- 1a) The Council reserves the power and right to reject tenders received from parties who cannot show a reasonable acquaintance with and preparation for the proper performance of the class of work herein specified and shown on plans. Evidence of such competence must be furnished by the tenderers if required to do so.
- 1b) A tenderer may be required to furnish to the Contracting Office, National Research Council of Canada, Building M-22, 1200 Montreal Road, Ottawa, Ontario, K1A 0R6, Canada, unsigned copies of the insurance requirements as covered by the Insurance Conditions of the General Specification.
- 1c) The Council does not bind itself to accept the lowest or any tender.

Article 12 – Harmonized Sales Tax

- 1) The Harmonized Sales Tax (HST) which is now in effect shall be considered an applicable tax for the purpose of this tender. However, the bidder shall NOT include any amount in the bid price for said HST. The successful contractor will indicate on each application for payment as a separate amount the appropriate HST 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 in addition to the amount certified for payment under the Contract and will therefore not affect the Contract Price. The Contractor agrees to remit any HST collected or due to Revenue Canada

## **Acceptable Bonding Companies**

Published September 2010

The following is a list of insurance companies whose bonds may be accepted as security by the government.

### **1. Canadian Companies**

- ACE INA Insurance
- Allstate Insurance Company of Canada
- Ascentus Insurance Ltd. (Surety only)
- Aviva Insurance Company of Canada
- AXA Insurance (Canada)
- AXA Pacific Insurance Company
- Canadian Northern Shield Insurance Company
- Certas Direct Insurance Company (Surety only)
- Chartis Insurance Company of Canada (formerly AIG Commercial Insurance Company of Canada)
- Chubb Insurance Company of Canada
- Commonwealth Insurance Company
- Co-operators General Insurance Company
- CUMIS General Insurance Company
- The Dominion of Canada General Insurance Company
- Echelon General Insurance Company (Surety only)
- Economical Mutual Insurance Company
- Elite Insurance Company
- Everest Insurance Company of Canada
- Federated Insurance Company of Canada
- Federation Insurance Company of Canada
- Gore Mutual Insurance Company
- Grain Insurance and Guarantee Company
- The Guarantee Company of North America
- Industrial Alliance Pacific General Insurance Corporation
- Intact Insurance Company
- Jevco Insurance Company (Surety only)
- Lombard General Insurance Company of Canada
- Lombard Insurance Company
- Markel Insurance Company of Canada
- The Missisquoi Insurance Company
- The Nordic Insurance Company of Canada
- The North Waterloo Farmers Mutual Insurance Company (Fidelity only)
- Novex Insurance Company (Fidelity only)
- The Personal Insurance Company
- Pilot Insurance Company
- Quebec Assurance Company
- Royal & Sun Alliance Insurance Company of Canada
- Saskatchewan Mutual Insurance Company
- Scottish & York Insurance Co. Limited
- The Sovereign General Insurance Company
- TD General Insurance Company
- Temple Insurance Company

- Traders General Insurance Company
- Travelers Guarantee Company of Canada
- Trisura Guarantee Insurance Company
- The Wawanesa Mutual Insurance Company
- Waterloo Insurance Company
- Western Assurance Company
- Western Surety Company

## 2. Provincial Companies

Surety bonds issued by the following companies may be accepted provided that the contract of suretyship was executed in a province in which the company is licensed to do business as indicated in brackets.

- AXA Boreal Insurance Company (P.E.I., N.B., Que., Ont., Man., B.C.)
- AXA Boreal Insurance Company (P.E.I., N.B., Que., Ont., Man., B.C.)
- ALPHA, Compagnie d'Assurances Inc. (Que.)
- Canada West Insurance Company (Ont., Man., Sask, Alta., B.C., N.W.T.) (Surety only)
- The Canadian Union Assurance Company (Que.)
- La Capitale General Insurance Inc. (Nfld. & Lab., N.S., P.E.I., Que.(Surety only), Man., Sask., Alta., B.C., Nun., N.W.T., Yuk.)
- Coachman Insurance Company (Ont.)
- Continental Casualty Company (Nfld. & Lab., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C., Nun., N.W.T., Yuk.)
- GCAN Insurance Company (Nfld. & Lab., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C., Nun., N.W.T., Yuk.)
- The Insurance Company of Prince Edward Island (N.S., P.E.I., N.B.)
- Kingsway General Insurance Company (N.S., N.B., Que., Ont., Man., Sask., Alta., and B.C.)
- Liberty Mutual Insurance Company (Nfld. & Lab., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C., Nun., N.W.T., Yuk.)
- Manitoba Public Insurance Corporation (Man.)
- Norgroupe Assurance Générales Inc.
- Orleans General Insurance Company (N.B., Que., Ont.)
- Saskatchewan Government Insurance Office (Sask.)
- SGI CANADA Insurance Services Ltd. (Ont., Man., Sask., Alta.)
- L'Unique General Insurance Inc. (Nfld. & Lab., N.S., P.E.I., N.B., Que.(Surety only), Ont.(Surety only), Man., Sask., Alta., B.C.(Surety only), Nun., N.W.T., Yuk.)

## 3. Foreign Companies

- Aspen Insurance UK Limited
- Compagnie Française d'Assurance pour le Commerce Extérieur (Fidelity only)
- Eagle Star Insurance Company Limited
- Ecclesiastical Insurance Office Public Limited Company (Fidelity only)
- Lloyd's Underwriters
- Mitsui Sumitomo Insurance Company, Limited
- NIPPONKOA Insurance Company, Limited
- Sompo Japan Insurance Inc.
- Tokio Marine & Nichido Fire Insurance Co., Ltd.
- XL Insurance Company Limited (Surety only)
- Zurich Insurance Company Ltd

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## Articles of Agreement

These Articles of Agreement made in duplicate this      day of      .

Between

**Her Majesty the Queen**, in right of Canada (referred to in the contract documents as “ Her Majesty”) represented by the National Research Council Canada (referred to in the contract documents as the “Council”)

and

(referred to in the contract documents as the “Contractor”)

Witness that in consideration for the mutual promises and obligations contained in the contract, Her Majesty and the Contractor covenant and agree as follows:

A1      Contract Documents

**(23/01/2002)**

- 1.1      Subject to A1.4 and A1.5, the documents forming the contract between Her Majesty and the Contractor, referred to herein as the contract documents, are
  - 1.1.1    these Articles of Agreement,
  - 1.1.2    the document attached hereto, marked “A” and entitled “Plans and Specifications”, referred to herein as the Plans and Specifications,
  - 1.1.3    the document attached hereto, marked “B” and entitled “Terms of Payment”, referred to herein as the Terms of Payment,
  - 1.1.4    the document attached hereto, marked “C” and entitled “General Conditions”, referred to herein as the General Conditions,
  - 1.1.5    the document attached hereto, marked “D” and entitled “Labour Conditions”, referred to herein as the Labour Conditions,
  - 1.1.6    the document attached hereto, marked “E” and entitled “Insurance Conditions”, referred to herein as the Insurance Conditions,
  - 1.1.7    the document attached hereto, marked “F” and entitled “Contract Security Conditions”, referred to herein as the Contract Security Conditions, and
  - 1.1.8    any amendment or variation of the contract documents that is made in accordance with the General Conditions.
  - 1.1.9    the document entitled Fair Wage Schedules for Federal Construction Contracts referred to herein as Fair Wage Schedules
  - 1.1.10



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## Articles of Agreement

The Council hereby designates \_\_\_\_\_ of \_\_\_\_\_ of the Government of Canada as the Engineer for the purposes of the contract, and for all purposes of or incidental to the contract, the Engineer's address shall be deemed to be:

### 1.2 In the contract

1.3.1 "Fixed Price Arrangement" means that part of the contract that prescribes a lump sum as payment for performance of the work to which it relates; and

1.3.2 "Unit Price Arrangement" means that part of the contract that prescribes the product of a price multiplied by a number of units of measurement of a class as payment for performance of the work to which it relates.

1.3 Any of the provisions of the contract that are expressly stipulated to be applicable only to a Unit Price Arrangement are not applicable to any part of the work to which a Fixed Price Arrangement is applicable.

1.4 Any of the provisions of the contract that are expressly stipulated to be applicable only to a Fixed Price Arrangement are not applicable to any part of the work to which a Unit Price Arrangement is applicable.

### A2 Date of Completion of Work and Description of Work

**(23/01/2002)**

2.1 The contractor shall, between the date of these Articles of Agreement and the \_\_\_\_\_, \_\_\_\_\_, in the careful and workmanlike manner, diligently perform and complete the following work:

which work is more particularly described in the Plans and Specifications.

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## Articles of Agreement

### A3 Contract Amount

**(23/01/2002)**

- 3.1 Subject to any increase, decrease, deduction, reduction or set-off that may be made under the Contract, Her Majesty shall pay the Contractor at the times and in the manner that is set out or referred to in the Terms of Payment
- 3.1.1 the sum of \_\_\_\_\_ (GST/HST extra), in consideration for the performance of the work or the part thereof that is subject to Fixed Price Arrangement, and
- 3.1.2 a sum that is equal to the aggregate of the products of the number of units of Measurement of each class of labour, plant and material that is set out in a Final Certificate of Measurement referred to in GC44.8 multiplied in each case by the appropriate unit price that is set out in the Unit Price Table in consideration for the performance of the work or the part thereof that is subject to a Unit Price Arrangement.
- 3.2 For the information and guidance of the Contractor and the persons administering the contract on behalf of Her Majesty, but not so as to constitute a warranty, representation or undertaking of any nature by either party, it is estimated that the total amount payable by Her Majesty to the Contractor for the part of the work to which a Unit Price Arrangement is applicable will be approximately \$N/A
- 3.3 A3.1.1 is applicable only to a Fixed Price Arrangement.
- 3.4 A3.1.2 and A3.2 applicable only to a Unit Price Arrangement.

### A4 Contractor's Address

**(23/01/2002)**

- 4.1 For all purposes of or incidental to the contract, the Contractor's address shall be deemed to be:

**Articles of Agreement**

A5 Unit Price Table

(23/01/2002)

5.1 Her Majesty and the Contractor agree that the following table is the Unit Price Table for the purposes of the contract.

<b>Column 1</b> Item	<b>Column 2</b> Class of Labour Plant  Or Material	<b>Column 3</b> Unit of Measurement	<b>Column 4</b> Estimated Total Quantity	<b>Column 5</b> Price per Unit	<b>Column 6</b> Estimated Total Price
		N/A			

5.2 The Unit Price Table that is set out in A5.1 designates the part of the work to which a Unit Price Arrangement is applicable.

5.3 The part of the work that is not designated in the Unit Price Table referred to in A5.2 is the part of the work to which a Fixed Price Arrangement is applicable.

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**Articles of Agreement**

Signed on behalf of Her Majesty by

\_\_\_\_\_

as Senior Contracting Officer

and \_\_\_\_\_

as \_\_\_\_\_

of the **National Research Council Canada**

on the \_\_\_\_\_

day of \_\_\_\_\_

Signed, sealed and delivered by

\_\_\_\_\_

as \_\_\_\_\_ and  
Position

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## GENERAL INSTRUCTIONS

### 1. NRC Project Manager

- 1.1. The National Research Council's (hereinafter referred to as NRC) Project Manager in conjunction with the work under this contract is the Site Operations Supervisor or the individual designated as NRC's Representative for this project.

### 2. Scope of Work

- 2.1. Work under this contract covers installation of the Fire Alarm Systems at the National Research Council, 435 Ellice Ave., and 445 Ellice Ave, Winnipeg, MB.

### 3. Schedule

#### 3.1. Complete all work before March 31/2018

- 3.2. The contractor shall prepare a detailed schedule, fixing the date for commencement and completion of the various parts of the work and update the said schedule. Such schedule shall be made available to the Project Manager not later than two weeks after the award of the contract and prior to commencement of any work on site.
- 3.3. Notify Project Manager in writing of any changes in the schedule.
- 3.4. Five (5) days before the scheduled completion date, arrange to do an interim inspection with the Project Manager.

### 4. Project Meetings

- 4.1. Hold regular project meetings at times and locations approved by the Project Manager.
- 4.2. Notify all parties concerned of meetings to ensure proper coordination of work.
- 4.3. Consultant will set times for project meetings and assume responsibility for recording and distributing minutes.



## 5. Minimum Standards

- 5.1. The work shall be executed in accordance with all applicable codes and standards, in particular the National Building Code, the Canadian Electrical Code, as well as conform with any requirements of local, Provincial and Federal authorities having jurisdiction. Conform to or exceed minimum acceptable standards of the various applicable federal, provincial and municipal codes.
- 5.2. Work to conform to referenced standards and codes as reaffirmed or revised to date of specification.

## 6. Working Hours

- 6.1. Normal working hours on the NRC property are from 8:00 a.m. until 4:30 p.m., Monday to Friday inclusive, except statutory holidays.
- 6.2. At all other times, special written permission is required for access to the building site.
- 6.3. Before scheduling any work outside normal working hours, obtain permission from the Project Manager to perform the specific tasks.

## 7. Inspections

- 7.1. The work is subject to inspections by NRC and any qualified individual that NRC's Project Manager may engage for this purpose. This does not relieve the Contractor from performing his own inspections and quality assurance, or from arranging any inspections mandated by authorities having jurisdiction.

## 8. Safety

- 8.1. The Contractor shall comply with all safety requirements and lawful obligations stipulated by NRC, National and Provincial laws and codes, and prescribed by the authorities having jurisdiction with respect to the work and federal facilities.
- 8.2. The Contractor shall ensure that all equipment and tools used to perform the work are safe and in a state of good repair. NRC reserves the right to order equipment and tools judged to be unsafe, not suitable or defective, taken out of service. The Contractor is responsible to supply suitable replacement without delay and with no entitlement to extra compensation.



- 8.3. The Contractor is hereby made aware that due to the nature of the research work performed at NRC, potential chemical, biological and physical hazards exist in the building. It is therefore of importance that the Contractor's staff complies with related instructions from NRC and Security staff. Appropriate signage must be read and complied with. Instructions and announcements in day-to-day and emergency situations must be promptly responded to. Contractor staff shall familiarize itself with emergency evacuation plans and orders displayed on all floors.
- 8.4. NRC will endeavour not to expose the Contractor's staff to direct personal harm, however the Contractor's staff must exercise due diligence and extra caution in areas with potential hazards, which is typically indicated by appropriate signage and subject to controlled access.
- 8.5. In the event of ringing fire alarm bells or an appropriate announcement on the PA system, the Contractor's staff shall evacuate the building immediately via designated emergency exit routes. The Contractor's staff shall then proceed to the waiting area south of the main entrance near Ellice Avenue. The Contractor's site supervisor shall report the evacuation status of the Contractor's staff to the NRC emergency personnel near the building main entrance.
- 8.6. The Contractor shall protect building occupants and the public from being endangered by tools, equipment and material, electric shock, etc. Signs shall be installed indicating overhead work in progress. Also, the area under the immediate work area shall be roped off where appropriate.

## 9. Sub-Trades

- 9.1. Submit no later than 72 hours after contract award, a complete list of sub trades for the Project Manager's review.

## 10. Personnel Security and Identification

- 10.1. The Contractor shall fully comply with NRC security requirements and rules that are in effect in the building. This includes mandatory signing in and out at the Security Kiosk. All such persons must wear and keep visible identification badges as issued by the NRC security.
- 10.2. Certain areas of the building have restricted access for security and/or safety reasons. Security staff will unlock access doors and hatches as necessary to provide access to the Contractor's staff.





- 10.3. The Contractor and his staff must not reveal anything which comes to their attention during the performance of their work to any other party with respect to internal NRC operations, unless such information is general public knowledge.
- 10.4. The Contractor's staff working in the building will be subject to a Reliability Security Screening prior to the commencement of the work. This will include finger printing by the RCMP, credit check, and criminal record searches. The security screening will be conducted by the NRC security branch. The Contractor shall cooperate with NRC as necessary to perform such checks. NRC reserves the right to deny access to the building to any person that is not deemed acceptable as a security risk. The Contractor shall replace such persons immediately with acceptable substitutes.

## 11. Storage

- 11.1. All material and tools must be brought into or removed from the building via the Loading Dock.
- 11.2. NRC, at its discretion, may provide limited storage space, but will not assume any liability for the Contractor's material and tools.

## 12. Use of Elevators

- 12.1. The Contractor will be permitted the use of the freight elevator, if necessary to bring tools and material to the floors. The Contractor shall be responsible for the safe operation of the freight elevator.

## 13. Light, Heat, Power and Water

- 13.1. NRC will supply all heat, light, power and hot and cold water reasonably required for the work.

## 14. Clean Up, Waste and Debris

- 14.1. The Contractor shall clean up the work site on an ongoing basis to ensure site is free from debris and waste materials.

**Part 1 General****1.1 SCOPE OF WORK**

- .1 All drawings and all sections of the specifications shall apply to and form an integral part of this section.
- .2 All electrical systems shall be fully tested and operational in accordance with applicable codes and bylaws.
- .3 Provide all labour and materials necessary for complete and operating systems as indicated on the drawings and specified herein. Any work and material, even if not shown or specified, which is obviously necessary or reasonably implied to complete the work shall be provided as if it was both shown and specified.
- .4 All materials, tools, appliances, scaffolding, apparatus and labour necessary for the execution, erection and completion of specified systems shall be furnished.
- .5 Contractor shall comply with all Department of Labour, Workplace and Health requirements and Canada Labour Code Part II at all times.
- .6 All Contractors shall have a valid Contractors license to operate in the City of Winnipeg.
- .7 Electrical Contractor shall maintain the appropriate ratio of Journeymen Electricians & Apprentices required by Provincial Codes. Only qualified workmen shall be employed on this contract. Supervision shall be by Journeymen Electricians and work carried out by Journeymen and/or registered apprentices only.

**1.2 INSTALLATION RESPONSIBILITY**

- .1 The Contractor shall complete all electrical connections to equipment and accessories pertaining to this Contract and leave all in satisfactory condition.
- .2 The Contractor shall ascertain and obtain information from all other sub-trades as to the extent and details of any additional electrical work to complete all systems served with electrical power or controlled electrically and, where necessary, allow in his tender for such work. No extra claim will be accepted for work on such systems whether they are; as specified in architectural, structural, landscape or mechanical plans and specifications; or proposed and accepted as alternate systems.
- .3 Control system wiring may be performed by a Controls Contractor; all line voltage control wiring is this Contractor's responsibility. Contractor shall work in close cooperation with the Controls Contractor and shall allow for any part of controls work in base tender. Refer to Mechanical Specification. This shall include but not limited to 120V power circuits, interconnection wiring, conduit, junction boxes, cover plates and device back boxes.
- .4 Any electrical and communication work carried out on behalf of, or by other contractors shall be in accordance with the Canadian Electrical Code and applicable clauses of this specification.

- .5 It shall be the Contractor's responsibility to ensure that all trade contractors and suppliers of electrical equipment observe the applicable clauses of the electrical specifications.
- .6 In case of differences between trade contractors regarding extent of work responsibilities, such matters shall be referred to the Consultant through the Contractor. Should any discrepancy between the specification and drawings leave the Contractor in doubt as to the true intent and meaning, a ruling shall be obtained from the Consultant before the tender is submitted. If this is not done it will be the contractor's responsibility to ensure that the more expensive alternate has been included.
- .7 Before tendering, the Contractor shall visit the site and report to the Consultant any condition which may prevent him from performing his contract as specified. No extra will be allowed if this procedure is not followed.
- .8 Contractor shall make a reasonable allowance in his tender for rerouting or making good any conduit or equipment exposed or rendered useless during the course of demolition or construction.
- .9 The drawings show approximate locations of outlets and apparatus. This right is reserved to make changes in location as may be necessary to center lights or meet the exigencies of construction in any way. No extra will be allowed for such changes unless the distance moved exceeds 3000mm.
- .10 Should any work or material be needed which is not specified or shown on the drawings and is nevertheless necessary for properly carrying out the obvious intent, such work or materials shall be provided without additional cost.
- .11 Contractor shall complete installation in accordance with CSA C22.1 except where specified otherwise.
- .12 Contractor shall complete overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

### 1.3 DEFINITIONS

- .1 The following are definitions of terms and expressions used in the specification:

**CONSULTANT** – means person, firm or corporation identified as such in Agreement, and is an Architect or Engineer licensed to practice in Province of Place of Work, is referred to throughout Contract Documents as if singular in number and masculine in gender, and has been appointed by Owner to act for Owner in a professional capacity in relation to Work.

**INSPECTION AUTHORITY** – means agent of any authority having jurisdiction over construction standards associated with any part of electrical work on site.

**SUPPLY AUTHORITY** – means electrical power utility company responsible for delivery of electrical power to project (Manitoba Hydro).

**ELECTRICAL CODE** – means Canadian Electrical Code or Local Code in force at Project location.

**INDICATE** – means as shown on contract drawings or noted in Contract Documents.

**TYPE TESTED** – means that each piece of equipment produced by manufacturer is not fully tested. An original piece with similar arrangement has been fully tested and results of that test are available.

**PROVIDE** – means to supply, install and leave in working order all materials and necessary wiring, supports, access panels, etc., as necessary for equipment indicated.

**OWNER** – means NRC.

**CONCEALED** – means hidden from normal sight in furred spaces, shafts, ceiling spaces, walls and partitions;

**EXPOSED** – means work normally visible, including work in equipment rooms, tunnels, and similar spaces;

**FINISHED** – means when in description of any area or part of an area or a product which receives a finish such as paint, or in case of a product may be factory finished;

**INSTALL** (and tenses of "install") – means secure in position, connect complete, test, adjust and verify;

**SUPPLY** – means to procure, arrange for delivery to site, distribute to floors, inspect, accept delivery and administer supply of manufacturer's products and/or systems, and includes manufacturer's supply of any special cables, standard on site testing, initial start-up, programming, basic commissioning, warranties and assistance to Contractor;

**DELETE** or **REMOVE** (and tenses of "delete" or "remove") – means to disconnect, make safe, remove including any back box and exposed conduits, patch and repair/finish surfaces to match adjoining similar construction, include for associated re-programming of systems and/or change of documentation identifications to suit deletions, and properly dispose of deleted products off site unless otherwise instructed by Consultant;

**BAS** – means building automation system; "BMS" – means building management system, "FMS" – means facility management system; and "DDC" means direct digital controls; references to "BAS", "BMS", "FMS" and "DDC" generally mean same;

**ELECTRICAL DIVISIONS** – refers to Divisions 26, 27, 28 and other Divisions as specifically noted, and which work as defined in Specifications and /or on drawings is responsibility of Electrical Contractor, unless otherwise noted;

**MECHANICAL DIVISIONS** – refers to Divisions 20, 21, 22, 23, 25 and other Divisions as specifically noted, and which work as defined in Specifications and /or on drawings is responsibility of Mechanical Contractor, unless otherwise noted;

## 1.4 DESIGN REQUIREMENTS

- .1 All electrical design drawings, details and specifications are diagrammatic, and unless specifically noted by figured dimensions, indicate the general arrangement of receptacles, light fixtures, switches, risers, panels, etc. Any information involving accurate dimensions, shall be obtained from detailed dimensioned drawings or by actual measurements at the building. If doubt exists as to the final location, the Contractor shall contact the Architect or Consultant for clarification prior to installation. The location of switches, receptacles, outlets, etc., shall be coordinated with built-in units, owner appliances and equipment, mechanical equipment, etc., as shown on the architectural and mechanical drawings and/or as existing.

- .2 Where space is indicated for future equipment, leave such space clear and install feeders and equipment pertaining to this contract in such a way that future equipment can be easily installed.
- .3 Contractor shall coordinate locations of lighting fixtures with sprinklers, mechanical ducts, diffusers, beams and other architectural, structural and mechanical items. Any relocation required shall be performed at no cost to the owner.
- .4 Operating voltages: to CAN3-C235.
- .5 Language operating requirements: provide identification nameplates and labels for control items in English.

## 1.5 PLANS

- .1 The Contractor shall familiarize them self with the plans which show the approximate locations of outlets and apparatus. The right is reserved to make such changes in location as may be necessary to meet contingencies of construction. No extras will be allowed for such changes to any piece of electrical equipment, outlets, etc., unless the distance exceeds 3000mm.
- .2 Should a discrepancy appear between plans, specifications, or the actual conditions encountered on the site, which leaves the Contractor in doubt as to the true intention and meaning of the plans and specifications, a ruling shall be obtained in writing from the Consultant which will be final.
- .3 Do not use Contract Drawing measurements for prefabrication and layout of raceways, conduits, ducts, bus ducts, luminaires, and other such work. Locations and routing are to be generally in accordance with Contract Drawings, however, prepare layout drawings for such work. Use established bench marks for both horizontal and vertical measurements. Confirm inverts, coordinate with and make allowances for work of other trades. Accurately layout work, and be entirely responsible for work installed in accordance with layout drawings. Where any invert, grade, or size is at variance with Contract Drawings, notify Consultant prior to proceeding with work.
- .4 Prepare plan and interference drawings of work for submittal to General Contractor, who will then arrange for preparation of detailed section drawings of ceiling spaces of corridors and any other congested areas. Sections are to be cross referenced with Contractor's plan drawings so that trades may make use of section drawings. Section drawings indicate lateral and elevation dimensions of major services within ceiling space. Lateral dimensions are to be from grid lines and elevations from top of floor slab. Obtain from Consultant, engineering drawings for this use. Prints and/or disks of Contractors' interference drawings are to be distributed among other Trade Contractors and General Contractor. Submit interference drawings to Consultant for review.
- .5 Where drawings indicate that acoustic tile ceiling is being suspended below existing plaster ceiling, coordinate with General Trades Contractor design of framework used to support suspended ceiling, lighting, diffusers, and other Electrical Divisions components that are

mounted within or through ceiling. Do not mount devices to suspended ceiling. Secure and mount to ceiling slab above. Seal ceiling openings to maintain required fire rating.

## **1.6 CONFLICT OF TRADES**

- .1 Contractor shall coordinate with all other sub-trades involved to confirm the locations of the various outlets and equipment and shall cooperate fully to ensure that no conflict arises during the installation. In case of any difference of opinion, the matter shall be referred to the Consultant for final decision.
- .2 Unless otherwise directed by Consultant, Mechanical Contractor is to determine final locations of major work within ceiling spaces.

## **1.7 COORDINATION WITH OTHER TRADES**

- .1 Contractor is responsible for coordinating with other divisions specifications for possible restrictions on usage and placement of electrical equipment, i.e. conduits in slab, panels in walls, etc.

## **1.8 QUALITY ASSURANCE**

- .1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.
- .2 Qualifications: electrical Work to be carried out by qualified, licensed electricians or apprentices in accordance with authorities having jurisdiction as per the conditions of Provincial Acts respecting manpower vocational training and qualification.
  - .1 Employees registered in provincial apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.
  - .2 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.

## **1.9 SAFETY PRECAUTIONS**

- .1 The Contractor shall strictly adhere to all safety rules and regulations pertaining to electrical servicing of all sub-trades during construction. All safety precautions as outlined in General Conditions shall be observed.

## **1.10 WORKMANSHIP**

- .1 The complete installation shall be carried out in a neat and workmanlike manner to the satisfaction of the Consultant.
- .2 Only qualified workmen shall be employed on this contract. Supervision shall be by Journeymen Electricians and work carried out by Journeymen and/or registered apprentices only.

**1.11 SUBMITTALS**

- .1 In addition to the requirement set out below, the Contractor shall review and thoroughly understand the requirements for submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 The Contractor shall take the necessary steps to insure that shop drawings for equipment with long lead-in or delivery time are expedited for review and approval so as to avoid impacting the construction schedule. The Consultant shall take such reasonable steps to insure the review process for these items is performed promptly. The Consultant agrees to make time available to meet with suppliers and the Contractor to expedite the shop drawing process.
- .3 Prior to manufacturing any item required for this project, the Contractor shall submit detailed shop drawings of the item.
- .4 Contractor shall allow a minimum of ten (10) working days for shop drawing review by the Consultant and time shall be incorporated in construction schedule so no delays occur due to late submission of shop drawings. Facsimile transmission of shop drawings will **NOT BE ACCEPTED**. Late submissions of shop drawings will be sufficient reason for stoppage of construction pending review, or removal and replacement of any unsatisfactory item at the Contractor's expense.
- .5 The Contractors shall review the shop drawings before they are submitted to the Consultant. The shop drawings shall be marked to show when this review was done. This review shall determine if the items are as specified or previously approved. Each shop drawing shall clearly indicate which model number or part number is being offered, wiring diagrams, installation details of equipment, and all components, accessories or options. The shop drawings will be returned to the Prime Consultant/Architect with this Consultants review stamp and/or appropriate comments.
- .6 Any shop drawing stamped "revised & resubmit" shall be corrected and resubmitted so as not to delay construction.
- .7 Any item rejected must have new shop drawings reviewed and submitted before being manufactured. Any item installed without having shop drawings reviewed may be rejected and may have to be replaced with no cost to Owner.
- .8 Corrections or comments made on the shop drawings by the Consultant during this review do not relieve Contractor from compliance with requirements of the drawings and specifications. This review is only for the general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his or her work with that of all other trades and performing all work in a safe and satisfactory manner.
- .9 Shop drawings shall be provided for all system components.
- .10 Approved shop drawings, subject to meeting specifications, shall be included in the Operation and Maintenance Manuals specified elsewhere. Only shop drawings stamped "Reviewed" or "Furnish as Corrected" by the Consultant are acceptable for inclusion in these manuals.

- .11 The Contractor shall ensure that shop drawings for electrical equipment supplied and installed by any and all trades are reviewed by the Consultant.
- .12 Submit for review fire alarm riser diagram, plan and zoning of building under plexiglass at the fire alarm control panel and annunciator. Minimum of 4 locations.

### 1.12 SUBSTITUTIONS

- .1 Unless otherwise noted on the plans or specifications, substitutions may be allowed by the Consultant, when requested by the Contractor or by equipment suppliers, for items specified by manufacturer and catalogue number.
- .2 Requests for review of such substitutions shall be submitted at least seven working days prior to the tender close date. Facsimile transmission of substitution drawings and/or specifications will **NOT BE ACCEPTED**.
- .3 Descriptive catalogue sheets accompanying the approval application which may show several items of varying specifications shall be conspicuously marked in such a manner that the offered substitute item may easily be recognized for comparison.
- .4 Proposed substitutions must be at least of equal quality to that of the specified item. The manufacturer's specification of the item shall apply for comparison if no other clause of this specification applies. The decision of the Consultant to accept or reject will be final.
- .5 Off-the-shelf items which are specified by description only, without any manufacturer, model type or catalogue number, do not require approval prior to the tender date. However, Contractor shall submit to the Consultant a request for review of such items prior to their use, in sufficient time to permit rejection if unsatisfactory.
- .6 All additional expenses incurred as a result of substitution will be the direct responsibility of the Contractor.

### 1.13 EQUIPMENT LOADS

- .1 Supply equipment loads (self-weight, operating weight, housekeeping pad, inertia pads, etc.) to Consultant, via shop drawing submissions, prior to construction.
- .2 When choice of specific equipment is made by Contractor, actual weight, location and method of support of equipment may differ from those initially given to Consultants and thus from those assumed for design. Consequently, it is necessary to back-check equipment loads, location, and supports.
- .3 Where supporting structure consists of structural steel framing, it is imperative that equipment loads, location, and method of support be confirmed prior to fabrication of structural steel. Be responsible for confirming locations of equipment with Consultant prior to construction.



**1.14 EQUIPMENT SUPPLIED BY OWNER**

- .1 On date of delivery, the Contractor shall sign for all items which are being supplied by the Owner and will be responsible for any loss or damage thereafter until the work is completed and accepted by the Owner. Sign delivery slips "Subject to Inspection". Keep all delivery slips.
- .2 Items supplied and delivered to the site by the Owner shall be examined by the Contractor, and any damage shall be reported immediately to the Owner who will enter a claim directly to the supplier and transportation company.
- .3 Belated damage claims on any equipment shall not be regarded as transport damage and will become the responsibility of the Contractor for repair or replacement.
- .4 All repairs or replacements shall be carried out by a Contractor to the satisfaction of the Owner.
- .5 Contractor is responsible for safe storage of all Owner supplied equipment

**1.15 APPROVAL AND CERTIFICATION**

- .1 Any electrical material and/or equipment supplied by any Contractor or subcontractor for installation must bear evidence of certification by authorized organization (e.g. CSA) or special certification acceptable to the Authority Having Jurisdiction.
- .2 Any material and/or equipment not complying with this requirement and found on the job site will be subject to rejection and replacement with approved equipment at no additional cost.
- .3 Contractor, upon receipt of equipment purchased by the Owner for installation on this project, shall examine it for compliance with the above requirements. Report any non-approved equipment to the Consultant for action. Such equipment shall be returned to its packing crate until instructions are received from the Consultant, unless otherwise directed in writing by the Owner.

**1.16 OPENINGS**

- .1 Supply opening sizes and locations to Consultant to allow verification of their effect on design, and for inclusion on structural drawings where appropriate.
- .2 No openings are permitted through completed structure without written approval of Consultant. Show required openings on a copy of structural drawings. Identify exact locations, elevations, and size of proposed openings and submit to Consultant for review, well in advance of doing work.

**1.17 EXTRA WORK**

- .1 Any extra work ordered to be done shall be governed by the specification of the Contract unless specific instructions or clauses supersede those of the specification for this particular application only.

**1.18 DAMAGE**

- .1 Where existing structure, grade or pavement has to be removed, altered or otherwise defaced to facilitate electrical installation, Contractor shall arrange for breaking of openings or grooves in any building structure or breaking of pavement and/or digging of trenches.
- .2 Any equipment, structure, pavement or grade damaged by the execution of this Contract shall be repaired to its original condition. Any cost incurred for such work shall be allowed for in tender sum.
- .3 Irreparably damaged equipment shall be replaced at no cost to the Owner.
- .4 If the finish of new equipment is damaged, the Contractor shall, at the discretion of the Consultant, either replace or restore the equipment to its original condition by re-spraying, refinishing, etc., at no cost to the Owner.
- .5 Openings and cutouts shall not be burned into panels. Oversize openings shall not be patched up with loose plates or oversize washers. Oversized openings will be considered damage to the equipment and are to be treated as specified above.
- .6 The Contractor shall use extreme care when working near existing services and any services disturbed shall be replaced by the contractor at no cost to the Owner to the satisfaction of the Consultant.
- .7 Contractor shall determine the location of the existing underground services from the authorities having jurisdiction and/or Owner and/or Architects before excavation of existing grade and sub-grade, or new construction begins.

**1.19 PAYMENT FOR SERVICES BY OTHERS**

- .1 Where, in the specifications, the Contractor is required to arrange with others to have certain installations carried out, or to have certain services performed, the Contractor shall allow for this work in their tender and pay all costs involved.

**1.20 WARRANTY OF CONTRACT**

- .1 The Contractor will guarantee all work and material covered in this Contract for a period of one year from the date of substantial performance of the contract. This is in addition to any manufacturer's warranty provided for supply of materials and equipment.

**1.21 SEPARATE PRICES**

- .1 The Contractor shall quote an all inclusive base price but will indicate the value of specific amounts of product or labour as called for herein or on the drawings.

**1.22 SYSTEM STARTUP**

- .1 Instruct 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.
- .4 Complete all commissioning of the system.

### **1.23 LETTERS OF SATISFACTION**

- .1 Where training is called for in the specification, the Contractor shall obtain a letter of satisfaction signed by the Owner's representative. This letter shall state that sufficient training for the particular system was provided, and that the Owner is generally satisfied with the level and content of the session.

### **1.24 MONITORING**

- .1 Before substantial performance will be granted, contractor shall arrange for monitoring of the Intrusion and Fire Alarm systems. Provide print-out of all events at monitoring company denoting time and type of signal from each device for Intrusion and FA systems. The print-out shall list time and type of signal received. Contractor shall produce a list of tested devices to show time of time testing. The list shall be produced in the same format as the print-out for fast cross-reference. A letter from monitoring company stating conformance to ULC requirements is required. This letter shall be provided and the connection incorporated in the Fire Alarm system verification as described elsewhere in this specification.

### **1.25 FINAL ELECTRICAL ACCEPTANCE**

- .1 As the Consultants are required to give professional assurance that all electrical systems have been installed, tested, commissioned and verified in accordance with the current edition of the Manitoba Building Code and the Canadian Electrical Code, the following items are required from the Contractor prior to substantial performance acceptance and issuance of "Assurance of Field Review and Compliance."
  - .1 "Certificate of Final Electrical Inspection" certificate signed by the Electrical Inspector for the project (a declaration form signed by the Electrical Contractor is not acceptable);
  - .2 Certificate of Fire Alarm System Verification; (Certificate shall include checklist for each and every item of the Fire Alarm System), Inspection, Testing and Maintenance Technician sheets; this implies that system is fully operational.
  - .3 Verification Certificate of Exit and Emergency Light Inspection and Testing Systems; this implies that system is fully operational.
  - .4 Confirmation of F.A. System monitoring of Alarm, Trouble and Supervisory Signals. Contractor shall obtain this confirmation from the owners monitoring company in the form of a print-out letter. The letters shall show the time each event signal occurred and has been reset during the verification.

- .5 Obtain and Complete a Manitoba Hydro Power Smart Lighting Rebate Form and submit to the Project Manager with all required backup.

## **1.26 RECEIPT SUBMITTAL**

- .1 At the time of purchase of electrical components, (mainly but not limited to light fixtures), which are components that may require review by regulatory agencies such as Manitoba Hydro Power Smart or LEEDS™ Certification process, the Contractor shall provide the owner and Consultant with copies of the corresponding receipts. The submittal of receipts is intended to verify quantities and specification of the components for submittal to the regulatory agencies.

## **1.27 LOT PRICING**

- .1 Package lot pricing from manufacturers, suppliers, and/or wholesalers will not be acceptable.

## **Part 2 Products**

### **2.1 MATERIALS AND EQUIPMENT**

- .1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Material and equipment to be CSA certified. Where CSA certified material and equipment is not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.

### **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 All motors and equipment name plate FLA and MOCP shall be verified with the manufacture and shop drawings prior to finalizing and supply or installation of feeders, breakers and safety disconnect switches.

### **2.3 WARNING SIGNS**

- .1 Warning Signs: in accordance with requirements of authority having jurisdiction 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 aluminium conductors.

**2.5 EQUIPMENT IDENTIFICATION**

- .1 Provide Lamacoid nameplates, 3mm (1/8") thick plastic engraving sheet, black or red face, white core, mechanically attached (screwed or riveted) unless specified otherwise to electrical Motor Starters, Motor Control Centers, Disconnect Switches, Panelboards. 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
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 Wording on nameplates and labels to be approved by Engineer prior to manufacture. Submit schedule of nameplates and wording.
- .3 Allow for a minimum of twenty-five (25) letters per nameplate and label.
- .4 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .5 Disconnects, starters and contactors: indicate equipment being controlled and voltage.
- .6 Transformers: indicate capacity, primary and secondary voltages.

**2.6 WIRING IDENTIFICATION**

- .1 Identify wiring with permanent indelible identifying markings, numbered, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1.
- .4 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 Colours: 25 mm wide prime colour and 15 mm wide auxiliary colour.

	<u>Prime</u>	<u>Auxiliary</u>
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 "equipment green" finish.
- .2 Paint indoor switchgear and distribution enclosures light grey to EEMAC 2Y-1.

## Part 3 Execution

### 3.1 NAMEPLATES AND LABELS

- .1 Manufacturer's nameplates and CSA labels shall be visible and legible after equipment is installed.
- .2 Provide warning signs on equipment, as required to meet the requirements of the Inspection Authorities, including indication of multiple power sources.
- .3 Provide quantity as required of buried cable sign reading "Buried Cable" and "Buried High Voltage Cable". Signs shall be installed at building structure/equipment and at locations as directed on site and as per Canadian Electrical Code.

### 3.2 CONDUIT SLEEVES AND HOLES

- .1 Install conduit, and sleeves, prior to pouring of concrete. Sleeves through concrete shall be sized for free passage of conduit.
- .2 Holes through exterior walls and roof shall be flashed and made weatherproof.
- .3 Make necessary arrangements for cutting of chases, drilling of holes and other structural work required to install electrical conduits, cables, pullboxes and outlet boxes.
- .4 Install cables, conduits, and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.
- .5 All conduits and cables shall be entered into the building above grade.

- .6 All coring in buildings with electrical in the slab shall be scanned to prevent damage at contractor's expense.
- .7 Contractor is responsible for arranging and coordinating with other divisions for proper drainage of electrical conduits and/or conduits entering from outside, drainage of all exterior electrical junction and pull boxes, sealing and waterproofing of all electrical penetrations; methods of firestopping, and envelope penetration.

### **3.3 CUTTING AND PATCHING**

- .1 Pay the costs of all cutting and patching required for the installation of electrical work. Payment for cutting and patching shall be made through the General Contractor.
- .2 Cutting and patching required for the installation of electrical work shall be done by the particular trade whose work is involved. No cutting or patching shall be carried out by the tradesman employed on the electrical work.
- .3 Obtain the approval of the Architect and/or Owner before arranging for any cutting. Patching shall restore the affected area to the original condition; materials and methods used for patching shall be in accordance with the requirements of the corresponding Divisions of the specification.

### **3.4 LOCATION OF OUTLETS**

- .1 Locate outlets as indicated.
- .2 Do not install outlets back-to-back in wall.
- .3 Drawings are schematic only and do not indicate all architectural or structural elements.
- .4 Change location of outlets at no extra cost or credit, providing distance does not exceed 10'-0" (3 m) and information is provided before installation.
- .5 Locate light switches on latch side of doors.
- .6 Vertically align outlets of different systems when shown in close proximity to each other and occurring at different mounting heights.
- .7 Coordinate mounting heights and location of all equipment with Architectural, Mechanical and Structural Drawings prior to installation of rough-in boxes.

### **3.5 MOUNTING HEIGHTS**

- .1 Mounting height of equipment is from finished floor to centre line of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not indicated, verify with Architect before proceeding with installation.
- .3 Install electrical equipment at the following heights unless indicated or directed otherwise (to bottom of outlet):
  - .1 Outlets above counters: 6" (150 mm);

- .2 General receptacles: 18" (450 mm).
  - .3 Receptacles in mechanical and shop areas: 40" (1.0 m).
  - .4 Switches, dimmers, push buttons, Luxo bracket: 48" (1.2 m).
  - .5 Fire alarm devices shall be installed as per CAN/ULC-S524-06 in conjunction with City of Winnipeg by-laws
  - .6 Thermostats: 64" (1.65 m).
  - .7 Panelboards, annunciators, etc.: 78" (2.0 m) to top.
  - .8 Clock outlets: 84" (2.15 m).
  - .9 As per Architectural elevations.
  - .10 Heights as above or at bottom of nearest block or brick course.
  - .11 Voice/Data wall outlets: 18" (450 mm) vertical orientation.
  - .12 Receptacles mounted adjacent voice/data outlet. 18" (450 mm) vertical orientation.
- 4 Panelboards and other equipment which are to be surface mounted shall be installed on minimum 3/4" (19 mm) fir plywood mounting backboards. Treat backboards with wood preservative prior to installation and paint with primer and two (2) coats gray enamel before any equipment is mounted. Provide plywood mounted boards unless specified otherwise in other sections.
  - 5 Panelboards mounted on exterior concrete/block walls shall have minimum 3/4" air gap behind enclosure (to minimize condensation).
  - 6 All transformers, motor control centers and floor-mounted distribution panels shall be mounted on 4" (100 mm) concrete housekeeping pads. The Electrical Contractors shall be responsible for provision of these pads.

### **3.6 CO-ORDINATION OF PROTECTIVE DEVICES**

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

### **3.7 FIELD QUALITY CONTROL**

- .1 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.
- .2 Conduct following tests in accordance with Section 01 45 00 - Quality Control.
  - .1 Power distribution system 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, Security System, PA system, 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.
- .3 Carry out tests in presence of Departmental Representative.
- .4 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .5 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.

### **3.8 PROTECTION**

- .1 Protect exposed live equipment during construction for personnel safety.
- .2 Shield and mark live part "LIVE ( ) VOLTS", with appropriate voltage.
- .3 Arrange for installation of temporary doors for rooms containing electrical distribution equipment. Keep these doors locked except when under direct supervision.
- .4 Provide guards for all electrical equipment in gymnasium or areas subject to damage.

### **3.9 SPARE PARTS**

- .1 Assemble spare parts as specified.
- .2 Include the following:
  - .3 Part number.
  - .4 Identification of equipment or system for which parts are applicable.
  - .5 Installation instructions as applicable.
- .6 Provide a written list complete with Owner's signature assuring that spare parts have been received by the Owner.

**3.10 SPRINKLERPROOF EQUIPMENT**

- .1 All surface mounted electrical equipment located in sprinklered areas shall be sprinkler proof and shall be provided with suitable hoods and shields.
- .2 Entrance of conduits into the top of surface mount electrical panels/cabinets/distributions and motor control centers shall utilize O-rings and watertight connectors.

**3.11 EXCAVATION AND BACKFILING**

- .1 Excavate and backfill as required for underground electrical services as indicated. Provide protective materials around and over services and be present at all times during excavation and backfilling to supervise work. Backfilling shall restore the excavated area to the original condition and shall include sodding where required.
- .2 Include all costs for excavation and backfilling, for any underground electrical installation, unless otherwise indicated.
- .3 Confirm the locations of all existing underground services, wiring, etc., prior to any trenching or installation of new Pole Bases., etc. The Electrical Contractor shall employ a qualified firm to survey and mark out all existing underground services which may be encountered (Electrical, Telephone, Sewer, Gas, Water, etc.).
- .4 Provide trenching, cable installations and backfill promptly. Open trenches shall be barricaded in an approved manner.
- .5 Cables required to cross under roadways, paved areas, sidewalks, etc. shall be installed in PVC conduits pushed under such areas.
- .6 Six (6") of sand shall be provided surrounding the cables and 2" x 4" treated plank installed 6" above the cables. Install cable marker tape in all trenches, minimum 12" above cables. The remainder of the trench shall be backfilled with granular base course. All backfill material shall be thoroughly tamped and compacted to at least 90% of maximum density at optimum moisture. The ground shall be left free from ruts and rough spots. In any asphalt areas, backfill shall be granular material only.
- .7 All sodded areas disturbed or damaged during trenching and backfilling shall be repaired with manured soil mix and resodded. Make all repairs to damaged asphalt and/or concrete surfaces to match existing.
- .8 Care shall be taken when excavating near existing services. Existing trees and shrubbery in work area shall be protected from damage.
- .9 Install buried cable signs as per CEC and Manitoba Electrical addendums.

**3.12 FIREPROOFING**

- .1 Where cables or conduits pass through floors, block or concrete walls and fire rated walls, seal openings with fire stopping material that combines intumescent and endothermic properties.
- .2 Fire proofing of electrical cables, conduits, trays, etc, passing through fire barriers shall conform to local codes and inspection authorities.

- .3 Fire stop materials shall be asbestos free and have been tested in accordance with ASTM E-84, E8-14, E -136 and UCL 1479.
- .4 Fire stop and smoke seals shall be done in accordance with Section 07270.
- .5 Approved manufacturers:
  - .1 Nelson Firestop Products
  - .2 Specseal
  - .3 Hilti firestop

### **3.13 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.
- .3 At time of final cleaning, clean lighting reflectors, lenses, and other lighting surfaces that have been exposed to construction dust and dirt.

### **3.14 TRIAL USAGE**

- .1 The Consultant reserves the right to use any piece of electrical equipment as required to make a complete and thorough check before the completion and acceptance of the work.

### **3.15 CLEAN-UP**

- .1 Contractor is responsible for daily clean-up of all debris, packaging, waste, etc., that is created by Contractor and his workers or agents.

### **3.16 REVIEW**

- .1 Word "Review" used in this specification or on the drawings means that the Consultant reserves the right to call for revision and resubmission, rejection, furnish as submitted or furnish as corrected.

### **3.17 EVALUATION OF "PROGRESS CLAIMS"**

- .1 Contractor shall submit to the Consultant for review and approval a detailed breakdown of material and labor. This detailed breakdown shall be formatted as per the following table.
- .2 The Progress Claim form(s) shall be submitted to the Consultant prior to the initiation of the Contractor's first claim for payment for review and acceptance. Failure to submit the Progress Claim form(s), and to subsequently submit all Progress Claims based on the same format, will delay the processing of the Contractor's Progress Claim.

Items		Claim To Date		Current Claim		Previous Claim		To Complete	
		\$	%	\$	%	\$	%	\$	%
Start-Up Costs	Labour								
	Material								
Permits/Bonds	Labour								
	Material								
Unit Substation	Labour								
	Material								
Dist. Equip.	Labour								
	Material								
MCC and/or Motor Control	Labour								
	Material								
F.A. System Including Verification & Acceptance	Labour								
	Material								
Fix./Lamps	Labour								
	Material								
Low Voltage Control	Labour								
	Material								
Serv. Raceway	Labour								
	Material								
Lighting Raceways	Labour								
	Material								
Low Tension Raceways	Labour								
	Material								
Distribution Feeders	Labour								
	Material								
Rough-in Branch Circuit Wiring	Labour								
	Material								
Devices - Supply & Installation	Labour								
	Material								
Cable Tray – Supply & Install.	Labour								
	Material								
Door/Access Control Systems	Labour								
	Material								
Telecomm/Data including testing	Labour								
	Material								
Manuals/As-Built Documentation	Labour								
	Material								
Presentations & Training	Labour								
	Material								

**END OF SECTION**

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**Part 1 General****1.1 RELATED SECTIONS**

- .1 Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

**1.2 PRODUCT DATA**

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

**1.3 SCOPE OF WORK**

- .1 Provide a complete system of wiring systems, making all required connections as indicated on the drawings, specified herein and as required. Unless noted as larger, install and rate all cables and conductors in accordance with the requirements of the current edition of the Canadian Electrical Code.
- .2 Unless otherwise noted, all systems in the building shall be wired in conduit.

**Part 2 Products****2.1 WIRES (CONDUCTORS)**

- .1 All conductors to be copper only, unless otherwise shown or specified. All conductors shall be 98% conductivity copper 600 volt "RW90" X-link insulated, and be of minimum size #12 AWG.
- .2 Provide cross-linked thermosetting polyethylene (RW90 X-link) type insulation for all fire alarm system conductors. Where run in cable form with outer jacket, provide Nexans, "Securex II", FAS 105, 300 volts, 105°C (220°F) conductor temperature rated fire alarm system flexible armoured cable with solid copper conductor, shielding, flame retardant PVC insulation and red colour outer overall jacket, ULC listed and labelled and CSA certified to C22.2 No. 208.
- .3 Wire for 120 volt lighting and receptacle branch circuits shall be #12 AWG for runs up to 27m (90'-0") and #10 AWG minimum for runs over 27m (90'-0"). Wire for 347 volt lighting branch circuits shall be #12 AWG for runs up to 75m (250'-0") and #10 AWG minimum for runs over 75m (250'-0"). Wire for branch circuits shall be sized for proper current-carrying capacity to limit the voltage drop at the outlet to 3%. Do not use common neutrals for IG circuits or for any electronic loads, e.g. computers, etc. For lighting circuits using electronic ballasts, minimum neutral conductor, one (1) size larger than current carrying conductor. Wire for 120-volt control circuits shall be #14 AWG minimum and for 24-volt control circuits shall be #16 AWG minimum. Wiring drops for luminaires to be copper, #14 AWG flame retardant, heat and moisture resistant, rated at 600 volt, 125 degrees C Insulation.
- .4 Conductors up to #10 AWG may be solid. Conductors #8 AWG and above shall be stranded, unless specifically mentioned to be solid.
- .5 Equipment bonding conductors shall be insulated.

- .6 Provide RWU90 XLPE rated cable for underground wiring. Related to new service entrance feeders and site lighting circuits. RWU90 XLPE not required under interior floor slabs.
- .7 The only exception to the above are as follows:
  - .1 Feeders from main distribution to all panelboards, MCC and sub distribution can be Alcan, NUAL, RW90 XLPE Minus 40% - 600V MIN conductor, however Contractor shall increase sizes of feeders accordingly for equal ampacity and submit a One Line Diagram as shop drawings. One Line Diagram shown on drawings, is meant to use all copper connections.
- .8 Cord drops (dropcord receptacles) shall be manufactured to comply with Tables 11 and 12 of C.E.C.

## 2.2 **TECK CABLE**

- .1 Cable: to CAN/CSA-C22.2 No. 131.
- .2 Conductors:
  - .1 Grounding conductor: copper.
  - .2 Circuit conductors: copper and ACM alloy, size as indicated.
- .3 Insulation:
  - .1 Cross-linked polyethylene XLPE, rating – 600 V.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Armour: interlocking aluminum, compliant to applicable Building Code classification for this project.
- .6 Overall covering: thermoplastic 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 1500 mm centers.
  - .3 Threaded rods: 6 mm dia. to support suspended channels.

## 2.3 **MINERAL-INSULATED CABLES**

- .1 Conductors: solid bare soft-annealed copper, size as indicated.
- .2 Insulation: compressed powdered magnesium oxide to form compact homogeneous mass throughout entire length of cable.
- .3 Overall covering: annealed seamless copper sheath, Type M1 rated 600 V, 250°C.
- .4 Overall jacket: PVC applied over the sheath and compliant to applicable Building Code classification for this project for direct buried and wet locations, as indicated.

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- .5 Two hour fire rating.
- .6 Connectors: watertight, field installed, approved for MI cable.
- .7 Termination kits: field installed approved for MI cable.

## **2.4 ARMOURED CABLES**

- .1 Conductors: insulated, copper, size as indicated.
- .2 Type: AC90.
- .3 Armour: interlocking type fabricated from aluminum strip.
- .4 Connectors: standard as required, complete with double split rings.

## **2.5 CONTROL CABLES**

- .1 Type LVT: 2 soft annealed copper conductors, sized as indicated, with thermoplastic insulation, outer covering of thermoplastic jacket.
- .2 Low energy 300 V control cable: stranded annealed copper conductors sized as indicated, with PVC insulation type TW -40°C polyethylene insulation with shielding of tape coated with paramagnetic material wire braid over each conductor and overall covering of PVC jacket.

## **2.6 NON-METALLIC SHEATHED CABLE**

- .1 Non-metallic sheathed copper cable type: NMD90 nylon, size as indicated.

## **2.7 CONNECTORS AND TERMINALS**

- .1 Mechanical connectors and terminals are restricted to branch circuit wiring.
  - .1 Mechanical connectors shall be torqued to manufacturer's recommendations.
- .2 Connectors #8 AWG gauge and larger shall be compression type.
- .3 Terminals shall be compression type with spade type lugs.
- .4 Wire and cables shall be as manufactured by Canada Wire and Cable, Canadian General Electric, Alcan or Phillips Cable.
- .5 Use approved compression connectors and terminal (i.e. the type that are formed around the conductor using mechanical or hydraulic tools).
  - .1 Compression terminal for conductor sizes 350 MCM and larger shall have two holes.
  - .2 The following compression terminals are approved:
    - .1 Alcan "Alcons" and Alterms";
    - .2 Burndy "Hylugs" and "Hylinks", YA-A-TN and YS-A series;

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- .3 IIsco compression tubes, AS series;
- .4 IIsco compression terminals, ACL and 2AC series;
- .5 Thomas and Betts colour key connectors;
- .6 Thomas and Betts colour key two-way connectors;
- .7 Thomas and Betts "H" taps.
- .3 Attach compression type connections only with the manufacturer's approved tools and dies and in accordance with his recommendations.
- .4 Watertight and/or type approved for TECK cable, as indicated.
- .6 Before applying any connector to an aluminum conductor, abrade the conductor with a wire brush and, in the case of mechanical connectors, it shall be immediately covered with a heavy coat of approved aluminum joint compound already inside the connector.
  - .1 Approved aluminum jointing compounds are as follows:
    - .1 Burndy Penatrox "A";
    - .2 Thomas and Betts aluminum joint compound;
    - .3 Ideal "Noalox";
    - .4 Penn Union "Cual-Aid".
  - .2 Provide a photograph(s) of application.
- .7 When aluminum lugs are connected to bus and/or lugs with steel or copper studs or bolts, ensure that bellville and chrome or stainless steel flat washer combinations are used and that unplated aluminum surfaces are cleaned and coated with compound.
  - .1 Bellville washers are not required where aluminum-to-aluminum contact is made with an aluminum bolt.
  - .2 If lug is to be bolted to unplated aluminum bus, the bus shall be lightly wire brushed and approved aluminum joint compound shall be applied over the contact area. Do not use a particular compound on a plated aluminum or copper bus.
- .8 When connecting aluminum conductors to copper conductors, outdoors or in damp conditions, use CSA approved CU/AL bi-metallic connectors for this purpose and apply them in accordance with the manufacturer's instructions. The completed connection shall be sealed from the ingress of moisture.

**Part 3 Execution****3.1 INSTALLATION**

- .1 Conductor length for parallel feeders to be identical.
- .2 Lace or clip groups of feeder conductors at all distribution centres, pull boxes, panel boards and termination points.
- .3 All exterior wiring to be RW90 X-link with 600 volt insulation.
- .4 Provide permanent plastic name tag indicating load fed on all cable ends.



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- .5 In applications where multiple conductors in conduit are being run, provide a trapeze configuration of metal C-channels and threaded rod hangers to support cable/conduit from ceiling slab. Wall mounted cable/conduit brackets and ring type conduit hangers may also be permitted in applications approved by Consultant. Provide required cable support system accessories which are not specified herein or shown on drawings but are required for proper installation.
- .6 Support flexible armoured cable in ceiling spaces and in stud wall construction with steel two (2) hole cable straps to "Code" requirements. Flexible armoured cables must run in a neat manner parallel to building lines. Utilize centralized conduit runs to maintain maximum permitted runs of flexible armoured cables as specified. Provide insulating grommet at cut ends of flexible armoured cable to protect conductor insulation.
- .7 All wiring shall be done concealed and in conduit except:
  - .1 Modular Wiring where specified.
  - .2 Wiring for receptacles and lighting fixtures. From receptacles and lighting fixtures to the local area Junction Box, wiring may be done using AC90 Cable. Home run from local area Junction Box to the Panelboard shall be done in conduit. Typically each room shall be equipped with at least one Junction Box with conduit home run.
  - .3 Low voltage conductors not installed in conduit or raceways shall be fire insulated rated in accordance with latest governing Code Flame Spread requirements.
- .8 Contractor shall ensure that all conduits and boxes are installed concealed in brick work, block work, furred out walls, steel stud and wood stud walls, unless specifically permitted. Any conduit installed on surface shall be removed and reinstalled concealed at Contractor's expense. All costs of making good walls and finishes will be borne by Contractor.
- .9 Generally, conductor sizes are indicated on drawings. Such sizes are minimum requirements and must be increased, where required, to suit length of run and voltage drop in accordance current edition of the Canadian Electrical Code.
- .10 Provide sizes of conductors as required by Canadian Electrical Code or as indicated on the drawings. Voltage drop from panels to farthest device must not exceed 3% at full load. Voltage drop from the main distribution to the panel board must not exceed 2%.
- .11 When pulling wires into conduit use lubricant and ensure that wires are kept straight and are not twisted or abraided.
- .12 Nylon or similar pulling rope only shall be used to pull conductors into metallic and/or non-metallic conduit.
- .13 Neatly secure exposed wire in apparatus enclosures with approved supports or ties.
- .14 Exposed wiring, where permitted, shall be installed neatly, parallel or at right angles to the building lines.
- .15 An allowance shall be made for re-routing conduits where they go from ceiling to the wall, so they do not appear on side of beams.

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- .16 No reduction is permitted on neutral conductors.

### 3.2 IDENTIFICATION OF CONDUCTORS

- .1 Line voltage conductors in conduit shall be colour coded to identify service voltage. Conductor colours for 120V circuits shall be:

120 Volt

- Phase A Red
- Phase B Black
- Phase C Blue
- Neutral White
- Ground Green
- Control Orange.

600V conductor colour to be confirmed with Consultant

- .2 Loop conductor in a three-way and four-way switching circuit shall be:
- Brown
- .3 Switch leg conductors of line voltage switches on lighting and any manually controlled plug receptacle circuits shall be colour coded as follows:
- A Yellow
  - B Orange
  - C Pink

The sequence of colours shall be repeated if more than three switch legs leave a switch box.

- .4 Colour code conductors for communications systems in accordance with system component manufacturer's recommendations.

### 3.3 WORKMANSHIP

- .1 Before installing wire, ensure conduit is clean and dry. If moisture present, thoroughly dry out conduit; vacuum if necessary. To facilitate pulling, recognized specially manufactured wire pulling lubricants may be used. Do not use grease. Employ suitable techniques to prevent damage to wire when ambient temperature is below the minimum permitted for each insulation type.
- .2 Installation to be free of opens and grounds. Before energization, megger each feeder to ensure that insulation resistance complies with C.E.C. requirements
- .3 Do not install any conductor smaller than #12 AWG gauge, except where specifically indicated otherwise.

**3.4 Insulation Test**

- .1 The insulation resistance between wires and between any wire and ground shall not be less than the "Canadian Electrical Code" requirements with all circuits complete and connected. Include tests results in maintenance manual.

**END OF SECTION**

**Part 1 General****1.1 SHOP DRAWINGS AND PRODUCT DATA**

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

**Part 2 Products****2.1 SPLITTERS**

- .1 Sprinkler proof, sheet metal enclosure, welded corners and formed hinged cover suitable for locking in closed position.
- .2 Connection bars to match required size and number of incoming and outgoing conductors as indicated.
- .3 At least three spare terminals on each set of lugs in splitters 400 A or less.
- .4 No Splitters without approval by Engineer.

**2.2 JUNCTION AND PULL BOXES**

- .1 Sprinkler proof, welded steel construction with screw-on flat covers for surface mounting.
- .2 Covers with 25 mm minimum extension all around, for flush-mounted pull and junction boxes.

**2.3 CABINETS**

- .1 Type E: sprinkler proof, sheet steel, hinged door and return flange overlapping sides, handle, lock and catch, for surface mounting.
- .2 Type T: sprinkler proof, sheet steel cabinet, with hinged door, latch, lock, 2 keys, containing sheet steel backboard for surface or flush mounting as required.
- .3 All cabinets shall be sprinklerproof

**Part 3 Execution****3.1 SPLITTER INSTALLATION**

- .1 Install splitters and mount plumb, true and square to the building lines.
- .2 Extend splitters full length of equipment arrangement except where indicated otherwise.

**3.2 JUNCTION, PULL BOXES AND CABINETS INSTALLATION**

- .1 Install pull boxes in inconspicuous but accessible locations.
- .2 Mount cabinets with top not higher than 2 m above finished floor.

- .3 Install terminal block as required in Type T cabinets.
- .4 Only main junction and pull boxes are indicated. Install pull boxes so as not to exceed 30m of conduit run between pull boxes.

**3.3 IDENTIFICATION**

- .1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.
- .2 Install size 2 identification labels indicating system name, voltage and phase.

**END OF SECTION**

**Part 1        General****1.1            REFERENCES**

- .1        Canadian Standards Association (CSA)
  - .1        CAN/CSA C22.2 No. 18-98, Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware.
  - .2        CSA C22.2 No. 45-M1981(R1992), Rigid Metal Conduit.
  - .3        CSA C22.2 No. 56-1977(R1999), Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
  - .4        CSA C22.2 No. 83-M1985(R1999), Electrical Metallic Tubing.
  - .5        CSA C22.2 No. 211.2-M1984(R1999), Rigid PVC (Unplasticized) Conduit.
  - .6        CAN/CSA C22.2 No. 227.3-M91(R1999), Flexible Nonmetallic Tubing.

**1.2            WASTE MANAGEMENT AND DISPOSAL**

- .1        Place materials defined as hazardous or toxic waste in designated containers.
- .2        Ensure emptied containers are sealed and stored safely for disposal away from children.
- .3        Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

**1.3            SCOPE OF WORK**

- .1        Provide conduit system as indicated herein, on the drawings and as required
- .2        All wiring in the building shall be installed in conduits unless otherwise noted.

**1.4            RESTRICTION OF PLACEMENT**

- .1        All conduit locations or placements shall be coordinated with structural drawings, prior to installation.
- .2        Unless specifically permitted by Structural Consultant, for slabs on grade, no horizontal conduit shall be run in the slab. The conduits shall be placed below the slab in the gravel or fill layer.
- .3        Conduit penetrations of the vapour membrane shall be minimized and treated as per the appropriate specification section.
- .4        For suspended floor slabs, conduits shall be installed on the underside of the metal deck or slab. Horizontal conduit runs are not permitted in the slab unless authorized by the structural engineer.
- .5        Under no circumstances shall Electrical Non-metallic Tubing be used.
- .6        DB 2 PVC conduit may be used only where specifically identified as such.

**Part 2 Products****2.1 RIGID STEEL CONDUIT**

- .1 Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.
- .2 Galvanized with threaded joints and connections.
- .3 Connections in dry locations: steel or malleable iron lock nuts inside and outside enclosures.
- .4 Connectors subject to moisture: Liquid and dust tight with insulated throat.
- .5 Fittings: steel

**2.2 EMT CONDUIT**

- .1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.
- .2 Fittings in dry locations: steel or malleable iron set screw type fastener with insulated throats or non-metallic bushings.
- .3 Fittings in wet locations: steel or malleable iron in rain tight, compression-type, with insulated throat or non-metallic bushings.

**2.3 RIGID PVC CONDUIT**

- .1 Rigid PVC conduit: to CSA C22.2 No. 211.2.
- .2 Conduit: rigid non-metallic conduit of non-plasticized polyvinyl chloride, Sceptre Rigid Conduit made by IPEX.
- .3 Fittings: threaded male or female solvent weld connectors and solvent weld couplings.
- .4 Solvent: as recommended by conduit manufacturer.

**2.4 RIGID PVC DUCT**

- .1 Duct: rigid, non-metallic conduit of un-plasticized polyvinyl chloride, type EB-1 or DB-2 (as approved by the C.E.C.) requiring concrete encasement, conforming to CSA standards.
- .2 Accessories: bell ends, coupling adapters, bends and other fittings of same material as duct. Use solvent recommended by manufacturer. Horizontal, vertical and foundation spacers as recommended by manufacturer.

**2.5 FLEXIBLE CONDUIT**

- .1 Conduit: spiral wound, interlocking flexible.
- .2 Connectors: slip-proof insulated throat or non-metallic bushings, steel type.

**2.6 LIQUID TYPE FLEXIBLE CONDUIT**

- .1 Flexible metal conduit: to CSA C22.2 No. 56, liquid-tight flexible metal.

- .2 Conduit: flexible metal conduit with PVC liquid type jacket.
- .3 Connectors: captive sealing jacket with ground cone insulated throat, steel. Provide sealing rings at all box entries.

## **2.7 CONDUIT FASTENINGS**

- .1 Two hole steel straps for conduits larger than 50 mm. One hole steel straps to secure surface conduits 50 mm and smaller where mounted above 2700mm. Two hole steel straps for conduits smaller than 50 mm in all other areas.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits at 2 m oc.
- .4 Threaded rods, 6 mm dia., to support suspended channels.

## **2.8 CONDUIT FITTINGS**

- .1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.
- .2 Factory "ells" where 90E bends are required for 25 mm and larger conduits.
- .3 Watertight connectors and couplings for EMT. Set-screws are not acceptable.

## **2.9 EXPANSION FITTINGS FOR RIGID CONDUIT**

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 200 mm linear expansion.
- .2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 19 mm deflection in all directions.
- .3 Weatherproof expansion fittings for linear expansion at entry to panel.

## **2.10 FISH CORD OR WIRE**

- .1 Polypropylene.

## **Part 3 Execution**

### **3.1 GENERAL**

- .1 Flexible Conduit shall be used for line and low voltage circuit connections to all motors or equipment subject to vibration and shall be metal PVC coated water tight, except for lighting fixture drops. Connectors shall be approved for flexible liquid tight conduits.
- .2 Unless otherwise noted, Electrical Metallic Tubing (EMT) - shall be utilized in the building.
- .3 Exposed conduit in areas subject to mechanical injury shall be rigid galvanized steel to a height of 4' (1218mm).



- .4 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .5 Conduit for telecommunication systems shall be a minimum 27mm DIA unless noted as larger.
- .6 Install all conduit and wiring concealed, except where specifically noted otherwise. Do not recess conduit in columns or concrete slabs unless approved by the Structural Engineer.
- .7 Where conduit is run exposed and in accessible ceiling spaces, run parallel to building lines. Where conduits are grouped (two or more), space evenly, make bends concentric and mount on racks.
- .8 Lay out conduit to avoid interference with other work. Maintain a minimum clearance of 150mm from steam or hot water piping, etc.
- .9 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment.
- .10 Use explosion proof flexible connection for connection to explosion proof motors.
- .11 Install conduit sealing fittings in hazardous areas. Fill with compound.
- .12 Minimum conduit size for lighting and power circuits: 19 mm.
- .13 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .14 Mechanically bend steel conduit over 19 mm dia. Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .15 Dry conduits out before installing wire.
- .16 Slabs on grade: install rigid PVC conduit in the gravel base below concrete slabs. Provide mechanical protection around stub-ups, through slab and extend 150mm beyond concrete. When rigid steel conduit is installed in contact with earth, it shall be protected with tape or asphaltum paint. Extend taping or paint 300mm above finished grade.
- .17 Conduit ends emerging from concrete slab, which are to remain as exposed conduit, shall be rigid galvanized steel. Provide rigid steel oversized sleeve over the exposed PVC portion of conduit.
- .18 All conduit exposed to weather shall be approved for the location and be complete with weatherproof fittings.
- .19 All rigid PVC conduit installed under slab on grade shall include a bonding wire sized as required by Canadian Electrical Code.
- .20 Where used, sleeves shall be c/w proper connectors and plastic bushing (this is particularly important for telecommunications cabling installation.)
- .21 An allowance shall be made for rerouting conduits so they do not appear on the side of beams where they go from ceiling to walls.

- .22 Install a separate ground wire in conduit installed underground or in concrete or masonry slab in contact with the earth.
- .23 Watertight fittings shall be installed in areas exposed to moisture and concrete type fittings in concrete slabs.
- .24 At all recessed panels provide 3-25mm conduits c/w pull string and end cap from panel into the accessible ceiling space above for future use. Terminate these conduits in 152 x 152 x 102 mm junction boxes in ceiling space or in case of an exposed concrete slab, terminate each conduit in surface type box.
- .25 Where conduit or ducts enter or exit concrete structures below grade, provide 19mm x 1500mm steel reinforced dowels to prevent shearing. Extend dowel 1 meter beyond concrete and bend conduit to this dowel.
- .26 Where conduit is required to be bent, do not heat and do not bend in such a way as to reduce the cross-sectional area at any point.
- .27 For all runs of conduit, do not include more than the equivalent of four 90 degree bends, including bends located immediately adjacent to an outlet box or fitting. Provide pulling elbows, pull boxes and/or junction boxes where necessary.
- .28 Where possible, install conduits so that they are not trapped. Cap turned up conduits to prevent the entrance of any dirt or moisture during construction. If necessary, swab out conduit and thoroughly clean internally before wires and cables are pulled.
- .29 Take extreme care in reaming ends of all conduit to ensure a smooth, interior finish that will not damage the insulation of the wires.
- .30 Use insulated non-metallic bushings on all conduit terminators. Ensure electrical continuity in all conduit systems. All conduits shown exposed in finished areas are to be free of labels and trade marks. Install a 45kg test line in all empty conduits. Conduits and ducts crossing building expansion joints shall have conduit expansion fittings to suit the type of conduit used. Seal conduits with duct seal where conduits are run between heated and unheated areas or into freezers. Where conduits, cables, or cable trays pierce fire separations, seal openings with approved sealing compound.
- .31 Where conduits enter the top or side of exposed equipment; panels, etc. provide seal rings and water resistant connectors (i.e. in Electrical and Mechanical Rooms).

### **3.2 SLEEVES AND CHASES**

- .1 Sleeves shall be provided and set for conduit passing through foundations, concrete walls and floors. Sleeves shall have sufficient diameter to allow free conduit movement resulting from thermal expansion and contraction. Sleeves installed through foundation walls, beams and footings shall be installed flush with walls, partitions, floors and ceilings. All sleeves installed below grade shall be caulked with oakum and lead on both sides of the wall. Sleeves in floors where water is present shall be caulked, graphite packing and waterproof sealant used.

- .2 Exact locations of conduit stub ups for connection to service equipment, signs etc., shall be checked and verified with the Owner. Shop drawings shall be issued prior to rough-in and slab being poured.
- .3 No extra claim will be accepted by the Architect or Consultant for stub up adjustments as a result of the Contractor not following the checking procedure as described under item 0.2.
- .4 Adjustments of stub ups shall be carried out to the satisfaction of the owner. Damaged surfaces shall be repaired to their original condition. Conduit extension shall comply with Canadian Electrical Code and wires are to be re-pulled.
- .5 For each telecommunication outlet (data, voice, video etc.) provide a corresponding sleeve in every wall leading to the local cable tray to facilitate installation of telecommunication cables.

### **3.3 EMPTY CONDUITS**

- .1 All empty conduits shall be tested for clear bore using a ball mandrel, brushes and snake. Clear any conduit which rejects the ball mandrel. All costs involved in making good any work, restoring any surface to original condition shall be borne by the Contractor. All empty conduits to be c/w nylon pull cord (181Kg/400Lb test).
- .2 All conduits stubbed out shall be provided with rubber grommets and end caps.

**END OF SECTION**

**Part 1 General****1.1 RELATED DOCUMENTS**

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.
- .2 Related Sections
  1. Division 26 Electrical, Section 260500 Common Work Results for Electrical

**1.2 SUMMARY**

- .1 Section Includes
  1. This specification describes an addressable Fire Detection and alarm signaling system. The control panel shall be intelligent device addressable, analog detecting, low voltage and modular, with digital communication techniques, in full compliance with all applicable codes and standards. The features and capacities described in this specification are required as a minimum for this project and shall be furnished by the successful contractor.
  2. The system shall be in full compliance with National and Local Codes.
  3. The system shall include all required hardware, raceways, interconnecting wiring and software to accomplish the requirements of this specification and the contract drawings, whether or not specifically itemized herein.
  4. All equipment furnished shall be new and the latest state of the art products of a single manufacturer, engaged in the manufacturing and sale of analog fire detection devices for over ten years.
  5. The system as specified shall be supplied, installed, tested and approved by the local Authority Having Jurisdiction, and turned over to the owner in an operational condition.
  6. In the interest of job coordination and responsibilities the installing contractor shall contract with a single supplier for fire alarm equipment, engineering, programming, inspection and tests, and shall be capable of providing a "ULC verification report" for the complete system.
  7. The system specified shall meet the project requirements. Other systems shall be submitted 10 days prior to bid date for approval by the Engineer. All system approved shall meet all the requirements spelled out in this specification. System approval shall be in writing by the Engineer and a copy shall be submitted with the system submittals.

**1.3 ALLOWANCES**

- .1 Specify products and work included in this section that are covered by cash or quantity allowance. Do not include amounts. Insert descriptions of items in Part 2 or 3 to provide information affecting the cost of the Work that is not included under the allowance.

**1.4 DEFINITIONS**

- .1 **ASME:** American Society of Mechanical Engineers

- .2 **FACP:** Fire alarm control panel
- .3 **FM:** FM Global (Factory Mutual)
- .4 **Furnish:** To supply the stated equipment or materials
- .5 **Install:** To set in position and connect or adjust for use
- .6 **LED:** Light-emitting diode
- .7 **NCC:** Network Command Centre
- .8 **NFPA:** National Fire Protection Association. Definitions in NFPA 72 apply to fire alarm terms used in this Section
- .9 **CFAA:** Canadian Fire Alarm Association
- .10 **Provide:** To furnish and install the stated equipment or materials
- .11 **UL:** Underwriters Laboratories
- .12 **ULC:** Underwriters' Laboratories of Canada

## 1.5 SYSTEM DESCRIPTION

- .1 Basic System - The system shall be a complete, electrically supervised fire detection and notification system, with a microprocessor based operating system having the following capabilities, features, and capacities:
  - 1. Support of mobile test system capable of providing point test reports in ULC standard format without manual report entries.
  - 2. The control panel shall allow control and monitoring from a wireless handheld display device during maintenance, inspection and trouble shooting tasks.

The control panel shall allow complete control and monitoring from a wireless handheld display device during one-man testing of the system.

Testing supported should be real smoke testing of devices, automatically logged and made available in ULC format reports. Manual test entries will not be accepted.
  - 3. System shall provide an output port for monitoring purposes by external systems. Communications to an external system shall be RS-232 or RS-485 communications.
  - 4. A single node or system shall support at least 50 remote transponders
  - 5. At least 59 nodes shall be network able.
  - 6. Communications between network nodes, each supporting an interactive, self-standing, intelligent local control panel, with system wide display. Any network node shall be capable of supporting a local system in excess of 4000 input/output points.

7. The local system shall provide status indicators and control switches for all of the following functions:

Audible and visual notification alarm circuit zone control.

Status indicators for sprinkler system water-flow and valve supervisory devices.

Any additional status or control functions as indicated on the drawings, including but not limited to; emergency generator functions, fire pump functions, door unlocking and security with bypass capabilities.

8. The system shall be UL 1076 listed for monitoring and reporting security System Zoning.
9. Each intelligent addressable device or conventional zone on the system shall be displayed at the Central Alarm and Control Facility and the local fire alarm control panel by a unique alphanumeric label identifying its location.

## 1.6 PERFORMANCE REQUIREMENTS

- .1 General Performance: Comply with National Building Code of Canada / local adoption of National Building Code of Canada and all contract documents and specification requirements.
- .2 All interconnections between this system and the monitoring system shall be arranged so that the entire system can be ULC-Certificated.
- .3 System shall be a complete, supervised, non-coded, addressable multiplex fire alarm system conforming to CAN/ULC-S527.
- .4 The system shall have DCLB circuits for each floor. The system shall operate in the alarm mode upon actuation of any alarm initiating device. The system shall remain in the alarm mode until all initiating device(s) are reset and the fire alarm control panel is manually reset and restored to normal.
- .5 The system shall have DCLA circuits for each floor. The system shall operate in the alarm mode upon actuation of any alarm initiating device. The system shall remain in the alarm mode until all initiating device(s) are reset and the fire alarm control panel is manually reset and restored to normal.
- .6 The system shall have DCLC circuits for each floor. The system shall operate in the alarm mode upon actuation of any alarm initiating device. The system shall remain in the alarm mode until all initiating device(s) are reset and the fire alarm control panel is manually reset and restored to normal.
- .7 The system shall provide the following functions and operating features:
  1. The FACP and auxiliary power panels shall provide power, annunciation, supervision and control for the system.
  2. Provide Class A initiating device circuits.
  3. Provide Class B initiating device circuits.
  4. Provide DCLC signaling line circuits for the network.
  5. Provide DCLA signaling line circuits for the network.

6. Provide Class A notification appliance circuits. Arrange circuits to allow individual, selective, and visual notification by zone. Notification Appliance circuits shall be zoned to correspond with the building fire barriers and other building features.
  7. Provide Class B notification appliance circuits. Arrange circuits to allow individual, selective, and visual notification by zone. Notification Appliance circuits shall be zoned to correspond with the building fire barriers and other building features.
  8. Stairwells: Each Stairwell NAC shall be separately zoned.
  9. Strobes shall be synchronized throughout the entire building.
  10. Provide electrical supervision of the primary power (AC) supply, presence of the battery, battery voltage, and placement of system modules within the control panel.
- .8 The system shall provide a field test function where one person can test the complete system or a specific area while maintaining full operational function of other areas not being tested. Alarms, supervisory signals, trouble signals shall be logged on the system printer and in system history during the walk-test.
  - .9 Alarm functions shall override trouble or supervisory functions. Supervisory functions shall override trouble functions.
  - .10 Fire alarm signal initiation shall be by one or more of the following devices:
    - .1 Manual station
    - .2 Heat detector
    - .3 Addressable area smoke detector
    - .4 Duct smoke detector
    - .5 Projected beam detector
    - .6 Aspiration Smoke Detector Alarm
    - .7 Automatic sprinkler system water flow switch
  - .11 Single Stage Operation: Activation of any system fire, security, supervisory, trouble, or status initiating device shall cause the following actions and indications at all network Person Machine Interfaces using basic graphics and multiple detail screens.
    - .1 Fire Alarm Condition
      - a. Sound an audible alarm and display a custom screen/message defining the building in alarm and the specific alarm point initiating the alarm in a graphic display.
      - b. Log into the system history archives all activity pertaining to the alarm condition.
      - c. Print alarm condition on system printer.
      - d. Sound the Temporal Pattern on all audibles and synchronized strobes throughout the facility.
      - e. Audible signals shall be silenced from the fire alarm control panel by an alarm silence switch. Visual signals shall be programmable to flash until system reset or alarm silencing, as required.
      - f. The alarm information shall be displayed on a Graphic Annunciator located where shown on drawing.
      - g. Activation of any smoke detector in a single elevator lobby or an elevator equipment room shall, in addition to the actions described, cause the recall

of that bank of elevators to the 1<sup>st</sup> floor and the lockout of controls. In the event of recall initiation by a detector in the first floor lobby, the recall shall be to the alternate floor as determined by the AHJ.

- h. System operated duct detectors as per local requirements shall accomplish HVAC shut down.
- i. Door closure devices shall operate by floor or by local requirements.
- j. Display on the FACP the type of hazard in the area of the fire via NFPA symbols.
- k. Send the event information to the Command Center with the device type and custom message.

#### .2 Supervisory Condition

- a. Display the origin of the supervisory condition report at the local fire alarm control panel graphic LCD display.
- b. Activate supervisory audible and dedicated visual signal.
- c. Audible signals shall be silenced from the control panel by the supervisory acknowledge switch.
- d. Record within system history the initiating device and time of occurrence of the event.
- e. Print supervisory condition to system printer.
- f. Maintain supervisory condition on system until system is reset.
- g. Send the event information to the Command Center with the device type and custom message.

#### .3 Trouble Condition

- a. Display at the local fire alarm control panel graphic LCD display, the origin of the trouble condition report.
- b. Activate trouble audible and visual signals at the control panel and as indicated on the drawings.
- c. Audible signals shall be silenced from the fire alarm control panel by a trouble acknowledge switch.
- d. Trouble conditions that have been restored to normal shall be automatically removed from the trouble display queue and not require operator intervention. This feature shall be software selectable and shall not preclude the logging of trouble events to the historical file.
- e. Trouble reports for primary system power failure to the master control shall be automatically delayed for a period of time equal to 25% of the system standby battery capacity to eliminate spurious reports as a result of power fluctuations.
- f. Record within system history, the occurrence of the event, the time of occurrence and the device initiating the event.
- g. Print trouble condition to system printer.
- h. Send the event information to the Network Command Centre with the device type and custom message.

- .12 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.



**1.7 SUBMITTALS**

- .1 Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories. Complete manufacturer's catalog data including supervisory power usage, alarm power usage, physical dimensions, and finish and mounting requirements.
- .2 Power calculations. Battery capacity calculations. Battery size shall be a minimum of 125% of the calculated requirement. Provide the following supporting information:
  - .1 Supervisory power requirements for all equipment.
  - .2 Alarm power requirements for all equipment.
  - .3 Power supply rating justification showing power requirements for each of the system power supplies. Power supplies shall be sized to furnish the total connected load in a worst-case condition plus 25% spare capacity.
  - .4 Voltage drop calculations for wiring runs demonstrating worst-case condition.
  - .5 NAC circuit design shall incorporate a 15% spare capacity for future expansion.
- .3 Submit manufacturer's requirements for testing signaling line circuits and device addresses prior to connecting to control panel. At a minimum the following tests shall be required; device address, the usage (Alarm, Supervisory etc), environmental compensation, temperature ratings for thermal detectors and smoke detector sensitivities. This requirement shall need approval before any wiring is connected to the control panel.
- .4 Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - .1 Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - .2 Wiring Diagrams: For power, signal, and control wiring.
  - .3 Complete drawings covering the following shall be submitted by the contractor for the proposed system:
    - a. Provide a fire alarm system function matrix. Matrix shall illustrate alarm input/out events in association with initiation devices. Matrix summary shall include system supervisory and trouble output functions. Include any and all departures, exceptions, variances or substitutions from these specifications and/or drawings at time of bid.
  - .4 Installation drawings shop drawings, and as-built drawings shall be prepared by an individual experienced with the work specified herein.
  - .5 Incomplete submittals shall be returned without review, unless with prior approval of the Engineer.
- .5 Qualification Data: For qualified Installer, Applicator, manufacturer, fabricator, professional engineer, testing agency, and factory-authorized service representative.
- .6 Source quality-control reports.
- .7 Field quality-control reports.
- .8 Operation and Maintenance Data: For all fire alarm equipment, to include in operation and maintenance manuals.
- .9 Warranty: Sample of special warranty.

**1.8 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: The publications listed below form a part of this publication to the extent referenced. The publications are referenced in the text by the basic designation only. The latest version of each listed publication shall be used as a guide unless the authority having jurisdiction has adopted an earlier version.
  1. FM Global (Factory Mutual (FM)):FM Approval Guide
  2. Canadian Electrical Code
  3. Underwriters' Laboratories, of Canada (ULC) standards, Latest Edition
    - CAN/ULC-S528 – Manual Pull Stations for Fire Alarm Systems
    - CAN/ULC-S547 – Door Holding Devices
    - CAN/ULC-S529 – Smoke Detectors
    - CAN/ULC-S526 – Visual Signal Devices
    - CAN/ULC-S525 - Audible Signal Devices
    - CAN/ULC- S530 – Heat Actuated Fire Detectors
    - CAN/ULC-S527 – Control Units and Accessories
    - CAN/ULC-S541 – Speakers for Fire Alarm Systems, Including Accessories
    - CAN/ULC-S524 – Installation of Fire Alarm Systems
    - CAN/ULC-S536 – Inspection of Fire Alarm Systems
    - CAN/ULC-S537 – Verification of Fire Alarm Systems
  4. Underwriters' Laboratories (UL)
    - UL 1076 – Security
  5. International Code Council
    - International Building Code
    - International Fire Code
  6. National and Provincial Building Codes as adopted and/or amended by The Authority Having Jurisdiction, and/or local equivalency standards as adopted by The Authority Having Jurisdiction.
  7. The manufacturer shall have a minimum of 15 years production experience in the manufacture and design of high sensitivity aspiration-type smoke detection systems.
  8. ISO 9002
- .2 Supplier Qualifications
  1. The manufacturer of the supplied products must utilize multi-channel product distribution on a national basis to be considered for this bid. The manufacturer must have factory branches as well as independent distributors to allow the end user with

the ability to utilize factory trained and authorized competitive service providers after system installation and commissioning

2. Provide the services of a factory trained and certified representative or technician, experienced in the installation and operation of the type of system provided. The representative shall be licensed in the Province if required by law.
3. The technician shall supervise installation, software documentation, adjustment, preliminary testing, final testing and certification of the system. The technician shall provide the required instruction to the owner's personnel in the system operation and maintenance.
4. The supplies shall furnish evidence they have an experienced service organization, which carries a stock of spare and repair parts for the system being furnished.
5. The equipment supplier shall be authorized and trained by the manufacturer to calculate, design, install, test, and maintain the air sampling system and shall be able to produce a certificate stating such upon request.

### .3 Installer Qualifications

1. Before commencing work, submit data showing that the manufacturer has successfully installed fire alarm systems of the same scope, type and design as specified.
2. The contractor shall submit copies of all required Licenses and Bonds as required in the Province having jurisdiction.
3. Contractors unable to comply with the provisions of Qualification of Installers shall present proof of engaging the services of a subcontractor qualified to furnish the required services.

.4 Testing Agency Qualifications: Qualified for testing indicated.

.5 Source Limitations for fire alarm equipment: Obtain fire alarm equipment from single source.

.6 Electrical Components, Devices, and Accessories: Listed and labeled as defined in ULC, by a qualified testing agency, and marked for intended location and application.

.7 Pre-installation Conference: Conduct conference at Project site.

## **1.9 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver products to project site in original, unopened packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, and shelf life if applicable.
- .2 Store materials inside, under cover, above ground, and kept dry and protected from physical damage until ready for use. Remove from site and discard wet or damaged materials.

## **1.10 PROJECT CONDITIONS**

- .1 Installed products or materials shall be free from any damage including, but not limited to, physical insult, dirt and debris, moisture, and mold damage.

- .2 Environmental Limitations: Do not deliver or install products or materials until spaces are enclosed and weather tight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

### **1.11 WARRANTY**

- .1 Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire alarm equipment that fail(s) in materials or workmanship within specified warranty period.
  - .1 Warranty Period: 1 year from date of Substantial Completion.

### **1.12 SERVICE AGREEMENT**

- .1 Technical Support: Beginning with Substantial Completion, provide software support for 1 year.
- .2 Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within one year from date of substantial completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.
  - .1 Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

### **1.13 EXTRA MATERIALS**

- .1 Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

## **Part 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- .1 Manufacturers: Seimens by Bison, Simplex, Edwards

### **2.2 CONTROL PANEL**

- .1 The fire alarm control panel shall be microprocessor based using multiple microprocessors throughout the system providing rapid processing of smoke detector and other initiation device information to control system output functions.
- .2 There shall be a watchdog circuit, which shall verify the system processors and the software program. Problems with either the processors or the system program the panel shall activate a trouble signal, and reset the panel.
- .3 The system modules shall communicate with an RS 485 network communications protocol. All module wiring shall be to terminal blocks, which will plug into the system card cage. The control panel shall be capable of expansion via up to 100 SLC's. Maximum system capacity shall be at least 2500 intelligent initiation devices.
- .4 The system shall be capable of supporting unshielded wiring applications.
- .5 System Components
  - .1 The device loop card shall be capable of 252 intelligent devices distributed between two SLC circuits. Any trouble on one circuit shall not affect the other circuit. This module controls the signaling from the initiation devices reporting alarms and troubles to the control panel. This module shall also provide the signaling to the field devices for the

controlling the output of specific initiation devices. The on board microprocessor provides the device loop card with the ability to function even if the main microprocessor fails. LED's on the board shall provide annunciation for the following; Power, Card Failure, Network Failure, Gnd. Fault, Alarm, Trouble, Short Zone 1, Short Zone 2, DCLA Open Zone 1, DCLA Open Zone 2. This card shall plug into the system card cage.

- .2 The Signal Line Circuits (SLC) shall be tested for opens, shorts and communications with all addressable devices installed before connection to the control panel. Systems without this capability shall have a test panel installed for initial testing to eliminate any possible damage short term or long term to the control panel. After initial testing replace the test panel and proceed with complete testing.
- .3 The interface screen shall provide the system information on ¼ VGA monochrome LCD, with Touch Screen and LED display. Graphic user interface shall be menu driven with 4 tabs showing the level and the total events for each tab. The tabs shall be; Alarm, Supervisory, Trouble and Security. At least 9 events shall be shown simultaneously with two full lines of text message for each event. Each event shall have a 32 character custom message describing the event's location. In addition, the time stamp and category of the event (i.e. Smoke, Water flow, Manual, etc) shall be displayed. The LED displays shall indicate Power, Audibles On or Silenced, and Partial System Disabled. Systems not having the above LED's shall provide separate LED's within the control panel enclosure with appropriate labels. Selection buttons shall be backlit to aid the operator in the selection process. There shall be controls for scrolling throughout the event list. A button shall provide zoom in zoom out for the amount of information desired for a specific entry. The interface screen shall be capable of monitoring the power supply loading and show available capacity for future expansion planning. The interface screen shall provide a More Info button that can display additional device information such as the device type and device address. This More Info shall also have the ability to display a detailed screen that provides the following:
  - .1 200 character custom message associated with the group of the device
  - .2 NFPA symbols representing fire service equipment in the area
  - .3 NFPA symbols representing hazards in the area
  - .4 NFPA symbols representing people in the area
  - .5 Number of devices in the associated group that are in alarm
  - .6 Name and phone number of emergency contact
- .4 The interface screen shall also have the ability to display a bitmap of a floor plan showing a "You are Here" symbol to tell the responding person exactly where they are in the building in relation to the event. Systems without this type of display shall supply a listed Graphics package with their system. The LCD shall have a keyboard screen to allow the technician ability to enter text and numbers for passwords or text changes. The interface screen shall also have a Context Sensitive Help button. A globally configured interface screen module shall have the ability to view events, acknowledge, silence and reset networked systems. A globally configured interface

screen module shall also have the ability to arm and disarm input and output points on FACP's. A globally configured interface screen module shall have the ability to be configured for control of the entire network, control of the local FACP, or annunciation only. In a networked configuration, the Partial System Disable LED shall be indicative of all networked FACP's. A globally configured interface screen module in a networked configuration shall have the ability to store 6 maps for every panel. At least 10 globally configured interface screen modules shall be supported in a network.

- .5 The International interface screen shall provide Spanish, Portuguese or French Canadian overlays. The International interface screen shall have the ability to be configured display text in Spanish, Portuguese, Hebrew or French while having the ability to swap in English text at anytime by a simple button press at the panel. Printers shall also have the ability to be configured for Spanish, Portuguese or French.
- .6 The network interface card shall provide either intranode communication or internode communication between enclosures. Either mode of communication shall support DCLB or DCLC wiring. The card shall have the ability to be configured as an electrical repeater in order to increase communication distances. In addition, the card shall support network communication. This card shall plug into the system card cage. {00100}
- .7 The network ring card shall provide the ability to network systems in a Class A Style 7 ring configuration. A single network ring card per system (node) shall provide peer-to-peer communication between systems allowing a total of 59 systems to be networked together. The card shall reside in the same enclosure as the interface screen. The card shall supervise the ring network to ensure proper operation. The card shall also isolate a short-circuit fault to each individual segment of the network and perform ground fault detection on its outgoing ring port. Any faults that are detected by the card shall be reported to the interface screen for annunciation. The network ring card shall isolate faults only to the individual node in trouble allowing communication on the network ring to continue. The network ring card shall act as an electrical repeater. {00100}
- .8 The system status display shall provide a remote LED/LCD display that shows the local status of a system. An LED shall illuminate when alarm, supervisory, trouble and security events occur on the system. The system status display shall consist of a LCD display that has four lines of forty characters each that provides details of the event in alphanumeric form. The display shall have three additional control buttons for acknowledging events, silencing audible circuits, and resetting the system. The display shall have an integral key switch that enables these control buttons to operate. The display shall have the ability to be located within a locked cabinet, so no additional key switch is required for enabling the control buttons. The display shall be mountable in a 2-gang electrical box or 4-inch square electrical box.
9. The zone indicating card shall contain 4 NAC circuits rated at 4 amps each with power-limited outputs. The zone inputs for the card shall be isolated and independently supervised. There shall be at least 3 unique codes/signals for each circuit based on system logic. These signals shall be Temporal Code 3 (Evacuation), Steady (Such as "Recall"), and Alert (Such as "Tornado Alert"). The card shall be listed for notification appliances, horns, bells, strobes, and speakers. The card shall also be listed for NFPA 13 Pre-Action Release, Clean Agent, Lease Line, and Municipal Tie. The card shall have the ability to be wired Class B or Class A with outputs synchronized. The card shall have the following LED's to provide trouble shooting and annunciation; Power,

Card Failure, Network Failure, Gnd. Fault, Zone Activation or Trouble. This card shall plug into the system card cage.

10. The control relay card shall contain 6 fully programmable relays each rated at 4A, 30VDC/120VAC resistive and 3.5A, 120VAC 0.6 PF inductive. The card shall have the following LED's to provide trouble shooting and annunciation; Power, Card Fail, Network Fail, Relay 1 Active, Relay 2 Active, Relay 3 Active, Relay 4 Active, Relay 5 Active, Relay 6 Active.
11. The system card cage shall provide the mounting of all system cards, field wiring, and panel's inter-card wiring. All power limited field wiring shall connect to the top of the card cage. All non-power limited internal wiring shall be connected to the bottom of the card cage. The card cage shall hold the systems cards and have capability of connecting multiple card cages to meet system demands. All terminal blocks are removable.
12. The remote printer module shall provide a means for connecting the FACP system to a serial or parallel printer for creating a hard copy of system status and configuration reports. The printer module shall also provide a foreign system interface output port that can be configured to communicate with external systems, such as Building Management Systems. The printer module shall consist of two RS-232 (serial) ports and a single parallel port allowing connection to a parallel printer. The serial port shall have the ability to be configured as RS-232 or RS-485.
13. The internal thermal strip printer shall act as an event logging device providing a permanent history report of all system activity. It shall also provide various system status reports that include detector sensitivities, thresholds, device types and custom messages. It shall mount in the FACP enclosure and its printout is visible through a window in the locked enclosure door. Printouts shall be automatically spooled on a take-up reel for easy record storage.
14. The supervised input module shall provide sixteen input circuits for remote system monitoring. Each input shall have the ability to be individually programmed as supervised (dry contact only) or unsupervised (general purpose input). The input module shall provide two programmable Form C relays. The input module shall be mountable in an enclosure that is remotely located from the main control panel. The input module shall be capable of supervising inputs 500 feet away.
15. The output control module shall provide sixteen open collector outputs to drive LED's, incandescent lamps or external relays. There shall also be an additional output for a local audible and two inputs for momentary lamp test as well as local audible silence switches. The module shall be mountable in an enclosure that is remotely located from the main control panel.
16. The switch control module shall be a supervised module with 8 switches and two LED's per switch for controlling such items as speaker/strobe or telephone circuits. The switches shall also be used as generic inputs into the system. The module shall be mounted in the door for easy access. These modules shall be connected to the control area network, and have a maximum distance of 1000 ft.
17. The LED control module shall contain eight groups of 2 LED's that shall be programmable. Eight LED's shall be dual color capable that can be lighted either RED

or GREEN flashing or steady. The remaining LED's shall be AMBER flashing or steady. A space shall be provided for labeling of LED functions. The label shall slide behind a clear protective membrane. The module shall be mounted in the door for easy access. These modules shall be connected to the control area network, and have a maximum distance of 1000 ft.

18. The fan control module shall provide manual control of building HVAC system fans, motors and dampers. Each module shall provide six sets of 3 push button switches for manual system control. Each switch shall have 3 associated LED's to indicate Fan/Damper/Motor status: with OFF shown by a Red LED, ON shown by a Green LED and TROUBLE shown by a Yellow LED. The modules shall be mounted in the door for easy access. These modules shall be connected to the control area network, and have a maximum distance of 1000 ft.
- .6 System response time from alarm to output shall be an average of three (3) seconds.
- .7 To expedite system troubleshooting, the system cards shall have ground fault detection, and diagnostic LED's by card.
- .8 All system cards and modules shall have Flash memory for downloading the latest module firmware.
- .9 Passwords
  - .1 Maintenance/Control Password - There shall be a 5 character password that a user must enter into the control panel in order to perform such maintenance- and control-related functions at the panel as:
    - .1 Arming and disarming devices
    - .2 Activating, deactivating or modifying detector ASD and sensitivity settings
    - .3 Activating and deactivating the History Log function, and deleting obsolete entries
    - .4 Changing the system time and date
  - .2 Function Key Password - There shall be a 5 character password that a user must enter into the control panel in order to access the panel's Function Keys: touch screen buttons which perform custom-programmed system functions.
  - .3 Reports Password - There shall be a 5 character password that a user must enter into the control panel in order to access the panel's reporting functions.
  - .4 Walk test Password - There shall be a 5 character password that a user must enter into the control panel in order to access the panel's walk testing functions.
  - .5 Acknowledge Silence able Reset Password - There shall be a 5 character password that a system user must enter into the control panel in order to acknowledge events, turn silenceable audibles and visuals on and off, and perform panel resets.
- .10 Networking
  - .1 Digital communication capabilities supporting DCLB (Class B) or DCLC (Class A) communications using either DC digital or fiber optics technologies or combinations of both as required for the control panel to communicate with at least 50 remote transponders.
  - .2 Digital communication capabilities supporting DCLB (Class B) or DCLC (Class A) communications using either DC digital or fiber optics technologies or combinations of both as required for the control panel to communicate with at least 59 network nodes.



- .3 Capability shall exist within the system to extend the network at any node. The system shall support a maximum of two network extension circuits in series on any system branch, extending the inherent distance limitations for network communications.
  - .4 Communication protocol shall be of the CSMA/CD (carrier sense, multiple access, collision detect) type, eliminating delays incorporated into other protocols. Communication techniques using token passing and requiring sensing of delays and re-generation of the token to re-establish network communications in the event of a fault shall not be acceptable.
- .11 Network Fiber Modules
- .1 Multimode and single mode fiber.
  - .2 The network fiber interface modules shall be used to transmit RS-485 communications between the network computer and multiple intelligent addressable fire alarm control panels. Each module shall have power, transmit and receive status LED's. The module can act as a repeater or end-point unit, in a daisy chain or star configuration. It shall be capable of being powered by 24VDC from the FACP or from a remote power supply. It can mount in the FACP back box, or can be mounted in a remote back box. It can be located up to 5,000' from the local FACP using 1 pair #18AWG twisted/shielded cable between the fiber interface module and the FACP.
  - .3 The connection between the multimode fiber interface modules shall use 2 high quality duplex 50/125 or 62.5/125  $\mu\text{m}$  fiber optic cables and ST style fiber connectors. Each segment of the fiber network can be up to 1.9 miles. The fiber module shall have a minimum operating power output budget of -13dB for 62.5/125  $\mu\text{m}$  cable and -9 dB for 50/125  $\mu\text{m}$  cable. It shall be possible to connect the fiber interface modules directly to the computer without the need for additional interface devices or control equipment.
  - .4 The connection between the single mode fiber interface modules shall use 2 high quality duplex 9/125  $\mu\text{m}$  fiber optic cables and ST style fiber connectors. Each segment of the fiber network can be up to 20 miles. The fiber module shall have a minimum operating power output budget of -16dB for 9/125 cable. It shall be possible to connect the fiber interface modules directly to the computer without the need for additional interface devices or control equipment.
- .12 Degrade Mode Alarm Activation
- .1 Each data gathering panel shall support the ability to have its corresponding zone indicating card and output devices on an SLC loop activate when the SLC or conventional detector card is in Degrade Mode (has lost communication with the FACP).  
For example, if the device loop includes detectors with relay bases and lamps, the relays and lamps will activate upon any system alarm when the SLC is in Degrade Mode.
- .13 Smoke Control: The fire alarm panels shall have the ability to be configured as a smoke control station that complies with UL/UUKL (UL 864) and NFPA 92A and ULC/ORD-C100 requirements. The system shall have the capability to monitor and override smoke control systems and equipment provided at designated locations within the same building.
- .14 Software Modifications: The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made. Systems that require the use of external programmers or change of EPROM's are not acceptable.
- .15 Mass Notification Interface: The fire alarm control panel shall interface to Mass Notification system and be a supervised connection.
- .16 Computer Interface: The fire alarm control panel shall network to the computer.
- .17 Logic: The fire alarm system shall support generic functions that deal with binary states (True/False, high/low), and produce desired outputs from one or more binary inputs (for

example, alarm outputs from detector or manual station inputs). AND, OR, NOT, Any N, D Latch, RS Latch, Time Base Control, Start Timer, Restart Timer are generic functions. Generic functions can be used as inputs to other function. The system shall support 1500 logic functions.

- .18 History: The system shall store 5000 events in history while in straight mode and 4500 in circular mode. In straight mode, trouble warnings will occur at 4000 and 4500 events. In circular mode, the control panels shall maintain a 2000 event Alarm History buffer, which consists of the 2000 most recent alarm events from the 4500 event history file.
- .19 Reports:
  1. The system shall have the ability to provide configuration, status, queue and history reports.
  2. Configuration reports shall provide the following information:
    - .1 Custom Messages
    - .2 Database Information
    - .3 Entity Type
    - .4 Device Usage
    - .5 Device Category
    - .6 Firmware revision
  3. Status reports shall provide the following information:
    - .1 Disarmed cards and devices
    - .2 ASD settings
    - .3 Sensitivity in %/foot
    - .4 Alarm threshold in %/foot
    - .5 Temperature in degrees C
    - .6 Walk test
  4. Queue reports shall provide the following information:
    - .1 Alarm events with custom message and event time
    - .2 Supervisory events with custom message and event time
    - .3 Security events with custom message and event time
    - .4 Trouble events with custom message and event time
  5. History reports shall provide Address, History Type, Description, Time & Date and Custom Message. The following event types shall be reported:

- .1 Alarm events
- .2 Supervisory events
- .3 Security events
- .4 Status changes
- .5 Alarm verification
- .6 Output activation from logic
- .7 System Reset
- .8 Event Acknowledgements
- .9 Block Acknowledgements
- .10 Audible Silence System Flag Changes
- .11 Sensitivity Changes
- .12 Arm / Disarm Commands
- .13 Arm / Disarm By Logic
- .14 Manual Output Overrides
- .15 Output Overrides By Logic
- .16 Time Changes
- .17 Menu Logins
- .18 ASD Changes
- .19 Walk test
- .20 Device Input to Logic Activations/Deactivations

### 2.3 POWER SUPPLY

- .1 The system power supply/charger shall be a 12-amp supply with battery charger. The power supply shall be filtered and regulated. The power supply shall have a minimum of 1 power limited output rated at 4 amps, and a minimum of 1 output rated at 12 amps. The system power supply can be expanded up to 48 amps. The auxiliary power supply module shall share common batteries with the primary power supply. The system power supply shall have 4 relays, 1 for common alarm, one for common trouble and two programmable relays. The power supply shall be rated for 120/240 VAC 50/60 Hz.
- .2 The battery charger shall be able to charge the system batteries up to 60 AH batteries. Battery charging shall be microprocessor controlled and programmed with a special software package to select charging rates and battery sizes. An optional Thermistor for monitoring battery temperature to control charging rate shall be available.

- .3 The power supply shall have a plug for an AC adapter cable, which allows a technician to plug in a laptop computer for up or down loading program information or test equipment.
- .4 Transfer from AC to battery power shall be instantaneous when AC voltage drops to a point where it is not sufficient for normal operation.

## **2.4 SYSTEM ENCLOSURE**

- .1 Provide the enclosure needed to hold all the cards and modules as specified with at least spare capacity for two cards. The enclosure outer door shall be either black or red. Provide the color as to the local AHJ requirements. The outer doors shall be capable of being a left hand open or a right hand open. The inner door shall have a left hand opening. System enclosure doors shall provide where required ventilation for the modules or cards in the enclosure.
- .2 Provide system enclosure for all amplifiers. Where required by the manufacturer, provide means for venting heat from the enclosure either by having enclosure sides and top vented or the doors vented.

## **2.5 INTELLIGENT INITIATING DEVICES**

- .1 General
  1. All initiation devices shall be insensitive to initiating loop polarity. Specifically, the devices shall be insensitive to plus/minus voltage connections on either DCLB or DCLA circuits.
- .2 Smoke Detectors – Addressable
  1. The detector shall be guaranteed in writing not to false alarm when configured by the factory trained certified technician. The detector must provide up to 11 different environmental algorithms that allow the detector to provide superior false alarm immunity without the need for additional alarm verification delays.
  2. The detector shall have a multicolor LED to streamline system maintenance/inspection by plainly indicating detector status as follows: green for normal operation, amber for maintenance required, red for alarm.
  3. The multi-criteria smoke detector shall be an intelligent digital photoelectric detector with a programmable heat detector. Detectors shall be listed for use as open area protective coverage, in duct installation and sampling assembly installation and shall be insensitive to air velocity changes. The detector communications shall allow the detector to provide alarm input to the system and alarm output from the system within four (4) seconds. So as to minimize the effort required by the installing and maintenance technician to appropriately configure the detector to ensure optimal system design, the detectors shall be programmable as application specific. Application settings shall be selected in software for a minimum of eleven environmental fire profiles unique to the devices installed location.
  4. The detector shall be designed to eliminate the possibility of false indications caused by dust, moisture, RFI/EMI, chemical fumes and air movement while factoring in conditions of ambient temperature rise, obscuration rate changes and hot/cold smoke phenomenon into the alarm decision to give the earliest possible real alarm condition report.
  5. The intelligent smoke detector shall be capable of providing three distinct outputs from the control panel. The outputs shall be from an input of smoke obscuration, a

thermal condition or a combination of obscuration and thermal conditions. The detector shall be designed to eliminate calibration errors associated with field cleaning of the chamber.

6. The detector shall support the use of a relay, or LED remote indicator without requiring an additional software address. Low profile, white case shall not exceed 2.5 inches of extension below the finish ceiling.
7. For the detector where required, there shall be available a locking kit and detector guard to prevent unauthorized detector removal.
8. Where required, there shall be available a programmable remote lamp configurable to remotely duplicate the on-board LED status of another system device with the same software address.

### .3 Smoke Detectors – Advanced Addressable Series

- .1 The detector shall be guaranteed in writing not to false alarm when configured by the factory trained certified technician. The detector must provide up to 19 different environmental algorithms that allow the detector to provide superior false alarm immunity without the need for additional alarm verification delays.
- .2 The detector shall have a tri-color LED to streamline system maintenance/inspection by plainly indicating detector status as follows: green for normal operation, amber for maintenance required, red for alarm.
- .3 Detector shall utilize state of the art forward backward light scattering technology, with improved detection for smoldering and flaming fire signatures. The detector shall replace the need for ionization detectors due to improved response characteristics to flaming fires.
- .4 Detector shall incorporate an addressable Carbon Monoxide (CO) detector. The CO detector shall be selectable as a multi-criteria fire detector or as a smoke detector and independent CO detector (in compliance with NFPA 720). {05330}
- .5 Detector shall provide pre-alarm signal at 0.2% obscuration/ft. to meet the performance requirements of National Fire Protection Association Standard 76, Fire Protection of Telecommunications Facilities as a Very Early Warning Fire Detector (VEWFD).
- .6 The forward backward light scattering technology shall provide improved immunity to spurious activation (deceptive phenomena). The detector shall have a “No False Alarm Guarantee”.
- .7 The detector shall be RoHS-compliant: it shall meet standards for Reduction of Hazardous Substances (RoHS) by reduction in lead content.
- .8 Detector shall be UL 2075 compliant as a gas and vapor detector. {05330}
- .9 The multi-criteria fire detector shall be an intelligent digital photoelectric detector with a programmable heat detector. Detectors shall be listed for use as open area protective coverage, in duct installation and sampling assembly installation and shall be insensitive to air velocity changes. The detector communications shall allow the

detector to provide alarm input to the system and alarm output from the system within four (4) seconds. So as to minimize the effort required by the installing and maintenance technician to appropriately configure the detector to ensure optimal system design, the detectors shall be programmable as application specific. Application settings shall be selected in software for a minimum of 19 environmental fire profiles unique to the devices installed location.

- .10 The detector shall be designed to eliminate the possibility of false indications caused by dust, moisture, RFI/EMI, chemical fumes and air movement while factoring in conditions of ambient temperature rise, obscuration rate changes and hot/cold smoke phenomenon into the alarm decision to give the earliest possible real alarm condition report.
  - .11 The detector shall be UL listed for operation in a 95% relative humidity (RH) environment.
  - .12 The detector shall be designed to eliminate calibration errors associated with field cleaning of the chamber.
  - .13 The detector shall support the use of a relay, or LED remote indicator without requiring an additional software address. Low profile, white case shall not exceed 2.5 inches of extension below the finish ceiling.
  - .14 The detector shall support the use of an ambient temperature warning signal at the panel. This temperature shall be user-configurable for the set temperature of the warning and the event type generated by the warning. This event can be used to trigger system logic.
  - .15 For the detector where required, there shall be available a locking kit and detector guard to prevent unauthorized detector removal.
  - .16 Available models:
    - .1 Photoelectric Smoke detector with an operating temperature range of 32°F to 120°F. Available in three parameter sets. Polar insensitivity with isolators. Three color LED.
    - .2 Multi-Criteria incorporating 1 Optical sensor and 1 Thermal sensor with an operating temperature range of 32°F to 100°F. Available in three parameter sets. Polar insensitivity with isolators. Three color LED.
    - .3 Multi-Criteria incorporating 2 Optical sensors and 2 Thermal sensors with an operating temperature range of 32°F to 120°F. Nineteen selectable profiles. Polar insensitivity with isolators. Three color LED.
    - .4 Multi-Criteria incorporating 2 Optical sensors, 2 Thermal sensors, and Carbon Monoxide sensing technologies with an operating temperature range of 32°F to 100°F. Nineteen selectable profiles. Polar insensitivity with isolators. Three color LED. CO sensor may be programmed as part of the multi-criteria, or may be an independent CO detector.
- .4 Heat Detectors – Addressable
- .1 Thermal Detectors shall be rated at 135 degrees fixed temperature and 15 degrees per minute rate of rise. Detectors shall be constructed to compensate for the thermal lag inherent in conventional type detectors due to the thermal mass, and alarm at the set point of 135 degrees Fahrenheit. The choice of alarm reporting as a fixed

- temperature detector or a combination of fixed and rate of rise shall be made in system software and be changeable at any time without the necessity of hardware replacement.
- .2 The detectors furnished shall have a listed spacing for coverage up to 2,500 square feet and shall be installed according to the requirements of CAN/ULC-S524 for open area coverage.
  - .3 Heat detector shall have the following temperature settings:
    - .1 Fixed temperature at 135°F, 145°F, 155°F, 165°F, 174°F
    - .2 Rate of Rise at 15°F/ min (8.3°C) at 135°F (57°C)
    - .3 Rate of Rise at 15°F/ min (8.3°C) at 174°F (79°C)
    - .4 Low temperature warning at 40°F (4.4°C)
  - .5 Duct Smoke Detectors – Addressable
    - .1 For duct detector applications, the smoke detector shall be an intelligent digital photoelectric detector with a programmable heat detector. Detectors shall be listed for use as open area protective coverage, in duct installation and sampling assembly installation and shall be insensitive to air velocity changes.
    - .2 The detector communications shall allow the detector to provide alarm input to the system and alarm output from the system within four (4) seconds. The detector shall be mounted in a duct detector housing listed for that purpose. The duct detector shall support the use of a remote test switch, relay or LED remote indicator. The duct detector shall be supplied with the appropriate sampling tubes to fit the installation.
    - .3 Where duct detectors are exposed to the weather a weatherproof enclosure shall be available. The duct housing cover shall include a test port for functional testing of the detector without cover removal. The duct housing shall include a cover removal switch capable of indicating cover removal status to the fire alarm control panel.
    - .4 Where required there shall be available a duct housing with an on-board relay. Also where required, there shall be a standalone housing available with its own power supply and test/reset switch that does not require connection to a fire alarm control panel.
    - .5 Duct smoke detector housing shall allow use in duct systems with air velocity ranging from 100 to 4,000 feet per minute, within temperature ranges of 32°F to 120°F per minute, and with relative humidity ranging from 0 to 95%.
    - .6 Duct Housings and Accessories:
      - .1 Air Duct Housing for Conventional and Addressable Detectors
      - .2 Air Duct Housing for Addressable P2 Detectors with Relay Application
      - .3 Air Duct Housing for Conventional Detectors with Relay Application
      - .4 Air Duct Housing for Conventional Detectors with Relay Application and Built-in Power Source
      - .5 Weather-Proof housing to accommodate all versions of Global Air Duct Housings

.6 Remote Test Lamp for Conventional Detectors

.6 Detector Bases – Addressable

- .1 Detector bases shall be low profile twist lock type with screw clamp terminals and self-wiping contacts. Bases shall be installed on an industry standard, 4” square or octagonal electrical outlet box.
- .2 Where selective localized control of electrical devices is required for system operation, furnish and install detector base with software programmed addressable relay integral to the base. The relay shall switch electrical loads within relay ratings, as indicated on the drawings. Operation of the addressable control circuit shall be independent of the number of detectors and relays on the circuit or the number in an alarm state. Relay bases shall be rated for resistive or inductive load (120VAC or 30VDC) 3 amps. The relay base shall be model number DB-HR.
- .3 Where indicated on the drawings, furnish detector base with integral approved audible evacuation alarm signal having an output of 85db @ 10’. The audible signal shall be individually addressable and software programmed for operation. The audible base shall be model number ADBX-11C.

.7 Manual Stations – Addressable

- .1 Provide addressable manual stations where shown on the drawings, to be flush or surface mounted as required. Manual stations shall contain the intelligence for reporting address, identity, alarm and trouble to the fire alarm control panel. The manual station communications shall allow the station to provide alarm input to the system and alarm output from the system within less than four (4) seconds.
- .2 The manual station shall be equipped with terminal strip and pressure style screw terminals for the connection of field wiring. Surface mounted stations where indicated on the drawings shall be mounted using a manufacturer’s prescribed matching red enamel outlet box. All Manual Stations are to be Bi-lingual and have an auxiliary contact.
- .3 Provide single stage manual station.

.8 Addressable Interface Devices

- .1 Addressable Interface Devices shall be provided to monitor contacts for such items as water-flow, tamper, and PIV switches connected to the fire alarm system. These interface devices shall be able to monitor a single or dual contacts. An address will be provided for each contact. Where remote supervised relay is required the interface shall be equipped with a SPDT relay rated for 4 amps resistive and 3.5 amps inductive.
- .2 Where needed a Conventional Zone Module shall connect to the Signal Line Circuit, which will allow the use of conventional initiation devices. This module shall have the ability to support up to 15 conventional smoke detectors and an unlimited number of contact devices. This module shall also be capable of monitoring Linear Beam detectors and conventional Flame detectors. Where required, there shall be an intrinsically safe detection solution for NEMA defined intrinsically safe installations compatible with the conventional zone module.



- .3 Single Device Damper Monitoring and Control: When connected to the FACP, a single switch input shall be able to monitor all 3 states of a damper – open, closed, and in transit. When connected to a FACP, a single relay shall be able to fully control a damper (through the relay connected to the motor control) while also using its switch input for monitoring all 3 states of the damper.

## 2.6 DEVICE PROGRAMMING UNIT

- .1 The programming tool shall program the intelligent devices with addresses. The unit shall test the device to respond to its address. Dipswitches and rotary switches shall not be acceptable. The programmer shall be model DPU with carrying case.

## 2.7 NOTIFICATION APPLIANCES – SINGLE STAGE

- .1 Strobes
  - .1 The strobes shall be ULC Listed for their intended function.
  - .2 Strobe appliances shall produce a flash rate of one (1) flash per second over the Regulated Voltage Range, and shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens.
  - .3 All inputs shall be compatible with standard, reverse polarity supervision of circuit wiring by a Fire-Alarm Control Panel (FACP).
  - .4 The Strobe shall be of low-current design.
  - .5 The strobe intensity shall have field-selectable settings, for 15/30/75/95cd or 115/177cd for ceiling mount where Multi-Candela appliances are specified.
  - .6 The selector switch for selecting the candela shall be tamper resistant.
  - .7 The appliance shall be compatible with power supplies with built-in sync protocol when synchronization is required.
  - .8 The strobes shall not drift out of synchronization at any time during operation.
  - .9 If the sync module or Power Supply fails to operate, (i.e. - contacts remain closed), the strobe shall revert to a non-synchronized flash rate.
  - .10 The strobes shall be designed for indoor surface or flush mounting.
  - .11 The Strobe Appliances shall incorporate a Patented, Integral Strobe Mounting Plate that shall allow mounting to single-gang, double-gang, 4-inch square, 100mm European type back boxes, or the Surface Back box.
  - .12 The Strobe Plate shall mount to either a standard, 4-inch square back box for flush mounting, or shall mount to the back box for surface mounting.
  - .13 All notification appliances shall be backward compatible.
- .2 Mini Horn Appliances
  - .1 Notification appliance shall be electronic, and shall have field-selectable settings for Temporal (Code 3) or continuous horn and support coded-systems operation.
  - .2 The anechoic sound pressure measurement on Temporal (Code 3) and Continuous Horn settings shall each be 87 dBA minimum at 24VDC.
  - .3 All models shall have provision for standard reverse polarity-type supervision and IN / OUT wiring using terminals that accept #12 to #18 AWG wiring.
  - .4 The appliances shall be mounted indoors, and mount on standard, single-gang electrical back boxes requiring no additional trim plates or adapters.
  - .5 All notification appliances shall be listed for “Special Applications”.
- .3 Horn and Horn Strobe Appliances
  - .1 Horn Strobe and standalone Horn Appliances shall meet and be listed for ULC for their intended function.
  - .2 Horn strobe shall be listed for indoor use and shall meet the requirement of FCC Part 15 - Class B.

- .3 All inputs shall be compatible with standard reverse polarity supervision of circuit wiring by the Fire Alarm Control Panel (FACP).
- .4 Horn Strobe and standalone Horn Appliances shall have a minimum of three (3) field selectable setting for dBA levels, and shall have a choice of continuous or temporal (Code 3) audible outputs.
- .5 Horns shall be of low-current design.
- .6 Strobe portion of the appliance shall produce a flash rate of one (1) flash per second over the Regulated Input Voltage Range, and shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens.
- .7 Strobe intensity, where Multi-Candela appliances are specified, shall have field-selectable settings, and shall be rated per ULC for:
  - .1 15/30/75/110cd
  - .2 135/185cd
- .8 The selector switch for selecting the candela setting shall be tamper resistant.
- .9 The appliance shall be compatible with power supplies with built-in sync protocol, when synchronization is required.
- .10 The strobes shall not drift out of synchronization at any time during operation.
- .11 The strobes shall revert to a non-synchronized flash-rate, if the sync module or Power Supply should fail to operate (i.e. – contacts remain closed).
- .12 All notification appliances shall listed for Special Applications:
  - .1 Strobes are designed to flash at 1-flash-per-second minimum over their “Regulated Input Voltage Range”.
- .13 All candela ratings represent minimum-effective Strobe intensity, based on CAN/ULC-S526.
- .4 Audible Strobe Appliances and Audibles {02600}
  - .1 Audible be listed for UL Standard 1971 (Emergency Devices for the Hearing-Impaired for Indoor Fire Protection Service).
  - .2 Audible shall be ULC Listed for their intended function.
  - .3 All inputs shall be compatible with standard reverse polarity supervision of circuit wiring by the Fire Alarm Control Panel (FACP).
  - .4 The audible portion of the appliance shall have a minimum of three (3) field-selectable settings for dBA levels, and shall have a choice of continuous or temporal (Code 3) audible outputs.
  - .5 Strobe portion of the appliance shall produce a flash rate of one (1) flash per second over the Regulated Input Voltage Range, and shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens.
  - .6 Device shall be of low-current design.
  - .7 Strobe intensity, where Multi-Candela appliances are specified, shall have field-selectable settings, and shall be rated per ULC for:
    - .1 15/30/75/110cd
    - .2 135/185cd
  - .8 The appliance shall be compatible with power supplies with built-in sync protocol, when synchronization is required.
  - .9 The strobes shall not drift out of synchronization at any time during operation.
  - .10 The strobes shall revert to a non-synchronized flash-rate, if the sync module or Power Supply should fail to operate (i.e. – contacts remain closed).

- .11 The appliance shall also be designed so that the audible signal may be silenced while maintaining strobe activation when used with synchronization.
  - .12 The Audible Strobe and Audible shall incorporate a Patented Universal Mounting Plate that shall allow mounting to a single-gang, double-gang, 4-inch square, 100mm European type back boxes, or the Surface Back box.
  - .13 All notification appliances shall listed for Special Applications.
  - .14 Strobes are designed to flash at 1-flash-per-second minimum over their “Regulated Input Voltage Range”.
  - .15 All candela ratings represent minimum-effective Strobe intensity, based on CAN/ULC-S526.
- .5 Strobe Multi-tone Electronic Appliances
- .1 The notification appliance shall be an audible/visual appliance or equivalent. Notification appliance shall be electronic and use solid state components. Electromechanical alternatives are not approved.
  - .2 Each electronic appliance shall provide eight (8) field selectable alarm tones. The tones shall consist of: HORN, BELL, MARCH TIME HORN, CODE-3 HORN, CODE-3 TONE, SLOW WHOOP, SIREN and HI/LO. Tone selection shall be by durable dip switch assembly and not clips or jumpers.
  - .3 The Multi-tone Audible appliance shall be ULC Listed for their intended function.
  - .4 The audible and the strobe shall be able to operate from a single NAC circuit while producing any of these tones. The appliance shall provide two output sound levels: STANDARD and HIGH dBA. The HIGH dBA setting shall provide a minimum 5 dBA increase in sound output at nominal voltage. The HIGH anechoic dBA measurement at 10 feet at the alarm HORN SETTING shall be 99 dBA minimum. All models shall have provisions for standard reverse polarity type supervision and IN/OUT field wiring using terminals that accept #12 to #18 AWG wiring.
  - .5 Combination audible/visual appliances shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens or equivalent with solid state circuitry. Strobe shall produce a flash rate of one (1) flash per second minimum over Regulated Input Voltage Range. The strobe intensity shall be rated per ULC with field selectable 15/30/75/110 candela settings.
  - .6 Strobe Models shall incorporate circuitry for synchronized strobe flash and shall be designed for compatibility with the power supply with built-in sync protocol. The strobes shall not drift out of synchronization at any time during operation. If the module fails to operate (i.e., contacts remain closed), the strobes shall revert to a non-synchronized default flash rate. Strobe activation shall be via independent input or from the same input circuit as the audible.
  - .7 The combination audible/visual appliances shall be installed indoors and may be surface or flush mounted. They shall mount to standard electrical hardware requiring no additional trim plate or adapter. The aesthetic appearance shall not have any mounting holes or screw heads visible when the installation is completed. The appliance shall be finished in a textured red color. All notification appliances shall be listed for “Special Applications.”
  - .8 The appliances may be installed indoor or outdoor with the proper back box.
- .6 Strobes, Horns, Horn/Strobes
- .1 Appliances shall be listed under ULC for their intended function.
  - .2 Appliances shall use a universal back plate, which shall allow mounting to a single-gang, double-gang, 4-inch-square, 4”-octagonal, or a 3-1/2”-octagonal back box.

- .3 Two-wire appliance wiring shall be capable of directly connecting to the mounting back plate.
- .4 Continuity check shall occur for entire NAC circuit prior to attaching any audible / visual-notification appliances.
- .5 Dust cover shall fit and protect the mounting plate.
- .6 Dust cover shall be easily removed when the appliance is installed over the back plate.
- .7 Removal of an appliance shall result in a trouble condition by the Fire Alarm Control Panel (FACP).
- .8 Strobe appliances shall produce a minimum flash rate of 60 flashes per minute (1 flash per second) over the Regulated Input Voltage Range, and shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens.
- .9 Strobes shall be available with two or four field-selectable settings in one unit, and shall be rated – per ULC for up to:
  - .1 185cd for wall mounting
  - .2 177cd for ceiling mounting
- .10 Strobes shall operate over an extended temperature range of 32°F to 120°F (0°C to 49°C), and be listed for maximum humidity of 95% RH.
- .11 Strobe inputs shall be polarized for compatibility with standard reverse-polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP).
- .12 Audibles and Audible/Strobe Combinations
  - .1 Horns and horn / strobes shall be listed for Indoor use under CAN/ULC-S526 and CAN/ULC-S525 Standards.
  - .2 Horns shall be able to produce continuous synchronized output or a temporal code-3 synchronized output.
  - .3 Horns shall have at least 2 sound-level settings of 90 and 95 dBA.
  - .4 The strobe portion shall be compatible with power supplies with built-in sync protocol, when synchronization is required.
- .13 The strobes shall not drift out of synchronization at any time during operation.
- .14 Audible and strobes shall be able to synchronize on a 2-wire circuit with the capability to silence the audible, if required.
- .15 Strobes shall revert to a non-synchronized flash-rate, if the sync module or Power Supply should fail to operate (i.e. – contacts remain closed).
- .16 Speaker and speaker-strobe appliances shall be designed for indoor surface or flush mounting.
- .17 All notification appliances shall be listed for Special Applications: Strobes are designed to flash at 1-flash-per-second minimum over their “Regulated Input Voltage Range.”

## 2.8 DIGITAL COMMUNICATOR {04400}

- .1 The digital alarm communicator shall be listed under CAN/ULC-S527 to provide point identification of alarm, supervisory, security and trouble events to a Central or Remote Receiving Station. The communicator shall support the following:
  - .1 Ademco Contact ID or SIA protocol.
  - .2 Ademco Contact ID selection shall provide the ability to transmit events for up to 999 individual points.

- .3 SIA selection shall provide the ability to transmit events for up to 2040 individual points.
- .4 Programming of accounts and phone numbers.
- .5 Dual phone line interface.
- .6 Line fault monitoring.
- .7 Automatic 24-hour test.

## **2.9 DIALER**

- .1 The dialer shall be listed with the system and shall have a minimum of 4 channels. The dialer shall be mounted externally.

## **Part 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- .2 Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- .1 Perform work in accordance with the requirements of Canadian Electrical Code and The National or Provincially-adopted Building Code.
- .2 Fasten equipment to structural members of building or metal supports attached to structure, or to concrete surfaces.
- .3 Wiring Method: Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Conceal raceway and cables except in unfinished spaces.
- .4 Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.
- .5 Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.
- .6 Provide primary power for each panel from normal/ emergency panels as indicated on the Electrical Power Plans. Power shall be 120 VAC service, transformed through a two-winding, isolation type transformer and rectified to low voltage DC for operation of all circuits and devices.

### **3.3 BOXES, ENCLOSURES AND WIRING DEVICES**

- .1 Boxes shall be installed plumb and firmly in position.
- .2 Extension rings with blank covers shall be installed on junction boxes where required.
- .3 Junction boxes served by concealed conduit shall be flush mounted.
- .4 Upon initial installation, all wiring outlets, junction, pull and outlet boxes shall have dust covers installed. Dust covers shall not be removed until wiring installation when permanent dust covers or devices are installed.
- .5 "Fire alarm system" decal or silk-screened label shall be applied to all junction box covers.

**3.4 CONDUCTORS**

- .1 Each conductor shall be identified as shown on the drawings at each with wire markers at terminal points. Attach permanent wire markers within 2 inches of the wire termination. Marker legends shall be visible.
- .2 All wiring shall be supplied and installed in compliance with the requirements of the Canadian Electric Code, CAN/ULC-S524 and that of the manufacturer.
- .3 Wiring for strobe and audible circuits shall be a minimum 14 AWG, signal line circuits; 18 AWG twisted shielded, speaker circuits; 18 AWG twisted, telephone circuit; 18 AWG twisted shielded.
- .4 All splices shall be made using solderless connectors. All connectors shall be installed in conformance with the manufacturer recommendations.
- .5 Crimp-on type spade lugs shall be used for terminations of stranded conductors to binder screw or stud type terminals. Spade lugs shall have upset legs and insulation sleeves sized for the conductors.
- .6 The installation contractor shall submit for approval prior to installation of wire, a proposed color code for system conductors to allow rapid identification of circuit types.
- .7 Wiring within sub panels shall be arranged and routed to allow accessibility to equipment for adjustment and maintenance.

**3.5 DEVICES**

- .1 Relays and other devices to be mounted in auxiliary panels are to be securely fastened to avoid false indications and failures due to shock or vibration.
- .2 Wiring within panels shall be arranged and routed to allow accessibility to equipment for adjustment and maintenance.
- .3 All devices and appliances shall be mounted to or in an approved electrical box.

**3.6 IDENTIFICATION**

- .1 Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems".
- .2 Permanently label or mark each conductor at both ends with permanent alphanumeric wire markers.
- .3 A consistent color code for fire alarm system conductors throughout the installation.

**3.7 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- .2 Testing General:
  - .1 All Alarm Initiating Devices shall be observed and logged for correct zone and sensitivity. These devices and their bases shall be tagged with adhesive tags located in an area not visible when installed, showing the initials of the installing technician and date.
  - .2 Wiring runs shall be tested for continuity, short circuits and grounds before system is energized. Resistance, current and voltage readings shall be made as work progresses.
  - .3 All test equipment, instruments, tools and labor required to conduct the system tests shall be made available by the installing contractor. The following equipment shall be a minimum for conducting the tests:

- .1 Ladders and scaffolds as required to access all installed equipment.
- .2 Multi-meter for reading voltage, current and resistance.
- .3 Two way radios, and flashlights.
- .4 A manufacturer recommended device for measuring air flow through air duct smoke detector sampling assemblies.
- .5 Decibel meter.
- .6 In addition to the testing specified to be performed by the installing contractor, the installation shall be subject to test by the acceptance inspector.

### 3.8 ACCEPTANCE TESTING

- .1 A written acceptance test procedure (ATP) for testing the fire alarm system components and installation will be prepared by the engineer in accordance with CAN/ULC-S524 and this specification. The contractor shall be responsible for the performance of the ATP, demonstrating the function of the system and verifying the correct operation of all system components, circuits, and programming.
- .2 A program matrix shall be prepared by the installing contractor referencing each alarm input to every output function affected as a result of an alarm condition on that input.
- .3 The installing contractor prior to the ATP shall prepare a complete listing of all device labels for alphanumeric annunciator displays.
- .4 Loop Resistance Tests: Measure and record the resistance of each circuit with each pair of conductors in the circuit short-circuited at the farthest point from the circuit origin. The tests shall be witnessed by the owner and test results recorded for use at the final acceptance test.
- .5 Preliminary Testing: Conduct preliminary tests to ensure that all devices and circuits are functioning properly. After preliminary testing is complete, provide a letter certifying that the installation is complete and fully operable. The letter shall state that each initiating and indicating device was tested in place and functioned properly. The letter shall also state that all panel functions were tested and operated properly. The Contractor and an authorized representative from each supplier of equipment shall be in attendance at the preliminary testing to make necessary adjustments.
- .6 Final Acceptance Test: Notify the owner in writing when the system is ready for final acceptance testing. Submit request for test at least 14 calendar days prior to the test date. A final acceptance test will not be scheduled until meggar test results, the loop resistance test results, and the submittals required in Part 1 are provided to the owner.
  - .1 Verify that the control unit is in the normal condition as detailed in the manufacturer's operating and maintenance manual.
  - .2 Test each initiating and indicating device and circuit for proper operation and response. Disconnect the confirmation feature for smoke detectors during tests to minimize the amount of smoke or test gas needed to activate the detector.
  - .3 Test the system for all specified functions in accordance with the contract drawings and specifications and the manufacturer's operating and maintenance manual.
  - .4 Visually inspect all wiring.
  - .5 Verify that all software control and data files have been entered or programmed into the FACP.
  - .6 Verify that Shop Drawings reflecting as-built conditions are accurate.
  - .7 Measure the current in circuits to assure that there is the calculated spare capacity for the circuits.
  - .8 Measure voltage readings for circuits to assure that voltage drop is not excessive.

- .9 Measure the voltage drop at the most remote appliance on each notification appliance circuit.
- .7 The acceptance inspector shall use the system record drawings in combination with the documents specified in this specification during the testing procedure to verify operation as programmed. In conducting the ATP, the acceptance inspector shall request demonstration of any or all input and output functions. The items tested shall include but not be limited to the following:
  - .1 System wiring shall be tested to demonstrate correct system response and correct subsequent system operation in the event of:
    - .1 Open, shorted and grounded signal line circuits.
    - .2 Open, shorted and grounded notification, releasing circuits.
    - .3 Primary power or battery disconnected.
  - .2 System notification appliances shall be demonstrated as follows:
    - .1 All alarm notification appliances actuate as programmed.
    - .2 Audibility and visibility at required levels.
  - .3 System indications shall be demonstrated as follows:
    - .1 Correct message display for each alarm input at the control display.
    - .2 Correct annunciator light for each alarm input at each annunciator and graphic display as shown on the drawings.
    - .3 Correct history logging for all system activity.
  - .4 System off-site reporting functions shall be demonstrated as follows:
    - .1 Correct zone transmitted for each alarm input.
    - .2 Trouble signals received for disconnect.
  - .5 Secondary power capabilities shall be demonstrated as follows:
    - .1 System primary power shall be disconnected for a period of time as specified herein. At the end of that period, an alarm condition shall be created and the system shall perform as specified for a period as specified.
    - .2 System primary power shall be restored for twenty-four hours and system-charging current shall be normal trickle charge for a fully charged battery bank.
    - .3 System battery voltages and charging currents shall be checked at the fire alarm control panel.

### 3.9 DOCUMENTATION

- .1 System documentation shall be furnished to the owner and shall include but not be limited to the following:
  - .1 System record drawings and wiring details including one set of reproducible drawings, and a CD ROM with copies of the record drawings in DXF format for use in a CAD drafting program.



- .2 System operation, installation and maintenance manuals.
- .3 System matrix showing interaction of all input signals with output commands.
- .4 Documentation of system voltage, current and resistance readings taken during the installation, testing and ATP phases of the system installation.
- .5 System program showing system functions, controls and labeling of equipment and devices.

### **3.10 PROTECTION**

- .1 Remove and replace devices and panel components that are wet, moisture damaged, or mold damaged.

### **3.11 DEMONSTRATION**

- .1 Instructor: Include in the project the services of an instructor, who shall have received specific training from the manufacturer for the training of other persons regarding the inspection, testing and maintenance of the system provided. The instructor shall train the employees designated by the owner, in the care, adjustment, maintenance, and operation of the fire alarm system.
- .2 Training sessions shall cover all aspects of system performance, including system architecture, signaling line circuit configurations, sensor and other initiating device types, locations, and addresses, fire alarm control panel function key operation, and other functions as designated by the owner.
- .3 Required Instruction Time: Provide 16 hours of instruction after final acceptance of the system. The instruction shall be given during regular working hours on such dates and times as are selected by the owner. The instruction may be divided into two or more periods at the discretion of the owner. One training session shall be videotaped by the contractor. Videotapes shall be delivered to the owner.
- .4 Provide a typeset printed or typewritten instruction card mounted behind a Lexan plastic or glass cover in a stainless steel or aluminum frame. Install the frame in a conspicuous location observable from the FACP. The card shall show those steps to be taken by an operator when a signal is received as well as the functional operation of the system under all conditions, normal, alarm, supervisory and trouble. The instructions shall be approved by the owner.
- .5 Comprehensive system troubleshooting training shall be provided for a single individual designated by the owner. This session shall be separate and distinct from the above described sessions.
- .6 All training sessions shall be conducted following final system certification and acceptance. Three additional training sessions shall be provided for all security personnel on all shifts six months after final system certification.
- .7 All training sessions shall be conducted by an authorized fire alarm system distributor representative, who has received specific training from the manufacturer for the training of other persons regarding the inspection, testing, and maintenance of the system provided.

**END OF SECTION**



**TP1 Amount Payable – General**

1.1 Subject to any other provisions of the contract, Her Majesty shall pay the Contractor, at the times and in the manner hereinafter set out, the amount by which

1.1.1 the aggregate of the amounts described in TP2 exceeds

1.1.2 the aggregate of the amounts described in TP3

and the Contractor shall accept that amount as payment in full satisfaction for everything furnished and done by him in respect of the work to which the payment relates.

**TP2 Amounts Payable to the Contractor**

2.1 The amounts referred to in TP1.1.1 are the aggregate of

2.1.1 the amounts referred to in the Articles of Agreement, and

2.1.2 the amounts, if any, that are payable to the Contractor pursuant to the General Conditions.

**TP3 Amounts Payable to Her Majesty**

3.1 The amounts referred to in TP1.1.2 are the aggregate of the amounts, in any, that the Contractor is liable to pay Her Majesty pursuant to the contract.

3.2 When making any payments to the Contractor, the failure of Her Majesty to deduct an amount referred to in TP3.1 from an amount referred to in TP2 shall not constitute a waiver of the right to do so, or an admission of lack of entitlement to do so in any subsequent payment to the Contractor.

**TP4 Time of Payment**

4.1 In these Terms of Payment

4.1.1 The “payment period” means a period of 30 consecutive days or such other longer period as is agreed between the Contractor and the Departmental Representative.

4.1.2 An amount is “due and payable” when it is due and payable by Her Majesty to the Contractor according to TP4.4, TP4.7 or TP4.10.

4.1.3 An amount is overdue when it is unpaid on the first day following the day upon which it is due and payable.

4.1.4 The “date of payment” means the date of the negotiable instrument of an amount due and payable by the Receiver General for Canada and given for payment.

4.1.5 The “Bank Rate” means the discount rate of interest set by the Bank of Canada in effect at the opening of business on the date of payment.



- 4.2 The Contractor shall, on the expiration of a payment period, deliver to the Departmental Representative in respect of that payment period a written progress claim that fully describes any part of the work that has been completed, and any material that was delivered to the work site but not incorporated into the work during that payment period.
- 4.3 The Departmental Representative shall, not later than ten days after receipt by him of a progress claim referred to in TP4.2,
- 4.3.1 inspect the part of the work and the material described in the progress claim; and
- 4.3.2 issue a progress report, a copy of which the Departmental Representative will give to the Contractor, that indicates the value of the part of the work and the material described in the progress claim that, in the opinion of the Departmental Representative,
- 4.3.2.1 is in accordance with the contract, and
- 4.3.2.2 was not included in any other progress report relating to the contract.
- 4.4 Subject to TP1 and TP4.5 Her Majesty shall, not later than 30 days after receipt by the Departmental Representative of a progress claim referred to in TP4.2, pay the Contractor
- 4.4.1 an amount that is equal to 95% of the value that is indicated in the progress report referred to in TP4.3.2 if a labour and material payment bond has been furnished by the Contractor, or
- 4.4.2 an amount that is equal to 90% of the value that is indicated in the progress report referred to in TP4.3.2 if a labour and material payment bond has not been furnished by the Contractor.
- 4.5 It is a condition precedent to Her Majesty's obligation under TP4.4 that the Contractor has made and delivered to the Departmental Representative,
- 4.5.1 a statutory declaration described in TP4.6 in respect of a progress claim referred to in TP4.2,
- 4.5.2 in the case of the Contractor's first progress claim, a construction schedule in accordance with the relevant sections of the Specifications, and
- 4.5.3 if the requirement for a schedule is specified, an update of the said schedule at the times identified in the relevant sections of the Specifications.
- 4.6 A statutory declaration referred to in TP4.5 shall contain a deposition by the Contractor that
- 4.6.1 up to the date of the Contractor's progress claim, the Contractor has complied with all his lawful obligations with respect to the Labour Conditions; and
- 4.6.2 up to the date of the Contractor's immediately preceding progress claim, all lawful obligations of the Contractor to subcontractors and suppliers of material in respect of the



work under the contract have been fully discharged.

- 4.7 Subject to TP1 and TP4.8, Her Majesty shall, not later than 30 days after the date of issue of an Interim Certificate of Completion referred to in GC44.2, pay the Contractor the amount referred to in TP1 less the aggregate of
- 4.7.1 the sum of all payments that were made pursuant to TP4.4;
  - 4.7.2 an amount that is equal to the Departmental Representative's estimate of the cost to Her Majesty or rectifying defects described in the Interim Certificate of Completion; and
  - 4.7.3 an amount that is equal to the Departmental Representative's estimate of the cost to Her Majesty of completing the parts of the work described in the Interim Certificate of Completion other than the defects referred to in TP4.7.2.
- 4.8 It is a condition precedent to Her Majesty's obligation under TP4.7 that the Contractor has made and delivered to the Departmental Representative,
- 4.8.1 a statutory declaration described in TP4.9 in respect of an Interim Certificate of Completion referred to in GC44.2, and
  - 4.8.2 if so specified in the relevant sections of the Specifications, and update of the construction schedule referred to in TP4.5.2 and the updated schedule shall, in addition to the specified requirements, clearly show a detailed timetable that is acceptable to the Departmental Representative for the completion of any unfinished work and the correction of all defects.
- 4.9 A statutory declaration referred to in TP4.8 shall contain a deposition by the contractor that up to the date of the Interim Certificate of Completion the Contractor has
- 4.9.1 complied with all of the Contractor's lawful obligations with respect to the Labour Conditions;
  - 4.9.2 discharged all of the Contractor's lawful obligations to the subcontractors and suppliers of material in respect of the work under the contract; and
  - 4.9.3 discharged the Contractor's lawful obligations referred to in GC14.6.
- 4.10 Subject to TP1 and TP4.11, Her Majesty shall, not later than 60 days after the date of issue of a Final Certificate of Completion referred to in GC44.1, pay the Contractor the amount referred to in TP1 less the aggregate of
- 4.10.1 the sum of all payments that were made pursuant to TP4.4; and
  - 4.10.2 the sum of all payments that were made pursuant to TP4.7.
- 4.11 It is a condition precedent to Her Majesty's obligation under TP4.10 that the Contractor has made and delivered a statutory declaration described in TP4.12 to the Departmental Representative.



- 4.12 A statutory declaration referred to in TP4.11 shall, in addition to the depositions described in TP4.9, contain a deposition by the Contractor that all of the Contractor's lawful obligations and any lawful claims against the Contractor that arose out of the performance of the contract have been discharged and satisfied.

**TP5 Progress Report and Payment Thereunder Not Binding on Her Majesty**

- 5.1 Neither a progress report referred to in TP4.3 nor any payment made by Her Majesty pursuant to these Terms of Payment shall be construed as an admission by Her Majesty that the work, material or any part thereof is complete, is satisfactory or is in accordance with the contract.

**TP6 Delay in Making Payment**

- 6.1 Notwithstanding GC7 any delay by Her Majesty in making any payment when it is due pursuant to these Terms of Payment shall not be a breach of the contract by Her Majesty.

- 6.2 Her Majesty shall pay, without demand from the Contractor, simple interest at the Bank Rate plus 1 -1/4 per centum on any amount which is overdue pursuant to TP4.1.3, and the interest shall apply from and include the day such amount became overdue until the day prior to the date of payment except that

- 6.2.1 interest shall not be payable or paid unless the amount referred to in TP6.2 has been overdue for more than 15 days following

6.2.1.1 the date the said amount became due and payable, or

6.2.1.2 the receipt by the Departmental Representative of the Statutory Declaration referred to in TP4.5, TP4.8 or TP4.11,

whichever is the later, and

- 6.6.2 interest shall not be payable or paid on overdue advance payments if any.

**TP7 Right of Set-off**

- 7.1 Without limiting any right of set-off or deduction given or implied by law or elsewhere in the contract, Her Majesty may set off any amount payable to Her Majesty by the Contractor under this contract or under any current contract against any amount payable to the Contractor under this contract.

- 7.2 For the purposes of TP7.1, "current contract" means a contract between Her Majesty and the Contractor

7.2.1 under which the Contractor has an undischarged obligation to perform or supply work, labour or material, or

7.2.2 in respect of which Her Majesty has, since the date of which the Articles of Agreement were made, exercised any right to take the work that is the subject of the contract out of the Contractor's hands.



**TP8 Payment in Event of Termination**

- 8.1 If the contract is terminated pursuant to GC41, Her Majesty shall pay the Contractor any amount that is lawfully due and payable to the Contractor as soon as is practicable under the circumstances.

**TP9 Interest on Settled Claims**

- 9.1 Her Majesty shall pay to the Contractor simple interest on the amount of a settled claim at an average Bank Rate plus 1 ¼ per centum from the date the settled claim was outstanding until the day prior to the date of payment.
- 9.2 For the purposes of TP9.1,
- 9.2.1 a claim is deemed to have been settled when an agreement in writing is signed by the Departmental Representative and the Contractor setting out the amount of the claim to be paid by Her Majesty and the items or work for which the said amount is to be paid.
- 9.2.2 an "average Bank Rate" means the discount rate of interest set by the Bank of Canada in effect at the end of each calendar month averaged over the period the settled claim was outstanding.
- 9.2.3 a settled claim is deemed to be outstanding from the day immediately following the date the said claim would have been due and payable under the contract had it not been disputed.
- 9.3 For the purposes of TP9 a claim means a disputed amount subject to negotiation between Her Majesty and the Contractor under the contract.



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## **GC1 Interpretation**

### **1.1 In the contract**

- 1.1.1 where reference is made to a part of the contract by means of numbers preceded by letters, the reference shall be construed to be a reference to the particular part of the contract that is identified by that combination of letters and numbers and to any other part of the contract referred to therein;
- 1.1.2 “contract” means the contract document referred to in the Articles of Agreement;
- 1.1.3 “contract security” means any security given by the Contractor to Her Majesty in accordance with the contract;
- 1.1.4 “Departmental Representative” means the officer or employee of Her Majesty who is designated pursuant to the Articles of Agreement and includes a person specially authorized by him to perform, on his behalf, any of his functions under the contract and is so designated in writing to the Contractor;
- 1.1.5 “material” includes all commodities, articles and things required to be furnished by or for the Contractor under the contract for incorporation into the work;
- 1.1.6 “Minister” includes a person acting for, or if the office is vacant, in place of the Minister and his successors in the office, and his or their lawful deputy and any of his or their representatives appointed for the purposes of the contract;
- 1.1.7 “person” includes, unless the context otherwise requires, a partnership, proprietorship, firm, joint venture, consortium and a corporation;
- 1.1.8 “plant” includes all animals, tools, implements, machinery, vehicles, buildings, structures, equipment and commodities, articles and things other than material, that are necessary for the due performance of the contract;
- 1.1.9 “subcontractor” means a person to whom the Contractor has, subject to GC4, subcontracted the whole or any part of the work;
- 1.1.10 “superintendent” means the employee of the Contractor who is designated by the Contractor to act pursuant to GC19;
- 1.1.11 “work includes, subject only to any express stipulation in the contract to the contrary, everything that is necessary to be done, furnished or delivered by the Contractor to perform the contract.

1.2 The headings in the contract documents, other than in the Plans and Specifications, form no part of the contract but are inserted for convenience of reference only.

1.3 In interpreting the contract, in the event of discrepancies or conflicts between anything in the Plans and Specifications and the General Conditions, the General Conditions govern.





- 1.4 In interpreting the Plans and Specifications, in the event of discrepancies or conflicts between
- 1.4.1 the Plans and Specifications, the Specifications govern;
  - 1.4.2 the Plans, the Plans drawn with the largest scale govern; and
  - 1.4.3 figured dimensions and scaled dimensions, the figured dimensions govern.

**GC2 Successors and Assigns**

- 2.1 The contract shall inure to the benefit of and be binding upon the parties hereto and their lawful heirs, executors, administrators, successors and assigns.

**GC3 Assignment of Contract**

- 3.1 The contract may not be assigned by the Contractor, either in whole or in part, without the written consent of the Minister.

**GC4 Subcontracting by Contractor**

- 4.1 Subject to this General Condition, the Contractor may subcontract any part of the work.
- 4.2 The Contractor shall notify the Departmental Representative in writing of his intention to subcontract.
- 4.3 A notification referred to in GC4.2 shall identify the part of the work, and the subcontractor with whom it is intended to subcontract.
- 4.4 The Departmental Representative may object to the intended subcontracting by notifying the Contractor in writing within six days of receipt by the Departmental Representative of a notification referred to in GC4.2.
- 4.5 If the Departmental Representative objects to a subcontracting pursuant to GC4.4, the Contractor shall not enter into the intended subcontract.
- 4.6 The contractor shall not, without the written consent of the Departmental Representative, change a subcontractor who has been engaged by him in accordance with this General Condition.
- 4.7 Every subcontract entered into by the Contractor shall adopt all of the terms and conditions of this contract that are of general application.
- 4.8 Neither a subcontracting nor the Departmental Representative's consent to a subcontracting by the Contractor shall be construed to relieve the Contractor from any obligation under the contract or to impose any liability upon Her Majesty.

**GC5 Amendments**



- 5.1 No amendment or change in any of the provisions of the contract shall have any force or effect until it is reduced to writing.

**GC6 No Implied Obligations**

- 6.1 No implied terms or obligations of any kind by or on behalf of Her Majesty shall arise from anything in the contract and the express covenants and agreements therein contained and made by Her Majesty are the only covenants and agreements upon which any rights against Her Majesty are to be founded.
- 6.2 The contract supersedes all communications, negotiations and agreements, either written or oral, relating to the work that were made prior to the date of the contract.

**GC7 Time of Essence**

- 7.1 Time is of the essence of the contract.

**GC8 Indemnification by Contractor**

- 8.1 The Contractor shall indemnify and save Her Majesty harmless from and against all claims, demand, losses, costs, damages, actions, suits, or proceedings by whomever made, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by or attributable to the activities of the Contractor, his servants, agents, subcontractors and sub-subcontractors in performing the work including an infringement or an alleged infringement of a patent of invention or any other kind of intellectual property.
- 8.2 For the purpose of GC8.1, "activities" includes any act improperly carried out, any omission to carry out an act and any delay in carrying out an act.

**GC9 Indemnification by Her Majesty**

- 9.1 Her Majesty shall, subject to the Crown Liability Act, the Patent Act, and any other law that affects Her Majesty's rights, powers, privileges or obligations, indemnify and save the Contractor harmless from and against all claims, demands, losses, costs, damage, actions, suits or proceedings arising out of his activities under the contract that are directly attributable to
- 9.1.1 lack of or a defect in Her Majesty's title to the work site whether real or alleged; or
- 9.1.2 an infringement or an alleged infringement by the Contractor of any patent of invention or any other kind of intellectual property occurring while the Contractor was performing any act for the purposes of the contract employing a model, plan or design or any other thing related to the work that was supplied by Her Majesty to the Contractor.

**GC10 Members of House of Commons Not to Benefit**



- 10.1 As required by the Parliament of Canada Act, it is an express condition of the contract that no member of the House of Commons shall be admitted to any share of part of the contract or to any benefit arising therefrom.

### **GC11 Notices**

- 11.1 Any notice, consent, order, decision, direction or other communication, other than a notice referred to in GC11.4, that may be given to the Contractor pursuant to the contract may be given in any manner.
- 11.2 Any notice, consent, order, decision, direction or other communication required to be given in writing, to any party pursuant to the contract shall, subject to GC11.4, be deemed to have been effectively given
- 11.2.1 to the Contractor, if delivered personally to the Contractor or the Contractor's superintendent, or forwarded by mail, telex or facsimile to the Contractor at the address set out in A4.1, or
- 11.2.2 to Her Majesty, if delivered personally to the Departmental Representative, or forwarded by mail, telex or facsimile to the Departmental Representative at the address set out in A1.2.1.
- 11.3 Any such notice, consent, order, decision, direction or other communication given in accordance with GC11.2 shall be deemed to have been received by either party
- 11.3.1 if delivered personally, on the day that it was delivered,
- 11.3.2 if forwarded by mail, on the earlier of the day it was received and the sixth day after it was mailed, and
- 11.3.3 if forwarded by telex or facsimile, 24 hours after it was transmitted.
- 11.4 A notice given under GC38.1.1, GC40 and GC41, if delivered personally, shall be delivered to the Contractor if the Contractor is doing business as sole proprietor or, if the Contractor is a partnership or corporation, to an officer thereof.

### **GC12 Material, Plant and Real Property Supplied by Her Majesty**

- 12.1 Subject to GC12.2, the Contractor is liable to Her Majesty for any loss of or damage to material, plant or real property that is supplied or placed in the care, custody and control of the Contractor by Her Majesty for use in connection with the contract, whether or not that loss or damage is attributable to causes beyond the Contractor's control.
- 12.2 The Contractor is not liable to Her Majesty for any loss or damage to material, plant or real property referred to in GC12.1 if that loss or damage results from and is directly attributable to reasonable wear and tear.
- 12.3 The Contractor shall not use any material, plant or real property referred to in GC12.1 except for



the purpose of performing this contract.

- 12.4 When the Contractor fails to make good any loss or damage for which he is liable under GC12.1 within a reasonable time after being required to do so by the Departmental Representative, the Departmental Representative may cause the loss or damage to be made good at the Contractor's expense, and the Contractor shall thereupon be liable to Her Majesty for the cost thereof and shall, on demand, pay to Her Majesty an amount equal to that cost.
- 12.5 The Contractor shall keep such records of all material, plant and real property referred to in GC12.1 as the Departmental Representative from time to time requires and shall satisfy the Departmental Representative, when requested, that such material, plant and real property are at the place and in the condition which they ought to be.

### **GC13 Material, Plant and Real Property Become Property of Her Majesty**

- 13.1 Subject to GC14.7 all material and plant and the interest of the Contractor in all real property, licenses, powers and privileges purchased, used or consumed by the Contractor for the contract shall, after the time of their purchase, use or consumption be the property of Her Majesty for the purposes of the work and they shall continue to be the property of Her Majesty.
- 13.1.1 in the case of material, until the Departmental Representative indicates that he is satisfied that it will not be required for the work, and
- 13.1.2 in the case of plant, real property, licenses, powers and privileges, until the Departmental Representative indicates that he is satisfied that the interest vested in Her Majesty therein is no longer required for the purposes of the work.
- 13.2 Material or plant that is the property of Her Majesty by virtue of GC13.1 shall not be taken away from the work site or used or disposed of except for the purposes of the work without the written consent of the Departmental Representative.
- 13.3 Her Majesty is not liable for loss of or damage from any cause to the material or plant referred to in GC13.1 and the Contractor is liable for such loss or damage notwithstanding that the material or plant is the property of Her Majesty.

### **GC14 Permits and Taxes Payable**

- 14.1 The Contractor shall, within 30 days after the date of the contract, tender to a municipal authority an amount equal to all fees and charges that would be lawfully payable to that municipal authority in respect of building permits as if the work were being performed for a person other than Her Majesty.
- 14.2 Within 10 days of making a tender pursuant to GC14.1, the Contractor shall notify the Departmental Representative of his action and of the amount tendered and whether or not the municipal authority has accepted that amount.
- 14.3 If the municipal authority does not accept the amount tendered pursuant to GC14.1 the Contractor shall pay that amount to Her Majesty within 6 days after the time stipulated in GC14.2.



- 14.4 For the purposes of GC14.1 to GC14.3 “municipal authority” means any authority that would have jurisdiction respecting permission to perform the work if the owner were not Her Majesty.
- 14.5 Notwithstanding the residency of the Contractor, the Contractor shall pay any applicable tax arising from or related to the performance of the work under the contract.
- 14.6 In accordance with the Statutory Declaration referred to in TP4.9, a Contractor who has neither residence nor place of business in the province in which work under the contract is being performed shall provide Her Majesty with proof of registration with the provincial sales tax authorities in the said province.
- 14.7 For the purpose of the payment of any applicable tax or the furnishing of security for the payment of any applicable tax arising from or related to the performance of the work under the contract, the Contractor shall, notwithstanding the fact that all material, plant and interest of the Contractor in all real property, licenses, powers and privileges, have become the property of Her Majesty after the time of purchase, be liable, as a user or consumer, for the payment or for the furnishing of security for the payment of any applicable tax payable, at the time of the use or consumption of that material, plant or interest of the Contractor in accordance with the relevant legislation.

#### **GC15 Performance of Work under Direction of Departmental Representative**

- 15.1 The Contractor shall
- 15.1.1 permit the Departmental Representative to have access to the work and its site at all times during the performance of the contract;
  - 15.1.2 furnish the Departmental Representative with such information respecting the performance of the contract as he may require; and
  - 15.1.3 give the Departmental Representative every possible assistance to enable the Departmental Representative to carry out his duty to see that the work is performed in accordance with the contract and to carry out any other duties and exercise any powers specially imposed or conferred on the Departmental Representative under the contract.

#### **CG16 Cooperation with Other Contractors**

- 16.1 Where, in the opinion of the Departmental Representative, it is necessary that other contractors or workers with or without plant and material, be sent onto the work or its site, the Contractor shall, to the satisfaction of the Departmental Representative, allow them access and cooperate with them in the carrying out of their duties and obligation.
- 16.2 If
- 16.2.1 the sending onto the work or its site of other contractors or workers pursuant to GC16.1 could not have been reasonably foreseen or anticipated by the Contractor when entering into the contract, and



16.2.2 the Contractor incurs, in the opinion of the Departmental Representative, extra expense in complying with GC16.1, and

16.2.3 The Contractor has given the Departmental Representative written notice of his claim for the extra expense referred to in GC16.2.2 within 30 days of the date that the other contractors or workers were sent onto the work or its site,

Her Majesty shall pay the Contractor the cost, calculated in accordance with GC48 to GC50, of the extra labour, plant and material that was necessarily incurred.

### **GC17 Examination of Work**

17.1 If, at any time after the commencement of the work but prior to the expiry of the warranty or guarantee period, the Departmental Representative has reason to believe that the work or any part thereof has not been performed in accordance with the contract, the Departmental Representative may have that work examined by an expert of his choice.

17.2 If, as a result of an examination of the work referred to in GC17.1, it is established that the work was not performed in accordance with the contract, then, in addition to and without limiting or otherwise affecting any of Her Majesty's rights and remedies under the contract either at law or in equity, the Contractor shall pay Her Majesty, on demand, all reasonable costs and expenses that were incurred by Her Majesty in having that examination performed.

### **GC18 Clearing of Site**

18.1 The Contractor shall maintain the work and its site in a tidy condition and free from the accumulation of waste material and debris, in accordance with any directions of the Departmental Representative.

18.2 Before the issue of an interim certificate referred to in GC44.2, the Contractor shall remove all the plant and material not required for the performance of the remaining work, and all waste material and other debris, and shall cause the work and its site to be clean and suitable for occupancy by Her Majesty's servants, unless otherwise stipulated in the contract.

18.3 Before the issue of a final certificate referred to in GC44.1, the Contractor, shall remove from the work and its site all of the surplus plant and material and any waste material and other debris.

18.4 The Contractor's obligations described in GC18.1 to GC18.3 do not extend to waste material and other debris caused by Her Majesty's servants or contractors and workers referred to in GC16.1.

### **GC19 Contractor's Superintendent**

19.1 The Contractor shall, forthwith upon the award of the contract, designate a superintendent.

19.2 The Contractor shall forthwith notify the Departmental Representative of the name, address and telephone number of a superintendent designate pursuant to GC19.1.



- 19.3 A superintendent designated pursuant to GC19.1 shall be in full charge of the operations of the Contractor in the performance of the work and is authorized to accept any notice, consent, order, direction, decision or other communication on behalf of the Contractor that may be given to the superintendent under the contract.
- 19.4 The Contractor shall, until the work has been completed, keep a competent superintendent at the work site during working hours.
- 19.5 The Contractor shall, upon the request of the Departmental Representative, remove any superintendent who, in the opinion of the Departmental Representative, is incompetent or has been conducting himself improperly and shall forthwith designate another superintendent who is acceptable to the Departmental Representative.
- 19.6 Subject to GC19.5, the Contractor shall not substitute a superintendent without the written consent of the Departmental Representative.
- 19.7 A breach by the Contractor of GC19.6 entitles the Departmental Representative to refuse to issue any certificate referred to in GC44 until the superintendent has returned to the work site or another superintendent who is acceptable to the Departmental Representative has been substituted.

#### **GC20 National Security**

- 20.1 If the Minister is of the opinion that the work is of a class or kind that involves the national security, he may order the Contractor
- 20.1.1 to provide him with any information concerning persons employed or to be employed by him for purposes of the contract; and
  - 20.1.2 to remove any person from the work and its site if, in the opinion of the Minister, that person may be a risk to the national security.
- 20.2 The Contractor shall, in all contracts with persons who are to be employed in the performance of the contract, make provision for his performance of any obligation that may be imposed upon him under GC19 to GC21.
- 20.3 The Contractor shall comply with an order of the Minister under GC20.1

#### **GC21 Unsuitable Workers**

- 21.1 The Contractor shall, upon the request of the Departmental Representative, remove any person employed by him for purposes of the contract who, in the opinion of the Departmental Representative, is incompetent or has conducted himself improperly, and the Contractor shall not permit a person who has been removed to return to the work site.

#### **GC22 Increased or Decreased Costs**



- 22.1 The amount set out in the Articles of Agreement shall not be increased or decreased by reason of any increase or decrease in the cost of the work that is brought about by an increase or decrease in the cost of labour, plant or material or any wage adjustment arising pursuant to the Labour Conditions.
- 22.2 Notwithstanding GC22.1 and GC35, an amount set out in the Articles of Agreement shall be adjusted in the manner provided in GC22.3, if any change in a tax imposed under the Excise Act, the Excise Tax Act, the Old Age Security Act, the Customs Act, the Customs Tariff or any provincial sales tax legislation imposing a retail sales tax on the purchase of tangible personal property incorporated into Real Property
- 22.2.1 occurs after the date of the submission by the Contractor of his tender for the contract,
- 22.2.2 applies to material, and
- 22.2.3 affects the cost to the Contractor of that material.
- 22.3 If a change referred to in GC22.2 occurs, the appropriate amount set out in the Articles of Agreement shall be increased or decreased by an amount equal to the amount that is established by an examination of the relevant records of the Contractor referred to in GC51 to be the increase or decrease in the cost incurred that is directly attributable to that change.
- 22.4 For the purpose of GC22.2, where a tax is changed after the date of submission of the tender but public notice of the change has been given by the Minister of Finance before that date, the change shall be deemed to have occurred before the date of submission of the tender.

### **GC23 Canadian Labour and Material**

- 23.1 The Contractor shall use Canadian labour and material in the performance of the work to the full extent to which they are procurable, consistent with proper economy and expeditious carrying out of the work.
- 23.2 Subject to GC23.1, the Contractor shall, in the performance of the work, employ labour from the locality where the work is being performed to the extent to which it is available, and shall use the offices of the Canada Employment Centres for the recruitment of workers wherever practicable.
- 23.3 Subject to GC23.1 and GC23.2, the Contractor shall, in the performance of the work, employ a reasonable proportion of persons who have been on active service with the armed forces of Canada and have been honourably discharged therefrom.

### **GC24 Protection of Work and Documents**

- 24.1 The Contractor shall guard or otherwise protect the work and its site, and protect the contract, specifications, plans, drawings, information, material, plant and real property, whether or not they are supplied by Her Majesty to the Contractor, against loss or damage from any cause, and he shall not use, issue, disclose or dispose of them without the written consent of the Minister, except as may be essential for the performance of the work.





- 24.2 If any document or information given or disclosed to the Contractor is assigned a security rating by the person who gave or disclosed it, the Contractor shall take all measures directed by the Departmental Representative to be taken to ensure the maintenance of the degree of security that is ascribed to that rating.
- 24.3 The Contractor shall provide all facilities necessary for the purpose of maintaining security, and shall assist any person authorized by the Minister to inspect or to take security measures in respect of the work and its site.
- 24.4 The Departmental Representative may direct the Contractor to do such things and to perform such additional work as the Departmental Representative considers reasonable and necessary to ensure compliance with or to remedy a breach of GC24.1 to GC24.3.

### **GC25 Public Ceremonies and Signs**

- 25.1 The Contractor shall not permit any public ceremony in connection with the work without the prior consent of the Minister.
- 25.2 The Contractor shall not erect or permit the erection of any sign or advertising on the work or its site without the prior consent of the Departmental Representative.

### **GC26 Precautions against Damage, Infringement of Rights, Fire, and Other Hazards**

- 26.1 The Contractor shall, at his own expense, do whatever is necessary to ensure that
- 26.1.1 no person, property, right, easement or privilege is injured, damaged or infringed by reasons of the Contractor's activities in performing the contract;
  - 26.1.2 pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted or endangered by the performance or existence of the work or plant;
  - 26.1.3 fire hazards in or about the work or its site are eliminated and, subject to any direction that may be given by the Departmental Representative, any fire is promptly extinguished;
  - 26.1.4 the health and safety of all persons employed in the performance of the work is not endangered by the method or means of its performance;
  - 26.1.5 adequate medical services are available to all persons employed on the work or its site at all times during the performance of the work;
  - 26.1.6 adequate sanitation measures are taken in respect of the work and its site; and
  - 26.1.7 all stakes, buoys and marks placed on the work or its site by or under the authority of the Departmental Representative are protected and are not removed, defaced, altered or destroyed.
- 26.2 The Departmental Representative may direct the Contractor to do such things and to perform such additional work as the Departmental Representative considers reasonable and necessary to ensure



compliance with or to remedy a breach of GC26.1.

- 26.3 The Contractor shall, at his own expense, comply with a direction of the Departmental Representative made under GC26.2.

#### **GC27 Insurance**

- 27.1 The Contractor shall, at his own expense, obtain and maintain insurance contracts in respect of the work and shall provide evidence thereof to the Departmental Representative in accordance with the requirements of the Insurance Conditions "E".

- 27.2 The insurance contracts referred to in GC27.1 shall

27.2.1 be in a form, of the nature, in the amounts, for the periods and containing the terms and conditions specified in Insurance Conditions "E", and

27.2.2 provide for the payment of claims under such insurance contracts in accordance with GC28.

#### **GC28 Insurance Proceeds**

- 28.1 In the case of a claim payable under a Builders Risk/Installation (All Risks) insurance contract maintained by the Contractor pursuant to GC27, the proceeds of the claim shall be paid directly to Her Majesty, and

28.1.1 the monies so paid shall be held by Her Majesty for the purposes of the contract, or

28.1.2 if Her Majesty elects, shall be retained by Her Majesty, in which event they vest in Her Majesty absolutely.

- 28.2 In the case of a claim payable under a General Liability insurance contract maintained by the Contractor pursuant to GC27, the proceeds of the claim shall be paid by the insurer directly to the claimant.

- 28.3 If an election is made pursuant to GC28.1, the Minister may cause an audit to be made of the accounts of the Contractor and of Her Majesty in respect of the part of the work that was lost, damaged or destroyed for the purpose of establishing the difference, if any, between

28.3.1 the aggregate of the amount of the loss or damage suffered or sustained by Her Majesty, including any cost incurred in respect of the clearing and cleaning of the work and its site and any other amount that is payable by the Contractor to Her Majesty under the contract, minus any monies retained pursuant to GC28.12, and

28.3.2 the aggregate of the amounts payable by Her Majesty to the Contractor pursuant to the contract up to the date of the loss or damage.

- 28.4 A difference that is established pursuant to GC28.3 shall be paid forthwith by the party who is determined by the audit to be the debtor to the party who is determined by the audit to be the



creditor.

- 28.5 When payment of a deficiency has been made pursuant to GC28.4, all rights and obligations of Her Majesty and the Contractor under the contract shall, with respect only to the part of the work that was the subject of the audit referred to in GC28.3, be deemed to have been expended and discharged.
- 28.6 If an election is not made pursuant to GC28.1.2 the Contractor shall, subject to GC28.7, clear and clean the work and its site and restore and replace the part of the work that was lost, damaged or destroyed at his own expense as if that part of the work had not yet been performed.
- 28.7 When the Contractor clears and cleans the work and its site and restores and replaces the work referred to in GC 28.6, Her Majesty shall pay him out of the monies referred to in GC28.1 so far as they will thereunto extend.
- 28.8 Subject to GC28.7, payment by Her Majesty pursuant to GC28.7 shall be made in accordance with the contract but the amount of each payment shall be 100% of the amount claimed notwithstanding TP4.4.1 and TP4.4.2.

### **GC29 Contract Security**

- 29.1 The Contractor shall obtain and deliver contract security to the Departmental Representative in accordance with the provisions of the Contract Security Conditions.
- 29.2 If the whole or a part of the contract security referred to in GC29.1 is in the form of a security deposit, it shall be held and disposed of in accordance with GC43 and GC45.
- 29.3 If a part of the contract security referred to in GC29.1 is in the form of a labour and material payment bond, the Contractor shall post a copy of that bond on the work site.

### **GC30 Changes in the Work**

- 30.1 Subject to GC5, the Departmental Representative may, at any time before he issues his Final Certificate of Completion,
- 30.1.1 order work or material in addition to that provided for in the Plans and Specifications;  
and
- 30.1.2 delete or change the dimensions, character, quantity, quality, description, location or position of the whole or any part of the work or material provided for in the Plans and Specifications or in any order made pursuant to GC30.1.1,
- if that additional work or material, deletion, or change is, in his opinion, consistent with the general intent of the original contract.
- 30.2 The Contractor shall perform the work in accordance with such orders, deletions and changes that are made by the Departmental Representative pursuant to GC30.1 from time to time as if they had appeared in and been part of the Plans and Specifications.



- 30.3 The Departmental Representative shall determine whether or not anything done or omitted by the Contractor pursuant to an order, deletion or change referred to in GC30.1 increased or decreased the cost of the work to the Contractor.
- 30.4 If the Departmental Representative determines pursuant to GC30.3 that the cost of the work to the Contractor has been increased, Her Majesty shall pay the Contractor the increased cost that the Contractor necessarily incurred for the additional work calculated in accordance with GC49 or GC50.
- 30.5 If the Departmental Representative determines pursuant to GC30.3 that the cost of the work to the Contractor has been decreased, Her Majesty shall reduce the amount payable to the Contractor under the contract by an amount equal to the decrease in the cost caused by the deletion or change referred to in GC30.1.2 and calculated in accordance with GC49.
- 30.6 GC30.3 to GC30.5 are applicable only to a contract or a portion of a contract for which a Fixed Price Arrangement is stipulated in the contract.
- 30.7 An order, deletion or change referred to in GC30.1 shall be in writing, signed by the Departmental Representative and given to the Contractor in accordance with GC11.

### **GC31 Interpretation of Contract by Departmental Representative**

- 31.1 If, at any time before the Departmental Representative has issued a Final Certificate of Completion referred to in GC44.1, any question arises between the parties about whether anything has been done as required by the contract or about what the Contractor is required by the contract to do, and, in particular but without limiting the generality of the foregoing, about
- 31.1.1 the meaning of anything in the Plans and Specification,
  - 31.1.2 the meaning to be given to the Plans and Specifications in case of any error therein, omission therefrom, or obscurity or discrepancy in their working or intention,
  - 31.1.3 whether or not the quality or quantity of any material or workmanship supplied or proposed to be supplied by the Contractor meets the requirements of the contract,
  - 31.1.4 whether or not the labour, plant or material provided by the Contractor for performing the work and carrying out the contract are adequate to ensure that the work will be performed in accordance with the contract and that the contract will be carried out in accordance with its terms,
  - 31.1.5 what quantity of any kind of work has been completed by the Contractor, or
  - 31.1.6 the timing and scheduling of the various phases of the performance of the work,
- the question shall be decided by the Departmental Representative whose decision shall be final and conclusive in respect of the work.
- 31.2 The Contractor shall perform the work in accordance with any decisions of the Departmental



Representative that are made under GC31.1 and in accordance with any consequential directions given by the Departmental Representative.

### **GC32 Warranty and Rectification of Defects in Work**

- 32.1 Without restricting any warranty or guarantee implied or imposed by law or contained in the contract documents, the Contractor shall, at his own expense,
- 32.1.1 rectify and make good any defect or fault that appears in the work or comes to the attention of the Minister with respect to those parts of the work accepted in connection with the Interim Certificate of Completion referred to GC44.2 within 12 months from the date of the Interim Certificate of Completion;
- 32.1.2 rectify and make good any defect or fault that appears in or comes to the attention of the Minister in connection with those parts of the work described in the Interim Certificate of Completion referred to in GC44.2 within 12 months from the date of the Final Certificate of Completion referred to in GC44.1.
- 32.2 The Departmental Representative may direct the Contractor to rectify and make good any defect or fault referred to in GC32.1 or covered by any other expressed or implied warranty or guarantee.
- 32.3 A direction referred to in GC32.2 shall be in writing, may include a stipulation in respect of the time within which a defect or fault is required to be rectified and made good by the Contractor, and shall be given to the Contractor in accordance with GC11.
- 32.4 The Contractor shall rectify and make good any defect or fault described in a direction given pursuant to GC32.2 within the time stipulated therein.

### **GC33 Non-Compliance by Contractor**

- 33.1 If the Contractor fails to comply with any decision or direction given by the Departmental Representative pursuant to GC18, GC24, GC26, GC31 or GC32, the Departmental Representative may employ such methods as he deems advisable to do that which the Contractor failed to do.
- 33.2 The Contractor shall, on demand, pay Her Majesty an amount that is equal to the aggregate of all cost, expenses and damage incurred or sustained by Her Majesty by reason of the Contractor's failure to comply with any decision or direction referred to in GC33.1, including the cost of any methods employed by the Departmental Representative pursuant to GC33.1.

### **GC34 Protesting Departmental Representative's Decisions**

- 34.1 The Contractor may, within ten days after the communication to him of any decision or direction referred to in GC30.3 or GC33.1, protest that decision or direction.
- 34.2 A protest referred to in GC34.1 shall be in writing, contain full reasons for the protest, be signed



by the Contractor and be given to Her Majesty by delivery to the Departmental Representative.

- 34.3 If the Contractor gives a protest pursuant to GC34.2, any compliance by the Contractor with the decision or direction that was protested shall not be construed as an admission by the Contractor of the correctness of that decision or direction, or prevent the Contractor from taking whatever action he considers appropriate in the circumstances.
- 34.4 The giving of a protest by the Contractor pursuant to GC34.2 shall not relieve him from complying with the decision or direction that is the subject of the protest.
- 34.5 Subject to GC34.6, the Contractor shall take any action referred to in GC34.3 within three months after the date that a Final Certificate of Completion is issued under GC44.1 and not afterwards.
- 34.6 The Contractor shall take any action referred to in GC34.3 resulting from a direction under GC32 within three months after the expiry of a warranty or guarantee period and not afterwards.
- 34.7 Subject to GC34.8, if Her Majesty determines that the Contractor's protest is justified, Her Majesty shall pay the Contractor the cost of the additional labour, plant and material necessarily incurred by the Contractor in carrying out the protested decision or direction.
- 34.8 Costs referred to in GC34.7 shall be calculated in accordance with GC48 to GC50.

### **GC35 Changes in Soil Conditions and Neglect or Delay by Her Majesty**

- 35.1 Subject to GC35.2 no payment, other than a payment that is expressly stipulated in the contract, shall be made by Her Majesty to the Contractor for any extra expense or any loss or damage incurred or sustained by the Contractor.
- 35.2 If the Contractor incurs or sustains any extra expense or any loss or damage that is directly attributable to
- 35.2.1 a substantial difference between the information relating to soil conditions at the work site that is contained in the Plans and Specifications or other documents supplied to the Contractor for his use in preparing his tender or a reasonable assumption of fact based thereon made by the Contractor, and the actual soil conditions encountered by the Contractor at the work site during the performance of the contract, or
- 35.2.2 any neglect or delay that occurs after the date of the contract on the part of Her Majesty in providing any information or in doing any act that the contract either expressly requires Her Majesty to do or that would ordinarily be done by an owner in accordance with the usage of the trade,

he shall, within ten days of the date the actual soil conditions described in GC35.2.1 were encountered or the neglect or delay described in GC35.2.2 occurred, give the Departmental Representative written notice of his intention to claim for that extra expense or that loss or damage.

- 35.3 When the Contractor has given a notice referred to in GC35.2, he shall give the Departmental Representative a written claim for extra expense or loss or damage within 30 days of the date that



a Final Certificate of Completion referred to in GC44.1 is issued and not afterwards.

- 35.4 A written claim referred to in GC35.3 shall contain a sufficient description of the facts and circumstances of the occurrence that is the subject of the claim to enable the Departmental Representative to determine whether or not the claim is justified and the Contractor shall supply such further and other information for that purpose as the Departmental Representative requires from time to time.
- 35.5 If the Departmental Representative determines that a claim referred to in GC35.3 is justified, Her Majesty shall make an extra payment to the Contractor in an amount that is calculated in accordance with GC47 to GC50.
- 35.6 If, in the opinion of the Departmental Representative, an occurrence described in GC35.2.1 results in a savings of expenditure by the Contractor in performing the contract, the amount set out in the Articles of Agreement shall, subject to GC35.7, be reduced by an amount that is equal to the saving.
- 35.7 The amount of the saving referred to in GC35.6 shall be determined in accordance with GC47 to GC49.
- 35.8 If the Contractor fails to give a notice referred to in GC35.2 and a claim referred to in GC35.3 within the times stipulated, an extra payment shall not be made to him in respect of the occurrence.

### **GC36 Extension of Time**

- 36.1 Subject to GC36.2, the Departmental Representative may, on the application of the Contractor made before the day fixed by the Articles of Agreement for completion of the work or before any other date previously fixed under this General Condition, extend the time for its completion by fixing a new date if, in the opinion of the Departmental Representative, causes beyond the control of the Contractor have delayed its completion.
- 36.2 An application referred to in GC36.1 shall be accompanied by the written consent of the bonding company whose bond forms part of the contract security.

### **GC37 Assessments and Damages for Late Completion**

- 37.1 For the purposes of this General Condition
- 37.1.1 the work shall be deemed to be completed on the date that an Interim Certificate of Completion referred to in GC44.2 is issued, and
- 37.1.2 "period of delay" means the number of days commencing on the day fixed by the Articles of Agreement for completion of the work and ending on the day immediately preceding the day on which the work is completed but does not include any day within a period of extension granted pursuant to GC36.1, and any other day on which, in the opinion of the Departmental Representative, completion of the work was delayed for reasons beyond the control of the Contractor.



- 37.2 If the Contractor does not complete the work by the day fixed for its completion by the Articles of Agreement but completes it thereafter, the Contractor shall pay Her Majesty an amount equal to the aggregate of
- 37.2.1 all salaries, wages and travelling expenses incurred by Her Majesty in respect of persons overseeing the performance of the work during the period of delay;
  - 37.2.2 the cost incurred by Her Majesty as a result of the inability to use the completed work for the period of delay; and
  - 37.2.3 all other expenses and damages incurred or sustained by Her Majesty during the period of delay as a result of the work not being completed by the day fixed for its completion.
- 37.3 The Minister may waive the right of Her Majesty to the whole or any part of the amount payable by the Contractor pursuant to GC37.2 I, in the opinion of the Minister, it is in the public interest to do so.

#### **GC38 Taking the Work Out of the Contractor's Hands**

- 38.1 The Minister may, at his sole discretion, by giving a notice in writing to the Contractor in accordance with GC11, take all or any part of the work out of the Contractor's hands, and may employ such means as he sees fit to have the work completed if the Contractor
- 38.1.1 Has not, within six days of the Minister or the Departmental Representative giving notice to the Contractor in writing in accordance with GC11, remedied any delay in the commencement or any default in the diligent performance of the work to the satisfaction of the Departmental Representative;
  - 38.1.2 has defaulted in the completion of any part of the work within the time fixed for its completion by the contract;
  - 38.1.3 has become insolvent;
  - 38.1.4 has committed an act of bankruptcy;
  - 38.1.5 has abandoned the work;
  - 38.1.6 has made an assignment of the contract without the consent required by GC3.1; or
  - 38.1.7 has otherwise failed to observe or perform any of the provisions of the contract.
- 38.2 If the whole or any part of the work is taken out of the Contractor's hands pursuant to GC38.1,
- 38.2.1 the Contractor's right to any further payment that is due or accruing due under the contract is, subject only to GC38.4, extinguished, and
  - 38.2.2 the Contractor is liable to pay Her Majesty, upon demand, an amount that is equal to the amount of all loss and damage incurred or sustained by Her Majesty in respect of the





Contractor's failure to complete the work.

- 38.3 If the whole or any part of the work that is taken out of the Contractor's hands pursuant to GC38.1 is completed by Her Majesty, the Departmental Representative shall determine the amount, if any, of the holdback or a progress claim that had accrued and was due prior to the date on which the work was taken out of the Contractor's hands and that is not required for the purposes of having the work performed or of compensating Her Majesty for any other loss or damage incurred or sustained by reason of the Contractor's default.
- 38.4 Her Majesty may pay the Contractor the amount determined not to be required pursuant to GC38.3.

**GC39 Effect of Taking the Work Out of the Contractor's Hands**

- 39.1 The taking of the work or any part thereof out of the Contractor's hands pursuant to GC38 does not operate so as to relieve or discharge him from any obligation under the contract or imposed upon him by law except the obligation to complete the performance of that part of the work that was taken out of his hands.
- 39.2 If the work or any part thereof is taken out of the Contractor's hands pursuant to GC38, all plant and material and the interest of the Contractor is all real property, licenses, powers and privileges acquired, used or provided by the Contractor under the contract shall continue to be the property of Her Majesty without compensation to the Contractor.
- 39.3 When the Departmental Representative certifies that any plant, material, or any interest of the Contractor referred to in GC39.2 is no longer required for the purposes of the work, or that it is not in the interest of Her Majesty to retain that plant, material or interest, it shall revert to the Contractor.

**G40 Suspension of Work by Minister**

- 40.1 The Minister may, when in his opinion it is in the public interest to do so, require the Contractor to suspend performance of the work either for a specified or an unspecified period by giving a notice of suspension in writing to the Contractor in accordance with GC11.
- 40.2 When a notice referred to in GC40.1 is received by the Contractor in accordance with GC11, he shall suspend all operations in respect of the work except those that, in the opinion of the Departmental Representative, are necessary for the care and preservation of the work, plant and material.
- 40.3 The Contractor shall not, during a period of suspension, remove any part of the work, plant or material from its site without the consent of the Departmental Representative.
- 40.4 If a period of suspension is 30 days or less, the Contractor shall, upon the expiration of that period, resume the performance of the work and he is entitled to be paid the extra cost, calculated in accordance with GC48 to GC50, of any labour, plant and material necessarily incurred by him as a result of the suspension.



- 40.5 If, upon the expiration of a period of suspension of more than 30 days, the Minister and the Contractor agree that the performance of the work will be continued by the Contractor, the Contractor shall resume performance of the work subject to any terms and conditions agreed upon by the Minister and the Contractor.
- 40.6 If, upon the expiration of a period of suspension of more than 30 days, the Minister and the Contractor do not agree that performance of the work will be continued by the Contractor or upon the terms and conditions under which the Contractor will continue the work, the notice of suspension shall be deemed to be a notice of termination pursuant to GC41.

#### **GC41 Termination of Contract**

- 41.1 The Minister may terminate the contract at any time by giving a notice of termination in writing to the Contractor in accordance with GC11.
- 41.2 When a notice referred to in GC41.1 is received by the Contractor in accordance with GC11, he shall, subject to any conditions stipulated in the notice, forthwith cease all operations in performance of the contract.
- 41.3 If the contract is terminated pursuant to GC41.1, Her Majesty shall pay the Contractor, subject to GC41.4, an amount equal to
- 41.3.1 the cost to the contractor of all labour, plant and material supplied by him under the contract up to the date of termination in respect of a contract or part thereof for which a Unit Price Arrangement is stipulated in the contract, or
  - 41.3.2 the lesser of
    - 41.3.2.1 an amount, calculated in accordance with the Terms and Payment, that would have been payable to the Contractor had he completed the work, and
    - 41.3.2.2 an amount that is determined to be due to the Contractor pursuant to GC49 in respect of a contract or part thereof for which a Fixed Price Arrangement is stipulated in the contract
- less the aggregate of all amounts that were paid to the Contractor by Her Majesty and all amounts that are due to Her Majesty from the Contractor pursuant to the contract.
- 41.4 If Her Majesty and the Contractor are unable to agree about an amount referred to in GC41.3 that amount shall be determined by the method referred to in GC50.

#### **GC42 Claims Against and Obligations of the Contractor or Subcontractor**

- 42.1 Her Majesty may, in order to discharge lawful obligations of and satisfy claims against the Contractor or a subcontractor arising out of the performance of the contract, pay any amount that is due and payable to the Contractor pursuant to the contract directly to the obligees of and the claimants against the Contractor or the subcontractor but such amount if any, as is paid by Her Majesty, shall not exceed that amount which the Contractor would have been obliged to pay to



such claimant had the provisions of the Provincial or Territorial lien legislation, or, in the Province of Quebec, the law relating to privileges, been applicable to the work. Any such claimant need not comply with the provisions of such legislation setting out the steps by way of notice, registration or otherwise as might have been necessary to preserve or perfect any claim for lien or privilege which claimant might have had;

- 42.2 Her Majesty will not make any payment as described in GC42.1 unless and until that claimant shall have delivered to Her Majesty:
- 42.2.1 a binding and enforceable Judgment or Order of a court of competent jurisdiction setting forth such amount as would have been payable by the Contractor to the claimant pursuant to the provisions of the applicable Provincial or Territorial lien legislation, or, in the Province of Quebec, the law relating to privileges, had such legislation been applicable to the work; or
  - 42.2.2 a final and enforceable award of an arbitrator setting forth such amount as would have been payable by the Contractor to the claimant pursuant to the provisions of the applicable Provincial or Territorial lien legislation, or, in the Province of Quebec, the law relating to privileges, had such legislation been applicable to the work; or
  - 42.2.3 the consent of the Contractor authorizing a payment.

For the purposes of determining the entitlement of a claimant pursuant to GC42.2.1 and GC42.2.2, the notice required by GC42.8 shall be deemed to replace the registration or provision of notice after the performance of work as required by any applicable legislation and no claim shall be deemed to have expired, become void or unenforceable by reason of the claimant not commencing any action within the time prescribed by any applicable legislation.

- 42.3 The Contractor shall, by the execution of his contract, be deemed to have consented to submit to binding arbitration at the request of any claimant those questions that need be answered to establish the entitlement of the claimant to payment pursuant to the provisions of GC42.1 and such arbitration shall have as parties to it any subcontractor to whom the claimant supplied material, performed work or rented equipment should such subcontractor wish to be adjoined and the Crown shall not be a party to such arbitration and, subject to any agreement between the Contractor and the claimant to the contrary, the arbitration shall be conducted in accordance with the Provincial or Territorial legislation governing arbitration applicable in the Province or Territory in which the work is located.
- 42.4 A payment made pursuant to GC42.1 is, to the extent of the payment, a discharge of Her Majesty's liability to the Contractor under the contract and may be deducted from any amount payable to the Contractor under the contract.
- 42.5 To the extent that the circumstances of the work being performed for Her Majesty permit, the Contractor shall comply with all laws in force in the Province or Territory where the work is being performed relating to payment period, mandatory holdbacks, and creation and enforcement of mechanics' liens, builders' liens or similar legislation or in the Province of Quebec, the law relating to privileges.
- 42.6 The Contractor shall discharge all his lawful obligations and shall satisfy all lawful claims against him arising out of the performance of the work at least as often as the contract requires Her



Majesty to pay the Contractor.

- 42.7 The Contractor shall, whenever requested to do so by the Departmental Representative, make a statutory declaration deposing to the existence and condition of any obligations and claims referred to in GC42.6.
- 42.8 GC42.1 shall only apply to claims and obligations
- 42.8.1 the notification of which has been received by the Departmental Representative in writing before payment is made to the Contractor pursuant to TP4.10 and within 120 days of the date on which the claimant
- 42.8.1.1 should have been paid in full under the claimant's contract with the Contractor or subcontractor where the claim is for money that was lawfully required to be held back from the claimant; or
- 42.8.1.2 performed the last of the services, work or labour, or furnished the last of the material pursuant to the claimant's contract with the Contractor or subcontractor where the claim is not for money referred to in GC42.8.1.1, and
- 42.8.2 the proceedings to determine the right to payment of which, pursuant to GC42.2. shall have commenced within one year from the date that the notice referred to in GC42.8.1 was received by the Departmental Representative, and
- the notification required by GC42.8.1 shall set forth the amount claimed to be owing and the person who by contract is primarily liable.
- 42.9 Her Majesty may, upon receipt of a notice of claim under GC42.8.1, withhold from any amount that is due and payable to the Contractor pursuant to the contract the full amount of the claim or any portion thereof.
- 42.10 The Departmental Representative shall notify the Contractor in writing of receipt of any claim referred to in GC42.8.1 and of the intention of Her Majesty to withhold funds pursuant to GC42.9 and the Contractor may, at any time thereafter and until payment is made to the claimant, be entitled to post, with Her Majesty, security in a form acceptable to Her Majesty in an amount equal to the value of the claim, the notice of which is received by the Departmental Representative and upon receipt of such security Her Majesty shall release to the Contractor any funds which would be otherwise payable to the Contractor, that were withheld pursuant to the provisions of GC42.9 in respect of the claim of any claimant for whom the security stands.

### **GC43 Security Deposit – Forfeiture or Return**

- 43.1 If
- 43.1.1 the work is taken out of the Contractor's hands pursuant to GC38,
- 43.1.2 the contract is terminated pursuant to GC41, or
- 43.1.3 the Contractor is in breach of or in default under the contract,



Her Majesty may convert the security deposit, if any, to Her own use.

- 43.2 If Her Majesty converts the contract security pursuant to GC43.1, the amount realized shall be deemed to be an amount due from Her Majesty to the Contractor under the contract.
- 43.3 Any balance of an amount referred to in GC43.2 that remains after payment of all losses, damage and claims of Her Majesty and others shall be paid by Her Majesty to the Contractor if, in the opinion of the Departmental Representative, it is not required for the purposes of the contract.

#### **GC44 Departmental Representative's Certificates**

44.1 On the date that

44.1.1 the work has been completed, and

44.1.2 the Contractor has complied with the contract and all orders and directions made pursuant thereto,

both to the satisfaction of the Departmental Representative, the Departmental Representative shall issue a Final Certificate of Completion to the Contractor.

44.2 If the Departmental Representative is satisfied that the work is substantially complete he shall, at any time before he issues a certificate referred to in GC44.1, issue an Interim Certificate of Completion to the Contractor, and

44.2.1 for the purposes of GC44.2 the work will be considered to be substantially complete,

44.2.1.1 when the work under the contract or a substantial part thereof is, in the opinion of the Departmental Representative, ready for use by Her Majesty or is being used for the purpose intended; and

44.2.1.2 when the work remaining to be done under the contract is, in the opinion of the Departmental Representative, capable of completion or correction at accost of not more than

44.2.1.2.1 -3% of the first \$500,000, and

44.2.1.2.2 -2% of the next \$500,000, and

44.2.1.2.3 -1% of the balance

of the value of the contract at the time this cost is calculated.

44.3 For the sole purpose of GC44.2.1.2, where the work or a substantial part thereof is ready for use or is being used for the purposes intended and the remainder of the work or a part thereof cannot be completed by the time specified in A2.1, or as amended pursuant to GC36, for reasons beyond the control of the Contractor or where the Departmental Representative and the Contractor agree not to complete a part of the work within the specified time, the cost of that part of the work



which was either beyond the control of the Contractor to complete or the Departmental Representative and the Contractor have agreed not to complete by the time specified shall be deducted from the value of the contract referred to GC44.2.1.2 and the said cost shall not form part of the cost of the work remaining to be done in determining substantial completion.

44.4 An Interim Certificate of Completion referred to in GC44.2 shall describe the parts of the work not completed to the satisfaction of the Departmental Representative and all things that must be done by the Contractor

44.4.1 before a Final Certificate of Completion referred to in GC44.1 will be issued, and

44.4.2 before the 12-month period referred to in GC32.1.2 shall commence for the said parts and all the said things.

44.5 The Departmental Representative may, in addition to the parts of the work described in an Interim Certificate of Completion referred to in GC44.2, require the Contractor to rectify any other parts of the work not completed to his satisfaction and to do any other things that are necessary for the satisfactory completion of the work.

44.6 If the contract or a part thereof is subject to a Unit Price Arrangement, the Departmental Representative shall measure and record the quantities of labour, plant and material, performed, used and supplied by the Contractor in performing the work and shall, at the request of the Contractor, inform him of those measurements.

44.7 The Contractor shall assist and co-operate with the Departmental Representative in the performance of his duties referred to in GC44.6 and shall be entitled to inspect any record made by the Departmental Representative pursuant to GC44.6.

44.8 After the Departmental Representative has issued a Final Certificate of Completion referred to in GC44.1, he shall, if GC44.6 applies, issue a Final Certificate of Measurement.

44.9 A Final Certificate of Measurement referred to in GC44.8 shall

44.9.1 contain the aggregate of all measurements of quantities referred to in GC44.6, and

44.9.2 be binding upon and conclusive between Her Majesty and the Contractor as to the quantities referred to therein.

#### **GC45 Return of Security Deposit**

45.1 After an Interim Certificate of Completion referred to in GC44.2 has been issued, Her Majesty shall, if the Contractor is not in breach of or in default under the contract, return to the Contractor all or any part of the security deposit that, in the opinion of the Departmental Representative, is not required for the purposes of the contract.

45.2 After a Final Certificate of Completion referred to in GC44.1 has been issued, Her Majesty shall return to the Contractor the remainder of any security deposit unless the contract stipulates otherwise.



- 45.3 If the security deposit was paid into the Consolidated Revenue Fund of Canada, Her Majesty shall pay interest thereon to the Contractor at a rate established from time to time pursuant to section 21(2) of the Financial Administration Act.

#### **GC46 Clarification of Terms in GC47 to GC50**

- 46.1 For the purposes of GC47 to GC50,
- 46.1.1 "Unit Price Table" means the table set out in the Articles of Agreement, and
- 46.1.2 "plant" does not include tools customarily provided by a tradesman in practicing his trade.

#### **GC47 Additions or Amendments to Unit Price Table**

- 47.1 Where a Unit Price Arrangement applies to the contract or a part thereof the Departmental Representative and the Contractor may, by an agreement in writing,
- 47.1.1 add classes of labour or material, and units of measurement, prices per unit and estimated quantities to the Unit Price Table if any labour, plant or material that is to be included in the Final Certificate of Measurement referred to in GC44.8 is not included in any class of labour, plant or material set out in the Unit Price Table; or
- 47.1.2 subject to GC47.2 and GC47.3, amend a price set out in the Unit Price Table for any class of labour, plant or material included therein if the Final Certificate of Measurement referred to in GC44.8 shows or is expected to show that the total quantity of that class of labour, plant or material actually performed, used or supplied by the Contractor in performing the work is
- 47.1.2.1 less than 85% of that estimated total quantity, or
- 47.1.2.2 in excess of 115% of that estimated total quantity.
- 47.2 In no event shall the total cost of an item set out in the Unit Price Table that has been amended pursuant to GC47.1.2.1 exceed the amount that would have been payable to the Contractor had the estimated total quantity actually been performed, used or supplied.
- 47.3 An amendment that is made necessary by GC47.1.2.2 shall apply only to the quantities that are in excess of 115%.
- 47.4 If the Departmental Representative and the Contractor do not agree as contemplated in GC47.1, the Departmental Representative shall determine the class and the unit of measurement of the labour, plant or material and, subject to GC47.2 and GC47.3, the price per unit therefore shall be determined in accordance with GC50.

#### **GC48 Determination of Cost – Unit Price Table**



- 48.1 Whenever, for the purposes of the contract, it is necessary to determine the cost of labour, plant or material, it shall be determined by multiplying the quantity of that labour, plant or material expressed in the unit set out in column 3 of the Unit Price Table by the price of that unit set out in column 5 of the Unit Price Table.

#### **GC49 Determination of Cost – Negotiation**

- 49.1 If the method described in GC48 cannot be used because the labour, plant or material is of a kind or class that is not set out in the Unit Price Table, the cost of that labour, plant or material for the purposes of the contract shall be the amount agreed upon from time to time by the Contractor and the Departmental Representative.
- 49.2 For the purposes of GC49.1, the Contractor shall submit to the Departmental Representative any necessary cost information requested by the Departmental Representative in respect of the labour, plant and material referred to in GC49.1

#### **GC50 Determination of Cost – Failing Negotiation**

- 50.1 If the methods described in GC47, GC48 or GC49 fail for any reason to achieve a determination of the cost of labour, plant and material for the purposes referred to therein, that cost shall be equal to the aggregate of
- 50.1.1 all reasonable and proper amounts actually expended or legally payable by the Contractor in respect of the labour, plant and material that falls within one of the classes of expenditure described in GC50.2 that are directly attributable to the performance of the contract,
  - 50.1.2 an allowance for profit and all other expenditures or costs, including overhead, general administration cost, financing and interest charges, and every other cost, charge and expenses, but not including those referred to in GC50.1.1 or GC50.1.3 or a class referred to in GC50.2, in an amount that is equal to 10% of the sum of the expenses referred to in GC50.1.1, and
  - 50.1.3 interest on the cost determined under GC50.1.1 and GC50.1.2, which interest shall be calculated in accordance with TP9,

provide that the total cost of an item set out in the Unit Price Table that is subject to the provisions of GC47.1.2.1 does not exceed the amount that would have been payable to the Contractor had the estimated total quantity of the said item actually be performed, used or supplied.

- 50.2 For purposes of GC50.1.1 the classes of expenditure that may be taken into account in determining the cost of labour, plant and material are,
- 50.2.1 payments to subcontractors;
  - 50.2.2 wages, salaries and travelling expenses of employees of the Contractor while they are actually and properly engaged on the work, other than wages, salaries, bonuses, living





and travelling expenses of personnel of the Contractor generally employed at the head office or at a general office of the Contractor unless they are engaged at the work site with the approval of the Departmental Representative,

- 50.2.3 assessments payable under any statutory authority relating to workmen's compensation, unemployment insurance, pension plan or holidays with pay;
- 50.2.4 rent that is paid for plant or an amount equivalent of the said rent if the plant is owned by the Contractor that is necessary for and used in the performance of the work, if the rent of the equivalent amount is reasonable and use of that plant has been approved by the Departmental Representative;
- 50.2.5 payments for maintaining and operating plant necessary for and used in the performance of the work, and payments for effecting such repairs thereto as, in the opinion of the Departmental Representative, are necessary to the proper performance of the contract other than payments for any repairs to the plant arising out of defects existing before its allocation to the work;
- 50.2.6 payments for material that is necessary for and incorporated in the work, or that is necessary for and consumed in the performance of the contract;
- 50.2.7 payments for preparation, delivery, handling, erection, installation, inspection protection and removal of the plant and material necessary for and used in the performance of the contract; and
- 50.2.8 any other payments made by the Contractor with the approval of the Departmental Representative that are necessary for the performance of the contract.

#### **GC51 Records to be kept by Contractor**

##### **51.1 The Contractor shall**

- 51.1.1 maintain full records of his estimated and actual cost of the work together with all tender calls, quotations, contracts, correspondence, invoices, receipts and vouchers relating thereto.
- 51.1.2 make all records and material referred to in GC5.1.1 available to audit and inspection by the Minister and the Deputy Receiver General for Canada or by persons acting on behalf of either of both of them, when requested;
- 51.1.3 allow any of the person referred to in GC51.1.2 to make copies of and to take extracts from any of the records and material referred to in GC51.1.1; and
- 51.1.4 furnish any person referred to in GC51.1.2 with any information he may require from time to time in connection with such records and material.

- 51.2 The records maintained by the Contractor pursuant to GC51.1.1 shall be kept intact by the Contractor until the expiration of two years after the date that a Final Certificate of Completion referred to in GC44.1 was issued or until the expiration of such other period of time as the



Minister may direct.

- 51.3 The Contractor shall cause all subcontractors and all other persons directly or indirectly controlled by or affiliated with the Contractor and all persons directly or indirectly having control of the Contractor to comply with GC51.1 and GC51.2 as if they were the Contractor.

**GC52 Conflict of Interest**

- 52.1 It is a term of this contract that no former public office holder who is not in compliance with the Conflict of Interest and Post-Employment Code for Public Office Holders shall derive a direct benefit from this contract.

**GC53 Contractor Status**

- 53.1 The Contractor shall be engaged under the contract as an independent contractor.
- 53.2 The Contractor and any employee of the said Contractor is not engaged by the contract as an employee, servant or agent of Her Majesty.
- 53.3 For the purposes of GC53.1 and GC53.2 the Contractor shall be solely responsible for any and all payments and deductions required to be made by law including those required for Canada or Quebec Pension Plans, Unemployment Insurance, Worker's Compensation or Income Tax.



## **GENERAL CONDITONS**

- IC 1 Proof of Insurance**
- IC 2 Risk Management**
- IC 3 Payment of Deductible**
- IC 4 Insurance Coverage**

## **GENERAL INSUANCE COVERAGES**

- GCI 1 Insured**
- GIC 2 Period of Insurance**
- GIC 3 Proof of Insurance**
- GIC 4 Notification**

## **COMMERCIAL GENERAL LIABILITY**

- CGL 1 Scope of Policy**
- CGL 2 Coverages/Provisions**
- CGL 3 Additional Exposures**
- CGL 4 Insurance Proceeds**
- CGL 5 Deductible**

## **BUILDER'S RISK – INSTALLATION FLOATER – ALL RISKS**

- BR 1 Scope of Policy**
- BR 2 Property Insured**
- BR 3 Insurance Proceeds**
- BR 4 Amount of Insurance**
- BR 5 Deductible**
- BR 6 Subrogation**
- BR 7 Exclusion Qualifications**

## **INSURER'S CERTIFICATE OF INSURANCE**



## **General Conditions**

### **IC 1 Proof of Insurance (02/12/03)**

Within thirty (30) days after acceptance of the Contractor's tender, the Contractor shall, unless otherwise directed in writing by the Contracting Officer, deposit with the Contracting Officer an Insurer's Certificate of Insurance in the form displayed in this document and, if requested by the Contracting Officer, the originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the Insurance Coverage Requirements shown hereunder.

### **IC 2 Risk Management (01/10/94)**

The provisions of the Insurance Coverage Requirements contained hereunder are not intended to cover all of the Contractor's obligations under GC8 of the General Conditions "C" of the contract. Any additional risk management measures or additional insurance coverages the Contractor may deem necessary to fulfill its obligations under GC8 shall be at its own discretion and expense.

### **IC 3 Payment of Deductible (01/10/94)**

The payment of monies up to the deductible amount made in satisfaction of a claim shall be borne by the Contractor.

### **IC 4 Insurance Coverage (02/12/03)**

The Contractor has represented that it has in place and effect the appropriate and usual liability insurance coverage as required by these Insurance Conditions and the Contractor has warranted that it shall obtain, in a timely manner and prior to commencement of the Work, the appropriate and usual property insurance coverage as required by these Insurance Conditions and, further, that it shall maintain all required insurance policies in place and effect as required by these Insurance Conditions.



## INSURANCE COVERAGE REQUIREMENTS

### PART I GENERAL INSURANCE COVERAGES (GIC)

#### **GCI 1 Insured (02/12/03)**

Each insurance policy shall insure the Contractor, and shall include, as an Additional Named Insured, Her Majesty the Queen in right of Canada, represented by the National Research Council Canada.

#### **GIC 2 Period of Insurance (02/12/03)**

Unless otherwise directed in writing by the Contracting Officer or otherwise stipulated elsewhere in these Insurance Conditions, the policies required hereunder shall be in force and be maintained from the date of the contract award until the day of issue of the Departmental Representative's Final Certificate of Completion.

#### **GIC 3 Proof of Insurance (01/10/94)**

Within twenty five (25) days after acceptance of the Contractor's tender, the Insurer shall, unless otherwise directed by the Contractor, deposit with the Contractor an Insurer's Certificate of Insurance in the form displayed in the document and, if requested, the originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the requirements of these Insurance Coverages.

#### **GIC 4 Notification (01/10/94)**

Each Insurance policy shall contain a provision that (30) days prior written notice shall be given by the Insurer to Her Majesty in the event of any material change in or cancellation of coverage. Any such notice received by the Contractor shall be transmitted forthwith to Her Majesty.

### PART II COMMERCIAL GENERAL LIABILITY

#### **CGL 1 Scope of Policy (01/10/94)**

The policy shall be written on a form similar to that known and referred to in the insurance industry as IBC 2100 – Commercial General Liability policy (Occurrence form) and shall provide for limit of liability of not less than \$2,000,000 inclusive for Bodily Injury and Property Damage for any one occurrence or series of occurrences arising out of one cause. Legal or defence cost incurred in respect of a claim or claims shall not operate to decrease the limit of liability.

#### **CGL 2 Coverages/Provisions (01/10/94)**



The policy shall include but not necessarily be limited to the following coverages/provisions.

- 2.1 Liability arising out of or resulting from the ownership, existence, maintenance or use of premises by the Contractor and operations necessary or incidental to the performance of this contract.
- 2.2 "Broad Form" Property Damage including the loss of use of property.
- 2.3 Removal or weakening of support of any building or land whether such support be natural or otherwise.
- 2.4 Elevator liability (including escalators, hoists and similar devices).
- 2.5 Contractor's Protective Liability
- 2.6 Contractual and Assumed Liabilities un this contact.
- 2.7 Completed Operations Liability – The insurance, including all aspects of this Part II of these Insurance Conditions shall continue for a period of at least one (1) year beyond the date of the Departmental Representative's Final Certificate of Completion for the Completed Operations.
- 2.8 Cross Liability – The Clause shall be written as follows:

Cross Liability – The insurance as is afforded by this policy shall apply in respect to any claim or action brought against any one Insured by any other Insured. The coverage shall apply in the same manner and to the same extent as though a separate policy had been issued to each Insured. The inclusion herein of more than one Insured shall not increase the limit of the Insurer's liability.

- 2.9 Severability of Interests – The Clause shall be written as follows:

Severability of Interests – This policy, subject to the limits of liability stated herein, shall apply separately to each Insured in the same manner and to the same extent as if a separate policy had been issued to each. The inclusion herein of more than one insured shall not increase the limit of the Insurer's liability.

### **CGL 3 Additional Exposures (02/12/03)**

The policy shall either include or be endorsed to include the following exposures of hazards if the Work is subject thereto:

- 3.1 Blasting
- 3.2 Pile driving and calsson work
- 3.3 Underpinning
- 3.4 Risks associated with the activities of the Contractor on an active airport



- 3.5 Radioactive contamination resulting from the use of commercial isotopes
- 3.6 Damage to the portion of an existing building beyond that directly associated with an addition, renovation or installation contract.
- 3.7 Marine risks associated with the contraction of piers, wharves and docks.

**CGL 4 Insurance Proceeds  
(01/10/94)**

Insurance Proceeds from this policy are usually payable directly to a Claimant/Third Party.

**CGL 5 Deductible  
(02/12/03)**

This policy shall be issued with a deductible amount of not more than \$10,000 per occurrence applying to Property Damage claims only.

**PART III  
BUILDER'S RISK - INSTALLATION FLOATER - ALL RISKS**

**BR 1 Scope of Policy  
(01/10/94)**

The policy shall be written on an "All Risks" basis granting coverages similar to those provided by the forms known and referred to in the insurance industry as "Builder's Risk Comprehensive Form" or "Installation Floater - All Risks".

**BR 2 Property Insured  
(01/10/94)**

The property insured shall include:

- 2.1 The Work and all property, equipment and materials intended to become part of the finished Work at the site of the project while awaiting, during and after installation, erection or construction including testing.
- 2.2 Expenses incurred in the removal from the construction site of debris of the property insured, including demolition of damaged property, de-icing and dewatering, occasioned by loss, destruction or damage to such property and in respect of which insurance is provided by this policy.

**BR 3 Insurance Proceeds  
(01/10/94)**

- 3.1 Insurance proceeds from this policy are payable in accordance with GC28 of the General Conditions "C" of the contract.
- 3.2 This policy shall provide that the proceeds thereof are payable to Her Majesty or as the Minister may direct.



- 3.3 The Contractor shall do such things and execute such documents as are necessary to effect payment of the proceeds.

**BR 4 Amount of Insurance**  
(01/10/94)

The amount of insurance shall not be less than the sum of the contract value plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by Her Majesty at the site of the project to be incorporated into and form part of the finished Work.

**BR 5 Deductible**  
(02/12/03)

The Policy shall be issued with a deductible amount of not more than \$10,000.

**BR 6 Subrogation**  
(01/10/94)

The following Clause shall be included in the policy:

"All rights of subrogation or transfer of rights are hereby waived against any corporation, firm, individual or other interest, with respect to which, insurance is provided by this policy".

**BR 7 Exclusion Qualifications**  
(01/10/94)

The policy may be subject to the standard exclusions but the following qualifications shall apply:

- 7.1 Faulty materials, workmanship or design may be excluded only to the extent of the cost of making good thereof and shall not apply to loss or damage resulting therefrom.
- 7.2 Loss or damage caused by contamination by radioactive material may be excluded except for loss or damage resulting from commercial isotopes used for industrial measurements, inspection, quality control radiographic or photographic use.
- 7.3 Use and occupancy of the project or any part of section thereof shall be permitted where such use and occupancy is for the purpose for which the project is intended upon completion.





**INSURER'S CERTIFICATE OF INSURANCE**

(TO BE COMPLETED BY INSURER (NOT BOKER) AND DELIVERD TO NATIONAL RESEARCH COUNCIL CANADA WITH 30 DAYS FOLLOWING ACCEPTANCE OF TENDER)

**CONTRACT**

DESCRIPTION OF WORK	CONTRACT NUMBER	AWARD DATE
LOCATION		

**INSURER**

NAME
ADDRESS

**BROKER**

NAME
ADDRESS

**INSURED**

NAME OF CONTRACTOR
ADDRESS

**ADDITIONAL INSURED**

HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE NATIONAL RESEARCH COUNCIL CANADA
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THIS DOCUENT CERTIFIES THAT THE FOLLOWING POLICES OF INSURANCE ARE AT PRESENT IN FORCE COVERING ALL OPERATIONS OF THE INSURE IN CONNECTION WITH THE CONTRACT MADE BETWEEN THE NAMED INSURED AND THE NATIONAL RESEARCH COUNCIL CANADA AND IN ACCORDANCE WITH THE INSURANCE CONDITIONS "E"

POLICY					
TYPE	NUMBER	INCEPTION DATE	EXPIRY DATE	LIMITS OF LIABILITY	DEDUCTIBLE
COMMERCIAL GENERAL LIABILITY					
BUILDERS RISK "AL RISKS"					
INSTALLATION FLOATER "ALL RISKS"					

THE INSURER AGREES TO NOTIFY THE NATIONAL RESEARCH COUNCIL CANADA IN WRITING 30 DAYS PRIOR TO ANY MATERIAL CHANGE IN OR CANCELLATION OF ANY POLICY OR COVERAGE SPECIFICALLY RELATED TO THE CONTRACT

NAME OF INSURER'S OFFICER OR AUTHORIZED EMPLOYEE	SIGNATURE	DATE:
		TELEPHONE NUMBER:

ISSUANCE OF THIS CERTIFIATE SHALL NOT LIMIT OR RESTRICT THE RIGHT OF THE NATIONAL RESEARCH COUNCIL CANADA TO REQUEST AT ANY TIME DUPLICATE COPIES OF SAID INSURANCE POLICIES



**CS1 Obligation to provide Contract Security**

- 1.1 The Contractor shall, at the Contractor's own expense, provide one or more of the forms of contract security prescribed in CS2.
- 1.2 The Contractor shall deliver to the Departmental Representative the contract security referred to in CS1.1 within 14 days after the date that the Contractor receives notice that the Contractor's tender or offer was accepted by Her Majesty.

**CS2 Prescribed Types and Amounts of Contract Security**

- 2.1 The Contractor shall deliver to the Departmental Representative pursuant to CS1
  - 2.1.1 a performance bond and a labour and material payment bond each in an amount that is equal to not less than 50% of the contract amount referred to in the Articles of Agreement, or
  - 2.1.2 a labour and material payment bond in an amount that is equal to not less than 50% of the contract amount referred to in the Articles of Agreement, and a security deposit in an amount that is equal to
    - 2.1.2.1 not less than 10% of the contract amount referred to in the Articles of Agreement where that amount does not exceed \$250,000, or
    - 2.1.2.2 \$25,000 plus 5% of the part of the contract amount referred to in the Articles of Agreement that exceeds \$250,000, or
  - 2.1.3 a security deposit in an amount prescribed by CS2.1.2 plus an additional amount that is equal to 10% of the contract amount referred to in the Articles of Agreement.
- 2.2 A performance bond and a labour and material payment bond referred to in CS2.1 shall be in a form and be issued by a bonding or surety company that is approved by Her Majesty.
- 2.3 The amount of a security deposit referred to in CS2.1.2 shall not exceed \$250,000 regardless of the contract amount referred to in the Articles of Agreement.
- 2.4 A security deposit referred to in CS2.1.2 and CS2.1.3 shall be in the form of
  - 2.4.1 a bill of exchange made payable to the Receiver General of Canada and certified by an approved financial institution or drawn by an approved financial institution on itself, or
  - 2.4.2 bonds of or unconditionally guaranteed as to principal and interest by the Government of Canada.
- 2.5 For the purposes of CS2.4
  - 2.5.1 a bill of exchange is an unconditional order in writing signed by the Contractor and addressed to an approved financial institution, requiring the said institution to pay, on demand, at a fixed or determinable future time a sum certain of money to, or to the order



of, the Receiver General for Canada, and

- 2.5.2 If a bill of exchange is certified by a financial institution other than a chartered bank then it must be accompanied by a letter or stamped certification confirming that the financial institution is in at least one of the categories referred to in CS2.5.3
- 2.5.3 an approved financial institution is
  - 2.5.3.1 any corporation or institution that is a member of the Canadian Payments Association,
  - 2.5.3.2 a corporation that accepts deposits that are insured by the Canada Deposit Insurance Corporation or the Régie de l'assurance-dépôts du Québec to the maximum permitted by law,
  - 2.5.3.3 a credit union as defined in paragraph 137(6)(b) of the *Income Tax Act*,
  - 2.5.3.4 a corporation that accepts deposits from the public, if repayment of the deposit is guaranteed by Her Majesty in right of a province, or
  - 2.5.3.5 The Canada Post Corporation.
- 2.5.4 the bonds referred to in CS2.4.2 shall be
  - 2.5.4.1 made payable to bearer, or
  - 2.5.4.2 accompanied by a duly executed instrument of transfer of the bonds to the Receiver General for Canada in the form prescribed by the Domestic Bonds of Canada Regulations, or
  - 2.5.4.3 registered, as to principal or as to principal and interest in the name of the Receiver General for Canada pursuant to the Domestic Bonds of Canada Regulations, and
  - 2.5.4.4 provided on the basis of their market value current at the date of the contract.



Contract Number / Numéro du contrat PR# 768868
Security Classification / Classification de sécurité UNCLASSIFIED

**SECURITY REQUIREMENTS CHECK LIST (SRCL)  
LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)**

<b>PART A - CONTRACT INFORMATION / PARTIE A - INFORMATION CONTRACTUELLE</b>		
1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine National Research Council	2. Branch or Directorate / Direction générale ou Direction ASPM	
3. a) Subcontract Number / Numéro du contrat de sous-traitance	3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant	
4. Brief Description of Work / Brève description du travail Fire Alarm replacement at 435 and 445 Eilco Ave.		
5. a) Will the supplier require access to Controlled Goods? Le fournisseur aura-t-il accès à des marchandises contrôlées?	<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> Yes / Oui	
5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations? Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques?	<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> Yes / Oui	
6. Indicate the type of access required / Indiquer le type d'accès requis		
6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets? Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS? (Specify the level of access using the chart in Question 7. c) (Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c)	<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> Yes / Oui	
6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted. Le fournisseur et ses employés (p. ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé.	<input type="checkbox"/> No / Non <input checked="" type="checkbox"/> Yes / Oui	
6. c) Is this a commercial courier or delivery requirement with no overnight storage? S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit?	<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> Yes / Oui	
7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès		
Canada <input checked="" type="checkbox"/>	NATO / OTAN <input type="checkbox"/>	
	Foreign / Étranger <input type="checkbox"/>	
7. b) Release restrictions / Restrictions relatives à la diffusion		
No release restrictions / Aucune restriction relative à la diffusion <input checked="" type="checkbox"/>	All NATO countries / Tous les pays de l'OTAN <input type="checkbox"/>	
Not releasable / À ne pas diffuser <input type="checkbox"/>		
Restricted to: / Limité à: <input type="checkbox"/>	Restricted to: / Limité à: <input type="checkbox"/>	
Specify country(ies): / Préciser le(s) pays:	Specify country(ies): / Préciser le(s) pays:	
7. c) Level of Information / Niveau d'information		
PROTECTED A / PROTÉGÉ A <input type="checkbox"/>	NATO UNCLASSIFIED / NATO NON CLASSIFIÉ <input type="checkbox"/>	PROTECTED A / PROTÉGÉ A <input type="checkbox"/>
PROTECTED B / PROTÉGÉ B <input type="checkbox"/>	NATO RESTRICTED / NATO DIFFUSION RESTREINTE <input type="checkbox"/>	PROTECTED B / PROTÉGÉ B <input type="checkbox"/>
PROTECTED C / PROTÉGÉ C <input type="checkbox"/>	NATO CONFIDENTIAL / NATO CONFIDENTIEL <input type="checkbox"/>	PROTECTED C / PROTÉGÉ C <input type="checkbox"/>
CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>	NATO SECRET / NATO SECRET <input type="checkbox"/>	CONFIDENTIAL / CONFIDENTIEL <input type="checkbox"/>
SECRET / SECRET <input type="checkbox"/>	COSMIC TOP SECRET / COSMIC TRÈS SECRET <input type="checkbox"/>	SECRET / SECRET <input type="checkbox"/>
TOP SECRET / TRÈS SECRET <input type="checkbox"/>		TOP SECRET / TRÈS SECRET <input type="checkbox"/>
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>		TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) <input type="checkbox"/>



Contract Number / Numéro du contrat PR# 766368
Security Classification / Classification de sécurité UNCLASSIFIED

**PART A (continued) / PARTIE A (suite)**

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC Information or assets?  
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?  
If Yes, indicate the level of sensitivity:  
Dans l'affirmative, indiquer le niveau de sensibilité:

No / Non  Yes / Oui

9. Will the supplier require access to extremely sensitive INFOSEC Information or assets?  
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?

No / Non  Yes / Oui

Short Title(s) of material / Titre(s) abrégé(s) du matériel:  
Document Number / Numéro du document:

**PART B - PERSONNEL (SUPPLIER) / PARTIE B - PERSONNEL (FOURNISSEUR)**

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

- |   |   |   |  |
|---|---|---|--|
| <input checked="" type="checkbox"/> RELIABILITY STATUS<br>COTE DE FIABILITÉ | <input type="checkbox"/> CONFIDENTIAL<br>CONFIDENTIEL           | <input type="checkbox"/> SECRET<br>SECRET           | <input type="checkbox"/> TOP SECRET<br>TRÈS SECRET               |
| <input type="checkbox"/> TOP SECRET- SIGINT<br>TRÈS SECRET - SIGINT         | <input type="checkbox"/> NATO CONFIDENTIAL<br>NATO CONFIDENTIEL | <input type="checkbox"/> NATO SECRET<br>NATO SECRET | <input type="checkbox"/> COSMIC TOP SECRET<br>COSMIC TRÈS SECRET |
| <input type="checkbox"/> SITE ACCESS<br>ACCÈS AUX EMPLACEMENTS              |   |   |  |

Special comments:  
Commentaires spéciaux:

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.  
REMARQUE: Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work?  
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?  
If Yes, will unscreened personnel be escorted?  
Dans l'affirmative, le personnel en question sera-t-il escorté?

No / Non  Yes / Oui

**PART C - SAFEGUARDS (SUPPLIER) / PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)**

**INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS**

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED Information or assets on its site or premises?  
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?

No / Non  Yes / Oui

11. b) Will the supplier be required to safeguard COMSEC Information or assets?  
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?

No / Non  Yes / Oui

**PRODUCTION**

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?  
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?

No / Non  Yes / Oui

**INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)**

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?  
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS?

No / Non  Yes / Oui

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?  
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?

No / Non  Yes / Oui



Contract Number / Numéro du contrat PR# 766868
Security Classification / Classification de sécurité UNCLASSIFIED

**PART C - (continued) / PARTIE C - (suite)**

For users completing the form manually use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) or premises.  
Les utilisateurs qui remplissent le formulaire manuellement doivent utiliser le tableau récapitulatif ci-dessous pour indiquer, pour chaque catégorie, les niveaux de sauvegarde requis aux installations du fournisseur.

For users completing the form online (via the Internet), the summary chart is automatically populated by your responses to previous questions.  
Dans le cas des utilisateurs qui remplissent le formulaire en ligne (par Internet), les réponses aux questions précédentes sont automatiquement saisies dans le tableau récapitulatif.

**SUMMARY CHART / TABLEAU RÉCAPITULATIF**

Category / Catégorie	PROTECTED / PROTÉGÉ			CLASSIFIED / CLASSIFIÉ			NATO				COMSEC					
	A	B	C	CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / Très SECRET	NATO RESTRICTED / NATO DIFFUSION RESTREINTE	NATO CONFIDENTIAL / NATO CONFIDENTIEL	NATO SECRET	COSMIC TOP SECRET / COSMIC TRÈS SECRET	PROTECTED / PROTÉGÉ			CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / Très SECRET
											A	B	C			
Information / Asses / Renseignements / Biens / Production																
IT Media / Support TI / IT Link / Lien électronique																

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?  
La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE?  No / Non  Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".  
Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.

12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?  
La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?  No / Non  Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).  
Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquez qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).



Contract Number / Numéro du contrat PR# 766868
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**PART D - AUTHORIZATION / PARTIE D - AUTORISATION**

13. Organization Project Authority / Chargé de projet de l'organisme			
Name (print) - Nom (en lettres moulées) Jose Varas		Title - Titre Site Operations Supervisor	Signature <i>[Signature]</i>
Telephone No. - N° de téléphone 204-984-6557	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel Jose.Varas@nrc-cnrc.gc.ca	Date May 17, 2017
14. Organization Security Authority / Responsable de la sécurité de l'organisme			
Name (print) - Nom (en lettres moulées) Richard Bramucci		Title - Titre Analyst, Security in Contracting	Signature <i>[Signature]</i>
Telephone No. - N° de téléphone (613) 991-1093	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel Richard.Bramucci@nrc-cnrc.gc.ca	Date MAY 18 2017
15. Are there additional instructions (e.g. Security Guide, Security Classification Guide) attached? Des instructions supplémentaires (p. ex. Guide de sécurité, Guide de classification de la sécurité) sont-elles jointes?			<input checked="" type="checkbox"/> No / <input type="checkbox"/> Yes / <input type="checkbox"/> Oui
16. Procurement Officer / Agent d'approvisionnement			
Name (print) - Nom (en lettres moulées) Alain Lehoucq		Title - Titre Senior Procurement Officer	Signature <i>[Signature]</i>
Telephone No. - N° de téléphone 613 991-9920	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel alain.lehoucq@nrc-cnrc.gc.ca	Date 18-5-2017
17. Contracting Security Authority / Autorité contractante en matière de sécurité			
Name (print) - Nom (en lettres moulées)		Title - Titre	Signature
Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date