



SPECIFICATIONS

SOLICITATION #: 16-22042

BUILDING: S-77
100 Sussex Drive
Ottawa, Ontario

PROJECT: S-77 Courtyard B Masonry Conservation
Repairs

PROJECT #: S77-4089

Date: June 2016

SPECIFICATION

TABLE OF CONTENTS

Construction Tender Form

Buyandsell Notice

Instructions to Bidders

Ontario Sales Tax

Acceptable Bonding Companies

Articles of Agreement

Plans and Specifications **A**

Terms of Payment **B**

General Conditions **C**

Labour Conditions and Fair Wage Schedule **D**

N/A

Insurance Conditions **E**

Contract Security Conditions **F**

Security Requirement Check List **G**

Directions to the Ottawa Research Facilities – Sussex Drive

100 Sussex Drive
Ottawa, Ontario, Canada

NRC Steacie Institute for Molecular Sciences (NRC-SIMS)

Tel: 613-991-5419

NRC Institute for Biological Sciences (NRC-IBS)

Tel: 613-993-5812

By Road, from the OTTAWA International Airport

1. Take the AIRPORT PARKWAY
2. Drive on the AIRPORT PARKWAY as it becomes BRONSON ST
3. Turn RIGHT at LAURIER ST
4. From LAURIER ST turn LEFT on BAY ST
5. From BAY ST, turn RIGHT on WELLINGTON ST
6. Pass the Parliament buildings and turn LEFT on SUSSEX DR
7. Drive on SUSSEX DR until you see the NRC-CNRC sign at 100 Sussex, on your LEFT.

By Road, from MONTREAL RD FACILITIES

1. Drive Southwest on MONTREAL RD (REGIONAL ROUTE 34 W)
2. Turn RIGHT onto VANIER PARKWAY / REGIONAL ROUTE 19 N
3. Turn LEFT onto ST PATRICK ST (You will cross the ST PATRICK ST BRIDGE)
4. Turn RIGHT on KING EDWARD AVE/REGIONAL ROUTE 99 N
5. Take EXIT to the RIGHT to SUSSEX
6. At the LIGHT, go straight into 100 Sussex PARKING lot.





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)

Construction Tender Form

Project Identification **S-77 – Courtyard B Masonry Conservation Repairs**

Tender No.: **16-22042**

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.

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

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 servives 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.

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)

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)

National Research Council Canada	Conseil national de recherches Canada
-------------------------------------	--

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

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

BUY AND SELL NOTICE

S-77 Courtyard B Masonry Conservation Repairs

The National Research Council Canada, S-77, 100 Sussex Drive Ottawa, ON has a requirement for a project that includes:

Repoint all the stonework, repair or replace flashing, replace all cracked or broken glazing panels, prepare the surface and repaint all steel windows and door frames. Remove and replace all caulking between the stonework and window frames or door frames, at building S-77, 100 Sussex Drive.

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 July 5th and July 7th, 2016 at **9:00**. Meet Kirk Williams at Building S-77, Main Entrance, 100 Sussex Drive, Ottawa, ON. 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. CLOSING DATE

Closing date is July 28th, 2016 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:

This procurement contains a mandatory security requirement as follows:

- 1 The Contractor must, at all times during the performance of the Contract, hold a valid Designated Organization Screening (DOS), issued by the Canadian Industrial Security Director (CISD), Public Works Government Services Canada.
- 2 The Contractor personnel requiring access to sensitive work site(s) must EACH hold a valid RELIABILITY STATUS, granted or approved by CISD/PWGSC.
- 3 The Contractor must comply with the provisions of the:
 - a. Security Requirements Checklist attached at Appendix "D"
 - b. Industrial Security Manual (Latest Edition) available at: <http://ssi-iss.tpsgc-pwgsc.gc.ca/ssi-iss-services/eso-oss-eng.html>

5.2 VERIFICATION OF SECURITY CLEARANCE AT BID CLOSING

- 1 The Bidder must hold a valid Designated Organization Screening (DOS) issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC), **TO BE INCLUDED WITH THEIR TENDER OR PROVIDED WITHIN 48 HOURS FROM THE DATE AND TIME OF TENDER CLOSING**. Verifications will be made through CISD to confirm the security clearance status of the Bidder. Failure to comply with this requirement will render the bid non-compliant and no further consideration will be given to the bid.
- 2 Within 72 hours of tender closing, the General Contractor must name all of his sub-contractors, each of whom **must hold a valid RELIABILITY STATUS**, granted or approved by CISD/PWGSC, or any other Federal Department or Agency along with the names and birthdates or security clearance certificate numbers of all personnel who will be assigned to the project.
- 3 It is to be noted that any subcontractor required to perform any part of the work during the performance of the subsequent contract must also adhere to the mandatory security requirement of the contract. As well, no personnel without the required level of security will be allowed on site. It will be the responsibility of the successful bidder to ensure that the security requirement is met throughout the performance of the contract. The Crown will not be held liable or accountable for any delays or additional costs associated with the contractor's non-compliance to the mandatory security requirement. Failure to comply with the mandatory security requirement will be grounds for being declared in default of contract.
- 4 For any enquiries concerning the project security requirement during the bidding period, the Bidder/Tenderer must contact the Security Officer @ 613-993-8956.

6.0 WSIB (WORKPLACE SAFETY AND INSURANCE BOARD)

- 1 All Bidders must provide a valid WSIB 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.

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.

- 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. You can also obtain more information on the OPO services available to you at their website at www.opo-boa.gc.ca.

The Departmental Representative or his designate for this project is: **Kirk Williams**
Telephone: **613 223-7842**

Contracting Authority for this project is: **Alain Leroux** 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
Alain Leroux, 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
1200 Montreal Road
Building M-22
Ottawa, ON
K1A 0R6

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.

Non-resident contractors

RST guide 804

Published August 2006

ISBN: 1-4249-2007-8 (Print), **1-4249-2009-4 (PDF)**, **1-4249-2008-6 (HTML)**

Publication Archived

Notice to the reader: For Retail Sales Tax (RST) – On July 1, 2010 the 13 per cent Harmonized Sales Tax (HST) took effect in Ontario replacing the existing provincial Retail Sales Tax (RST) and combining it with the federal Goods and Services Tax (GST). As a result, RST provisions described on this page and in other publications ended on June 30, 2010.

Effective July 1, 2010 this publication was archived for RST purposes **only**. Use caution when you refer to it, since it reflects the law in force for RST at the time it was released and may no longer apply.

- The information in this Guide explains the Retail Sales Tax (RST) responsibilities of a non-resident contractor who is awarded a construction contract to perform work in Ontario and their Ontario customers. Please note that this Guide replaces the previous version dated March 2001.

Non-Resident Contractor Defined

A non-resident contractor is a contractor located outside Ontario who has been awarded a construction contract to perform work in Ontario, and who has not maintained a permanent place of business in Ontario continuously for twelve months immediately prior to signing the contract, or which is not a company incorporated under the laws of Ontario. A construction contract is a contract for the erection, remodelling or repair of a building or other structure on land.

A contractor is a person who is in the business of constructing, altering, repairing or improving real property and includes, but is not limited to,

1. a general contractor and subcontractor,
2. a carpenter, bricklayer, stonemason, electrician, plasterer, plumber, painter, decorator, paver, and bridge builder,
3. a sheet metal, tile and terrazzo, heating, air conditioning, insulation, ventilating, papering, road, roofing and cement contractor, who installs or incorporates items into real property. (See RST [Guide 206 - Real Property and Fixtures](#)).

Registration and Guarantee Deposit

Non-resident contractors who are awarded a construction contract in Ontario are required to register with the Ministry of Finance (ministry), Centralized Programs Unit and post a guarantee equal to 4 per cent of the total of each Ontario contract. The guarantee can be paid in cash, by certified cheque (payable to the Minister of Finance), letter of credit or by a guarantee bond.

To register with the ministry and to obtain further information on posting a guarantee, contractors should contact the ministry's Centralized Programs Unit, 33 King Street West, PO Box 623, Oshawa, Ontario, L1H 8H7, toll-free 1 866 ONT-TAXS (1 866 668-8297) or fax to 905 435-3617.

Non-resident contractors who sell taxable goods on a supply only basis to Ontario customers, or provide taxable services in Ontario, may obtain a regular Vendor Permit to collect and remit RST on their sales. Non-resident contractors who have been issued a regular Vendor Permit must still register separately with the ministry and post a guarantee if they are awarded a construction contract in Ontario.

Letter of Compliance

After receiving the guarantee, the ministry mails out two copies of a "letter of compliance" to the contractor certifying the Retail Sales Tax (RST) requirements have been met. Contractors must give a copy of the letter to their customers.

If a copy of the compliance letter is not provided, the customer must withhold 4 per cent of all amounts payable to the non resident contractor and pay the withheld amounts to the Minister of Finance (minister). Details relating to the contract should be sent along with the payments to the Centralized Programs Unit. Customers may give the minister a guarantee bond equal to 4 per cent of the total contract price instead of making the 4 per cent payments.

Note: Customers who do not follow these requirements may be held liable for 4 per cent of all amounts payable to the non resident contractor or any other amount that the Ministry deems to be the RST payable resulting from the performance of the contract.

Calculation of RST

Fair Value

RST is payable on the "fair value" of materials, purchased or brought into Ontario, to be used for work performed in Ontario. "Fair value" includes:

- the purchase price in Canadian funds;
- all charges by the supplier for handling and delivery, and
- any federal customs duties and excise taxes paid (but not the federal Goods and Services Tax (GST)).

Contractors are also required to pay RST to Ontario suppliers on the purchase, rental or lease of taxable services, materials, machinery, or equipment.

Machinery and Equipment - Leased

If machinery or equipment is leased from a supplier outside Ontario and brought into the province, RST is payable on the lease payments for the period the machinery or equipment is in Ontario.

Machinery and Equipment - Owned by Contractor

If machinery or equipment is owned by the contractor, RST may be calculated in one of the following ways:

- a. If a contractor brings machinery and equipment into Ontario for less than 12 months' use, RST is to be calculated using the following formula:

$$1/36 \times \text{net book value at date of import} \times \text{number of months in Ontario} \times \text{tax rate}$$

For the purpose of this formula, RST is payable for each month or part of a month that the goods are in Ontario. A month is considered 31 consecutive days and a part month is considered more than 12 days. The RST payable is based on the number of days the machinery and equipment are located in Ontario and not the number of days the items are actually used.

Example: Equipment is brought into Ontario on March 28 and taken out on May 8. The items were in the province for 41 days. RST is payable on the first 31 days' temporary stay in Ontario vs. use of the equipment. Since the remainder (10 days) is not considered part of a month, no RST is payable on this portion.

- b. If, at the time the goods are brought into Ontario, it is expected that the machinery or equipment will be in Ontario for more than twelve months, contractors must pay Retail Sales Tax (RST) on the following basis:

net book value at date of import x tax rate

If, at the time of import, the length of time is not known, vendors may use the formula under (a). If they later find it necessary to keep the machinery and equipment in Ontario for more than 12 months, the RST paid under (a) may be deducted from the RST payable under (b).

Using formula (a) or (b) above, contractors will calculate and remit the RST payable on the return that is filed when the contract is finished.

(See Completion of Contract section)

M a n u f a c t u r i n g f o r O w n U s e

Contractors may need to manufacture items, such as doors and windows, for their construction contracts. Manufacturing is work done in a factory away from a construction site, or in a mobile unit or workshop that is on or near the construction site. Manufacturing occurs when raw materials are changed into manufactured goods for use in real property contracts.

Contractors are considered to be manufacturing contractors if they produce goods:

1. for their own use in real property contracts, and
2. the manufactured cost of the goods is more than \$50,000 a year.

(See RST Guide 401 - Manufacturing Contractors)

C o n t r a c t s w i t h t h e F e d e r a l G o v e r n m e n t

Where a non-resident contractor enters into a construction contract with the federal government, for the construction of a building and/or the installation of equipment, the nature of the equipment will determine whether the contract should be let on a tax-included or tax excluded basis.

Contracts for the construction of a building and the installation of equipment that directly services that building (i.e., elevators, escalators, light fixtures, central heating and air conditioning, etc.) should be tendered on a tax -included basis. Contractors are the consumers of the materials used in fulfilling these contracts and must pay or account for RST on the materials used to complete the contracts. There is NO exemption just because the contract is with the federal government.

Contracts for the installation of equipment that becomes a fixture and does not directly service a building (i.e., material handling equipment, production machinery, communication equipment, training equipment) may be tendered on a tax-excluded basis. Contractors engaged in contracts of this nature are permitted to make tax exempt purchases of such equipment by issuing a valid Purchase Exemption Certificate (PEC) to their supplier. Only non-resident contractors who have registered with the ministry and posted a guarantee may issue a PEC.

E x e m p t i o n s

Contractors may supply and install equipment or materials for certain customers that may be entitled to an exemption from RST (e.g., manufacturers, Indian band councils, farmers and diplomatic organizations). The equipment or materials, when installed, becomes real property if it is permanently attached to land, or a fixture if it is permanently attached to a building or real property structure. Since

contractors are liable for RST, they should contact the ministry to find out if the customer qualifies for exemption before tendering the contract on a tax-excluded basis.

Status Indians, Indian Bands and Band Councils

Non-resident contractors may purchase building materials exempt from Retail Sales Tax (RST) for certain buildings and structures situated on reserves. The cost of such projects must be paid by the band council, and the buildings must provide a community service for the reserve. Contracts for the construction of an exempt community building project should be made on an RST-excluded basis. Non-resident contractors may purchase the materials exempt from RST by providing suppliers with a valid Purchase Exemption Certificate (PEC). As noted previously, only non-resident contractors who have registered with the ministry and posted a guarantee may issue a PEC. (See RST Guide [204 - Purchase Exemption Certificates](#)).

Non-resident contractors must pay RST on items purchased for incorporation into a building or structure built for individual status Indians on a reserve. (See RST [Guide 808 - Status Indians, Indian Bands and Band Councils](#)).

Completion of Contract

When a contract is completed, non-resident contractors who were required to post a guarantee must complete a [Non-Resident Contractor Retail Sales Tax Return \[PDF - 92 KB\]](#) that is provided by the ministry.

If a contractor's guarantee was given in cash or by certified cheque, the amount of the deposit can be deducted from the RST liability owed by the contractor. If the liability is greater than the deposit, the amount remaining must be paid by the contractor. If the deposit is more than the liability, the contractor will receive a refund.

If a guarantee bond was posted instead of cash, the bond will be discharged once the RST liability is paid in full.

All returns are subject to audit.

Legislative References

- Retail Sales Tax Act, Subsections 19(2) and 39(3)(4) and (5)
- Regulation 1012 under the Act, Subsections 15.3(1)(2)(5)(6) and (7)
- Regulation 1013 under the Act, Sections 1 and 3

For More Information

The information contained in this publication is only a guideline. For more information, please contact the Ontario Ministry of Finance at 1 866 ONT-TAXS (1 866 668-8297) or visit our website at ontario.ca/finance.

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

Articles of Agreement

Standard Construction Contract – Articles of Agreement
(23/01/2002)

- A1 Contract Documents
- A2 Date of Completion of Work and Description of Work
- A3 Contract Amount
- A4 Contractor's Address
- A5 Unit Price Table

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

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.

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.

Column 1 Item	Column 2 Class of Labour Plant Or Material	Column 3 Unit of Measurement	Column 4 Estimated Total Quantity	Column 5 Price per Unit	Column 6 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.

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

by _____

as _____ and
Position

of

on the _____

day of _____

Seal

TABLE OF CONTENTS

	Pages
Division 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS	
Section 00 01 10 - Table of Contents.....	2
Section 00 10 00 – General Instructions	11
Section 00 15 45 – General Safety Section and Fire Instructions.....	6
Division 02 – EXISTING CONDITIONS	
Section 01 54 23 Temporary Scaffolding and Platforms	8
Division 04 – MASONRY	
Section 04 03 06 Historic – Cleaning of Masonry.....	9
Section 04 03 07 Historic – Masonry Repointing.....	10
Section 04 03 41 Historic – Repairing Stone.....	8
Section 04 03 42 Historic – Replacing Stone	8
Section 04 03 43 Historic – Dismantling Stone Masonry.....	5
Section 04 05 00 Common Work Results for Masonry	6
Section 04 05 19 Masonry Anchorage and Reinforcing.....	4
Division 07 – THERMAL AND MOISTURE PROTECTION	
Section 07 62 00 Sheet Metal Flashing and Trim.....	4
Section 07 92 00 Joint Sealants	6
Division 08 – OPENINGS	
Section 08 80 50 Glazing.....	4

Division 09 – FINISHES

Section 09 03 61 Historic – Repainting Exterior Surfaces 8

END OF TABLE

1. SCOPE OF WORK

- .1 Work under this contract covers the masonry conservation of the exterior of Courtyard B in the Council's Building S-77 of the National Research Council.

2. DRAWINGS

- .1 The following drawings illustrate the work and form part of the contract documents:

- .1 4089-CS1 – Cover Sheet
- .2 4089-A01 - Basement Plan
- .3 4089-A02 - Courtyard B Elevations, Mortar Joints Repairing
- .4 4089-A03 - Courtyard B Elevations, Stone Resetting
- .5 4089-A04 - Courtyard B Elevations, Stone Patching and Descaling
- .6 4089-A05 - Courtyard B Elevations, Caulking Replacement, Flashing Repairs and Painting
- .7 4089-A06 - Courtyard B Sections, Details

3. COMPLETION

- .1 Complete all work within 24 week(s) after receipt of notification of acceptance of tender.

4. GENERAL

- .1 The word "provide" in this Specification means to supply and install.
- .2 Provide items mentioned in either the drawings or the specification.

5. SPECIFIED ACCEPTABLE & ALTERNATIVE EQUIPMENT & MATERIALS

- .1 Materials and equipment scheduled and/or specified on the drawings or in the specifications have been selected to establish a performance and quality standard. In most cases, acceptable manufacturers are stated for any material or equipment specified by manufacturer's name and model number. Contractors may base their tender price on materials and equipment supplied by any of the manufacturers' names as acceptable for the particular material or equipment.
- .2 In addition to the manufacturers specified or named as acceptable, you may propose alternative manufacturers of materials or equipment to the Departmental Representative for acceptance. For a product to be considered as an alternative product substitute, make a written application to the Departmental Representative during the tender period, not later than ten (10) working days before tender closing.
- .3 Certify in writing that the alternative meets all requirements of the specified material or equipment. In addition, it shall be understood that all costs required by or as a result of acceptance or proposed alternatives, will be borne by the contractor.
- .4 Approval of alternatives will be signified by issue of an Addendum to the Tender Documents.

- .5 Any alternative manufacturers or materials submitted which are incomplete and cannot be evaluated, or are later than ten (10) working days before tender closing date or after the tender period, will not be considered.

6. MINIMUM STANDARDS

- .1 Conform to or exceed minimum acceptable standards of the various applicable federal, provincial and municipal codes such as The National Building Code, The National Fire Code, Canadian Plumbing Code, Canadian Electrical Code, Canadian Code for Construction Safety and the Provincial Construction Safety Act.
- .2 Work to conform to referenced standards and codes as reaffirmed or revised to date of specification.

7. WORKPLACE HAZARDOUS MATERIAL INFORMATION SYSTEM (WHMIS)

- .1 The general contractor shall comply with Federal and Provincial legislation regarding the WHMIS. The contractor's responsibilities include, but are not limited to the following:
 - .1 To ensure that any controlled product brought on site by the contractor or sub-contractor is labeled;
 - .2 To make available to the workers and the Departmental Representative, Material Safety Data Sheets (MSDS) for these controlled products;
 - .3 To train own workers about WHMIS, and about the controlled products that they use on site;
 - .4 To inform other contractors, sub-contractors, the Departmental Representative, authorized visitors and outside inspection agency personnel about the presence and use of such products on the site.
 - .5 The site foreman or superintendent must be able to demonstrate, to the satisfaction of the Departmental Representative, that he/she has had WHMIS training and is knowledgeable in its requirements. The Departmental Representative can require replacement of this person if this condition or implementation of WHMIS is not satisfactory.

8. REQUIREMENTS OF BILL 208, SECTION 18(a)

Under the requirements of Bill 208 of the Ontario Ministry of Labour Occupational Health & Safety Act, the following designated substances may be encountered while performing the work described in these contract documents:

- .1 Acrylonitrile, Isocyanates, Arsenic, Lead, Asbestos, Mercury, Benzene, Silica, Coke Oven Emissions, Vinyl Chloride, and Ethylene Oxide
 - .1 It is the responsibility of the general contractor to ensure that each prospective subcontractor for this project has received a copy of the above list.
 - .2 The general contractor is advised to take precautions when dealing with the above substances.

9. COST BREAKDOWN

- .1 Submit, for approval by the Departmental Representative, a cost breakdown of tender 72 hours after the contract is awarded.
- .2 Use the approved cost breakdown as the basis for submitting all claims.
- .3 Request Departmental Representative's verbal approval to amount of claim prior to preparing and submitting the claim in its final form.

10. SUB-TRADES

- .1 Submit no later than 72 hours after tender closing, a complete list of sub trades for the Departmental Representative's review.

11. PERSONNEL SECURITY AND IDENTIFICATION

- .1 All persons employed by the contractor, or by any subcontractor and present on the site must be security cleared in accordance with the requirements of the Section entitled Special Instructions to Tenderers.
- .2 All such persons must wear and keep visible identification badges as issued by the Security Office of NRC.

12. WORKING HOURS AND SECURITY

- .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.
- .2 At all other times, special written passes are required for access to the building site.
- .3 Before scheduling any work outside normal working hours, obtain permission from the Departmental Representative to perform the specific tasks.
- .4 An escort may be required whenever working outside normal hours. Contractor to bear the associated costs.

13. SCHEDULE

- .1 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 Departmental Representative not later than two weeks after the award of the contract and prior to commencement of any work on site.
- .2 Notify Departmental Representative in writing of any changes in the schedule.
- .3 14 day(s) before the scheduled completion date, arrange to do an interim inspection with the Departmental Representative.

14. PROJECT MEETINGS

- .1 Hold regular project meetings at times and locations approved by the Departmental Representative.
- .2 Notify all parties concerned of meetings to ensure proper coordination of work.
- .3 Departmental Representative will set times for project meetings and assume responsibility for recording and distributing minutes.

15. SHOP DRAWINGS

- .1 Submit to Departmental Representative for review, shop drawings, product data and samples specified within two week(s) after contract award.
- .2 Submit to Departmental Representative for review a complete list of all shop drawings, product data and samples specified and written confirmation of corresponding delivery dates within one (1) week after shop drawings, product data and samples approval date. This list shall be updated and any changes to the list shall be immediately notified in writing to the Departmental Representative.
- .3 Review shop drawings, data sheets and samples prior to submission.
- .4 Submit electronic copy of all shop drawings and product data and samples for review, unless otherwise specified.
- .5 Review of shop drawings and product data by the Departmental Representative does not relieve the contractor of the responsibility for errors and omissions and for the conformity with contract documents.

16. SAMPLES AND MOCK-UPS

- .1 Submit samples in sizes and quantities as specified.
- .2 Where colour, pattern or texture is criterion, submit full range of samples.
- .3 Construct field samples and mock-ups at locations acceptable to Departmental Representative.
- .4 Reviewed samples or mock-ups will become standards of workmanship and material against which installed work will be checked on the project.

17. MATERIALS AND WORKMANSHIP

- .1 Install only new materials on this project unless specifically noted otherwise.
- .2 Only first class workmanship will be accepted, not only with regard to safety, efficiency, durability, but also with regard to neatness of detail and performance.

18. WORK & MATERIALS SUPPLIED BY OWNER

- .1 Work and materials not included in this contract are described on drawings and in this specification.
- .2 Deliver to a storage place, as directed by the Departmental Representative, all materials returned to the Owner.
- .3 Unless otherwise specified, accept owner-supplied materials at their storage location and provide all transportation as required.
- .4 General Contractor's duties:
 - .1 Unload at site.
 - .2 Promptly inspect products and report damaged or defective items.
 - .3 Give written notification to the Departmental Representative for items accepted in good order.
 - .4 Handle at site, including uncrating and storage.
 - .5 Repair or replace items damaged on site.
 - .6 Install, connect finished products as specified.

19. SITE ACCESS

- .1 Make prior arrangements with the Departmental Representative before starting work or moving materials and equipment on site.
- .2 Obtain approval of Departmental Representative for regular means of access during the construction period.
- .3 Obtain approval of Departmental Representative before temporarily suspending operations on site; before returning to the site and before leaving the site at the end of the job.
- .4 Provide and maintain access to site.
- .5 Build and maintain temporary roads and provide snow removal during period of work.
- .6 Make good any damage and clean up dirt, debris, etc., resulting from contractor's use of existing roads.

20. USE OF SITE

- .1 Restrict operations on the site to the areas approved by the Departmental Representative
- .2 Locate all temporary structures, equipment, storage, etc., to the designated areas.
- .3 Restrict parking to the designated areas.

21. ACCEPTANCE OF SITE

- .1 Inspect the site before commencing work, review any unexpected conditions with the Departmental Representative.
- .2 Commencement of work will imply acceptance of existing conditions.

22. SITE OFFICE & TELEPHONE

- .1 Contractor to erect a temporary site office at his own expense.
- .2 Install and maintain a telephone, if necessary.
- .3 Use of NRC phones is not permitted unless in the case of an emergency.

23. SANITARY FACILITIES

- .1 Obtain permission from the Departmental Representative to use the existing washroom facilities in the building or provide sanitary facilities, and bear all associated costs.

24. TEMPORARY SERVICES

- .1 A source of temporary power will be made available in the area. Bear all costs to make connections to the power source and perform distribution on site.
- .2 Provide all load centres, breakers, conduit, wiring, disconnects, extension cords, transformers, as required from the source of power.
- .3 Power is to be used only for power tools, lighting, controls, motors, and not for space heating.
- .4 A source of temporary water will be made available if required.
- .5 Bear all costs associated with distributing the water to the required locations.

- .6 Comply with NRC requirements when connecting to existing systems in accordance with the articles entitled "Co-operation" and "Service Interruptions" of this section.

25. DOCUMENTS REQUIRED AT WORK SITE

- .1 The contractor shall keep on the site, one (1) up-to-date copy of all contract documents, including specifications, drawings, addenda, shop drawings, change notices, schedule and any reports or bulletins pertaining to the work, in good order, available to the Departmental Representative and to his / her representatives at all times.
- .2 At least one (1) copy of specifications and drawings shall be marked by the contractor to show all work "As Built" and shall be provided to the Departmental Representative with the Application for Payment and for the Final Certificate of Completion.

26. CO-OPERATION

- .1 Co-operate with NRC staff in order to keep disruption of normal research work to an absolute minimum.
- .2 Work out in advance, a schedule for all work which might disrupt normal work in the building.
- .3 Have schedule approved by the Departmental Representative.
- .4 Notify the Departmental Representative in writing, 72 hours prior to any intended interruption of facilities, areas, corridors, mechanical or electrical services and obtain requisite permission.

27. PROTECTION AND WARNING NOTICES

- .1 Provide all materials required to protect existing equipment.
- .2 Erect dust barriers to prevent dust and debris from spreading through the building.
- .3 Place dust protection in the form of cover sheets over equipment and furniture and tape these sheets to floors, to ensure no dust infiltration.
- .4 Repair or replace any and all damage to Owner's property caused during construction, at no cost to the Owner and to the satisfaction of the Departmental Representative.
- .5 Protect the buildings, roads, lawns, services, etc. from damage which might occur as a result of this work.
- .6 Plan and co-ordinate the work to protect the buildings from the leakage of water, dust, etc.
- .7 Ensure that all doors, windows, etc., that could allow transfer of dust, noise, fumes, etc., to other areas of the building are kept closed.
- .8 Be responsible for security of all areas affected by the work under the Contract until acceptance by NRC. Take all necessary precautions to prevent entry to the work area by unauthorized persons and guard against theft, fire and damage by any cause. Secure working area at the end of each day's work and be responsible for same.
- .9 Provide and maintain adequate safety barricades around the work sites to protect NRC personnel and the public from injury during the construction.
- .10 Post warnings, in all instances where possible injury could occur such as Work Overhead, Hard Hat Areas, etc. or as required by the Departmental Representative.

- .11 Provide temporary protective enclosures over building entrances and exits to protect pedestrians. All enclosures to be structurally sound against weather and falling debris.

28. BILINGUALISM

- .1 Ensure that all signs, notices, etc. are posted in both official languages.
- .2 Ensure that all identification of services called for by under this contract are bilingual.

29. LAYOUT OF WORK

- .1 Location of equipment, fixtures, outlets and openings indicated on drawings or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with the manufacturer's recommendations for safety, access and maintenance.
- .3 Employ competent person to lay out work in accordance with the contract documents.

30. DISCREPANCIES & INTERFERENCES

- .1 Prior to the start of the work, examine drawings and specifications. Report at once to the Departmental Representative, any defects, discrepancies, omissions or interferences affecting the work.
- .2 Contractor to immediately inform the Departmental Representative in writing, of any discrepancies between the plans and the physical conditions so the Departmental Representative may promptly verify same.
- .3 Any work done after such a discovery, until authorized, is at the contractor's risk.
- .4 Where minor interferences as determined by the Departmental Representative are encountered on the job and they have not been pointed out on the original tender or on the plans and specifications, provide offsets, bends or reroute the services to suit job conditions at no extra cost.
- .5 Arrange all work so as not to interfere in any way with other work being carried out.

31. MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .2 Notify the Departmental Representative in writing of any conflict between these specifications and manufacturer's instruction. Departmental Representative will designate which document is to be followed.

32. TEMPORARY HEATING AND VENTILATING

- .1 Bear the costs of temporary heat and ventilation during construction including costs of installation, fuel, operation, maintenance, and removal of equipment.
- .2 Use of direct-fired heaters discharging waste products into the work areas will not be permitted unless prior approval is given by the Departmental Representative.

- .3 Furnish and install temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of work.
 - .2 Protect work and products against dampness and cold.
 - .3 Reduce moisture condensation on surfaces to an acceptable level.
 - .4 Provide ambient temperature and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for a safe working environment.
- .4 Maintain minimum temperature of 5 °C to 10 °C or higher where specified as soon as finishing work is commenced and maintain until acceptance by the Departmental Representative. Maintain ambient temperature and humidity levels as required for comfort of NRC personnel.
- .5 Prevent hazardous or unhealthy accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction including also, storage areas and sanitary facilities.
 - .1 Dispose of exhaust materials in a manner that will not result in a harmful or unhealthy exposure to persons.
- .6 Maintain strict supervision of operation of temporary heating and ventilating equipment.
 - .1 Enforce conformance with applicable codes and standards.
 - .2 Comply with instructions of the Departmental Representative including provision of full-time watchman services when directed.
 - .3 Enforce safe practices.
 - .4 Vent direct-fired combustion units to outside.
- .7 Submit tenders assuming existing or new equipment and systems will not be used for temporary heating and ventilating.
- .8 After award of contract, Departmental Representative may permit use of the permanent system providing agreement can be reached on:
 - .1 Conditions of use, special equipment, protection, maintenance, and replacement of filters.
 - .2 Methods of ensuring that heating medium will not be wasted and in the case of steam, agreement on what is to be done with the condensate.
 - .3 Saving on contract price.
 - .4 Provisions relating to guarantees on equipment.

33. CONNECTIONS TO AND INTERRUPTIONS TO EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times and in the manner agreed to by the Departmental Representative and by authorities having jurisdiction, with minimum disruption to NRC Personnel and vehicular traffic and minimum service interruption. Do not operate any NRC equipment or plant.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit a schedule to and obtain approval from the Departmental Representative for any shut-down or closure of active service or facility; allow minimum 72 hours notice. Adhere to approved schedule and provide notice to the Departmental Representative.

- .4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .5 Provide detours, bridges, alternate feeds, etc., as required to minimize disruptions.
- .6 Protect existing services as required and immediately make repairs if damage occurs.
- .7 Remove any abandoned service lines as indicated on the contract documents and as approved by the Departmental Representative; cap or otherwise seal lines at cut-off points. Record and provide a copy to the Departmental Representative of locations of maintained, re-routed and abandoned service lines.

34. CUTTING AND PATCHING

- .1 Cut existing surfaces as required to accommodate new work.
- .2 Remove all items as shown or specified.
- .3 Patch and make good with identical materials, the surfaces that have been disturbed, cut or damaged, to the satisfaction of the Departmental Representative.
- .4 Where new pipes pass through existing construction, core drill an opening. Size openings to leave 12mm (1/2") clearance around the pipes or pipe insulation. Do not drill or cut any surface without the approval of the Departmental Representative.
- .5 Obtain written approval of the Departmental Representative before cutting openings through existing or new structural members.
- .6 Seal all openings where cables, conduits or pipes pass through walls with an acoustic sealant conforming to CAN/CGSB-19.21-M87.
- .7 Where cables, conduits and pipes pass through fire rated walls and floors, pack space between with compressed glass fibres and seal with fire stop caulking in accordance with CAN/CGSB-19.13-M87 AND NBC 3.1.7.

35. FASTENING DEVICES

- .1 Do not use explosive actuated tools, without first obtaining permission from the Departmental Representative.
- .2 Comply with the requirements of CSA A-166 (Safety Code for Explosive Actuated Tools).
- .3 Do not use any kind of impact or percussion tool without first obtaining permission from the Departmental Representative.

36. OVERLOADING

- .1 Ensure that no part of the building or work is subjected to a load which will endanger safety or cause permanent deformation or structural damage.

37. DRAINAGE

- .1 Provide temporary drainage and pumping as required to keep site free of water.

38. ENCLOSURE OF STRUCTURES

- .1 Construct and maintain all temporary enclosures as required to protect the work and building from frost penetration or damage.

- .2 Maintain in place until all chances of damage are over and proper curing has taken place.
- .3 Provide temporary weather tight enclosures for exterior openings until permanent sash and glazing and exterior doors are installed.
- .4 Provide lockable enclosures as required to maintain the security of NRC facilities and be responsible for the same.
- .5 Provide keys to NRC security personnel when required.
- .6 Lay out the work carefully and accurately and verify all dimensions and be responsible for them. Locate and preserve general reference points.
- .7 Throughout the course of construction, keep continuously acquainted with field conditions, and the work being developed by all trades involved in the project. Maintain an awareness of responsibility to avoid space conflict with other trades.
- .8 Conceal all services, piping, wiring, ductwork, etc., in floors, walls or ceilings except where indicated otherwise.

39. STORAGE

- .1 Provide storage as required to protect all tools, materials, etc., from damage or theft and be responsible for the same.
- .2 Do not store flammable or explosive materials on site without the authorization of the Departmental Representative.

40. GENERAL REVIEW

- .1 Periodic review of the contractor's work by the Departmental Representative does not relieve the contractor of the responsibility of making the work in accordance with contract documents. Contractor shall carry out his own quality control to ensure that the construction work is in accordance with contract documents.
- .2 Inform the Departmental Representative of any impediments to the installation and obtain his / her approval for actual location.

41. TESTING

- .1 Obtain and hand to the Departmental Representative all acceptance certificates or test reports from authority having jurisdiction. The project will be considered incomplete without the same.

42. PARTIAL OCCUPANCY

- .1 NRC may request partial occupancy of the facility if the contract extends beyond the expected completion date.
- .2 Do not restrict access to the building, routes, and services.
- .3 Do not encumber the site with materials or equipment.

43. DISPOSAL OF WASTES

- .1 Dispose of waste materials including volatiles, safely off NRC property. Refer to the section entitled "General and Fire Safety Requirements" included as part of this specification.

44. CLEAN-UP DURING CONSTRUCTION

- .1 On a daily basis, maintain project site and adjacent area of campus including roofs, free from debris and waste materials.
- .2 Provide on-site dump containers for collection of waste materials and rubbish.

45. FINAL CLEAN-UP

- .1 Upon completion do a final clean-up to the satisfaction of the Departmental Representative.
- .2 Clean all new surfaces, lights, existing surfaces affected by this work, replace filters, etc.
- .3 Clean all resilient flooring and prepare to receive protective finish. Protective finish applied by NRC

46. WARRANTY AND RECTIFICATION OF DEFECTS IN WORK

- .1 Refer to General Conditions "C", section GC32.
- .2 Ensure that all manufacturers' guarantees and warranties are issued in the name of the **General** Contractor and the National Research Council.

47. MAINTENANCE MANUALS

- .1 Provide three (3) bilingual copies of maintenance manuals or two English and two French maintenance manuals immediately upon completion of the work and prior to release of holdbacks.
- .2 Manuals to be neatly bound in hard cover loose leaf binders.
- .3 Manuals to include operating and maintenance instructions, all guarantees and warranties, shop drawings, technical data, etc., for the material and apparatus supplied under this contract.

END OF SECTION

1. GENERAL CONSTRUCTION SAFETY REQUIREMENTS

- .1 The Contractor shall take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property from any harm during the course of the contract.
- .2 The Contractor shall be solely responsible for the construction safety of both its employees and those of its sub-contractors at the work site, and for initiating, maintaining and supervising safety precautions, programs and procedures in connection with the performance of the work.
- .3 The Contractor shall comply with all Federal, Provincial and Municipal safety codes and regulations and the Occupational Health and Safety Act and the Workplace Safety and Insurance Board. In the event of any conflict between any provisions in legislation or codes, the most stringent provisions shall apply.
- .4 Periodic review of the contractor's work by the Departmental Representative, using the criteria of the contract documents, does not relieve the contractor of his safety responsibilities in carrying out the work in accordance with the contract documents. The contractor shall consult with the Departmental Representative to ensure that this responsibility is carried out.
- .5 The Contractor shall ensure that only competent personnel are permitted to work on site. Throughout the term of the contract, any person will be removed from the site who is not observing or complying with the safety requirements.
- .6 All equipment shall be in safe operating condition and appropriate to the task.
- .7 Following a project and site hazard assessment, the Contractor shall develop a Site Specific Safety Plan based on the following minimum requirements:
 - .1 Provide a safety board mounted in a visible location on the project site, with the following information included thereon:
 - .1 Notice of Project
 - .2 Site specific Safety Policy
 - .3 Copy of Ontario Health and Safety Act
 - .4 Building Schematic showing emergency exits
 - .5 Building emergency procedures
 - .6 Contact list for NRC, Contractor and all involved sub-contractors
 - .7 Any related MSDS sheets
 - .8 NRC Emergency phone number
- .8 The Contractor shall provide competent personnel to implement its safety program and those of any Health and Safety Act legislation applicable at this project location, and to ensure they are being complied with.
- .9 The Contractor shall provide safety orientation to all its employees as well as those of any subcontractors under its jurisdiction.

- .10 The Departmental Representative will monitor to ensure that safety requirements are met and that safety records are properly kept and maintained. Continued disregard for safety standards can cause the contract to be cancelled and the Contractor or sub-contractors removed from the site.
- .11 The Contractor will report to the Departmental Representative and jurisdictional authorities, any accident or incident involving Contractor or NRC personnel or the public and/or property arising from the Contractor's execution of the work.
- .12 If entry to a laboratory is required as part of the work of the Contractor, a safety orientation shall be provided to all his employees as well as those of any subcontractors regarding lab safety requirements and procedures, as provided by the Researcher or the Departmental Representative.

2. FIRE SAFETY REQUIREMENTS

.1 Authorities

1. The Fire Commissioner of Canada (FC) is the authority for fire safety at NRC.
2. For the purpose of this document, "Departmental Representative" will be deemed as the NRC person in charge of the project and who will enforce these Fire Safety Requirements.
3. Comply with the following standards as published by the Office of the Fire Commissioner of Canada:
 - a. Standard No. 301 - June 1982 "Standard for Construction Operations";
 - b. Standard No. 302 - June 1982 "Standard for Welding and Cutting".

.2 Smoking

- .1 Smoking is prohibited inside all NRC buildings, as well as roof areas.
- .2 Obey all "NO SMOKING" signs on NRC premises.

.3 Hot Work

- .1 Prior to commencement of any "Hot Work" involving welding, soldering, burning, heating, use of torches or salamanders or any open flame, obtain a Hot Work Permit from the Departmental Representative.
- .2 Prior to commencement of "Hot Work", review the area of hot work with the Departmental Representative to determine the level of fire safety precautions to be taken.

.4 Reporting Fires

- .1 Know the exact location of the nearest Fire Alarm Pull Station and telephone, including the emergency phone number.
- .2 REPORT immediately, all fire incidents as follows:
 - .1 Activate nearest fire alarm pull station and;
 - .2 Telephone the following emergency phone number as appropriate:

FROM AN NRC PHONE 333
FROM ANY OTHER PHONE (613) 993-2411

4. When reporting a fire by phone, give the location of fire, building number and be prepared to verify location.
5. The person activating fire alarm pull station must remain at a safe distance from the scene of the fire but readily available to provide information and direction to the Fire Department personnel.

.5 Interior and Exterior Fire protection & Alarm Systems

- .1 DO NOT OBSTRUCT OR SHUT OFF FIRE PROTECTION EQUIPMENT OR SYSTEMS, INCLUDING BUT NOT LIMITED TO FIRE ALARM SYSTEMS, SMOKE/HEAT DETECTORS, SPRINKLER SYSTEM, PULL STATIONS, EMERGENCY CALL BUTTONS AND PA SYSTEMS, WITHOUT AUTHORIZATION FROM THE DEPARTMENTAL REPRESENTATIVE.
- .2 WHEN ANY FIRE PROTECTION EQUIPMENT IS TEMPORARILY SHUT DOWN, ALTERNATIVE MEASURES AS PRESCRIBED BY THE DEPARTMENTAL REPRESENTATIVE SHALL BE TAKEN TO ENSURE THAT FIRE PROTECTION IS MAINTAINED.
- .3 DO NOT LEAVE FIRE PROTECTION OR ALARM SYSTEMS INACTIVE AT THE END OF A WORKING DAY WITHOUT NOTIFICATION AND AUTHORISATION FROM THE DEPARTMENTAL REPRESENTATIVE. THE DEPARTMENTAL REPRESENTATIVE WILL ADVISE THE (FPO) OF THE DETAILS OF ANY SUCH EVENT.
- .4 DO NOT USE FIRE HYDRANTS, STANDPIPES AND HOSE SYSTEMS FOR OTHER THAN FIRE FIGHTING PURPOSES UNLESS AUTHORISED BY DEPARTMENTAL REPRESENTATIVE.

.6 Fire Extinguishers

- .1 Provide a minimum of 1-20 lb. ABC Dry Chemical Fire Extinguisher at each hot work or open flame location.
- .2 Provide fire extinguishers for hot asphalt and roofing operations as follows:
 - a. Kettle area - 1-20 lb. ABC Dry Chemical;
 - b. Roof - 1-20 lb. ABC Dry Chemical at each open flame location.
- .3 Provide fire extinguishers equipped as below:
 - c. Pinned and sealed;
 - d. With a pressure gauge;
 - e. With an extinguisher tag signed by a fire extinguisher servicing company.
- .4 Carbon Dioxide (CO₂) extinguishers will not be considered as substitutes for the above.

.7 Roofing Operations

.1 Kettles:

- .1 Arrange for the location of asphalt kettles and material storage with the Departmental Representative before moving on site. Do not locate kettles on any roof or structure and keep them at least 10m (30 feet) away from a building.
- .2 Equip kettles with 2 thermometers or gauges in good working order; a hand held and a kettle-mounted model.
- .3 Do not operate kettles at temperatures in excess of 232°C (450 °F).
- .4 Maintain continuous supervision while kettles are in operation and provide metal covers for the kettles to smother any flames in case of fire. Provide fire extinguishers as required in article 2.6.
- .5 Demonstrate container capacities to Departmental Representative prior to start of work.
- .6 Store materials a minimum of 6m (20 feet) from the kettle.

.2 Mops:

- .1 Use only glass fibre roofing mops.
- .2 Remove used mops from the roof site at the end of each working day.

.3 Torch Applied Systems:

- .1 DO NOT USE TORCHES NEXT TO WALLS.
- .2 DO NOT TORCH MEMBRANES TO EXPOSED WOOD OR CAVITY
- .3 Provide a Fire Watch as required by article 2.9 of this section.

- .4 Store all combustible roofing materials at least 3m (10 feet) away from any structure.
- .5 Keep compressed gas cylinders a minimum of 6m (20 feet) away from the kettle, protected from mechanical damage and secured in an upright position.

.8 Welding / Grinding Operations

- .1 Contractor to provide fire blankets, portable fume extraction devices, screens or similar equipment to prevent exposure to welding flash, or sparks from grinding.

.9 Fire Watch

- .1 Provide a fire watch for a minimum of one hour after the termination of any hot work operation.
- .2 For temporary heating, refer to General Instructions Section 00 010 00.
- .3 Equip fire watch personnel with fire extinguishers as required by article 2.6.

.10 Obstruction of access/egress routes-roadways, halls, doors, or elevators

- .1 Advise the Departmental Representative in advance of any work that would impede the response of Fire Department personnel and their apparatus. This includes violation of minimum overhead clearance, erection of barricades and the digging of trenches.

- .2 Building exit routes must not be obstructed in any way without special permission from the Departmental Representative, who will ensure that adequate alternative routes are maintained.
- .3 The Departmental Representative will advise the FPO of any obstruction that may warrant advanced planning and communication to ensure the safety of building occupants and the effectiveness of the Fire Department.

.11 Rubbish and Waste Materials

- .1 Keep rubbish and waste materials to a minimum and a minimum distance of 6m (20 feet) from any kettle or torches.
- .2 Do not burn rubbish on site.
- .3 Rubbish Containers
 - .1 Consult with the Departmental Representative to determine an acceptable safe location for any containers and the arrangement of chutes etc. prior to bringing the containers on site.
 - .2 Do not overfill the containers and keep area around the perimeter free and clear of any debris.
- .4 Storage
 - .1 Exercise extreme care when storing combustible waste materials in work areas. Ensure maximum possible cleanliness, ventilation and that all safety standards are adhered to when storing any combustible materials.
 - .2 Deposit greasy or oily rags or materials subject to spontaneous combustion in CSA or ULC approved receptacles and remove at the end of the work day or shift, or as directed.

.12 Flammable Liquids

- .1 The handling, storage and use of flammable liquids is governed by the current National Fire Code of Canada.
- .2 Flammable Liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 45 litres (10 imp gal), provided they are stored in approved safety cans bearing the ULC seal of approval and kept away from buildings, stockpiled combustible materials etc. Storage of quantities of flammable liquids exceeding 45 litres (10 imp gal) for work purposes, require the permission of the Departmental Representative.
- .3 Flammable liquids are not to be left on any roof areas after normal working hours.
- .4 Transfer of flammable liquids is prohibited within buildings.
- .5 Do not transfer flammable liquids in the vicinity of open flames or any type of heat producing device.
- .6 Do not use flammable liquids having a flash point below 38 °C (100 °F) such as naphtha or gasoline as solvents or cleaning agents.

- .7 Store flammable waste liquids for disposal in approved container located in a safe, ventilated area. Waste flammable liquids are to be removed from the site on a regular basis.
- .8 Where flammable liquids, such as lacquers or urethane are used, ensure proper ventilation and eliminate all sources of ignition. Inform the Departmental Representative prior to, and at the cessation of such work.

3. Questions and/or clarifications

- .1 Direct any questions or clarification on Fire or General Safety, in addition to the above requirements, to the Departmental Representative.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 05 00 Common Work Results for Masonry.
- .2 Section 04 03 07 Historic – Masonry Repointing.
- .3 Section 04 03 41 Historic – Repairing Stone.

1.2 REFERENCES

- .1 Occupational Health and Safety Act, 1990, latest revision.
 - .1 Occupational Health and Safety Regulations
- .2 National Building Code, 2015, latest revision.
- .3 Ontario Building Code, 2016, latest revision.

1.3 SCOPE OF WORK

- .1 The contractor shall be responsible to carry in his tender the complete cost for all labour, the materials, the tools, and the equipment required to erect all the scaffolding, platforms, netting, and hoarding, as designed by the contractor's Engineer, to carry out the restoration work, including the cost for design, inspection, approvals, upkeep, repairs, temporary protection and support for the required scaffolding, netting and hoarding.
- .2 At the beginning of the project, install all necessary scaffolding, hoarding, and netting required to cover all elevations of the building façade, full height, in Courtyard B. Maintain that amount of scaffolding, hoarding, and netting at all time during the Work.
- .3 Provide continuous full width aluminum platforms to the entire primary scaffolding at 2000mm (79") vertical centers. Also provide continuous aluminum platforms on all removable outrigger brackets at 2000mm (79") vertical centers.
- .4 Provide metal stairways as required to give safe handy access and exit to and from scaffolding.
- .5 Scaffolding shall not be removed until all the inspections of the Work has been carried out and deficiencies completed to the full satisfaction of the Departmental Representative and/or Consultant.
- .6 Obtain Departmental Representative and/or Consultant approval before removing any part of the required scaffolding
- .7 Provide all the necessary temporary structural supports required for the scaffolding on existing roof areas.

- .8 Provide all the necessary temporary protection to existing building equipment, structures, and other building elements required by the installation of scaffolding or by the Departmental Representative and/or Consultant. Temporary protection must permit safe access and use of such equipment and structures.
- .9 Provide all the necessary temporary protection to the existing roof areas under the scaffolding.
- .10 Provide covered entries to permit safe and convenient access to Courtyard B.
- .11 Provide all anchoring and stabilizers required to secure the scaffolding to the building.
- .12 Provide weather enclosures around scaffolding to permit work to continue at all times.

Maintain the scaffolding rigid, secure, and safe manner during the erection and for the full duration of the Work and to meet the needs of the Work and to the full satisfaction of the Engineering firm who designed and inspects the scaffolding.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Submit stamped, signed, and dated scaffolding and platform design/setup plan, prepared by an Engineer licensed in the Province of Ontario, Canada.
 - .1 Provide in writing all the approvals required by the authorities having jurisdiction to the Departmental Representative and/or Consultant
- .3 Submit the plan(s) no later than two (2) weeks after notification of contract award to the Contractor for review by the Departmental Representative and/or Consultant.
- .4 Product Data:
 - .1 Submit product data on scaffolding framing, accessories, decking, and debris netting.

1.5 QUALIFICATIONS

- .1 Scaffolding must be designed by and Engineer licensed in the Province of Ontario, Canada.
- .2 A qualified scaffold erection company specializing in that field must erect scaffolding.
- .3 Erection company must demonstrate a minimum of three (3) years of experience in the field of scaffold erection with at least one project the size of the scope of work.

1.6 ACCESS TO SITE

- .1 Provide and maintain access to Courtyard B through the scaffolding set-up, at the designated access point through the building as shown on the drawings.
- .2 All scaffolding shall be delivered to the construction staging/storage area outside the building, as indicated on the drawings.

- .3 All scaffolding shall be joisted into Courtyard B via a crane. No scaffolding shall be brought through the building.

1.7 DELIVERY AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Deliver and store materials to the staging area indicated on the drawings. Deliver and store materials to Courtyard B.
- .3 Do not overload the Courtyard B roof. Do not encumber the courtyard or exterior staging areas with excess equipment.

1.8 FIRE ROUTES

- .1 Maintain access to the property and to Courtyard B, including overhead clearances for use by emergency response vehicles and personnel.
- .2 Provide a temporary emergency exit route and signage as required in Courtyard B.
- .3 The door leading to the Lecture Hall (room 1002), indicated on the drawings, shall only be used as an emergency exit door. Provide signage on the door and scaffolding as required. No regular access is permitted.

1.9 PROTECTION

- .1 Provide protection for finished and partially finished work and equipment during performance of work.
- .2 Protect the building from damage during the progress of the Work by providing resilient bumpers, scaffolding bumper protection and wood blocking to protect stone surfaces, roofing, metal work, and windows.
- .3 Provide necessary screens, covers, and hoardings.
- .4 Confirm with Departmental Representative and/or Consultant location of starting point a minimum of 72 hours prior to installation.
- .5 Be responsible for damage incurred due to lack of or improper protection.

1.10 INSPECTIONS

- .1 Have the Engineering firm who designed the scaffolding perform a monthly inspection of the scaffolding and provide the Departmental Representative and/or Consultant with written inspection reports. Follow all the recommendations of the Engineering firm.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Not Used.

PART 3 - EXECUTION

3.1 DESIGN

- .1 Comply with Part of the National Building Code and/or Ontario Building Code, most recent versions, whichever is more stringent.
- .2 Comply with all Canadian Labour and Safety Codes.
- .3 Comply with the Occupational Health and Safety Act and Regulations for construction projects from the Ontario Ministry of Labour, specifically related to the erection of scaffolding, guardrails and temporary stairs.
- .4 Primary scaffolding framing shall allow un-obstructed access to all surfaces subject to this specification.
- .5 Primary scaffolding framing shall extend a minimum one flight above the parapet line to allow for the installation of a temporary roof on top of the scaffolding as may be required by the Work.
- .6 Modify primary framing and platform materials as required to fit scaffolding around building equipment such as exhaust ducts, ventilation systems, tanks, etc. or over existing structures, entrances, etc. Framing and platforms to maintain same load bearing capacity.
- .7 Verify existing bearing capacity of the concrete roof structure in Courtyard B, prior to designing and installing scaffolding. Existing drawings of the building can be provided to the design Engineer.
- .8 Provide OSB sheathing over the entire roof membrane to protect for the duration of the project.
- .9 Provide 8" x 8" continuous wood timber members as the primary support for the scaffolding on roof areas in Courtyard B, or as required by the design Engineer. Make the primary support assembly waterproof. Maintain roof drainage during the restoration work.
- .10 Do not damage or cut the existing membrane.
- .11 If the scaffold design Engineer requires the scaffolding to be anchored directly to the concrete structure, cut the existing membrane and insulation as required to sit and anchor the primary support directly on the existing concrete roof slab. Make openings waterproofing for the duration of the Work. Install new insulation and new roofing membranes as required to return the roof to the original condition. Waterproofing must be done by a qualified roofing contractor and provide a warranty for the repairs.
- .12 Include in design all details of the temporary supports, anchorage, and procedures required for safe

erection and use.

- .13 Expansion anchors, if required, shall be sized to fit into stone mortar joints in “T” joints. Expansion anchors must be smaller than the masonry joint they are drilled into.
- .14 Include in design all modifications required to the primary framing to suit site conditions such as entrances, exits, low roofs, openings for uninterrupted access to exterior equipment, etc.

3.2 APPROVALS

- .1 Submit scaffolding drawings to the Departmental Representative and/or Consultant for review prior to installation. Drawings must be prepared and signed, stamped, and dated by a licensed Engineer in the province of Ontario, Canada.
- .2 Provide scaffolding approval through the Ontario Ministry of Labour to verify compliance and provide documentation to the Departmental Representative and/or Consultant of said compliance.
- .3 The Departmental Representative and/or Consultant reserve the right to limit access to the entire or part of it should the contractor fail to provide the above certificate.

3.3 ACCEPTANCE OF SCAFFOLDING

- .1 Inspect the site before commencing work and report any unexpected conditions to the scaffolding design Engineer and Departmental Representative and/or Consultant.
- .2 Commencement of work will imply acceptance of existing conditions.

3.4 COORDINATION

- .1 Make prior arrangement with the Departmental Representative and/or Consultant prior to starting erection of scaffolding or moving materials or equipment on site.
- .2 Coordinate and schedule scaffold erection to minimize disruption to normal use of existing building, roadways, sidewalks, parking lots, etc.
- .3 Coordinate with other trades to make sure that the scaffolding will meet their Work requirements.

3.5 INSPECTION

- .1 Inspect entire scaffolding system once installed and at the beginning of each one month period.
- .2 Inspection must be done by the design Engineering firm who prepared, signed, and stamped the scaffold drawings.
- .3 For each inspection, provide a written report to the Departmental Representative and/or Consultant within 48 hours.
- .4 The Departmental Representative and/or Consultant reserve the right to limit access to the entire or part of it should the contractor fail to provide the above inspection report.

3.6 ROOF PROTECTION

- .1 Provide roof protection to the penthouses and courtyard roof areas in the form of wood sheathing where the scaffold legs rest on the roof areas. This protection shall be continuous and from existing building wall out a minimum 2500mm (8 ft).
- .2 Install a layer of 6 mil polyethylene sheet over the entire roof membrane followed by 12mm (1/2") plywood sheathing over 25mm (1") extruded polystyrene insulation boards.
- .3 Spread scaffolding points over loads those sleepers as specified by the scaffold design Engineer.
- .4 Once the above assembly is installed, cover it with polyethylene sheet to ease the future cleanup of debris and dust.
- .5 Do not permit any metals, steel, sharp objects, etc. to come in contact with the existing roof. Be responsible for damages resulting from scaffolding work.
- .6 Repair at once and at no extra cost any damage to the roofing membrane resulting from the scaffolding work. A qualified roofing contractor to the approval of the Departmental Representative and/or Consultant must do repairs.
- .7 Have the roof protection reviewed by the Departmental Representative and/or Consultant before installing scaffolding and only install after written approval from the Departmental Representative and/or Consultant has been obtained.

3.7 SCAFFOLDING

- .1 Make prior arrangements with the Departmental Representative and/or Consultant before starting work or moving materials and equipment on site.
- .2 Locate all equipment and materials where directed by the Departmental Representative and/or Consultant and as indicated on the drawings.
- .3 Install all necessary temporary supports at ground level and on roofs as specified by the scaffold design Engineer and as indicated on the drawings.
- .4 Install all the temporary protection as required to maintain safe access to the building and safe use of the building outdoor equipment.
- .5 Install all primary scaffolding framing and secure in place. Install scaffolding independent of walls.
- .6 Install beams, pads, extension bars, etc. to suit the existing conditions and Work requirements.
- .7 Install removable outrigger brackets at all levels, 2000mm (79") vertical centers, the full width of the scaffolding, complete with aluminum platforms.
- .8 Install hand rails and toe boards the full width of scaffolding at each level.

- .9 Install all anchoring and stabilizers required to maintain safe erection and use of the scaffolding.
- .10 Expansion anchors, if required, shall be carefully set into the stone mortar joints, particularly in “T” joints when possible. Expansion anchors must be smaller than the masonry joint and shall be approved by the scaffold design Engineer.
- .11 Install aluminum decking as specified and required by the Work.
- .12 Solid or laminated planking or other similar lumber products are not acceptable for scaffold decking. Lumber products may only be used to fill small openings where standard size aluminum decking could not be used.

3.8 STAIRWAYS

- .1 Install minimum one (1) full height stairway every 76m (240 ft.) to marry at the same elevation as the platforms (2m vertical centers)
- .2 Provide one stairway at both ends of open-end scaffolding.
- .3 Provide a minimum of two (2) stairways.
- .4 Locate stairways so that one stairway could provide egress from scaffolding if the other stairway becomes inaccessible.
- .5 There is to be no change in elevation in order to provide floor to stairways.

3.9 DEBRIS NETTING

- .1 Fully enclose the main scaffolding system with debris netting tightly fitted and secured to the main scaffold framing.
- .2 Use only one colour for the whole project.
- .3 Keep netting in perfect condition through the course of the Work. Repair and/or replace immediately netting damaged during Work.

3.10 PROTECTION OF ENTRANCES

- .1 Provide overhead protection at all entrances and exits and over equipment located underneath scaffolding.
- .2 Cover the required roof framing with platforms and/or plywood sheathing. Install two layers of 6-mil polyethylene on top of platforms and/or plywood sheathing and protect with one layer of plywood.
- .3 Prevent accumulation of water over covered entrances. Prevent water from draining on the masonry or on the users.
- .4 Provide side protection at all entrances. Use plywood sheathing.

- .5 Inspect the entrance protection on a regular basis and repair as required.
- .6 Cover to entrances must be water and dust tight and must resist impact from falling debris.

3.11 LUMBER

- .1 Except where indicated otherwise, use materials at least 40mm (1-1/2") thick secured with 10mm (3/8") bolts located within 300mm (1 ft.) from the ends of members and uniformly spaced at 1200mm (4 ft.) between.
- .2 Countersink bolts where necessary to provide clearance for other work.

3.12 QUALITY CONTROL

- .1 Materials or assemblies, which are not equal to those specified, shall be removed and replaced at no extra cost.

3.13 REMOVAL

- .1 Remove from NRC site all surplus scaffolding materials.
- .2 Promptly remove all scaffolding and temporary supports, debris netting and anchor system upon completion.
- .3 Carefully remove all expansion anchors and coordinate repointing of masonry joints at those locations with the masonry contractor.

3.14 REPAIRS

- .1 Make good on any damaged to the roof, cladding or any other surrounding building elements as a result of this work.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- .1 The work included in this section includes the cleaning of all stone surfaces of the walls in Courtyard B.
- .2 The intent of the cleaning is to improve the performance of the stone, reduce spalling, and remove elements in the stone contributing to its deterioration. A 'like-new' appearance is not necessarily the goal of this work.

1.2 RELATED REQUIREMENTS

- .1 Section 00 10 00 General Instructions
- .2 Section 04 05 00 Common Work Results for Masonry.
- .3 Section 04 03 41 Historic – Repairing Stone.

1.3 REFERENCES

- .1 Definitions:
 - .1 Low-pressure water soaking: less than 72 kPa (500 psi), measured at nozzle tip.
 - .2 Medium-pressure water soaking: minimum 72 kPa (500 psi) and maximum 144 kPa (1000 psi), measured at nozzle tip.
- .2 CSA Group
 - .1 CAN/CSA-Z94.4-(11), Selection, Use, and Care of Respirators.
- .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Assessment Act (CEAA), 2012.
 - .2 Canadian Environmental Protection Act (CEPA), 1999.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, (1992, c. 34).

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Provide time and allow attendance of relevant employees at environmental briefing session arranged by Departmental Representative prior to beginning work of this Section.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Provide proposed cleaning method and type of protection from cleaning residue for in-place conditions.
- .3 Product Data:
 - .1 Provide technical data on cleaning materials, equipment, machinery, compressors, tools and nozzles.
 - .2 Submit two (2) copies of WHMIS MSDS.
- .4 Samples:
 - .1 Provide samples of cleaning materials for approval of Departmental Representative.
- .5 Test and Evaluation Reports:
 - .1 Provide test results.
 - .1 Provide two (2) copies of test results describing cleaning method, compressor equipment, water pressure at compressor, nozzle size and distance from masonry surface used for cleaning of test patches.
 - .2 Proceed with cleaning upon receiving written approval by Departmental Representative concerning tested cleaning methods.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: ensure work is performed in compliance with CEPA, CEAA, TDGA and applicable Provincial regulations.
- .2 Comply with requirements of Workplace Hazardous Materials Information Sheet (WHMIS).
- .3 Mock-ups:
 - .1 Do mock-up tests in accordance with Section 00 10 00 – General Instructions.
 - .2 Notify Departmental Representative 48 hours before commencing cleaning of each test patch.
 - .1 Obtain approval from Departmental Representative before commencing test.
 - .3 Before proceeding with mock up:
 - .1 Ensure area of testing is watertight and decorative elements are protected.
 - .2 Ensure contaminated water is kept in containers and their disposal respects environmental regulations.
 - .4 Conduct tests on building to determine effectiveness of scrubbing with neutral pH detergent in warm water and low pressure wash cleaning methods. The test should start with the gentlest cleaning techniques, raising aggressiveness in increments until acceptable level of cleaning is reached, while causing no damage to the masonry.
 - .5 Conduct tests to determine effectiveness of 100 to 350 kPa water pressures, time between 1 and 5 minutes, 18 to 30 litres per minute flow rates and 80 degrees C water temperatures, types of nozzles between 15 degree and 25 degree angle of spray, spraying distances from wall surface.
 - .6 Start with lowest impact tests and stop testing when desired level of cleaning is achieved, stop testing immediately when damage is caused.
 - .7 Test pressure at each storey height to determine effect of "line drop" on effectiveness of

- water jets.
- .8 Test brushing and spraying as alternative to pressure washing. Consult Departmental Representative and/or Consultant to review test results. Use method approved by Departmental Representative and/or Consultant.
 - .9 Add increasing amount of surfactant until cleaning can be done efficiently.
 - .10 Areas to be test cleaned to include five (5) stone block and five (5) decorative stone blocks.
 - .11 Locate test patches in inconspicuous places as shown on the drawings.
 - .12 Test patches shall include all types of cleaning methods and materials being used.
 - .13 Conduct tests to determine best methods of protecting surrounding historic material, openings and plants during test cleaning procedure, and monitor for detrimental effects.
 - .14 Do not proceed with work without approval of mock-up.
 - .15 Allow 48 hours for inspection of mock-up by Departmental Representative and/or Consultant.
 - .16 Accepted mock-up will demonstrate minimum standard for work. Mock-up may remain as part of finished work.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and with manufacturer’s written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.8 SITE CONDITIONS

- .1 Ambient conditions:
 - .1 Do not use wet cleaning methods when there is threat of frost.
 - .2 Do not use chemical cleaners when temperature is below 10 degrees C.
 - .3 Follow manufacturer's written instructions on use of chemical cleaners in accordance with product's temperature range application.
 - .4 Provide shading to wall to avoid cleaning in full, hot sunlight.
 - .5 Do not clean if there is risk of chemical spray being blown onto surrounding historic material, publicly accessible areas or plants.
 - .6 Protect work in the event of high winds.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Use clean potable water free from contaminants.

- .2 Treat water that has high metal content before use in cleaning.
- .3 Use air free from oil or other contaminants.
- .4 Use masking material strippable masking (butyl rubber spray) to approval of Departmental Representative and/or Consultant.
- .5 Use non-ionic surfactant (detergent) in concentration less than 2% by volume.
- .6 Use hydrofluoric acid (HF) based cleaner in concentration less than 5% by volume. Include Orthophosphoric acid 0.25% by volume.
- .7 Use xylene to remove graffiti and other stains.
- .8 Use 10% sulfuric acid solution in water in poultice pack to treat copper stains.
- .9 Use Kaolin Clay or Diatomaceous Earth as poultice medium.
- .10 Use non-ferrous or plastic mesh as support mechanism for poultice.
- .11 Use Organic grits for fine work.
- .12 Prepare poultices to treat iron stains on sandstone and granite using:
 - .1 10% solution by weight of orthophosphoric acid or oxalic acid and 2% sodium salt of EDTA.
- .13 Poultice reinforcement and accessories:
 - .1 Fibre reinforcing: fibrillated fibre concrete reinforcement.
 - .2 Plastic mesh reinforcing: alkali resisting.
 - .3 6 mil polyethylene film.
- .14 Abrasives:
 - .1 Abrasives shall be non-siliceous slag aggregate.
 - .2 Abrasives for use with fine scale abrasive equipment shall be Dolomite 70 to 200 mesh.
 - .3 Abrasives for use shall be non-proprietary.

2.2 HOT WATER

- .1 Use 80 degrees C water.
- .2 Generate hot water in flash boilers or other suitable appliance.

2.3 TOOLS AND EQUIPMENT

- .1 Use brushes with natural or soft plastic bristles.
- .2 Use scrapers of wood or plastic.
- .3 Use corrosion resistant trowels.
- .4 Use water pumps fitted with accurate pressure regulators and gauges capable of being preset and

- locked at maximum specified levels.
- .1 Water pumps to have rating of 400 kPa.
 - .2 Equipment shall be designed to provide a flow rate between 18 and 30 litres per minute at pressures ranging from 100 to 350 kPa.
 - .3 When rinsing on masonry or adjacent to masonry, employ pressures below 140 kPa and working distances to ensure there is no loss of surface or damage to substrate.
- .5 Use air compressors equipped with on-line oil filters to avoid spraying oil onto masonry.
 - .6 Use gun equipped with pressure gauge at nozzle end.
 - .7 Use plastic or non-ferrous metal piping and fittings.
 - .8 Use nozzles that give nebulized droplet spray. Use nozzles with 15 degree to 25 degree spread.
 - .9 Abrasive Equipment:
 - .1 Equipment must incorporate an accurate and adjustable pressure gauge and moisture/oil separator on air supply from compressor to nozzle and be within 2.5 meters of operative.
 - .2 Laboratory sized electrically operated micro-abrasive equipment specifically designed for use with abrasives of fine flour consistency operating in the 0 to 35 kPa range able to be fitted with a variety of nozzles, from 0.15mm up to 0.15mm by 3.81mm.
 - .3 Proprietary cleaning systems based on micro abrasives and low pressure water delivered by means of various nozzles, including standard, micro and piccolo, producing a rotating vortex process. Acceptable system: JOS/TORC Clean System or approved alternate.

PART 3 - EXECUTION

3.1 SITE VERIFICATION OF CONDITIONS

- .1 Record existing conditions, by means of photographs before and after cleaning. Advise Departmental Representative of potential complications.
- .2 Report to Departmental Representative conditions of deteriorated masonry or pointing not noted on Contract Drawings found before and during cleaning.
- .3 Obtain written approval of Departmental Representative before cleaning areas of deteriorated masonry.

3.2 PREPARATION

- .1 Protect operatives and other site personnel from hazards.
 - .1 Ensure good ventilation in work area.
 - .2 Ensure workers wear eye, head, face protection, protective gloves, coveralls, boots, and respirator to CAN/CSA-Z94.4
- .2 Place safety devices and signs near work areas as indicated and directed.
- .3 Repair openings and joints prior to cleaning where there is potential risk of water/chemical infiltration in accordance with Sections 04 03 41 and 04 03 07.

- .4 Each surface being cleaned shall be evenly lit during cleaning operations and during drying.
- .5 Lighting shall be of the type and intensity required to illuminate surfaces to show stains, streaking and other defects as well as the level of cleaning results.

3.3 PROTECTION OF IN-PLACE CONDITIONS

- .1 Cover and protect surfaces and non-masonry finishes not to be cleaned.
 - .1 Obtain approval of protection method from Departmental Representative and/or Consultant] before commencing cleaning procedure.
- .2 Protect vents, windows, and other openings, to prevent water entry.
 - .1 Protect masonry openings from water/chemical infiltration with polyethylene sheets during cleaning.
- .3 Protect wood, glass, and metal adjacent to masonry.
- .4 Protect roof membrane from all cleaning products.
- .5 Hang tarps or polyethylene sheets from scaffolding to enclose water spray.
- .6 Protect cleaned surfaces to be painted from contact with rain and snow.
- .7 Protect adjacent Work from spread of dust and dirt beyond work areas.
- .8 Protect building envelope from water infiltration.

3.4 GENERAL CLEANING

- .1 Progress Cleaning
 - .1 Leave Work area clean at end of each day.
- .2 Rinse off masonry to satisfaction of Departmental Representative and/or Consultant]]][until no indications of chemicals are present.
- .3 Rinse from bottom to top and from top to bottom.
- .4 Clean up work area as work progresses. At end of each workday remove debris and waste from site.
- .5 Upon completion, clean and restore areas used for work to condition equal to that previously existing.

3.5 EXECUTION OF CLEANING

- .1 Proceed with cleaning in accordance with manufacturer's written instructions of methods, systems, tools and equipment.
- .2 Dry brush or scrape accumulations from walls, ledges and cornices.
- .3 Pre-wet masonry surface when necessary. Work from bottom of wall upwards.

- .4 Do not exceed maximum pressure at nozzle or have nozzle closer to masonry than approved by Departmental Representative at tests.
- .5 Keep nozzle minimum 150 mm distance away from masonry surface.
- .6 Stop work when cleaning has detrimental effect on surrounding material and plants.
- .7 Avoid prolonged wetting and excessive water penetration.
- .8 Apply chemical cleaners approved by Departmental Representative and/or Consultant based on tests.
- .9 Brush and scrape only to supplement water washing.
- .10 Undertake prolonged water spray to soften and loosen heavy deposits, then brush. Remove thick incrustations with wooden or plastic scrapers.
- .11 Removal of vegetation or organic growth growing in or on masonry.
 - .1 Soak masonry with low-pressure water.
 - .2 Follow soaking by gentle scrubbing with natural bristle brushes. Continue removing growth by scraping with soft plastic or wood spatulas if not removed by gently scrubbing.
- .12 Cleaning of bird droppings and staining.
 - .1 The removal of all pigeon soiling is to be carried out wherever present on the building.
 - .2 Note that pigeon droppings are considered a hazardous substance. Take all required safety precautions.
 - .3 When cleaning bird droppings or working in areas where they occur, wear respirators acceptable to Labour Canada or Provincial Labour Department as suitable for exposure in work area. Workers shall be educated as to risks, and be trained in safe work.
 - .4 Remove droppings by means of scraping with wooden paddles while removing loosened material with high efficiency particulate air filtered vacuum equipment. Remove droppings in sealed containers, labelled as to contents to disposal area acceptable to authorities having jurisdiction.
 - .5 Low pressure, maximum 140 kPa (20 p.s.i.) surfactant cleaning shall be employed to remove all stains, and on completion to all work areas. Supplement water washing with bristle brushing where sound substrate exists.
 - .6 Use additional techniques in conjunction with poultices as necessary or directed.
 - .7 To be reviewed and approved by Departmental Representative and/or Consultant.
- .13 Cleaning of Repellent Gels and Caulking.
 - .1 The removal of gels and caulking is to be carried out wherever present on building.
 - .2 Use scarppers to remove as much material as possible.
 - .3 Apply xylene to masonry and allow to dwell on masonry for a maximum of 15 minutes.
 - .4 Do not allow solution to dry on surface. Reapply as necessary to keep moist.
 - .5 Thoroughly rinse all traces of cleaning solution from masonry.
 - .6 Run residues to containers and dispose of in accordance with hazardous waste legislation.
 - .7 Where soiling remains prepare poultice with clay and xylene and mix to stiff cream consistency.
 - .8 Trowel apply poultice approximately 12 mm thick over soiled area and leave finished neatly.
 - .9 Apply cover of polyethylene film or sheet tape edges to control rate of drying.
 - .10 Remove plastic after 24 hours.

- .11 Allow poultice to dry.
 - .12 Carefully scrape residue into plastic bags, seal, and remove from site. Dispose of waste in accordance with hazardous waste legislation.
 - .13 Pick up any droppings and dispose of as above.
 - .14 Reapply poultice and repeat process as necessary.
 - .15 To be reviewed and approved by Departmental Representative and/or Consultant.
 - .16 Micro-abrasive clean where pigeon repellent has been applied over soiled stone.
- .14 Removal of soluble salts.
- .1 Dry wash wall areas containing salts to remove surface residues. Collect salts in bags and remove from site.
 - .2 Thoroughly irrigate wall to put salts into solution.
 - .3 Empty nebulized spray heads arranged to achieve maximum saturation with minimum water run-off.
 - .4 Construct eavestroughs to collect run-off and run to barrels. Remove from site.
 - .5 Prepare poultice medium from clay and clean water to consistence of stiff cream. Reinforce with fibres as necessary.
 - .6 Trowel apply poultice to contaminated wall areas approximately 12 mm thick and leave finished neatly.
 - .7 Where appropriate to provide support for the poultices over large areas apply mesh over poultice and secure into mortar joints with stainless steel fasteners.
 - .8 Apply cover of polyethylene film or sheet tape edges to control rate of drying.
 - .9 Remove plastic after 24 hours.
 - .10 Allow poultice to dry.
 - .11 Carefully scrape residue into plastic bags, seal, and remove from site. Dispose of waste in accordance with hazardous waste legislation.
 - .12 Pick up any droppings and dispose of as above.
 - .13 Reapply poultice and repeat process as necessary up to four times.
 - .14 Complete poultice cleaning by carrying out a final wash down to remove residual poultice media in the pores of the stone using JOS/TORC system with pressure and nozzles as determined and approved during the tests.
- .15 Removal of Metallic Stains, Bitumens and Tars.
- .1 Carry out cleaning using poultices to remove stains.
 - .1 Prepare poultice medium mixed with clean water (or solvents or chemicals as appropriate to the nature of the soiling).
 - .2 Mix to consistency of stiff cream.
 - .3 Pre-wet soiled area with liquid portion of poultice.
 - .4 Trowel apply poultice approximately 12 mm thick over soiled area and leave finished neatly.
 - .5 Apply cover of polyethylene film or sheet tape edges to control rate of drying.
 - .6 Remove plastic after 24 hours.
 - .7 Allow poultice to dry.
 - .8 Carefully scrape residue into plastic bags, seal, and remove from site. Dispose of waste in accordance with hazardous waste legislation.
 - .9 Pick up any droppings and dispose of as above.
 - .10 Reapply poultice and repeat procedure as necessary.
- .16 Final clean down of building.
- .1 Immediately after cleaning of stone, pre-wet the wall.
 - .2 Apply sufficient water to surfaces to point where no further water is absorbed.

- .3 Apply 5% solution by weight surfactant.
- .4 Agitate on wall to create lather.
- .5 Do not allow to dry out.
- .6 Thoroughly rinse all traces of cleaning solution from the masonry.
- .7 Reapply as necessary.
- .8 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.6 PROTECTION OF WORK

- .1 Protect finished Work from damage until take-over.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- | | | |
|----|------------------|------------------------------------|
| .1 | Section 00 10 00 | General Instructions. |
| .2 | Section 04 05 00 | Common Work Results for Masonry. |
| .3 | Section 04 03 42 | Historic – Replacing Stone. |
| .4 | Section 04 05 19 | Masonry Anchorage and Reinforcing. |

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Work of this Section is indicated on the drawings. Work above and beyond the estimated amount on the drawings will be measured by Departmental Representative and/or Consultant. Work will be paid for under payment items:
 - .1 Pointing -
 - .1 Per linear metre of joints raked and pointed beyond the estimated amount indicated on the drawings.
- .2 Work necessary for completion of work of this Section will not be paid for separately but will be considered as incidental to work of this Section.

1.3 REFERENCES

- .1 Definitions:
 - .1 Raking: removal of loose/deteriorated mortar to a depth suitable for repointing until sound mortar, and/or 4x joint thickness and/or a specified mm depth is reached.
 - .2 Repointing: filling and finishing of masonry joints from which mortar is missing, has been raked out or has been omitted.
 - .3 Back Pointing: repointing to depths greater than minimum raked depths specified, to bring mortar face to specified depth for raked joints.
 - .4 Finish Pointing: repointing face of joint, to depth specified for raked joints.
 - .5 Tooling: finishing of masonry joints using tool to provide final contour.
 - .6 Low-pressure water cleaning: water soaking of masonry using less than 350 kPa (50 psi) water pressure, measured at nozzle tip of hose.
- .2 Reference Standards:
 - .1 CSA Group
 - .1 CSA A23.1/A23.2-09 (R2014), Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for RECONSTEC 900 and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Provide labeled samples of materials to be used on project for approval before work commences.
- .4 Test and Evaluation Reports:
 - .1 Provide certified test reports showing compliance with specified performance characteristics and physical properties.
 - .2 Provide laboratory test reports certifying compliance of mortar ingredients with specifications requirements.

1.5 QUALITY ASSURANCE

- .1 Masonry Contractor:
 - .1 Use single Masonry Contractor for masonry work.
 - .2 Masonry Contractor to have experience in historic stone masonry repair and conservation work on projects of similar size and complexity to Work of this Contract.
 - .3 Masonry Contractor to have good level of understanding of structural behaviour of masonry walls when masonry work involves replacing or repairing [stones brick] which are part of structural masonry work.
 - .4 Masonry Contractor will be responsible for all aspects of masonry work for duration of project.
- .2 Project Supervisor:
 - .1 Masonry Contractor to employ a Project Supervisor with documented successful experience of historic masonry repair and conservation work of required for this Contract. Project Supervisor to be present on site full-time for duration of Work.
- .3 Masons:
 - .1 Masons to have certificate of qualification with experience in historic stone masonry repair and conservation work required for this Contract and be registered in the province of Ontario, Canada.
 - .2 Masons to have proof of license certification for proprietary restoration mortars.
- .4 Grouting: grouting activities should be undertaken by workers experienced in manipulation and grouting methods.
- .5 Departmental Representative reserves the right to reject the Project Supervisor, mason or apprentice if, documentation provided does not demonstrate level of experience or skill required for successful completion of Work of this Contract.
- .6 Obtain written approval from Departmental Representative for changes to qualified personnel.

- .7 Mock-ups:
 - .1 Construct mock-up in accordance with Section 00 10 00 – General Instructions.
 - .2 Construct mock-up 1 m x 1 m to demonstrate raking and repointing procedures for stone masonry material specified in locations designated by Departmental Representative and/or Consultant.
 - .3 Notify Departmental Representative and/or Consultant minimum of 48 hours prior to construction of the mock-up.
 - .4 Construct mock-up under supervision of Departmental Representative and/or Consultant to demonstrate a full understanding of specified procedures, techniques and formulations is achieved before work commences.
 - .5 Construct mock-up where directed by Departmental Representative and/or Consultant.
 - .6 Work not to proceed prior to approval of mock-up. Allow 72 hours for inspection of mock-up by Departmental Representative and/or Consultant before proceeding with masonry repointing work.
 - .7 Repeat mock-up until results obtained are to satisfaction of Departmental Representative and/or Consultant.
 - .8 Mock-up will be used to:
 - .1 Judge quality of work, substrate preparation, operation of equipment, material preparation and application, and curing methods.
 - .2 Determine joint finish required.
 - .3 Test to determine compliance with property requirements.
 - .9 Accepted mock-up will demonstrate minimum standard for this work. Mock-up will remain as part of finished work.

- .8 Laboratory tests for mortar:
 - .1 Contractor to include costs for provision of laboratory testing of pointing mortars during mock-ups and on a continuing weekly basis.
 - .2 Test following properties, at a minimum, will be tested:
 - .1 Compressive strength: 7 day and 28 day.
 - .2 Air entrainment percentage.
 - .3 Sample mortar for testing purposes directly on site.
 - .4 Testing laboratory to be approved in writing by Departmental Representative and/or Consultant.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors or off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store cementitious materials and aggregates in accordance with CSA A23.1/A23.2.
 - .3 Store lime putty in plastic lined sealed drums.
 - .4 Keep material dry. Protect from weather, freezing and contamination.
 - .5 Remove rejected or contaminated material from site.
 - .6 Replace defective or damaged materials with new.

1.7 SITE CONDITIONS

- .1 Ambient conditions:
 - .1 Maintain masonry temperature between 10 and 27 degrees C for duration of work.
 - .2 When ambient temperature is below 10 degrees C or is forecast to fall below 10 degrees C within 24 hours:
 - .1 Maintain temperature of packaged mortar at or above 10 degrees C at all times.
 - .2 Store mortar materials for immediate use within heated enclosure in accordance with manufacturer's instructions. Allow mortar materials to reach minimum temperature of 10 degrees C before use.
 - .3 Heat and maintain packaged mortar temperature to minimum 10 degrees C and maximum 30 degrees C.
 - .1 Heat and maintain water temperature to minimum of 20 degrees C and maximum of 30 degrees C:
 - .4 Provide enclosure system around curing area to ensure that stated conditions are maintained for curing period.
 - .5 Use heated temporary enclosures to maintain temperatures above 10 degrees C in cold weather only with written approval of material manufacturer and Departmental Representative and/or Consultant
 - .6 Submit enclosure system for approval from Departmental Representative and/or Consultant
- .2 Remove work exposed to temperatures lower than 10 degrees C as directed by Departmental Representative and/or Consultant.
- .3 When ambient temperature is above 21 degrees C:
 - .1 Protect repointed areas from direct sunlight and wind.
 - .2 Use protective methods acceptable to the Departmental Representative and/or Consultant
- .4 No curing is required for the mortar, as per the manufacturer's instructions.
- .5 Use and prepare mortar when the ambient air temperature is between 10 and 27 degrees C at the location of the work.
- .6 Mix mortar with water when ambient air temperature is between 10 and 30 degrees C, or as per manufacturer's instructions, whichever is more stringent.
- .7 Maintain mortar mix temperature between 10 and 30 degrees C.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Water: clean and free of deleterious materials such as acid, alkali and organic material in accordance to CAN/CSA-A179.
- .2 Repointing mortars for sandstone; proprietary formulated, pre-mixed and pre-pigmented mortar for

- natural stone mortar joints, consisting of special hydraulic cement, silica sand, river washed sand and mineral additives (with or without bonding agent). Acceptable product:
- .1 RECONSTEC 900 – Repointing (part of the heritage building solutions products), manufactured by King Packaged Materials Company, 3385 Harvester Road, Burlington ON L7N 3N2.
 - .2 Or approved alternate.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify masonry, staging and storage areas and notify Departmental Representative and/or Consultant in writing of conditions detrimental to acceptable and timely completion of Work.
 - .1 Visually inspect substrate in presence of Departmental Representative and/or Consultant.
 - .2 Inform in writing Departmental Representative and/or Consultant areas of deteriorated masonry not previously identified.
- .2 Notify Departmental Representative and/or Consultant immediately if evidence of hazardous materials is discovered in work area.
- .3 Stop work in that area and report to Departmental Representative and/or Consultant immediately evidence of hazardous materials.

3.2 PROTECTION OF IN-PLACE CONDITIONS

- .1 Protection requirements are specified in Section 00 10 00 – General Instructions.

3.3 SPECIAL TECHNIQUES

- .1 Examine mortar joints.
 - .1 Examine horizontal and vertical joints to determine which were struck first and whether they are the same style, as well as aspects of quality of work that establish authenticity of original work.
 - .2 Replicate the style selected by Departmental Representative and/or Consultant.
- .2 Test mortar joints.
 - .1 Procedure of testing: examine joints visually for signs of deteriorated masonry such as voids, spalled surfaces, loose or missing mortar, cracking or micro-cracking at edges of joints or across joints, and dense cement-rich mortar.
 - .2 Test joints not visually deteriorated as follows:
 - .1 Test for voids and weakness by using hammers or other approved means.
 - .2 Perform examination and testing in co-operation with Departmental Representative and/or Consultant so that unsound joints can be marked and recorded.

3.4 MORTAR REMOVAL FOR REPOINTING

- .1 Remove all mortar in the contract area.
- .2 Mortar is defective when:
 - .1 It is cracked.
 - .2 It is spalled, chalked, dusted, or otherwise crumbling and excessively weathered back.
 - .3 The Departmental Representative and/or Consultant states so in writing.
 - .4 Indicated areas on the drawings.
- .3 Where mortar is found to be defective beyond specified raking depths, continue raking until sound mortar is encountered.
- .4 Where mortar is found to be defective beyond identified locations on the drawings, notify the Departmental Representative and obtain approval for additional area prior to starting repairs.
- .5 Be aware that additional raking out beyond specified depths will be necessary and that voiding can be expected, requiring alternately backpointing or grouting prior to finish re-pointing.
- .6 Allow for, and include for backpointing to 80% of all joints [horizontal and vertical]with depth to be cut back varying from approximately 100mm to 200mm. Assume an average depth of 150mm for all joints on the main wall and 200mm on the parapet wall. Assume that the 80% applies to each area.
- .7 If masonry unseats or bond is broken, remove unit and reset.
- .8 Use manual tool to obtain clean masonry surfaces.
 - .1 Remove deteriorated and adhered mortar from masonry surfaces to sound mortar remains.
 - .2 Clean out voids and cavities encountered.
- .9 Remove mortar without chipping, altering or damaging masonry units.
- .10 Power tools are not permitted to remove mortar joints.
- .11 Clean surfaces of joints by compressed air, with non-ferrous brush or by moderate water wash without damaging texture of exposed joints or masonry units.
- .12 Flush open joints and voids; clean open joints and voids with low pressure water and if not free draining blow clean with compressed air.
- .13 Leave no standing water.
- .14 Repair stone damaged as a result of careless raking of saw cutting, at no cost to Owner.
- .15 Remove mortar from top, bottom and side joints, with back surface of joint square and of an even depth.
- .16 Raking shall be carried out to at least twice the width of the joint to a minimum depth, measured from the arris of masonry unit, of not less than 30mm. Also refer to paragraph 3.2 in this Section.

3.5 BACKPOINTING

- .1 Obtain acceptance of raked out work prior to commencing pointing operations.
- .2 Where cut out joints are deeper than raking out depths specified above, backpoint joints to bring mortar face to specified depth for raked out joints, in preparation for finish pointing. Where voids exist that conventional backpointing cannot fill, grout voids in accordance with 3.6 Hand Grouting below.
- .3 Before repointing, wash down wall to be repointed and allow to dry to damp, but not wet. Ensure that dust and debris are removed from joints and wall surfaces prior to repointing. Ensure the entire wall is dampened, not just at the joints.
- .4 Keep masonry damp while pointing is being performed.
- .5 Allow water to soak into masonry and mortar, leaving no standing water but remaining damp.
- .6 For backpointing, fill all joints full with mortar, compacting mortar firmly into joints to ensure positive adhesion to all inner surfaces. Place mortar in layers, max. 30mm thick, min., 12mm thick, allowing each layer to set to thumbprint hard before placing next layer. Bring face of mortar in backpointed joint to specified depth for raked out joints, measured from the arris of the masonry unit, leave ready for final pointing.
- .7 Prevent mortar from being placed or smeared onto face of stone to prevent mortar staining of masonry faces during backpointing.

3.6 HAND GROUTING

- .1 Hand grout voids that cannot be successfully filled by back pointing procedures. Obtain Departmental Representative and/or Consultant's acceptance of voids and damming procedures prior to commencing grout operations.
- .2 Prior to grouting, ensure that grout will not penetrate into intentional cavities in walls by examining site conditions at back faces of voids and joints. Report findings to the Departmental Representative. Grouting may occur only where grouting operations cannot fill intentional cavities. Take all measures required to contain grout in voids and joints to be grouted using temporary damming materials, and as specified below.
- .3 Carefully flush out joints and voids to be grouted to remove all loose materials and pre-wet backup materials. Do not over soak wall, and ensure water does not penetrate to the interior; damage interior finishes, or flood intentional cavities.
- .4 Pack soak faces of joints to be grouted with non-staining, non-oily, plumbers hemp or other acceptable damming material to a minimum depth of 20mm, so that grout will be contained in the joint or void, and the void can be filled solid. Where required to keep grout from intentional cavities in the walls, install temporary dams to back face of joint.
- .5 Form grout cup on wall at top of void or joint to be grouted using non-staining, non-oily, potters clay or other acceptable material direct grout into voids without staining walls. Keep clay cups damp to prevent drying and cracking. Other methods of directing grout into voids and joints will be acceptable to Departmental Representative and/or Consultant's approval.

- .6 Pour grout into joint or void via clay cup, until voids filled. Do not exceed one meter lifts or one vertical joint at any one time.
- .7 Continually observe interior and exterior faces of wall during grouting operations. Cease grouting if leaks occur at interior. Seal all leaks, and make good all damage caused to the satisfaction of the Departmental Representative and/or Consultant.
- .8 Remove any grout spills immediately, using clean water and non-metallic bristle brushes to wash surfaces.
- .9 Allow grout to set for 24 hours and then remove hemp packing, temporary dams, grout cups, and other grouting aids.
- .10 Allow grout to fully dry for as per the manufacturer's instructions before commencing finish pointing.

3.7 REPOINTING

- .1 When required repair and replacement work is complete carry out repointing.
- .2 Before repointing, wash down wall to be repointed and allow to dry to damp, but not wet. Ensure that dust and debris are removed from joints and wall surfaces prior to repointing. Ensure the entire wall is dampened, not just at the joints.
- .3 Keep masonry damp while pointing is being performed.
- .4 Completely fill joint with mortar.
 - .1 If surface of masonry units has worn rounded edges keep pointing back 1 mm from surface to maintain same width of joint
 - .2 Avoid feathered edges.
 - .3 Pack mortar firmly into voids and joints, ensuring full contact with back and sides of joint and leaving no voids.
- .5 Build-up pointing in layers not exceeding 12 mm in depth.
 - .1 Allow each layer to set before applying subsequent layers.
 - .2 Maintain joint width.
- .6 Finish joints to match existing.
 - .1 Tool, compact and finish using jointing tool or mason's slick to force mortar into joint. Ensure jointing tool fits within width of joint. Use tools of varying widths to meet this requirement.
 - .2 Provide final exposed aggregate texture when mortar has dried to thumbprint hardness by striking surface of joint with a stiff bristle brush.
- .7 Remove excess mortar from masonry face before it sets.

3.8 REMVAL OF SURPLUS EQUIPMENT AND METAL FIXINGS

- .1 Remove the unused exhaust duct as indicated on the drawings and dispose of from site.
- .2 Remove any anchors or plugs by coring to ensure their complete removal.

- .3 Repoint where scaffolding was removed from mortar joints and at any fixings.
- .4 Where removed from masonry unit and masonry unit will not be replaced, patch hole with stone repair mortar as per Section 04 03 41 – Historic – Repairing Stone

3.9 PROTECTION DURING CURING PROCESS

- .1 Cover completed and partially completed work not enclosed or sheltered at end of each workday.
 - .1 Membranes should extend to 0.5 m over surface area of work and be tightly installed to prevent finished work from drying out too rapidly.
- .2 Cover with waterproof tarps to protect newly laid mortar from frost, rainfall and rapid drying conditions such as wind.
 - .1 Maintain tarps in place for the minimum number of days as required by the manufacturer.
 - .2 Ensure that bottoms of tarps permit airflow to reach mortar in joints.
- .3 Anchor coverings securely in position.
- .4 Damp cure:
 - .1 Damp cure is not required, as per the manufacturer's instructions.
- .5 Follow manufacturer's instructions for protection and curing requirements.
- .6 Protect from drying winds. Pay particular attention at corners of structure.
- .7 Maintain ambient temperature of minimum 10 degrees C after repointing masonry for:
 - .1 Minimum 7 days in summer.
 - .2 Minimum 30 days in cold weather conditions using dry heated enclosures.

3.10 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
- .2 Clean surfaces thoroughly of mortar droppings, stains and other blemishes resulting from work of this contract on a daily basis, as work progresses.
- .3 Remove droppings and splashings using clean water and thick cotton rags.
- .4 Clean masonry with stiff natural bristle brushes and plain water only if mortar has fully cured.
- .5 Clean masonry with low pressure 103 to 310 kPa clean water and soft natural bristle brush.
- .6 Obtain approval of Departmental Representative and/or Consultant prior to using other cleaning methods for persistent stains.

3.11 PROTECTION OF COMPLETED WORK

- .1 Protect adjacent finished work against damage, which may be caused, by on-going work.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- | | | |
|----|------------------|--------------------------------------|
| .1 | Section 04 05 00 | Common Work Results for Masonry |
| .2 | Section 04 03 06 | Historic – Cleaning Masonry |
| .3 | Section 04 03 07 | Historic – Masonry Repointing |
| .4 | Section 04 03 42 | Historic – Replacing Stone |
| .5 | Section 04 03 43 | Historic – Dismantling Stone Masonry |
| .6 | Section 04 05 19 | Masonry Anchorage and Reinforcing |

1.2 PRICE AND PAYMENT PROCEDURES

- .1 Work of this Section is indicated on the drawings. Work above and beyond the estimated amount and indicated areas on the drawings will be reviewed by Departmental Representative and/or Consultant prior to the proceeding with the work.

1.3 REFERENCES

- .1 Definitions:
 - .1 Repair of Stone: mechanical or plastic repair, done to restore original appearance and function of partly deteriorated stones.
 - .2 Filling: material used to rebuild broken or deteriorated part of stone.
 - .3 Adhesive: material used to fasten broken/fractured stone elements by direct application at fracture interface and/or by application to added reinforcing elements such as dowels.
 - .4 Mortar: material used to re-bed the stone element being repaired and to repoint adjacent mortar joints.
- .2 Reference Standards:
 - .1 ASTM International
 - .1 ASTM C 144-11, Standard Specification for Aggregate for Masonry Mortar.
 - .2 ASTM A 276-13a, Standard Specification for Stainless Steel Bars and Shapes.
 - .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-75.1-M88, Tile, Ceramic.
 - .3 CSA Group
 - .1 CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.
 - .2 CSA-A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for stones and include product characteristics, performance criteria, physical size, finish and limitations.
 - .1 Application/installation instructions.
 - .2 Laboratory test reports certifying compliance of products with specification requirements.
 - .3 Manufacturer's material safety data sheets (MSDS) for safe handling of specified materials and products, in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .3 Samples:
 - .1 Submit mortar samples for colour matching to exiting sandstone.
- .4 Certificates:
 - .1 Submit upon request by Departmental Representative and/or Consultant purchase orders, invoices, suppliers test certificates and documents to prove materials used in contract meet requirements of specification. Allow free access to sources where materials were procured.

1.5 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Record Documentation:
 - .1 Provide marked up set of drawings to provide referencing system identifying locations of stone repairs.

1.6 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Manufacturers:
 - .1 Filling mortar: manufactured by company specializing in production of cementitious restoration materials with experience in production of filling mortar products and with a record of satisfactory in-service performance.
 - .2 Masonry Contractor:
 - .1 Work of this Section: executed by contractor specializing in historic stone conservation work of this nature, using similar stone repair techniques.
 - .3 Foreperson:
 - .1 Provide competent trade foreperson specializing in type of work required.
 - .2 Experience: experience in conservation work similar to work of this Section. Must be present on site throughout Work.
 - .4 Installers:
 - .1 Plastic repairs: executed by skilled trades people who have successfully completed a course of instruction provided by filling mortar manufacturer and hold a Training Workshop Certificate from said manufacturer. Maintain proof of credential for each installer at site.

- .2 Mock-ups:
 - .1 Construct mock-up in accordance with Section 00 10 00 – General Instructions.
 - .2 Construct minimum 150mm x 150mm mock-up of a representative sample of each type of repair specified, with specified materials and methods.
 - .3 Use existing stonework when constructing job mock-up.
 - .4 Select locations of mock-ups in consultation with Departmental Representative and/or Consultant
 - .5 Notify Departmental Representative and/or Consultant 48 hours before commencing each mock-up.
 - .1 Obtain approval from Departmental Representative and/or Consultant before commencing mock-up.
 - .6 Allow mock-ups of plastic repairs to cure at least 3 days.
 - .1 Obtain Departmental Representative and/or Consultant approval for colour match.
 - .7 Allow 72 hours for inspection of mock-up by Departmental Representative and/or Consultant before proceeding with stone repair work.
 - .8 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
 - .9 Clean mock-up in accordance with Section 04 03 06 - Historic - Cleaning Masonry to demonstrate cleaning operations to Departmental Representative and/or Consultant before starting cleaning work.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
 - .1 Identification with grade, batch and production date shown on container or packaging.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Maintain a minimum ambient temperature of 10 degrees C in storage area.
 - .3 Replace defective or damaged materials with new.

1.8 SITE CONDITIONS

- .1 Ambient conditions:
 - .1 Maintain masonry temperature between 10 and 27 degrees C for duration of work.
 - .2 When ambient temperature is below 10 degrees C or is forecast to fall below 10 degrees C within 24 hours:
 - .1 Maintain temperature of packaged mortar at or above 10 degrees C at all times.
 - .2 Store mortar materials for immediate use within heated enclosure in accordance with manufacturer's instructions. Allow mortar materials to reach minimum temperature of 10 degrees C before use.
 - .3 Heat and maintain packaged mortar temperature to minimum 10 degrees C and maximum 30 degrees C.
 - .1 Heat and maintain water temperature to minimum of 20 degrees C and

- maximum of 30 degrees C:
- .4 Provide enclosure system around curing area to ensure that stated conditions are maintained for curing period.
- .5 Use heated temporary enclosures to maintain temperatures above 10 degrees C in cold weather only with written approval of material manufacturer and Departmental Representative and/or Consultant
- .6 Submit enclosure system for approval from Departmental Representative and/or Consultant
- .2 Remove work exposed to temperatures lower than 10 degrees C or as directed by Departmental Representative and/or Consultant.
- .3 When ambient temperature is above 21 degrees C:
 - .1 Protect repointed areas from direct sunlight and wind.
 - .2 Use protective methods acceptable to the Departmental Representative and/or Consultant.
- .4 No curing is required for the mortar, as per the manufacturer's instructions.
- .5 Use and prepare mortar when the ambient air temperature is between 10 and 27 degrees C at the location of the work.
- .6 Mix mortar with when ambient air temperature is between 10 and 30 degrees C, or as per manufacturer's instructions, whichever is more stringent.
- .7 Maintain mortar mix temperature between 10 and 30 degrees C.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Use materials from same manufacturer throughout the Work.
- .2 Water: clean and free of deleterious materials such as acid, alkali and organic material in accordance to CAN/CSA-A179.
- .3 Restoration mortar for sandstone: proprietary formulated, pre-mixed and pre-pigmented mortar for natural stone, non-shrink with good bond to sandstone, and containing no synthetic polymers.
Acceptable product:
 - .1 RECONSTEC 200: Sandstone repair mortar (part of the heritage building solutions), manufactured by King Packaged Materials Company, 3385 Harvester Road, Burlington ON L7N 3N2.
- .4 Dowels: 2mm to 12 mm diameter, threaded, stainless steel to ASTM A 276, Type 304.
 - .1 Diameter: dependent on size and weight of each new stone insert.
- .5 New stone: Refer to Section 04 03 42 – Historic – Replacing Stone.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify masonry, staging and storage areas and notify Departmental Representative and/or Consultant in writing of conditions detrimental to acceptable and timely completion of Work.
 - .1 Visually inspect substrate in presence of Departmental Representative and/or Consultant
 - .2 Inform in writing Departmental Representative and/or Consultant areas of deteriorated masonry not previously identified.
- .2 Obtain Departmental Representative and/or Consultant and instructions for repair and replacement of masonry units before proceeding with repair work.
- .3 Stop work in that area and report to Departmental Representative and/or Consultant immediately any evidence of hazardous materials.

3.2 PREPARATION

- .1 Obtain Departmental Representative and/or Consultant approval for tools to be employed prior to commencing work.
- .2 Obtain Departmental Representative and/or Consultant approval for alternative repair methodology and tools to be employed prior to commencing work.
- .3 The location and size of all patches shall be reviewed by the Departmental Representative and/or Consultant prior to cutting back a stone.
- .4 Cut back deteriorated or spalled stone or previous repair to sound substrate.
- .5 Cut back not less than 12mm and leave edges square. Do not feather edges in the patch area.
- .6 All cutting out is to be done using hand and/or pneumatic stone cutting chisels. No grinders are permitted in this work.
- .7 Leave cut back surface on the claw to give textures surface to assist bond of the patching mortar.
- .8 Where depths of patch or location warrants, install dowels to assist in reinforcing patch, all in accordance with manufacturer's instructions.
- .9 Remove all impurities, dirt, grease, and other bond inhibiting materials from the surface.

3.3 SPECIAL TECHNIQUES

- .1 Temporary Marking and Recording:
 - .1 Mark stone, on face, before removal using marking product which can be completely erased when required without damaging masonry unit:
 - .1 Ball-point pen on diachylon, attached to stone.
 - .2 Wax less chalk directly on stone.

- .2 Ensure that temporary marking will remain in use: resistant to weather, handling and cleaning until final marking of stones.
- .3 Remove markings and adhesive without damaging units:
 - .1 Brush with vegetable fibre brush: either dry or with water.
 - .2 Use no solvent, acid or other chemical product.

3.4 PROTECTION

- .1 Prevent damage to stone surfaces, mortar joints, windows and doors, glass, and other building elements, which are to remain. Make good damage incurred.
- .2 Protect surrounding components from damage during work.
- .3 Obtain Departmental Representative and/or Consultant approval for repair methodology.

3.5 DESCALING

- .1 As identified on the drawings, scale all sandstone where the outermost layer of stone is deteriorating and peeling. Notify the Departmental Representative and/or Consultant of other areas that require scaling not indicated on the drawings.
- .2 Use stiff bristle brushes and widen hand tools to descale the outermost layer of the stone. DO NOT use metal tools or wire brushes, as these tools will leave marks in the sandstone.
- .3 Continue to descale until sound sandstone remains.
- .4 If descaling penetrates the stone surfaces more than 13 mm, repair the sandstone using the patching mortar in the sections below.
- .5 If descaling penetrates half of the stone depth and approximately ¼ of the stones surface face area, consider replacing the stone with new or with stockpiled stone. Follow the resetting instructions in Section 04 03 42 – Historic – Replacing Stone.
- .6 Notify the Departmental Representative and/or Consultant of any stones that may require replacement prior to replacing.

3.6 MIXING PATCHING MORTAR

- .1 Do not mix more materials than can be used within 15 minutes. Discard any materials that have been mixed for 15 minutes or more. (Time will vary depending on temperature and manufacturer's instructions).
- .2 Thoroughly mix powders with water in ratios, or to consistency recommended by manufacturer.
- .3 Adjust water content to suit weather conditions, if required or permitted by manufacturer's instructions.

3.7 GENERAL APPLICATION OF PATCHING MORTAR

- .1 Pre-wet substrate with spray bottles. Depending on the porosity of stone, vary amount of pre-wetting. Pre-wetting is designed to prevent substrate from absorbing moisture from the patching mortar.
- .2 Immediately prior to commencing patching re-wet surface. Surface should glisten, but there should be no standing water.

3.8 APPLICATION OF RECONSTEC 200 PATCHING MORTAR

- .1 Apply the patching mortar in a series of lifts up to 75mm thick with no waiting period or requirement to scratch between lifts.
- .2 Mortar should be applied lightly but firmly enough to ensure a homogeneous patch with no voids. Build up profile just proud of surrounding stonework.
- .3 Allow material to achieve an initial set (15 to 20 minutes, depending on weather conditions) before scraping off excess material back to the profile of the surrounding stone.
- .4 Where patches exceed 75mm in thickness build up in two or more layers of approximately 75mm each. Work material around any reinforcing.
- .5 Allow first layers to set up a little before applying second layer.
- .6 Hollows or colour lightening as a result of the formation of a cement skin or laitance on the surface may be scraped back and fresh material applied to profile.

3.9 FINISHING

- .1 Finish mortars to match existing texture and tooling of adjacent stone.
- .2 Do not “float” patch, leave as tooled by scraping tools to match stone finish.
- .3 Clean any mortar residue from around the edges of the repair using sponges with clean water. Repeat as necessary using clean water each time. Do not allow sponge or water to touch restoration mortar, as this will produce “halo” effect at the edges of the patch.

3.10 CURING

- .1 Curing is not necessary with the patching mortar RECONSTEC 200. Follow manufacturer’s instructions for covering and protecting the mortar during drying time.

3.11 MORTAR JOINT REPAIR

- .1 Do repointing work in accordance with Section 04 03 07 - Historic - Masonry Repointing.
- .2 Make good damage incurred to mortar joints.

3.12 CLEANING

- .1 Protect any roof openings at bottom of scaffolding from excessive water accumulation
- .2 Clean stone work surfaces after repairs have been completed and mortar has set.
- .3 Clean stone surfaces of adhesive or mortar residue resulting from work performed without damage to stone or joints.
- .4 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
- .5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 00 10 00 – General Instructions.

3.13 PROTECTION OF COMPLETED WORK

- .1 Protect finished work from impact damage.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 00 10 00 General Instructions.
- .2 Section 04 03 07 Historic – Masonry Repointing.
- .3 Section 04 03 41 Historic – Repairing Stone.
- .4 Section 04 03 43 Historic – Dismantling Stone Masonry.
- .5 Section 04 05 19 Masonry Anchorage and Reinforcing

1.2 REFERENCES

- .1 Definitions:
 - .1 Lewis: instrument inserted at top of stone as means of attachment in raising and lowering. Holds stone by means of keys or wedges fitted to dovetailed recess.
 - .2 Dogs: metal appliance for securing parts or members together by means of one or more projecting teeth or bent portions, lug, cramp.
 - .3 Fabricator: company having sufficient capacity to quarry, cut, and deliver stonework on schedule.
 - .4 Installer: company or person specializing in commercial stonework. Employ skilled stonemasons on site to do necessary field cutting, as stones are set.
- .2 Reference Standards:
 - .1 ASTM International
 - .1 ASTM C 97/C 97M-15, Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
 - .2 ASTM C 170/C 170M-16, Standard Test Method for Compressive Strength of Dimension Stone.
 - .2 CSA Group
 - .1 CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.
 - .2 CSA A370-14, Connectors for Masonry.
 - .3 CAN/CSA-A371-04 (R2014), Masonry Construction for Buildings.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-installation meetings:
 - .1 Masons employed on this project must attend orientation session provided free-of-charge by Departmental Representative and/or Consultant.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.

- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for masonry materials and reinforcing and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Classification for new sandstone:
 - .1 Sandstone, type I, siliceous sandstone.
- .4 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer with experience in rehabilitating historic structures registered or licensed in Ontario, Canada.
 - .2 Submit drawings describing method of stone replacement, including removal, shoring and erection.
 - .3 Submit shop drawing for all new stone required.
 - .4 Submission shall show all details of size, section, bedding, jointing, anchor, or tying system and finish of stone.
- .5 Samples:
 - .1 Submit samples of replacement stones as soon as possible after replacement is deemed required.
 - .1 Submit two (2) of each type of masonry unit specified: sandstone and copingstone.
 - .2 Submit two (2) of each type of masonry anchor tie proposed for use.
 - .3 Submit as required for testing purposes.
 - .2 Submit samples from original quarry of replacement stones from quarry supplying original stone as follows:
 - .1 Four (4): representing full range of colour, pattern and inclusions.
 - .2 Two (2): sized and dressed to match existing stone units.
 - .3 Select samples from currently worked bed of quarry and accompanied by quarry certification.
 - .1 Certification: issued within last 5 years.

1.5 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.

1.6 QUALITY ASSURANCE

- .1 Allow Departmental Representative and/or Consultant access for inspection of current work-in-progress.
- .2 Qualifications:
 - .1 Execute work by personnel experienced in preservation of historic masonry.
 - .2 Masons engaged by Masonry Contractor to have experience with historic masonry.
 - .3 Departmental Representative and/or Consultant have right to reject masons who do not demonstrate appropriate abilities or experience.
 - .4 Masons employed on this project throughout course of project must meet above requirements. Where, during course of project, masons leave work force, replacement masons must also meet requirements.

- .3 Mock-ups:
 - .1 Construct mock-up in accordance with Section 00 10 00 – General Instructions.
 - .2 Construct mock-up of two (2) stone replacement with specified materials and methods.
 - .3 Use existing stonework when constructing job mock-up.
 - .4 Notify Departmental Representative and/or Consultant minimum of 48 hours prior to construction of mock-up.
 - .5 Work not to proceed prior to approval of mock-up. Allow 72 hours for inspection of mock-up by Departmental Representative and/or Consultant before proceeding with stone repair work.
 - .6 When accepted, mock-up will demonstrate minimum standard for this work.
 - .7 Retain mock-up as part of finished work as directed by Departmental Representative and/or Consultant.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Prevent damage and soiling of finishes when transporting, storing and handling.
- .4 Keep materials dry. Protect against weather, freezing and any source of contamination.
- .5 Do not place stones directly on the ground.

1.8 SITE CONDITIONS

- .1 Ambient conditions:
 - .1 Maintain ambient temperature of minimum 10 degrees C after repointing masonry for:
 - .1 Minimum 7 days in summer.
 - .2 Minimum 30 days in cold weather conditions using dry heated enclosures.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Obtain new stone from stockpiled location on site. Departmental Representative shall provide the contractor the location.
- .2 Contractor shall use stockpiled stones for replacement first. Stones shall be examined and tested as required above. If stones are unsuitable for use, notify the Departmental Representative and/or Consultant and provide access to examine the stone and test results. Obtain new stones at the direction of the Departmental Representative and/or Consultant.
- .3 Obtain new stone from a single quarry source acceptable to Departmental Representative and/or

Consultant

- .1 Ensure single quarry source has resources to provide materials of consistent quality and matching existing stone.
- .2 Procurement of stones to meet approved schedule.
- .3 Acceptable quarry location (original sandstone for the building):
 - .1 Wallace Quarries Ltd., 57 Quarry Hill Drive, P.O. Box 203, Wallace, NS B0K1Y0.
 - .2 Or approved alternate.
- .4 Sandstone: to ASTM C 616/C 616M, class I – Sandstone, colour and texture to match.
- .5 Stones:
 - .1 Good quality, free of cracks, quarrying marks; pick marks and other defects impairing structural integrity of material.
 - .2 Stone: quarry without blasting.

2.2 STONE CHARACTERISTICS

- .1 Sandstone:
 - .1 Stratification: low, bedding plane to within 15% of the horizontal trim of work.
 - .2 Water absorption: 3.0 to 4.0%
 - .3 Compressive strength: 70 to 100 MPa.

2.3 STONE FABRICATION

- .1 Cut stone to shape and dimensions and full to square with joints as indicated.
 - .1 Dress exposed faces true.
 - .2 Cut stone for cornices, sills, walls, or any required location and lay on its natural quarry bed.
- .2 Execute profiled work from full size details and templates.
 - .1 Make exposed arises in true alignment and ease slightly to prevent snipping.
- .3 Back-check stone contacting structural members as indicated.
 - .1 Allow minimum of 25 mm clearance between back of stone back-up wall.
- .4 Cut stones for anchors, cramps, dowels and support systems.
 - .1 Provide Lewis pin and clamp holes in pieces, which cannot be manually lifted.
 - .2 Do not cut holes in exposed surfaces.
- .5 Finish exposed faces and edges of stones to comply with requirements indicated for finish and match existing construction and approved samples.
- .6 Roughen stone surfaces of new cut stone against which mortar is to be placed (if face is smooth as a result of sawing) by scoring with saw grinder.
 - .1 Space score lines maximum 25 mm on center and minimum 3 mm in depth.
- .7 Dress exposed surfaces of moulded work to match existing.

2.4 FABRICATION TOLERANCES

- .1 Fabricate limestone dimension stone to the following tolerances:
 - .1 Unit Length: plus or minus 1.5 mm.
 - .2 Unit Height: plus or minus 1.5 mm.
 - .3 Deviation From Square: plus or minus 1.0 mm, with measurement taken using the longest edge as the base.
 - .4 Bed Depth: plus or minus 1.5 mm.

2.5 BEDDING OF STONE

- .1 All stone shall be supplied to be laid on its natural quarry bed with the following exceptions:
 - .1 Arches: lay stones with bed at right angles to thrust.
 - .2 Projecting, undercut members: to be edge bedded.

2.6 EXISTING STONE

- .1 Use hard, sound, and clean existing stockpiled on site, supplied by Departmental Representative only with Departmental Representative and/or Consultant approval.

2.7 MORTAR

- .1 Mortar: Pointing mortar can be used as bedding mortar, as per manufacturer's technical information. Refer to Section 04 03 07 – Historic – Repointing Mortar.
- .2 Obtain mortar ingredients of uniform quality and from a single manufacturer, source or producer.

2.8 ACCESSORIES

- .1 Anchors ties: in accordance with Section 04 05 19 – Masonry Anchorage and Reinforcing.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify masonry, staging and storage areas and notify Departmental Representative and/or Consultant in writing of conditions detrimental to acceptable and timely completion of Work.
 - .1 Visually inspect substrate in presence of Departmental Representative and/or Consultant
 - .2 Inform in writing Departmental Representative and/or Consultant areas of deteriorated masonry not previously identified.
 - .3 Obtain Departmental Representative and/or Consultant approval and instructions for repair and replacement of masonry units before proceeding with repair work.
 - .4 Stop work immediately and report to Departmental Representative and/or Consultant evidence of hazardous materials.

3.2 PREPARATION

- .1 Move and lift stone units using means to prevent damage. Submit stone units dropped or impacted to Departmental Representative and/or Consultant for inspection and approval. Do not make holes or indentations for Lewises or dogs on face or topside of stone.
- .2 Indicate bedding planes of stone units. Duplicate bedding marks on usable pieces of cut stone.
- .3 Place safety devices and signs near work area as directed in accordance with Section 00 10 00 – General Instructions.
- .4 Install and remove self-supporting scaffolding in accordance with Section 01 54 23 – Temporary Scaffolding and Platforms.
- .5 Protection of in-place conditions:
 - .1 Protect adjacent building elements.

3.3 RE-ALIGNING and RESETTING STONES

- .1 Re-align and reset all stones as noted on the drawings.
- .2 Cut joints to full depth of blocks to be re-aligned on all faces.
- .3 Remove stone without damage to arrisses. Remove multiple stones requiring re-aligning as indicated on the drawings.
- .4 Clean out loose material behind so that the stone may be re-set to line.
- .5 Install new helical anchors in the mortar joints around the stone being re-aligned, securing to the substrate.
 - .1 Refer to Section 04 05 19 - Masonry Anchorage and Reinforcing for spacing and placement of helical anchor ties.
- .6 Install wood wedges to temporarily support and align the stone into place.
- .7 Drench dry stone with clean water just prior to setting.
- .8 Set stone true and in alignment, maintain joint thickness with wood wedges until mortar has set.
- .9 Pack horizontal and vertical joints with mortar, rake back ready for repointing. Allow to fully set.
- .10 Ensure the mortar beds completely encapsulate the helical anchors.
- .11 Pull out wood wedges when dried and shrunken, without breaking them off, and fill voids with mortar.
- .12 Point to surface in two layers.

3.4 MOVING STONES

- .1 Use Lewises to lift stones to working level.
- .2 Move stones horizontally on carts.
- .3 Slide stones into place on wood ramps.
- .4 Protect edges of stone from damage when hoisting and lifting from position. Use wood shims to isolate units from hoisting belts.
 - .1 Incorporate only undamaged stone in Work.

3.5 STONE REPLACEMENT

- .1 Co-ordinate bond pattern, coursing height and joint width with existing stonework in area selected by Departmental Representative and/or Consultant
- .2 Clean dust and stone fragments from slot.
- .3 Clean stone by washing with water and natural fibre brush before laying.
- .4 Before proceeding with Work, inspect cleaned surface with Departmental Representative and/or Consultant
- .5 Install masonry ties, connectors and flashings in accordance with CSA A370 and CAN/CSA-A371 unless indicated otherwise.
 - .1 Apply asphalt emulsion to helical ties at the back-up wall.
 - .2 Obtain approval of Departmental Representative and/or Consultant of placement of ties and connectors prior to placing mortar.
 - .3 Use non-corrosive ties and connectors.
- .6 Install anchors, dowels and cramps.
 - .1 Obtain approval of Departmental Representative and/or Consultant of placement of anchors, dowels and cramps prior to placing mortar.
 - .2 Use non-corrosive anchors, dowels and cramps to fix stone faceplates.
- .7 Dampen slot's surfaces before applying mortar.
- .8 Apply bedding mortar.
 - .1 Lay stones on full beds of mortar.
 - .2 Lay heavy stones and projecting stones after mortar in courses below has hardened sufficiently to support weight.
 - .3 Prop and anchor projecting stones until wall above is set.
 - .4 Set large stones on water soaked softwood wedges to support stone in proper alignment until mortar has set. Remove wedges when dry, do not break off.
 - .5 Set stones to match alignment of adjacent stones in full bed of mortar with vertical joints buttered and placed full except where otherwise specified.
 - .6 Fill anchor completely, dowel and lifting holes and voids left by removed edges.
- .9 Fill vertical joints buttered and placed full in face, and at vertical joint between wythes.

- .10 Tool joints with a round jointer to provide smooth joints compressed uniformly concave.
- .11 Rake bedding mortar back to a minimum depth of 25 mm and make ready for pointing with pointing mortar in separate operation.
 - .1 Remove mortar dropping from face of stone before mortar is set. Sponge stone free of mortar along joints as work progresses.

3.6 REPOINTING

- .1 Do pointing work in accordance with Section 04 03 07 - Historic - Masonry Repointing.

3.7 PROTECTION OF WORK

- .1 Cover completed and partially completed work not enclosed or sheltered at end of each workday.
 - .1 Extend membranes 0.5 m beyond surface area of work.
 - .1 Prevent finished work from drying out too rapidly.
 - .2 Anchor coverings securely in position.
 - .3 Protect from drying winds. Pay particular attention at corners.
 - .4 Cover with waterproof tarps to prevent weather from eroding recently laid material.
 - .1 Maintain tarps in place for minimum of 7 days after laying.
 - .2 Ensure that bottoms of tarps permit airflow to reach mortar in joints.
 - .5 Inspect tarps daily for duration of curing.

3.8 CLEANING

- .1 Confirm acceptance of mock-up cleaning operations to demonstration from Departmental Representative and/or Consultant before starting cleaning work.
- .2 Clean stone work surfaces after repairs have been completed and mortar has set.
- .3 Clean stone surfaces of adhesive or mortar residue resulting from work performed without damaging stone or joints.
- .4 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
- .5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 00 10 00 – General Instructions.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 00 10 00 General Instructions
- .2 Section 04 05 00 Common Work Results for Masonry.
- .3 Section 04 03 42 Historic – Replacing Stone.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Conduct a pre-dismantling meeting with Departmental Representative and/or Consultant to verify project requirements, equipment, procedures and assigned storage areas.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Submit method of reference numbering for dismantling stone prior to start of stone removal to Departmental Representative and/or Consultant for approval.
- .3 Site Quality Control Submittals:
 - .1 Provide up-to-date copies of stone location recording system chart or card index, as well as chronological information concerning each numbered unit (individual cards of units), when requested.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual. Include:
 - .1 Photographically record stonework to be dismantled and rebuilt.
 - .2 Record drawings of layout of stored stones.

1.5 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Masonry Contractor:
 - .1 Work of this Section: executed by contractor specializing in historic stone conservation work, using similar stone dismantling techniques.
 - .2 Foreperson:
 - .1 Provide competent trade foreperson specializing in type of work required.
 - .2 Experience: experience in deconstruction of historic stone masonry. Must be present

- on site throughout Work.
- .3 Dismantlers:
 - .1 Experience: record of successful masonry dismantling.
 - .2 Mock-ups:
 - .1 Construct mock-up in accordance with Section 00 10 00 – General Instructions.
 - .2 Perform mock-up of one stone to demonstrate dismantling procedures for each type of masonry condition specified in locations designated on the drawings.
 - .3 Notify Departmental Representative and/or Consultant minimum of 48 hours prior to construction of mock-up.
 - .4 Perform mock-up under supervision of Departmental Representative and/or Consultant to demonstrate a full understanding of specified procedures and techniques is achieved before work commences.
 - .5 Work not to proceed prior to approval of mock-up. Allow 72 hours for inspection of mock-up by Departmental Representative and/or Consultant before proceeding with masonry dismantling work.
 - .6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and with manufacturer's written instructions.
- .2 Protect and store stones to facilitate their resetting.
 - .1 Store dismantled masonry units on wood pallets, protected from exposure to water, elements, and potential mechanical damage fully covered under polyethylene.
 - .2 Submit storage and identification system to Departmental Representative and/or Consultant.

1.7 AMBIENT CONDITIONS

- .1 Loosen wet masonry only when temperature is above 5 degrees C.
- .2 In temperature 5 degrees C and below:
 - .1 Keep stones dry.
 - .2 Protect wet stones from freezing.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine masonry, staging and storage areas and notify Departmental Representative and/or Consultant in writing of conditions detrimental to acceptable and timely completion of Work.
 - .1 Visually inspect substrate in presence of Departmental Representative and/or Consultant.
 - .2 Inform Departmental Representative and/or Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Departmental Representative and/or Consultant.
 - .4 Report in writing, Departmental Representative and/or Consultant areas of deteriorated stone not identified in the documents. Obtain Departmental Representative and/or Consultant's approval and instructions for repair of stone before proceeding.
 - .5 Stop work in that area and report to Departmental Representative and/or Consultant immediately evidence of hazardous materials.

3.2 PREPARATION

- .1 Remove the stones as per Section 04 03 42 – Historic - Replacing Stone.

3.3 PROTECTION

- .1 Prevent damage to all building elements that are to remain.
- .2 Make good damage incurred.
- .3 Protect surrounding components from damage during work.
- .4 Obtain Departmental Representative and/or Consultant approval for repair methodology.

3.4 SPECIAL TECHNIQUES

- .1 Number and identify stones and other elements on a photographic record.
- .2 Before dismantling stones, indicate dimensions of each numbered stone in area on a drawing.
- .3 Temporary Marking and Recording:
 - .1 Mark stone, on face, before removal using marking product which can be completely erased when required without damaging masonry unit:
 - .1 Ball-point pen on diachylon, attached to stone.
 - .2 Wax less chalk directly on stone.
 - .2 Tracking relocated stones and other masonry units:
 - .1 Use numbering, marking, and positioning system shown on drawing.
 - .3 Mark/Identify:
 - .1 Stones and other elements or components to show identity and position.
 - .2 Wood platforms or other equipment used to transport and store stones.
 - .3 Work and storage areas.
 - .4 Location from which stones are removed on drawing.
 - .4 Stone location recording system.

- .1 Prepare chart or card index to:
 - .1 Help locate stones or units when necessary.
 - .2 To manage availability of platforms.
 - .3 To manage work and storage areas.
- .2 Keep chart or card index up-to-date and, if required, produce copy every day.
- .3 Prepare a drawing to contain relevant information.
- .5 Ensure that temporary marking will remain in use resistant to weather, handling and cleaning until final marking of stones.
- .6 Remove markings and adhesive without damaging units:
 - .1 Brush with vegetable fibre brush: either dry or with water.
 - .2 Use no solvent, acid or other chemical product

3.5 METHOD FOR LOOSENING STONES

- .1 Use approved methods to loosen stones that will cause no damage either to stones or to other architectural elements.
- .2 Prior to removing a stone approved for replacement or re-installation, rout out existing mortar joints around the stone.
- .3 Remove mortar from top, bottom and side joints, with the back surface of the joint square and of an even depth.
- .4 Use only hand held tools with mallet or pneumatic driven percussion at low stroke speed.
- .5 Obtain Departmental Representative and/or Consultant approval for use of power tools before commencing work.
- .6 Ensure that adjacent stones are not used as lever points in removal of stone.
- .7 Loosen wet masonry when temperature is above freezing.

3.6 DISMANTLING AND MOVING STONES

- .1 Avoid damaging arrises of stone when removing mortar and freeing up.
- .2 Remove excess mortar using hand tools.
- .3 Use wood wedges where required to remove or dislocate stone.
 - .1 Use flat pry bars protected with impact absorbing protection (burlap, cardboard).
- .4 Use regularly inspected nylon hoisting belts. Use minimum 2 belts per stone.
- .5 Protect stone from damage when hoisting and lifting from position.
 - .1 Use wood shims to isolate units from hoisting belts.
- .6 Where damage occurs to stone, report to Departmental Representative and/or Consultant and repair stone in accordance with Section 04 03 41 - Historic - Repairing Stone.
- .7 Make good damage incurred at no additional cost to Owner.

- .8 Obtain approval of repaired damage by Departmental Representative and/or Consultant

3.7 HANDLING

- .1 Usage of Lewis bolts for handling stone is permitted.
- .2 Place detached stones on wood surfaces during handling. Prevent contact with metal.
- .3 When stones are lowered to ground, place directly on wooden platform used for transport or storage.
- .4 Transport and keep stones on wooden platforms.
- .5 Ensure that sharp edges of stones do not come into contact with hard objects.

3.8 TEMPORARY STORAGE STAGING AREA

- .1 Place stones in designated area of site for cleaning, detailed inspection and for final marking, before storage.
- .2 Make stones accessible and retrievable when required.

3.9 CLEANING

- .1 Clean stones in accordance with Section 04 03 06 - Historic - Cleaning Masonry.
- .2 Do cleaning operations at above freezing temperature.
 - .1 After cleaning, protect wet stones against freezing until dry.
- .3 Clean stones by wet scrubbing with vegetable fibre brush unless otherwise instructed by Departmental Representative and/or Consultant
 - .1 Do not use high pressure water jet.
 - .2 Remove excess mortar with hand tools.
- .4 Provide chemical cleaning treatment in accordance with Section 04 03 06 - Historic - Cleaning Masonry.
- .5 Use chemical cleaning methods only with prior written approval of Departmental Representative and/or Consultant.
- .6 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
- .7 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 00 10 00 – General Instructions.

END OF SECTION

PART 1- GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 00 10 00 General Instructions.
- .2 Section 04 03 06 Historic – Cleaning Masonry.
- .3 Section 04 03 07 Historic – Masonry Repointing.
- .4 Section 04 03 41 Historic – Repairing Stone.
- .5 Section 04 03 42 Historic – Replacing Stone.
- .6 Section 04 03 43 Historic – Dismantling Stone Masonry.
- .7 Section 04 05 19 Masonry Anchorage and Reinforcing.

1.2 REFERENCES

- .1 CSA Group
 - .1 CAN/CSA-A165 Series-04 (R2014), CSA Standards on Concrete Masonry Units (Consists of A165.1, A165.2 and A165.3).
 - .2 CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.
 - .3 CAN/CSA-A371-04 (R2014), Masonry Construction for Buildings.
- .2 International Masonry Industry All-Weather Council (IMIAC)
 - .1 Recommended Practices and Guide Specification for Cold Weather Masonry Construction.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-installation meetings: comply with Section 00 10 00 – General Instructions. Conduct pre-installation meeting one week prior to commencing work to:
 - .1 Verify project requirements, including mock-up requirements.
 - .2 Verify substrate conditions.
 - .3 Co-ordinate products, installation methods and techniques.
 - .4 Sequence work of related sections.
 - .5 Co-ordinate with other building subtrades.
 - .6 Review manufacturer's installation instructions.
 - .7 Review masonry cutting operations, methods and tools and determine worker safety and protection from dust during cutting operations.
 - .8 Review warranty requirements.
- .2 Sequencing: sequence with other work in accordance with Section 00 10 00 – General Instructions. Comply with manufacturer's written recommendations for sequencing construction operations.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for masonry and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two (2) copies of WHMIS MSDS in accordance with Section 00 10 00 – General Instructions.
- .3 Shop Drawings:
 - .1 Refer to individual sections of this specification for requested shop drawings.
- .4 Samples:
 - .1 Refer to individual sections of this specification for requested shop drawings.
- .5 Certificates: submit manufacturer's product certificates certifying materials comply with specified requirements.
- .6 Test and Evaluation Reports:
 - .1 Test reports to certify compliance of stone units and mortars with specified performance characteristics and physical properties.
 - .2 Submit data for masonry units, in addition to requirements set out in referenced CSA and ASTM Standards, indicating initial rates of absorption.
- .7 Installer Instructions: provide manufacturer's installation instructions, including storage, handling, safety and cleaning.
- .8 Manufacturer's Reports: provide written reports prepared by manufacturer's on-site personnel to include:
 - .1 Verification of compliance of work with Contract.
 - .2 Site visit reports providing detailed review of installation of work, and installed work.

1.5 CLOSEOUT SUBMITTALS

- .1 Submit manufacturer's instructions for care, cleaning and maintenance of prefaced masonry units for incorporation into manual specified in Section 00 10 00 – General Instructions.

1.6 EXTRA MATERIALS

- .1 Submit manufacturer's instructions in accordance with Section 00 10 00 – General Instructions covering maintenance requirements and parts catalogue, with cuts and identifying numbers.

1.7 QUALITY ASSURANCE

- .1 Mock-ups:

- .1 Construct mock-ups in accordance with Section 00 10 00 – General Instructions.
- .2 Construct mock-up of:
 - .1 Raking out, six (6) linear meters, horizontal and vertical joints.
 - .2 Back pointing two (2) linear meters, horizontal and vertical joints.
 - .3 Repointing, two (2) linear meters, horizontal and vertical joints.
 - .4 Patching one-half (0.5) square meters of a sandstone unit.
 - .5 Bedding two (2) sandstone unit.
 - .6 Re-setting two (2) sandstone unit.
 - .7 Cleaning one (1) square meter panel for each type of cleaning technique specified and on each masonry substrate representative of full range of soiling conditions.
- .3 Mock-up used:
 - .1 To judge quality of work, substrate preparation, operation of equipment and material application.
- .4 Construct mock-up where directed by Departmental Representative and/or Consultant.
- .5 Allow 72 hours for inspection of mock-up Departmental Representative and/or Consultant before proceeding with work.
- .6 When accepted Departmental Representative and/or Consultant mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
- .7 Start work only upon receipt of written approval of mock-up by Departmental Representative and/or Consultant.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect materials from damage.
 - .3 Keep materials dry until use except where wetting of bricks is specified.
 - .4 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.
 - .5 Replace defective or damaged materials with new.

1.9 SITE CONDITIONS

- .1 Ambient Conditions: assemble and erect components when temperatures are above 10 degrees C.
- .2 Hot weather requirements
 - .1 When wall surfaces or ambient temperatures reach 25 degrees C protect new work from rapid drying by providing burlap protection kept misted wet as necessary to control drying and shrinkage.
- .3 Removal of existing pointing mortar
 - .1 Attention is drawn to the fact that significant quantities of silica and/or lead that exists in the

- existing pointing mortar, classifying it as a hazardous material.
- .2 The contractor shall be responsible for all testing of the existing mortar and to determine the requirements of its containment, collection, safe removal, and the health and safety of the building occupants, site operatives, and other trades.
 - .3 The contractor shall comply with current legislation to provide protective clothing, breathing apparatus, and all other necessary measures. The contractor shall ensure all operatives are fully informed of the hazards, and trained in required procedures, prior to commencing work.
 - .4 Contractor shall ensure that their operatives wear and maintain this equipment and follow all necessary procedures at all times when involved with such hazards.
 - .5 Contractor shall be responsible for the containment of all existing mortar waste on the scaffold level where removed and shall be responsible for its removal from each scaffold level and the ground level on a minimum daily basis.
 - .6 Maintain and be responsible for continuity of adequate protection at ground level around the building, to prevent leaching of toxic material into the roof drainage system.
 - .7 Provide secure and clearly marked containers for hazardous waste.
 - .8 Fine dust from various masonry procedures may drift into the building through cracks in the masonry, at window and door openings, or in the building ventilation system on the main roof, causing potential health risks to occupants. Take all necessary steps to prevent this occurrence and cease activity until corrective action has been taken.

1.10 WARRANTY

- .1 For Work in this Section 04 05 00 - Common Work Results for Masonry, 12 months warranty period is extended to 24 months.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Not used.

PART 3 - EXECUTION

3.1 INSTALLERS

- .1 Experienced and qualified masons to carry out erection, assembly and installation of masonry work.

3.2 EXAMINATION

- .1 Examine conditions, substrates and work to receive work of this Section.
 - .1 Co-ordinate with all other sections.
- .2 Examine openings to receive masonry units. Verify opening size, location, and that opening is square and plumb, and ready to receive work of this Section.

- .1 Inform Departmental Representative and/or Consultant of unacceptable conditions immediately upon discovery.
- .2 Proceed with installation after unacceptable conditions have been remedied and after receipt of written approval from Departmental Representative and/or Consultant.
- .3 Verification of Conditions:
 - .1 Verify that:
 - .1 Substrate conditions, which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of mortars and other products.
 - .2 Field conditions are acceptable and are ready to receive work.
 - .3 Built-in items are in proper location, and ready for roughing into masonry work.
 - .2 Commencing installation means acceptance of existing substrates.

3.3 PREPARATION

- .1 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations and co-ordinate with all other sections.
- .2 Establish and protect lines, levels, and coursing.
- .3 Protect adjacent materials from damage and disfiguration.

3.4 INSTALLATION

- .1 Do masonry work in accordance with CAN/CSA-A371 except where specified otherwise.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment, respecting construction tolerances permitted by CAN/CSA-A371.
- .3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

3.5 SITE TOLERANCES

- .1 Tolerances in notes to CAN/CSA-A371 apply.

3.6 FIELD QUALITY CONTROL

- .1 Site Tests, Inspection:
 - .1 Perform field inspection and testing in accordance with Section 00 10 00 – General Instructions.
 - .2 Notify inspection agency minimum of 48 hours in advance of requirement for tests.
- .2 Manufacturer's Services:

- .1 Have manufacturer of products supplied under any other section review work involved in handling, installation/application, and protection of its products, and submit written reports in acceptable format to verify compliance of work with Contract.
- .2 Manufacturer's field services: provide manufacturer's field services, consisting of product use recommendations and periodic site visits for inspection of product installation, in accordance with manufacturer's instructions.
- .3 Schedule site visits to review work at stages listed:
 - .1 After delivery and storage of products, and when preparatory work on which work of this Section depends is complete, but before installation begins.
 - .2 Twice during progress of work at 25% and 60% complete.
 - .3 Upon completion of work, after cleaning is carried out.
- .4 Obtain reports within 2 days of review and submit immediately to Departmental Representative and/or Consultant.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.

3.8 PROTECTION

- .1 Temporary Bracing:
 - .1 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.
 - .2 Brace masonry walls as necessary to resist wind pressure and lateral forces during construction.
- .2 Moisture Protection:
 - .1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until completed and protected by flashing or other permanent construction.
 - .2 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each workday. Anchor securely in position.
 - .3 Air Temperature Protection: protect completed masonry as recommended in 1.9, SITE CONDITIONS.

END OF SECTION

PART 1- GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 05 00 Common Work Results for Masonry.
- .2 Section 04 03 07 Historic – Masonry Repointing.
- .3 Section 04 03 41 Historic – Repair Stone.
- .4 Section 04 30 42 Historic – Replacing Stone.

1.2 REFERENCES

- .1 CSA Group
 - .1 CSA A23.1/A23.2-09 (R2014), Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.
 - .3 CAN/CSA-A370-04 (R2014), Connectors for Masonry.
 - .4 CAN/CSA-A371-04 (R2014), Masonry Construction for Buildings.
 - .5 CSA S304.1-04 (R2010), Design of Masonry Structures.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for anchorage and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
 - .2 Submit drawings detailing anchorage details lists and placement drawings.
 - .3 On placement drawings, indicate sizes, spacing, location and quantities of connectors.
- .4 Samples:
 - .1 Submit two (2) samples of: stainless steel helical ties.
- .5 Manufacturers' Instructions: submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties, and in accordance with Section 04 05 00 - Common Work

Results for Masonry.

- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 00 10 00 – General Instructions and requirements of Section 04 05 00 - Common Work Results for Masonry.

1.5 SITE MEASUREMENTS

- .1 Make site measurements necessary to ensure proper fit of members.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations.
 - .2 Store and protect anchorage from damage and bending.
 - .3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Connectors: to CAN/CSA-A370 and CSA S304.1.
- .2 Corrosion protection: to CSA S304.1 and CAN/CSA-A370.
- .3 Fasteners: installed post-construction:
 - .1 Bolts and Screws: size and type to suit application, locate where indicated.
 - .2 Nails: case-hardened cut or spiral nails, size and type to suit fastening application.
 - .3 Powder-Driven Fasteners: pin styles and lengths to suit fastening application in accordance with manufacturers use, load and hold recommendations.
 - .4 Adhesives: epoxies, mastics and contact cements for fastening applications, use in accordance with manufacturers' recommendations.
- .4 Anchors: to CAN/CSA-A370:
 - .1 Spiral Anchors: 9 mm stainless steel spiral anchors to Grade 304.
 - .1 Acceptable product: Heli-Tie, manufactured by Simpson Strong-tie Company Inc.

2.2 FABRICATION

- .1 Fabricate connectors in accordance with CAN/CSA-A370.
- .2 Ship reinforcement and connectors, clearly identified in accordance with drawings.

2.3 SOURCE QUALITY CONTROL

- .1 Upon request, provide CSA S304.1 with certified copy of mill test report of reinforcement steel and connectors, showing physical and chemical analysis.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- .1 Direct and coordinate placement of metal anchors for sandstone re-setting supplied to other Sections.

3.3 INSTALLATION

- .1 Supply and install masonry connectors and reinforcement in accordance with CAN/CSA-A370, CAN/CSA-A371, CSA A23.1/A23.2 and CSA S304.1 unless indicated otherwise.
- .2 Prior to placing mortar and sandstones, obtain Departmental Representative and/or Consultant approval of placement of reinforcement and connectors.

3.4 LATERAL SUPPORT AND ANCHORAGE

- .1 Supply and install lateral support and anchorage in accordance with CSA S304.1 and as indicated.
- .2 Install helical tie anchorage where indicated and in accordance with CAN/CSA-A370 and CAN/CSA-A371 and manufacturer's instructions.
 - .1 Secure the sandstone cladding to the back-up substrate using the helical ties in accordance with CAN/CSA-A371 and as indicated.

- .2 One the main wall, not around openings:
 - .1 Install one (1) helical tie in each horizontal joint at maximum spacing of 800 mm on center.
 - .2 Install one (1) helical tie in each vertical joint at a maximum spacing of 600 mm on center.
- .3 Around openings in the wall (windows, doors, etc.):
 - .1 Install one (1) helical tie in each horizontal joint at a maximum space of 600 mm.
 - .2 Install one (1) helical tie in each vertical joint at a maximum spacing of 600 mm on center.
 - .3 Install one (1) helical tie 300 mm from the edge of the opening.
 - .4 Treat the perimeter of the large stone re-setting areas, indicated on the drawings, as the perimeter of an opening.
- .4 Ties shall be not more then 300 mm from the top of a wall and not more then 400 mm from the bottom of a wall.

3.5 FIELD QUALITY CONTROL

- .1 Site inspections in accordance with Section 04 05 00 - Common Work Results for Masonry.
- .2 Obtain Departmental Representative and/or Consultant approval of placement of connectors prior to placing mortar

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 00 10 00 – General Instructions.

END OF SECTION

PART 1- GENERAL

1.1 RELATED REQUIREMENTS

- .1 No Used.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM B 32-08, Standard Specification for Solder Metal.
 - .2 ASTM B 370-03, Standard Specification for Copper Sheet and Strip for Building Construction.
 - .3 ASTM B101-83, Lead-coated Copper.
- .2 Canadian Roofing Contractors Association (CRCA)
 - .1 Roofing Specifications Manual, 1997.
- .3 Lead Sheet Association (LSA), United Kingdom.
 - .1 Rolled Lead Sheet – The Complete Manual.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two (2) copies WHMIS MSDS - Material Safety Data Sheets in accordance with Section 00 10 00 – General Instructions.
- .3 Quality assurance submittals: submit following in accordance with Section 00 10 00 – General Instructions.

1.4 QUALITY ASSURANCE

- .1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative and Departmental Representative and/or Consultant:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review installation instructions and warranty requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions.

PART 2- PRODUCTS

2.1 ACCESSORIES

- .1 Cleats: of same material as copper sheet metal, cornice temper, 5 kg/m².
- .2 Clips: of same material as copper sheet metal, cornice temper, 12 kg/m².
- .3 Solder: to ASTM B 32, alloy composition 50% tin and 50% lead.
- .4 Flux: rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.
- .5 Patination Oil: proprietary lead patination oil. Acceptable standard: British Lead Mills or approved alternative.

PART 3- EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 MOCK-UP

- .1 Prepare a new soldered joint on the main roof parapet copper for review and approval by Departmental Representative and/or Consultant.
- .2 Obtain written approval and acceptance of the mock-up from Departmental Representative and/or Consultant for the new for the new soldered joint.

3.3 PREPARATION

- .1 Clean the existing copper flashings where the new flashings will be installed and soldered.
- .2 Extend cleaning a minimum of 150 mm beyond where soldering will occur.
- .3 Clean the existing lead flashing surfaces with a wire brush, to accept new patination oil.
- .4 Verify existing copper and lead flashings are in good condition and suitable to be soldered onto.
- .5 Notify the Departmental Representative and/or Consultant if any copper or lead flashings are in poor condition and not suitable to be soldered.

- .6 Protect existing building and roof surfaces and adjacent structures from damage during this work.
- .7 Clean any solder droplets, spills, or splatter immediately.

3.4 COPPER FLASHING REPAIR

- .1 Re-solder all joints on the main roof parapet copper flashings, as indicated on the drawings.
- .2 Grind smooth the new soldered joints, without adversely effecting integrity of the solder joint itself.

3.5 LEAD COATED FLASHING REPAIR

- .1 Re-solder all joints on the lead coated flashings, as indicated on the drawings.
- .2 Grind smooth the new soldered joints, without adversely effecting integrity of the solder joint itself.

3.6 APPLICATION OF PATINATION OIL

- .1 Apply patination oil to all lead coated flashings in accordance with manufacturer's and Lead Sheet Association's recommendations.
- .2 Shake can vigorously for a minimum of 2 minutes prior to use and periodically during application.
- .3 Apply one even coat, using soft cloth, working systematically from top to bottom, keeping lower edge wet. Do not scrub with circular motion. Do not spill or smear oil on adjacent stone.
- .4 Protect untreated lead from rain.
- .5 Lead that shows signs of oxidation staining shall be cleaned with a 5% solution of nitric acid. Take care not to drip, spill, or splatter solution on adjacent masonry.
- .6 Apply patination oil as the work progresses and not later than the end of each working day so that lead does not remain unpatinated for more than 8 hours.
- .7 Protect from construction dust and damage.
- .8 Where patinated lead becomes scuffed, marred or damaged in any way, apply a second coat to affected areas as necessary.

3.7 FIELD QUALITY CONTROL

- .1 Inspection:
 - .1 Advise Departmental Representative and/or Consultant when work is 30% and 60% complete for inspections.
 - .2 Make good on any deficiencies with the new solder joints.

3.8 CLEANING

- .1 Proceed in accordance with Section 00 10 00 – General Instructions.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Leave work areas clean, free from grease, finger marks and stains.
- .4 Make good on any damages to the building surfaces as a result of this work.

END OF SECTION

PART 1- GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 00 10 00 General Instructions.
- .2 Section 04 05 00 Common Work Results of Masonry.
- .3 Section 09 03 61 Historic – Repainting of Exterior Surfaces.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C 920, Standard Specification for Elastomeric Joint Sealants.
 - .2 ASTM C1184, Standard Specification for Structural Silicone Sealants.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
- .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Assessment Act (CEAA), 2012.
 - .2 Canadian Environmental Protection Act (CEPA), 1999.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .6 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, (1992, c. 34).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Manufacturer's product to describe:
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

- .3 Submit two (2) copies of WHMIS MSDS in accordance with Section 00 10 00 – General Instructions.
- .3 Samples:
 - .1 Submit two (2) samples of each type of material and colour.
 - .2 Cured samples of exposed sealants for each colour where required to match adjacent material.
- .4 Manufacturer's Instructions:
 - .1 Submit instructions to include installation instructions for each product used.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.6 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Proceed with installation of joint sealants only when:
 - .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
 - .2 Joint substrates are dry.
 - .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .2 Joint-Width Conditions:
 - .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 QUALITY ASSURANCE/MOCK-UP

- .1 Construct mock-up to show location, size, shape, and depth of joints complete with back-up material, primer, caulking, and sand as required.
- .2 Prepare mock-up of:
 - .1 One (1) window perimeter.
 - .2 One (1) door perimeter.
 - .3 One (1) typical cladding penetration.
 - .4 A 1.22-meter long section of lead coated flashing at the 4th floor eyebrow roof.
 - .5 A 1.22-meter long section of a parapet wall horizontal stone joint.
- .3 Departmental Representative and/or Consultant may request additional mock-ups of other locations.
- .4 Mock-ups will be used to judge workmanship, substrate, preparation, operation of equipment and material application.
- .5 Locate the mock-ups in a location agreed upon by the Departmental Representative and/or Consultant.
- .6 Allow 24 hours for inspection by Departmental Representative and/or Consultant before proceeding with sealant work.
- .7 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-ups may remain as part of the finished work.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Place materials defined as hazardous or toxic materials in designated containers.
- .3 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in location where it will pose health or environmental hazard.
- .4 Divert unused joint sealing material from landfill to official hazardous waste material collections site.

1.10 WARRANTY

- .1 Contractor hereby warrants that joint sealants will stay in place and remain leak-proof in accordance with the General Conditions, but for five years from the date of substantial performance of the

contract. Make all necessary repairs and replacements within 48 hours of receipt of written notification.

- .2 Manufacturer warranty for joint sealant shall be twenty (20) years, as per manufacturer literature.

PART 2

2.1 SEALANT MATERIALS

- .1 When low toxicity caulks are not possible, confine usage to areas, which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.
- .2 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Silicones one part:
 - .1 To CAN/CGSB-19.13.
 - .2 Acceptable material: DOW Corning 795 Silicone Building Sealant, one-part, neutral-cure, RTV silicone sealant, manufactured by DOW Corning.
 - .3 Approved alternates must be submitted at the time of bid submission and shall be equivalent to the specified sealant in characteristics and properties. Alternates may be rejected.
 - .4 Colour to be chosen from manufacturer's standard colour range by Departmental Representative.
- .2 Preformed compressible and non-compressible back-up materials:
 - .1 Polyethylene, urethane, neoprene or vinyl foam:
 - .1 Extruded closed cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .2 Neoprene or butyl rubber:
 - .1 Round solid rod, Shore A hardness 70.
 - .3 High density foam:
 - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.
 - .4 Bond breaker tape:
 - .1 Polyethylene bond breaker tape that will not bond to sealant.

2.3 SEALANT SELECTION

- .1 Use specified silicone sealant at all locations including: windows and door perimeter, exterior cladding penetrations, the horizontal joints in the exterior cladding stone at the main roof parapet level, and any flashing bird mouths and terminations/transitions.

2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in

accordance with sealant manufacturer's written recommendations.

- .2 Primer: in accordance with sealant manufacturer's written recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative and/or Consultant of unacceptable conditions immediately upon discovery and allow for an inspection.
 - .3 Have the manufacturer's representative conduct an examination of the existing conditions and substrates and provide written confirmation that they are acceptable.
 - .4 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Departmental Representative and/or Consultant and/or manufacturer's representative.

3.2 SURFACE PREPARATION

- .1 Protect all surrounding building elements from staining, contamination, or other damage.
- .2 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .3 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter, which may impair Work.
- .4 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .5 Ensure joint surfaces are dry and frost free.
- .6 Prepare surfaces in accordance with manufacturer's directions.

3.3 TESTING

- .1 Perform an adhesive test of proposed joint sealant of all exterior applications to confirm surface preparation, priming, and sealant performance to manufacturer's specifications. Submit written test results to Departmental Representative and/or Consultant prior to proceeding with work.

3.4 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.5 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.6 APPLICATION

- .1 Sealant:
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, and embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
 - .2 Clean adjacent surfaces immediately.
 - .3 Remove excess and droppings, using recommended cleaners as work progresses.
 - .4 Remove masking tape after initial set of sealant.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 00 10 00 – General Instructions.

3.8 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 00 10 00 General Instructions.
- .2 Section 07 92 00 Joint Sealants.
- .3 Section 09 03 61 Historic – Repainting Exterior Surfaces.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI/ASTM E330 – Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
- .3 Environmental Choice Program (ECP)
 - .1 CCD-045-95 (R2005), Sealants and Caulking Compounds.
- .4 Glass Association of North American (GANA)
 - .1 GANA Glazing Manual - 2008.
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Arrange for site visit with Departmental Representative and/or Consultant prior to start of Work to examine existing site conditions regarding the window and door glass.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for glass and glazing putty and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Submit two (2) samples of 150 mm x 150 mm window glass. Thickness and style/pattern of

glazing to match the existing.

- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

1.5 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Operation and Maintenance Data: submit operation and maintenance data for glazing and putty for incorporation into manual.

1.6 QUALITY ASSURANCE

- .1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 00 10 00 – General Instructions.
 - .2 Construct mock-up to include glass and glazing putty.
 - .3 Mock-up will be used:
 - .1 To judge quality of work, substrate preparation, operation of equipment and material application.
 - .4 Locate where directed.
 - .5 Allow 48 hours for inspection of mock-up before proceeding with work.
 - .6 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors and in accordance with manufacturer's recommendations in clean and dry area.
 - .2 Store and protect glass from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.8 AMBIENT CONDITIONS

- .1 Ambient Requirements:

- .1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
- .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Design Criteria:
 - .1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:
 - .1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
 - .2 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to design pressure to ASTM E330.
 - .3 Limit glass deflection to flexural limit of glass with full recovery of glazing materials.
- .2 Flat Glass:
 - .1 Float glass: to CAN/CGSB-12.3, glazing quality, thickness of glass to match existing.
- .3 Glazing Putty/Sealant:
 - .1 Contractors Weatherproofing Sealant (CWS), 100% silicone sealant, UV resistant, manufactured by DOW Corning Corporation.
- .4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect the damaged windows reported by the Contractor at the start of the project and visually re-inspect in the presence of Departmental Representative and/or Consultant
 - .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
 - .3 Inform Departmental Representative and/or Consultant of unacceptable conditions immediately upon discovery.
 - .4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative and/or Consultant.

3.2 PREPARATION

- .1 Remove the broken glazing unit and dispose of.

- .2 Clean contact surfaces with solvent and wipe dry.
- .3 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .4 Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION: INTERIOR - WET METHOD COMPOUND AND COMPOUND

- .1 Perform work in accordance with GANA Glazing Manual for glazing installation methods.
- .2 Install glazing resting on setting blocks. Install applied stop and centre light by use of spacer shims, 6 mm below sight line.
- .3 Locate and secure glazing light using glazers' clips.
- .4 Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
 - .1 Remove traces of primer, caulking.
 - .2 Remove glazing materials from finish surfaces.
 - .3 Remove labels.
 - .4 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 00 10 00 – General Instructions.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 00 10 00 General Instructions.
- .2 Section 07 92 00 Joint Sealants.
- .3 Section 08 80 50 Glazing.

1.2 REFERENCES

- .1 Definitions:
 - .1 Exterior surfaces: refers to surfaces of a historic structure which is exposed to exterior weather including wet conditions of rain, sleet or snow, high temperatures and sunlight as well as temperatures below the freezing point.
- .2 Reference Standards:
 - .1
 - .2 Environmental Protection Agency (EPA)
 - .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).
 - .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .4 Master Painters Institute (MPI)
 - .1 Maintenance Repainting Manual, 2012, Master Painters Institute (MPI) including Identifiers, Evaluation, Systems, Preparation and Approved Products List.
 - .5 National Fire Code of Canada, [2010].
 - .6 Society for Protective Coatings (SSPC)
 - .1 SSPC Painting Manual, latest edition.
 - .7 United States Federal Standards, issued by General Services Administration.
 - .1 Federal Standard 595C - Colors Used in Government Procurement.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for [paints and coating products] and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two (2) copies of WHMIS MSDS in accordance with Section 00 10 00 – General Instructions.
- .3 Samples:
 - .1 Submit colour sample for review.
 - .2 Submit two (2) 200 x 300 mm sample panels of each paint in colours, glass/sheen and

textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:

- .1 3 mm thick steel plate for finishes over metal surfaces.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 00 10 00 – General Instructions.
- .2 Operation and Maintenance Data: submit operation and maintenance data for paints for incorporation into manual.
 - .1 Provide records of products used. List products in relation to finish system and include following:
 - .1 Product name, type and use (e.g. materials and location).
 - .2 Manufacturer's product number.
 - .3 Colour code numbers.
 - .4 Manufacturer's Material Safety Data Sheets.
- .3 Submit maintenance record of painting work.

1.5 QUALITY ASSURANCE

- .1 Regulatory Agency Sustainability Approvals:
 - .1 Compliance Report indicating requirement to purchase energy efficient and environmentally friendly products.
 - .2 Conform to applicable standards and requirements for exterior repainting work including cleaning, preparation and priming.
 - .3 Retain purchase orders, invoices and other documents and produce when requested by Departmental Representative.
- .2 Qualifications:
 - .1 Contractor: minimum of five (5) years proven satisfactory experience with historic structures painting. When requested, provide list of last three (3) comparable jobs including, job name and location, specifying authority, and project manager.
 - .2 Qualified journeypersons: as identified by local jurisdiction.
 - .3 Apprentices: work under direct supervision of qualified journeyperson in accordance with applicable trade regulations.
- .3 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 00 10 00 – General Instructions.
 - .2 Provide following mock-ups:
 - .1 One (1) window.
 - .3 Prepare a full-size mock-up of an entire window including surface preparation, priming, and paint finish showing selected colours, number of coats, gloss/sheen, and quality of work.
 - .4 Allow 48 hours for inspection of mock-up by Departmental Representative and/or Consultant before proceeding with work.
 - .5 When accepted, mock-up demonstrates minimum standard for this work. Mock-up may remain as part of finished work.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 00 10 00 – General Instructions and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
 - .1 Labels: to indicate:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect paints and coatings.
 - .3 Keep areas for storage, cleaning and preparation, clean and orderly.
 - .4 Remove paint materials from storage in quantities required for same day use.
 - .5 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
 - .6 Store materials and equipment within temperature range between 7 degrees C to 30 degrees C.
 - .7 Store materials and supplies away from heat generating devices and sensitive materials above minimum temperature as recommended by manufacturer.
 - .8 Replace defective or damaged materials with new.
- .4 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site daily.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.7 AMBIENT CONDITIONS

- .1 Substrate and ambient temperatures: in accordance with limits prescribed by manufacturer and MPI.
- .2 Apply paint finish in areas where:
 - .1 Dust is no longer being generated by related construction operations.
 - .2 Wind conditions are such that airborne particles will not affect quality of finished surface.
- .3 Substrate and ambient air temperature, humidity and moisture content levels:
 - .1 Do not perform repainting work when:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is over 32 degrees C.
 - .3 Substrate and ambient air temperatures are expected to fall outside paint manufacturer's and MPI prescribed limits.
 - .4 Substrate is wet, damp or frosted.
 - .5 There is inadequate lighting. The minimum lighting level of 323 Lux shall be

- provided on surfaces to be painted. Adequate lighting facilities to be provided by General Contractor.
- .6 Maximum moisture content of substrate exceeds: 12% for concrete and unit masonry.
 - .7 Relative humidity is above 85%.
 - .8 Dew point is less than 3 degrees C variance between air/surface temperature.
 - .9 Precipitation is forecast to occur before paint has thoroughly cured.
 - .10 It is foggy, misty, raining, icing or snowing at site.
- .2 Damp and cold weather conditions:
- .1 Provide and maintain cover for paint finish.
 - .2 Heat substrates and surrounding air to comply with temperature and humidity conditions required.
 - .3 Protect until paint is dry.
 - .4 Protect until weather conditions are suitable.
- .4 Perform work on surfaces exposed to direct, intense sunlight in early morning.
- .5 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not effect quality of finished surface.
- .6 Apply paint when previous coat of paint is dry or adequately cured.
- .7 Apply paint finishes when conditions forecast for entire period of application will fall within manufacturer's recommendations.
- .8 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
- .9 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, and solvents: in accordance with MPI.
 - .1 Each product from a single manufacturer.
- .2 Linseed oil, shellac, and turpentine: highest quality product of an approved manufacturer.
 - .1 Compatible with other coating materials as required.
- .3 Paint materials listed in MPI Approved Product List.
- .4 Paints and coatings:
 - .1 Products of single manufacturer.

2.2 EXTERIOR PAINTING SYSTEMS

- .1 REX 5.1G - Structural Steel and Metal Fabrications: Steel windows and doors. Pigmented polyurethane finish (over epoxy zinc rich primer and high build epoxy)

2.3 FINISH

- .1 All exterior repainting work shall be done in accordance with MPI Premium Grade requirements.

2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss: in accordance with following MPI Gloss/Sheen ratings:

Gloss Level	Units @ 60	Units @ 85
Category/	Degrees/	Degrees/
G5 – semi-gloss finish	35 to 70	--

2.5 ACCESSORIES

- .1 Use tools that do not damage adjacent materials.
- .2 Spray equipment: No spraying is permitted on this project.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for painting in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative and/or Consultant].
 - .2 Inform Departmental Representative and/or Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Departmental Representative and/or Consultant.
 - .4 Refer to MPI manual to determine the degree of surface deterioration.

3.2 PREPARATION

- .1 Ensure workers are kept safe in accordance with Federal, Provincial and Municipal regulations.
- .2 Implement safety measures as required in preparation for implementing work.
- .3 Place safety devices and signage in locations in accordance with Federal, Provincial, and Municipal regulations.

3.3 PROTECTION OF IN-PLACE CONDITIONS

- .1 Protect existing building surfaces and adjacent structures with masking, tarps, polyethylene sheets, etc. against paint spatters, markings and other damage.
- .2 Move and cover exterior furniture and portable equipment as necessary to carry out painting operations. Replace as painting progresses.
- .3 As painting operations progress, place "WET PAINT" signs.

3.4 SURFACE PREPARATION

- .1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting Requirements except where specified otherwise.
- .2 Clean and prepare exterior surfaces in accordance with MPI Maintenance Repainting Manual requirements. Refer to manual for specific requirements as follows:
 - .1 Remove dust, dirt, and surface debris by wiping with dry, clean cloths.
 - .2 Sand substrate to roughen existing to achieve adequate bond to new paint.
 - .3 Wash surfaces with biodegradable detergent and clean warm water using a stiff bristle brush. Remove dirt, oil and surface contaminants. Ensure existing substrate is not damaged by process.
 - .4 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .5 Use trigger operated spray nozzles for water hoses.
 - .6 Allow surfaces to drain completely and dry thoroughly.
 - .7 Use water-based cleaners for surfaces to be repainted using water based paints.
- .3 Where noted on Contract Drawings, pressure wash exterior surfaces in accordance with MPI standards for type of surfaces and in accordance with recommended pressures.
 - .1 Ensure complete removal of loose paint, stains, dirt, and foreign matter.
 - .2 Stop work immediately and report to Departmental Representative and/or Consultant damage occurring from this process.
 - .3 Use of water hose as spray equipment not permitted.
 - .4 Allow sufficient drying time.
 - .5 Test surfaces with electronic moisture meter before commencing work.
- .4 Clean metal surfaces: remove rust, dirt, oil, grease and foreign substances in accordance with MPI requirements.
 - .1 Remove contaminants from surfaces, pockets and corners: brush with clean brushes as required.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before priming.
- .6 Touch-up, spot prime, and apply primer, paint, or pre-treatment immediately after cleaning.
- .7 Obtain written approval of prepared surfaces by Departmental Representative and/or Consultant before applying paint.

3.5 APPLICATION

- .1 Special Techniques:
 - .1 Apply coating in manner that replicates texture of existing paint coating.
- .2 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.
- .3 Apply paint materials in accordance with paint manufacturer's written application instructions.
 - .1 Apply paint:
 - .1 To adequately prepared surfaces and within moisture limits.
 - .2 When previous coat of paint is dry and adequately cured.
 - .3 In accordance with manufacturer's written instructions.
- .4 Apply paint with brush and/or roller.
- .5 Brush and Roller Application:
 - .1 Apply paint in a uniform layer using brush and/or roller suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Brush and roll out runs and sags, and overlap marks.
 - .4 Eliminate roller tracking and stipple by finishing with a brush. Maintain historic appearance.
 - .5 Remove runs and sags from finished work and repaint.
 - .6 Apply final coat of paint with brush.

3.6 FIELD QUALITY CONTROL

- .1 Standard of acceptance:
 - .1 When viewed using natural prevailing sunlight at peak period of day (mid-day) on surface viewed, surfaces to indicate following:
 - .1 Windows and doors: no defects visible from a distance of 1000 mm at 90 degrees to surface.
 - .2 Final coat: to exhibit uniformity of colour and sheen across full surface.
- .2 Advise Departmental Representative DCC Representative, Consultant and/or Paint Inspection Agency (if required by paint manufacturer) when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved by Departmental Representative, Consultant and/or Paint Inspection Agency.
- .3 Co-operate with Paint Inspection Agency and provide access to areas of work.
- .4 Manufacturer's Field Services:
 - .1 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.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 00 10 00 – General Instructions.
 - .1 Leave Work area clean at end of each day.
- .2 Reinstall and clean removed items after painting is completed.

- .3 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
 - .1 Clean and restore as directed by Departmental Representative and/or Consultant.
- .4 Wipe spills and spots immediately with a damp cloth.
- .5 Minimize use of kerosene and organic solvents to clean up water-based paints.
- .6 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 00 10 00 – General Instructions.

3.8 PROTECTION

- .1 Protect freshly completed surfaces from paint droppings and dust. Avoid scuffing newly applied paint.
- .2 Remove paint splashing on exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .3 Protect completed work from paint droppings. Use non-staining coverings.
- .4 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative and/or Consultant.
- .5 Remove protective coverings and warning signs as soon as practical after operations cease.

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.



Section	Page	Heading
GC1	1	Interpretation
GC2	2	Successors and Assigns
GC3	2	Assignment of Contract
GC4	2	Subcontracting by Contractor
GC5	2	Amendments
GC6	3	No Implied Obligations
GC7	3	Time of Essence
GC8	3	Indemnification by Contractor
GC9	3	Indemnification by Her Majesty
GC10	3	Members of House of Commons Not to Benefit
GC11	4	Notices
GC12	4	Material, Plant and Real Property Supplied by Her Majesty
GC13	5	Material, Plant and Real Property Become Property of Her Majesty
GC14	5	Permits and Taxes Payable
GC15	6	Performance of Work under Direction of Departmental Representative
GC16	6	Cooperation with Other Contractors
GC17	7	Examination of Work
GC18	7	Clearing of Site
GC19	7	Contractor's Superintendent
GC20	8	National Security
GC21	8	Unsuitable Workers
GC22	8	Increased or Decreased Costs
GC23	9	Canadian Labour and Material
GC24	9	Protection of Work and Documents
GC25	10	Public Ceremonies and Signs
GC26	10	Precautions against Damage, Infringement of Rights, Fire, and Other Hazards
GC27	11	Insurance
GC28	11	Insurance Proceeds
GC29	12	Contract Security
GC30	12	Changes in the Work
GC31	13	Interpretation of Contract by Departmental Representative
GC32	14	Warranty and Rectification of Defects in Work
GC33	14	Non-Compliance by Contractor
GC34	14	Protesting Departmental Representative's Decisions
GC35	15	Changes in Soil Conditions and Neglect or Delay by Her Majesty
GC36	16	Extension of Time
GC37	16	Assessments and Damages for Late Completion
GC38	17	Taking the Work Out of the Contractor's Hands
GC39	18	Effect of Taking the Work Out of the Contractor's Hands
GC40	18	Suspension of Work by Minister
GC41	19	Termination of Contract
GC42	19	Claims Against and Obligations of the Contractor or Subcontractor
GC43	21	Security Deposit – Forfeiture or Return
GC44	22	Departmental Representative's Certificates
GC45	23	Return of Security Deposit
GC46	24	Clarification of Terms in GC47 to GC50
GC47	24	Additions or Amendments to Unit Price Table
GC48	24	Determination of Cost – Unit Price Table
GC49	25	Determination of Cost – Negotiation
GC50	25	Determination of Cost – Failing Negotiation
GC51	26	Records to be kept by Contractor
GC52	27	Conflict of Interest
GC53	27	Contractor Status



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

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 CS2.12 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
Security Classification / Classification de sécurité

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

PART A - CONTRACT INFORMATION / PARTIE A - INFORMATION CONTRACTUELLE

1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine	National Research Council	2. Branch or Directorate / Direction générale ou Direction	ASPM/SAGI
---	---------------------------	--	-----------

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
**Courtyard B Masonry Conservation Repairs, Building S-77, 100 Sussex Drive.
 Repoint all the stonework in courtyard B.**

5. a) Will the supplier require access to Controlled Goods? / Le fournisseur aura-t-il accès à des marchandises contrôlées? No / Non 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? No / Non 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) No / Non 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. No / Non 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? No / Non 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"/>	No release restrictions / Aucune restriction relative à la diffusion <input type="checkbox"/>
Not releasable / À ne pas diffuser <input type="checkbox"/>		
Restricted to: / Limité à: Specify country(ies): / Préciser le(s) pays: <input type="checkbox"/>	Restricted to: / Limité à: Specify country(ies): / Préciser le(s) pays: <input type="checkbox"/>	Restricted to: / Limité à: Specify country(ies): / Préciser le(s) pays: <input type="checkbox"/>

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
Security Classification / Classification de sécurité

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
COTE DE FIABILITÉ | <input type="checkbox"/> CONFIDENTIAL
CONFIDENTIEL | <input type="checkbox"/> SECRET
SECRET | <input type="checkbox"/> TOP SECRET
TRÈS SECRET |
| <input type="checkbox"/> TOP SECRET - SIGINT
TRÈS SECRET - SIGINT | <input type="checkbox"/> NATO CONFIDENTIAL
NATO CONFIDENTIEL | <input type="checkbox"/> NATO SECRET
NATO SECRET | <input type="checkbox"/> COSMIC TOP SECRET
COSMIC TRÈS SECRET |
| <input type="checkbox"/> SITE ACCESS
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
 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

Security Classification / Classification de sécurité

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 / Assets / Renseignements / Biens																
Production	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT Media / Support TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT Link / Lien électronique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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).



Government of Canada
Gouvernement du Canada

Contract Number / Numéro du contrat

Security Classification / Classification de sécurité

PART D - AUTHORIZATION / PARTIE D - AUTORISATION

13. Organization Project Authority / Chargé de projet de l'organisme

Name (print) - Nom (en lettres moulées) Christopher Day		Title - Titre Construction Project Manager	Signature <i>C. Day</i>	
Telephone No. - N° de téléphone 613-993-3118	Facsimile No. - N° de télécopieur 613-957-9828	E-mail address - Adresse courriel chris.day@nrc-cnrc.gc.ca		Date June 14, 2016

14. Organization Security Authority / Responsable de la sécurité de l'organisme

Name (print) - Nom (en lettres moulées) Charlotte Carrier		Title - Titre Controlled Goods and Contracts Security Coordinator	Signature <i>[Signature]</i>	
Telephone No. - N° de téléphone (613) 993-8956	Facsimile No. - N° de télécopieur (613) 990-0946	E-mail address - Adresse courriel charlotte.carrier@nrc-cnrc.gc.ca		Date 16 Jun 2016

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?

No / Non Yes / Oui

16. Procurement Officer / Agent d'approvisionnement

Name (print) - Nom (en lettres moulées) <i>Alain Leous</i>		Title - Titre Senior Procurement Officer	Signature	
Telephone No. - N° de téléphone 613-991-1180	Facsimile No. - N° de télécopieur 613-998-5701	E-mail address - Adresse courriel alainleous.j@nrc-cnrc.gc.ca		Date

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