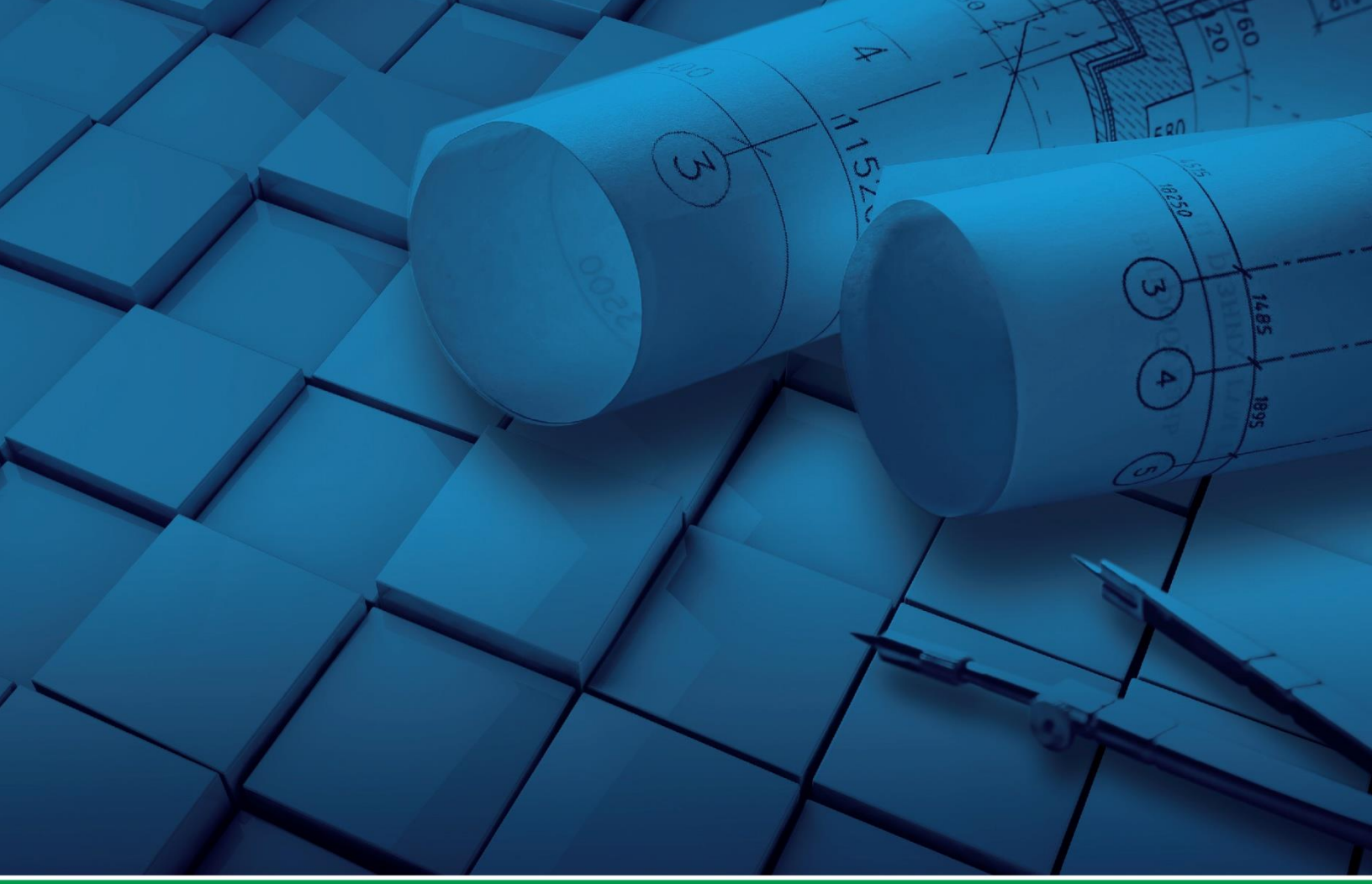


NRC·CNRC Real Property Planning and Management

SPECIFICATIONS

SOLICITATION #: 24-58048

BUILDING: M50,
1200 Montreal Road,
Ottawa, Ontario

PROJECT: M50 Elevator No. 1 and Elevator No. 4

PROJECT #: 6495

Date: May 2024

National Research Council Canada | Conseil national de recherches Canada

Canada

SPECIFICATION

TABLE OF CONTENTS

Construction Tender Form

Project Identification **M50 Elevator No. 1 and Elevator No. 4**

Tender No.: **24-58048**

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 His Majesty the King in Right of Canada (hereinafter referred to as "His 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.

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 His Majesty to forfeit the security deposit.

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

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)

1.10 Execution of Tender

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

1.11 Pricing Table

To be included with Tender Form

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

Pricing Table

M-50 Elevator #1 Passenger Elevator No. 21142

Fixed fee $_____

M-50 Elevator #4 Passenger Elevator No. 80127

Fixed fee $_____

Sub TOTAL **$**_____

HST **$**_____

TOTAL **$**_____

BUY AND SELL NOTICE

M50 Elevator No. 1 and Elevator No. 4

You are invited to submit **one** electronic Technical Proposal and **one** electronic Tender Form in two separate attachments to fulfil the following requirement forming part of this Request for Proposal. One attachment **must** be clearly marked 'Technical Proposal' and the other attachment **must** be marked 'Tender Form'. All financial information **must** be fully contained in the Tender Form, and only in the Tender Form. Vendors who provide financial information in the technical proposal will be disqualified.

The National Research Council Canada, 1200 Montreal Road Ottawa, has a requirement for a project that includes:

The proposed scope of work includes partial modernization of Lobby Elevator #1 and complete modernization of CPFC Elevator #4 to Building M-50 located at the Montreal Road Campus of the National Research Council of Canada.

Tender Destination

a) Tenders are to be submitted **by email only**:
National Research Council Canada

NRC.BidReceiving-ReceptiondesSoumissions.CNRC@nrc-cnrc.gc.ca

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.

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

Selection Criteria

Potential bidders will be rated in a combination of technical score and price rating. For this project the total score will be established as follows:

Technical rating 40%	=	Technical Score (Points)
Price rating 60% =	Price Score (Points)	
Total Score	=	Max. 100 points

Mandatory requirements

Failure to meet the mandatory requirement will render the proposal as non-compliant and no further evaluation will be carried out.

Item	Mandatory Criteria	Proposal Page #(s)
1	The Proponent must have a minimum of ten (10) years' experience as an elevator contractor providing construction services comparable to this tender. Provide a company profile and relevant history as described in item #1 of the evaluated technical criteria.	
2	The Proponent must supply a CV for the proposed Construction Site Supervisor **and** Project Manager. Construction Site Supervisor and Project Manager must each possess a minimum of 7 years' experience in a similar position.	
3	The Proponent must prove to be licensed to perform work in the province of Ontario.	

Include this table with your proposal and indicate the proposal page where the information can be found.

Any Proposal which fails to meet any of the following mandatory requirements will be considered non-compliant and will not be given further consideration. Each requirement should be addressed separately.

Evaluated Technical Criteria

Item	Evaluated Technical Criteria	Proposal Page # (s)	Max Score
1	Demonstrated experience by the Proponent providing general contracting construction services relevant to this project. Include two (2) comparable projects completed by the proponent's firm in the last Ten (10) years with reference names & email address. Evaluations will take into account relevance compared to the scope of this tender **(up to 3 points for each example project)** and whether the reference was satisfied with the work completed **(up to 1 point for each example project).** It is the responsibility of the bidder to ensure the contact information for the reference is accurate. If the reference cannot be reached or declines to provide input the proponent will receive a score of 0/1 for that example. A total of three (3) pages (letter size) maximum for this criteria.		8
2	Qualifications and overall experience of proposed Construction Site Supervisor. CV will be scored on the basis of related experience. Include detailed examples of 2 past projects **(up to 2 points),** experience acting as a construction site supervisor on federal government construction projects **(up to 3 points)** and training/education **(up to 1 point).** A total of two (2) pages (letter size) maximum for this criteria.		6
3	Qualifications and overall experience of proposed Construction Project Manager. CV will be scored on the basis of related experience. Include detailed examples of 2 past projects **(up to 2 points),** experience acting as a construction project manager on federal government construction projects **(up to 3 points)** and training/education **(up to 1 point).** A total of two (2) pages (letter size) maximum for this criteria.		6
4	The Proponent to provide their construction schedule for this project, from award to final completion, detailing major milestones, critical path elements, and associated timelines. Schedule evaluation will be based on whether it meets the completion date noted in the tender documents **(up to 2 points),** and if the tasks and associated timelines demonstrate the contractor understands the scope of work **(up to 3 points).** A total of two pages (tabloid size) maximum for this criteria.		5
	Total		25

Include this table with your proposal and indicate the proposal page where the information can be found.

Evaluation and Rating

Financial Proposal will remain sealed and only the technical components of the proposals considered responsive will be reviewed, evaluated and rated by an NRC Evaluation Board in accordance with the criteria listed in the evaluated technical criteria table.

No further consideration will be given to proponents not achieving the pass mark of 17.5 out of 25 (70%). The successful Bidder shall be the one who accumulates the highest combined score of the technical assessment (40%) and tendered amount (60%), as shown below:

TABLE A	Bidder #1	Bidder #2	Bidder #3
Technical score	18 out of 25	20 out of 25	23 out of 25
Tendered amount	$190,000	$200,000	$210,000

For information only:

	Technical score (40%)	Tendered amount score (60%)	Final score
Bidder #1	18/25 X 40(%) = 28.8	$\frac{190\text{ k}}{190\text{ k}} \times 60(\%) = 60$	= 88.8
Bidder #2	20/25 X 40(%) = 32	$\frac{190\text{ k}}{200\text{ k}} \times 60(\%) = 57$	= 89
Bidder #3	23/25 X 40(%) = 36.8	$\frac{190\text{ k}}{210\text{ k}} \times 60(\%) = 54.3$	= 91.1 (successful bid)

1. GENERAL

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

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

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

2. MANDATORY SITE VISIT

It is mandatory that the bidder attends one of the site visits at the designated date and time. At least one representative from proponents that intend to bid must attend.

The site visits will be held on June 11th and June 12th 2024 at **10:00am**. Meet Nick Becker at 1200 Montreal Road, Building M50, Main Entrance, 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 11th, 2024, 14:00

4. TENDER RESULTS

Following the Tender closing, proposals will be evaluated and notice of individual results will be sent by email 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: https://www.tpsgc-pwgsc.gc.ca/esc-src/msi-ism/index-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. WSIB (WORKPLACE SAFETY AND INSURANCE BOARD)

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

7. OFFICE OF THE PROCUREMENT OMBUDSMAN

1. Clause for solicitation documents and regret letters for unsuccessful bidders

   The Office of the Procurement Ombudsman (OPO) was established by the Government of Canada to provide an independent venue for Canadian bidders to raise complaints regarding the award of federal contracts under $25,300 for goods and under $101,100 for services. Should you have any issues or concerns regarding the award of a federal contract below these dollar amounts, contact OPO by e-mail at boa.opo@boa-opo.gc.ca, by telephone at 1-866-734-5169, or by web at www.opo-boa.gc.ca. For more information about OPO, including the available services, please visit the OPO website.

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 complainant respecting the administration of the 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.

   To file a complaint, the Office of the Procurement Ombudsmai1 may be contacted by e-mail at boa.opo@boa-opo.gc.ca, by telephone at 1-866-734-5169, or by web at www.opo-boa.gc.ca.

3. Dispute Resolution

   The Parties agree to make every reasonable eff01i, in good faith, to settle amicably all disputes or claims relating to or arising from the Contract, through negotiations between the Parties' representatives authorized to settle. If the Parties do not reach a settlement within 10 working days, each party hereby consents to fully participate in ai1d bear the cost of mediation led by the Procurement Ombudsman pt1rsuai1t to Subsection 22.1(3)(d) of the Department of Public Work and Government Services Act and Section 23 of the Procurement Ombudsman Regulations.

   The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169, by e-mail at boa.opo@boa-opo.gc.ca, or by web at www.opo-boa.gc.ca.

The Departmental Representative or his designate for this project is: Nick Becker
Nicholas.Becker@nrc-cnrc.gc.ca
Telephone: (343) 553-9461

Contracting Authority for this project is: Collin Long
Collin.Long@nrc-cnrc.gc.ca

INSTRUCTIONS TO BIDDERS

Article 1 – Receipt of Tender

1a) Tender must be received **by email only** not later than the specified tender closing time. Electronic bids received after the indicated closing time - NRC servers received time - will be irrevocably rejected. Bidders are urged to send their proposal sufficient time in advance of the closing time to prevent any technical issues. NRC will not be held responsible for bids sent before closing time but received by the NRC servers after the 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 **email only** provided that such amendments are received not later than the specified tender closing time.

1d) Any amendments to the tender which are transmitted by **email only** must be signed and must clearly identify the tenderer.

All such amendments are to be addressed to:
National Research Council of Canada
Collin Long, Senior Contracting Officer

NRC.BidReceiving-ReceptiondesSoumissions.CNRC@nrc-cnrc.gc.ca

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 colored 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 tenderer.

4) Tenders must be based on the plans, specifications and tender documents provided.

5) A proposal submitted by a bidder who's Board of Directors or proprietor (s) are in majority the same as a former vendor who has declared bankruptcy while performing work for NRC over the last 7-years from the date of issuance of this RFP may be rejected and not eligible for award at NRC's sole discretion. In such case, NRC will advise the ineligible proponent(s).

6) A proposal submitted by a bidder who has had a previous contracts cancelled by NRC due to lack of performance within 3 years from the issuance date of this RFP may be rejected and not eligible for award at NRC's sole discretion. In such case, NRC will advise the ineligible proponent (s).

7) If there is discrepancy between the English version and the French version of this document and any of the attachments and amendments, the English version will takes precedence.

8) The Council does not bind itself to accept the lowest or any tender.

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 **by email only**:
National Research Council Canada

NRC.BidReceiving-ReceptiondesSoumissions.CNRC@nrc-cnrc.gc.ca

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) bonds of the Government of Canada, or bonds unconditionally guaranteed as to principal and interest by the Government of Canada; **OR**

ii) 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.

1c) 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 bond or E-bond Security must be in the ORIGINAL form. PDF via email is acceptable. FAILURE TO PROVIDE THE REQUIRED BID SECURITY SHALL INVALIDATE THE TENDER.

1d) 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 amout 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.

1e) 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-58, Montreal Road, Ottawa, Ontario, K1A 0R6.

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.

1) 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-58, 1200 Montreal Road, Ottawa, Ontario, K1A 0R6, Canada, unsigned copies of the insurance requirements as covered by the Insurance Conditions of the General Specification.

Article 12 – Harmonized Sales Tax

1) The Harmonized Sales Tax (HST) which in 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 × net book value at date of import × number of months in Ontario × 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 × 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)

Manufacturing for Own Use

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)

Contracts with the Federal Government

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.

Exemptions

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

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

His Majesty the King, in right of Canada (referred to in the contract documents as "His 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, His 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 His 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

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, including addendum(s).

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:

A5 Unit Price Table

(23/01/2002)

5.1 His 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 His 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_____
Position **Seal**

of

on the_____

day of_____

Pages

END OF TABLE

1. SCOPE OF WORK

.1 Work under this contract covers the partial modernization of Elevator #1 and the complete modernization of Elevator #4 in the Council's Building M-50 of the National Research Council.

2. COMPLETION

.1 Complete all work within 34 weeks after receipt of notification of acceptance of tender.

3. GENERAL

.1 The word "provide" in this Specification means to supply and install.

.2 Provide items mentioned in either or the specification.

.3 Contractor must ensure that Elevator #1 and Elevator #4 are not out of service simultaneously. Contractor to carefully coordinate to ensure scheduling of work allows for the least amount of disruption to the building users as possible.

4. SPECIFIED ACCEPTABLE & ALTERNATIVE EQUIPMENT & MATERIALS

.1 Materials and equipment scheduled and/or specified on 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.

5. 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.

6. 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

7. 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 sub-contractor for this project has received a copy of the above list.

8. 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.

.4 Contractor costs associated with compliance with occupational health and safety requirements (Canada Labour Code) related to the Coronavirus/COVID-19 pandemic must

be included in the initial bid price. These costs may include, but are not limited to, the provision of additional personal protective equipment (PPE) and social distancing requirements as required to complete the project. Contractor must review and incorporate into initial bid pricing compliance with any Coronavirus/COVID-19 related health and safety guidance issued by the local Medical Officer of Health (applicable in the jurisdiction of the project), the Public Health Agency of Canada, Health Canada and/or the provincial Ministry of Health, as applicable.

9. SUB-TRADES

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

10. PERSONNEL SECURITY AND IDENTIFICATION

.1 All persons employed by the Contractor, or by any sub-contractor 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.

11. 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.

12. 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 Ten (10) days before the scheduled completion date, arrange to do an interim inspection with the Departmental Representative.

13. 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 assumes responsibility for recording and distributing minutes.

14. SHOP DRAWINGS

.1 Submit to Departmental Representative for review, shop drawings, product data and samples specified within two (2) weeks 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 on a one (1) week basis 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 one (1) electronic copy of all shop drawings and product data and sample~~s~~ 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.

15. 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.

16. 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.

17. WORK & MATERIALS SUPPLIED BY OWNER

.1 Work and materials not included in this contract are described 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.

18. 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 Provide snow clearing and removal as required during the contract period.

.7 Make good any damage and clean up dirt, debris, etc., resulting from Contractor's use of existing roads.

19. USE OF SITE

.1 Restrict operations on the site to the areas approved by the Departmental Representative

.2 The Contractor is to minimize their movements within the building other than to perform Tasks directly related to the Project.

.3 Locate all temporary structures, equipment, storage, etc., to the designated areas.

.4 Restrict parking to the designated areas.

20. 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.

21. 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.

22. 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.

23. 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.

24. 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, 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 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.

25. 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.

26. 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.

27. 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.

28. LAYOUT OF WORK

.1 Location of equipment, fixtures, outlets and openings 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.

29. DISCREPANCIES & INTERFERENCES

.1 Prior to the start of the work, examine 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.

30. 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.

31. 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 $10^{o}C$ ($50^{o}F$) or higher where specified as soon as finishing work is commenced and maintain until acceptance by the Departmental Representative.

.1 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.

32. 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.

33. 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.

34. FASTENING DEVICES

.1 Do not use explosive actuated tools

.2 Do not use any kind of impact or percussion tool without first obtaining permission from the Departmental Representative.

35. 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.

36. DRAINAGE

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

37. ENCLOSURE OF STRUCTURES

.1 Construct and maintain all temporary enclosures as required to protect foundations, sub-soil, concrete, masonry, etc., 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.

38. 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.

39. 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.

40. INSPECTION OF BURIED OR CONCEALED SERVICES

.1 Prior to concealing any services that are installed, ensure that all inspection bodies concerned, including NRC, have inspected the work and have witnessed all tests. Failure to do so may result in exposing the services again at the Contractor's expense.

41. TESTING

.1 On completion, or as required by local authority inspectors and/or Departmental Representative during progress of work and before any services are covered up and flushing is complete, test all installations in the presence of the Departmental Representative.

.2 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 two (2) bilingual copies of maintenance manuals or two (2) English and two (2) French maintenance manuals and one (1) electronic copy of same 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. Site Specific Safety Plans must also be robust enough to address any abnormal occurrences, such as, but not limited to: pandemics (COVID-19 or a similar), fire, flooding, inclimate weather or other environmental anomalies.

.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 sub-contractors 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 sub-contractors 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**

3. When reporting a fire by phone, give the location of fire, building number and be prepared to verify location.
4. 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:

1. Kettle area - 1-20 lb. ABC Dry Chemical; and
2. Roof - 1-20 lb. ABC Dry Chemical at each open flame location.

.3 Provide fire extinguishers equipped as below:

1. Pinned and sealed;
2. With a pressure gauge; and
3. 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 two (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 Fire and Smoke Hazard Management:

.1 Contractor shall identify “Designated Roofing Marshall” for duration of construction activities. “Designated Roofing Marshall” shall be responsible for the following:

.1 Perform NRC Daily Fire and Smoke Risk Hazard Assessment each day prior to commencement of roofing activities.

.2 Provide completed NRC Daily Fire and Smoke Risk Hazard Assessment to Departmental Representative every morning by email prior to commencement of roofing activities.

.3 Follow behind any torch activities with a thermal scanner periodically to identify any hot spots and rectify immediately. Intervals for periodic thermal scanning to be as follows: Open Field installation – every 60 minutes, and for Detail areas (eg: curbs, parapets, pipe enclosures, etc.) – every 20 minutes.

.2 Any proposed changes to "Designated Roofing Marshall" must be reviewed and approved by Departmental Representative.

.5 Store all combustible roofing materials at least 3m (10 feet) away from any structure.

.6 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^{o}C (100^{o}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. QUESTINONS 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 SECTIONS

.1 Section 00 10 00 - General Instructions Ontario

1.2 ADMINISTRATIVE

.1 Submit to Departmental Representative for review, shop drawings, product data and samples specified within two weeks after contract award.

- .1 Submit promptly and in orderly sequence to not cause delay in Work
- .2 Failure to submit in the prescribed time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Ontario, Canada.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 5 week days for Departmental Representative's review of each submission.

.5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.9 After Departmental Representative's review, distribute copies.

.10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within [3] years of date of contract award for project.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit electronic copies of manufacturer’s instructions for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.17 Delete information not applicable to project.

.18 Supplement standard information to provide details applicable to project.

.19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.20 The review of shop drawings by National Research Council Canada (NRC) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that NRC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Departmental Representative's business address.

.3 Notify Departmental Representative Engineer Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 MOCK-UPS

.1 Construct field mock-ups at locations acceptable to Departmental Representative.

.2 Reviewed mock-ups will become standards of workmanship and material against which installed work will be checked on the project.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 This Section includes requirements for management of construction waste and disposal, which forms the Contractor's commitment to reduce and divert waste materials from landfill and includes the following:

.1 Preparation of a Draft Construction Waste Management Plan that will be used to track the success of the Construction Waste Management Plan against actual waste diversion from landfill.

.2 Preparation of monthly progress reports indicating cumulative totals representing progress towards achieving diversion and reduction goals of waste materials away from landfill and identifying any special programs, landfill options or alternatives to landfill used during construction.

.3 Preparation of a Construction Waste Management Report containing detailed information indicating total waste produced by the project, types of waste material and quantity of each material, and total waste diverted and diversion rates indicated as a percentage of the total waste produced.

.2 Owner has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors be employed by the Contractor.

1.2 RELATED REQUIREMENTS

.1 [Section 00 10 00 – General Instructions]

.2 [Section 02 42 00 – Removal and Salvage of Construction Material]

1.3 REFERENCE STANDARDS

.1 ASTM International (ASTM)

.1 ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program

.2 Canada Green Building Council (CaGBC)

.1 LEED Reference Guide for Building Design and Construction, Version 4

.3 Recycling Certification Institute (RCI):

.1 RCI Certification Construction and Demolition Materials Recycling

1.4 DEFINITIONS

.1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.

.2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, re-modeling, repair and demolition operations.

.3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.

.4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.

.5 Non-toxic: Not poisonous to humans either immediately or after a long period of exposure.

.6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

.7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

.8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.

.9 Return: To give back reusable items or unused products to vendors for credit.

.10 Reuse: To reuse a construction waste material in some manner on the project site.

.11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

.12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.

.13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

.14 Toxic: Poisonous to humans either immediately or after a long period of exposure.

.15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

.16 Volatile Organic Compounds (VOC’s): Chemical compounds common in and emitted by many building products over time through outgassing:

.1 Solvents in paints and other coatings;

.2 Wood preservatives; strippers and household cleaners;

.3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

.4 When released, VOC’s can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

.18 Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the project, and ensure that requirements of the Construction Waste Management Plan are followed.

.2 Preconstruction Meeting: Arrange a pre-construction meeting in accordance with Section 01 10 00 – General Instructions before starting any Work of the Contract attended by the Owner, Contractor, affected Subcontractor's and Departmental Representative to discuss the Contractor's Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide required information in accordance with Section 01 10 00 – General Instructions.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Draft Construction Waste Management Plan (Draft CWM Plan): Submit to Departmental Representative a preliminary analysis of anticipated site generated waste by listing a minimum of five (5) construction or demolition waste streams that have potential to generate the most volume of material indicating methods that will be used to divert construction waste from landfill and source reduction strategies; Departmental Representative will provide commentary before development of Contractor's Construction Waste Management Plan.

.2 Construction Waste Management Plan (CWM Plan): Submit a CWM Plan for this project prior to any waste removal from site and that includes the following information:

.1 Material Streams: Analysis of the proposed jobsite waste being generated, including material types and quantities forming a part of identified material streams in the Draft CWM Plan; materials removed from site destined for alternative daily cover at landfill sites and land clearing debris cannot be considered as contributing to waste diversion and will be included as a component of the total waste generated for the site.

.2 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into CWM Plan.

.3 Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the course of the project, and the proposed local market for each material.

.4 Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification; energy will be considered as a viable alternative diversion strategy for these materials where facilities

exist and are operated in accordance with LEED Construction and Demolition Waste Management requirements.

.5 Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the project.

.6 Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

.7 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

1.7 PROJECT CLOSEOUT SUBMISSIONS

.1 Record Documentation: Submit as constructed information in accordance with Section 01 10 00 – General Instructions as follows:

.1 Construction Waste Management Report (CWM Report): Submit a CWM Report for this project in a format that includes the following information:

.1 Accounting: Submit information indicating total waste produced by the project.

.2 Composition: Submit information indicating types of waste material and quantity of each material.

.3 Diversion Rate: Submit information indicating total waste diverted from landfill as a percentage of the total waste produced by the project.

.4 Transportation Documentation and Diversion Documentation: Submit copies of transportation documents or shipping manifests indicating weights of materials, and other evidence of disposal indicating final location of waste diverted from landfill and waste sent to landfill.

.5 Multiple Waste Hauling: Compile all information into a single CWM Report where multiple waste hauling and diversion strategies were used for the project.

1.8 QUALITY ASSURANCE

.1 Resources for Development of Construction Waste Management Report (CWM Report): The following sources may be useful in developing the Draft Construction Waste Management Plan:

.1 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into CWM Plan.

.2 Waste-to-Energy Systems: Investigate local waste-to-energy incentives where systems for diverting materials from landfill for reuse or recycling are not available.

.3 Municipal Garbage & Recycling Waste Websites:

.1 [Ontario Region

.1 London

EnviroDepots | City of London

.2 Mississauga

How to sort your waste - Region of Peel (peelregion.ca)

.3 National Capital Region (City of Ottawa)

Garbage and recycling | City of Ottawa

.2 Quebec Region

.1 Boucherville

Accueil | Ville de Longueuil

.2 Montreal

Get details about bulky items and construction debris collections | Ville de Montréal (montreal.ca)

.3 Saguenay

Demolition Waste Management | Demex-Centrem group (groupedemexcentrem.com)

.3 East Region

.1 Charlettetown

Sorting Guide - Island Waste Management Corporation | Prince Edward Island Recycling, Compost and Waste Disposal (iwmc.pe.ca)

.2 Fredericton

Construction and Demolition - Fredericton Region Solid Waste : Fredericton Region Solid Waste (frswc.ca)

.3 Halifax

Halifax C&D Recycling (halifaxcdrecycling.ca)

.4 Ketch Harbour

Halifax C&D Recycling (halifaxcdrecycling.ca)

.5 St. John’s

Accepted Material at RHB (Commercial/ Municipal Users) | Robin Hood Bay Facility | Garbage Disposal | St. John's

.4 West Region

.1 Edmonton
Material Recovery Facility (MRF) | KBL Environmental

.2 Penticton
https://keremeos.civicweb.net/document/3069/

.3 Saskatoon
Construction/Demolition/Fencing — Loraas Disposal North

.4 Victoria
Reno & Demo Waste | CRD

.5 Vancouver
Construction and demolition waste disposal | City of Vancouver

.6 Winnipeg
What goes where? Use the Recyclepedia - MyUtility - Water and Waste Department - City of Winnipeg / MesServices – Service des eaux et des déchets – Ville de Winnipeg]

1.9 DELIVERY, STORAGE AND HANDLING

.1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.

.2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:

.1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.

.2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.

.3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 OBJECTIVE

.1 The Federal Sustainable Development Strategy (FSDS) presents the Government of Canada's sustainable development goals and targets, as required by the *Federal Sustainable Development Act.* In keeping with the purpose of this Act – to provide the legal framework for developing and implementing a Federal Sustainable Development Strategy that will make environmental decision-making more transparent and accountable to Parliament – National Research Council (NRC) supports the goals laid out in the FSDS through the activities described in our

Departmental Sustainable Development Strategy (DSDS). NRC's DSDS waste management target is as follows:

.1 Divert at least 90% (by weight) of all construction and demolition waste from landfills (striving to achieve 100% by 2030).

.2 Project Waste Diversion Target: 90%.

3.2 (CWM PLAN) IMPLEMENTATION

.1 Manager: Contractor is responsible for designating an on-site party or parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the project.

.2 Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor, the Owner, the Departmental Representative and other site personnel as required to maintain CWM Plan.

.3 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the project to Subcontractor's at appropriate stages of the project.

.4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:

.1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

.2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.

.5 Progressive Documentation: Submit a monthly summary of waste generated by the project to ensure that waste diversion goals are on track with project requirements:

.1 Submission of waste summary can coincide with application for progress payment, or similar milestone event as agreed upon between the Contractor and Departmental Representative.

.2 Monthly waste summary shall contain the following information:

.1 The amount in tonnes or m3 and location of material landfilled;

.2 The amount in tonnes or m3 and location of materials diverted from landfill; and

.3 Indication of progress based on total waste generated by the project with materials diverted from landfill as a percentage.

3.3 SUBCONTRACTOR'S RESPONSIBILITY

.1 Subcontractor's shall cooperate fully with the Contractor to implement the CWM Plan.

.2 Failure to cooperate may result in the Owner not achieving their environmental goals, and may result in penalties being assessed by the Contractor to the responsible Subcontractor's.

3.4 CONSTRUCTION WASTE MANAGEMENT FORMS

.1 Departmental Representative will provide Contractor will NRC Waste Management and Disposal Tracking Forms (sample provided below) for recording management of construction waste.

.2 Contractor shall utilize these forms for all waste management and disposal tracking for the duration of the project, and is responsible for maintaining current up to date records at all times during construction.

.3 Contractor is responsible to ensure all waste management tracking forms, weigh-bills, donation receipts, and summary information are incorporated into Operational and Maintenance Manuals upon construction completion in accordance with 01 10 00 – General Instructions.

END OF SECTION

WASTE AUDIT worksheet for NRC Construction, Renovation and Demolition Projects

Worksheet for: Total Inventory ☐ Specific Stage ☐ Individual Floor ☐

Create one worksheet for the entire project or multiple worksheets for each stage of the project, or per floor (where needed). Mark each worksheet accordingly

Project Name	
Project Type (Construction, Renovation or Demolition)	
Area (sq. m)	
Site Address	
Contact Person & Telephone	
Date	

Add or delete materials as project requires

WASTE CATEGORY AND MATERIAL TYPE	Units	Total Units	Weight (kg) per unit of measurement	Estimated Weight (Metric Tonnes)	Potential Reuse (Metric Tonnes)	Potential Recycle (Metric Tonnes)	Potential Landfill (Metric Tonnes)	For Project Planning Purposes (i.e. number of bins required) Volume (cubic yards)
Masonry and Pavement								
Asphalt (cu. m.)	cu. m.		2400.00	0.00				
Concrete (walls, floors, stairs)	cu. m.		2400.00	0.00				
Brick, block, etc.	cu. m.		1840.00	0.00				
Stone (foundation)	cu. m.		1473.80	0.00				
Glass masonry	cu. m.			0.00				
Marble	cu. m.		2563.00	0.00				
Granite	cu. m.		2750.00	0.00				
Clay tile	cu. m.			0.00				
Other	cu. m.			0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Walls and Ceilings								
Drywall (12.5 mm)	sq. m.		9.74	0.00				
Drywall (19 mm)	sq. m.		12.25	0.00				
Cellulose insulation	sq. m.		6.41	0.00				
Fiberglass insulation	sq. m.		6.41	0.00				
Solid SM insulation	sq. m.		11.54	0.00				
Ceiling tile (19 mm standard)	sq. m.		6.82	0.00				
Glass (5 - 6 mm)	sq. m.			0.00				
Acoustic composite (ceilings, walls)	sq. m.		0.30	0.00				
Other	sq. m.			0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Metal								
Steel (structural, stairs, fabrications, joists, deck, siding)	weight		600.00	0.00				
Aluminum (structural, siding)			2700.00	0.00				
Light Metal				0.00				
Studs	lm. of wall			0.00				
Ceiling grid	sq. m.		1.41	0.00				
Steel mesh				0.00				
Miscellaneous				0.00				
Other				0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Mechanical								
HVAC								
Solid ducts	weight		26238.00	0.00				
Flex ducts	weight		5180.00	0.00				
Metal diffuser (600 X600)	each			0.00				
Light diffuser (boot only)	each			0.00				
Plastic grilles (600 X 600)	each			0.00				
VAV boxes	weight			0.00				
Heat coils	weight			0.00				
A/C units	weight		90.00	0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Plumbing								
Copper piping (12.5 to 19mm)	lin. m.		1833.30	0.00				
Steel piping (38 to 50mm)	lin. m.		220.00	0.00				
Plastic piping (38 to 50mm)	lin. m.			0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Fixtures								
Sinks (ceramic/porcelain)	each		10.00	0.00				
Sinks (metal)	each		10.00	0.00				
Faucets	each			0.00				
Water Closet	each		46.00	0.00				
Urinals (wall hung)	each		29.00	0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Other								
			TOTAL	0.00	0.00	0.00	0.00	0
Windows and Doors								
Doors								
Wood (solid or hollow core)	each		20.00	0.00				
Metal (hollow metal)	each		30.00	0.00				
Garage	each		135.00	0.00				
Frame (wood)	each		23.33	0.00				
Frame (metal)	each		2.33	0.00				
Windows				0.00				
Wood frame	each		216.36	0.00				
Plastic frame	each		125.10	0.00				
Aluminum frame	each		216.67	0.00				
Door Hardware				0.00				
Locksets	each		2.50	0.00				
Hinges, plates, stops, etc.	each		2.50	0.00				
Other (closers, operators, etc.)	each		2.50	0.00				
Other				0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Wood								
Rough (crating, timber, etc.)	weight			0.00				
Dimension (3 m studs)	each		2.83	0.00				
Plywood (17mm)	sq. m.		0.08	0.00				
Hardwood (floor)	sq. m.		0.02	0.00				
Other				0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Millwork and Finish Carpentry								
Baseboards and casing (50 mm ht.)	each			0.00				
Lower cabinets (c/w doors)	each		44.10	0.00				
Upper cabinets (c/w doors)	each			0.00				
Counters (9' sections)	each		45.65	0.00				
Other				0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Flooring								
Carpet (roll)	sq. m.		2.44	0.00				
Carpet tile	sq. m.		2.98	0.00				
Sheet vinyl and linoleum	sq. m.		2.98	0.00				
Rubber cove or carpet base	lin. m.		0.52	0.00				
Terrazzo - 25 mm	sq. m.		0.02	0.00				
Ceramic Tiles	sq. m.		0.21	0.00				
Other				0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Electrical								
Wiring								
Data	weight			0.00				
Electrical (aluminum, copper, iron, etc)	weight			0.00				
Junction and outlet boxes (standard)	each		3800.00	0.00				
Cover plates	each			0.00				
Electrical panels	weight			0.00				
Conduit (25 mm)	lin. m.			0.00				
Conduit (50 mm)	lin. m.			0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Lighting								

Fluorescent fixture (600 X 1200)	each		0.82	0.00				
Fluorescent fixture (300 X 1200)	each		0.08	0.00				
Ballast	each		4432.00	0.00				
Lamps	each			0.00				
Complete fixture (600 X 1200)	each			0.00				
Complete fixture (300 X 1200)	each			0.00				
Emergency battery lights	each		6.66	0.00				
Exit lights	each		1.00	0.00				
Fire bells/alarms	each			0.00				
Micellaneous (switches, sensors, etc.)	each		600.00	0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Other								
			TOTAL	0.00	0.00	0.00	0.00	0
Roofing								
Shingles - asphalt	sq. m.		10.72	0.00				
Tin	sq. m.		616.76	0.00				
Copper	sq. m.			0.00				
Waterproof EDPM	sq. m.		796.67	0.00				
Waterproof PVC	sq. m.			0.00				
Tar and gravel	sq. m.		608.85	0.00				
Other	sq. m.			0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Specialties & Miscellaneous								
Office Furnishings								
Furniture (workstations and chairs)	each							
Shelving	each							
Bulletin and white boards	each							
Building Furnishings								
Window Coverings (rolling shutters, blinds)	each							
Signs	each							
Lockers	each							
Metal partition (toilet)	each							
Plastic partition (toilet)	each							
Stud-type partition (demountable)	each							
Specilaized Equipment								
Food service equipment	each							
Parking control equipment	each							
Waste/cleaning equipment	each							
Refrigeration equipment	each							
Lifts	each							
Elevators	each							
Escalators	each							
Dumbwaiters	each							
Communications	each							
Telecom raceways/cables	each							
Terminals and connectors	each							
Other	each							
			TOTAL	0.00	0.00	0.00	0.00	0
Packaging								
Cardboard Packaging	weight		60.00	0.00				
Plastic packaging	weight			0.00				
Other				0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
Other								
				0.00				
				0.00				
				0.00				
				0.00				
				0.00				
			TOTAL	0.00	0.00	0.00	0.00	0
			TOTAL	**0.00**	**0.00**	**0.00**	**0.00**	**0**

NRC Construction, Renovation and Demolition PRE-WASTE AUDIT SUMMARY

Project Name	0
Project Type (Construction, Renovation or Demolition)	0
Area (sq. m)	0
Site Address	0
Contact Person & Telephone	0
Date	

Waste Audit Summary

WASTE CATEGORY	Estimated Quantity Generated (Metric Tonnes)	Potential Quantity (Metric Tonnes)			Potential Diversion Rate
		Reuse	Recycle	Landfill	
Masonry and Pavement	0.00	0.00	0.00	0.00	#DIV/0!
Walls and Ceilings	0.00	0.00	0.00	0.00	#DIV/0!
Metal	0.00	0.00	0.00	0.00	#DIV/0!
Mechanical:					
HVAC	0.00	0.00	0.00	0.00	#DIV/0!
Plumbing	0.00	0.00	0.00	0.00	#DIV/0!
Fixtures	0.00	0.00	0.00	0.00	#DIV/0!
Other	0.00	0.00	0.00	0.00	#DIV/0!
Windows and Doors	0.00	0.00	0.00	0.00	#DIV/0!
Wood	0.00	0.00	0.00	0.00	#DIV/0!
Millwork and Finish Carpentry	0.00	0.00	0.00	0.00	#DIV/0!
Flooring	0.00	0.00	0.00	0.00	#DIV/0!
Electrical:				0.00	#DIV/0!
Wiring	0.00	0.00	0.00		
Lighting	0.00	0.00	0.00	0.00	#DIV/0!
Other	0.00	0.00	0.00	0.00	#DIV/0!
Roofing	0.00	0.00	0.00	0.00	#DIV/0!
Specialties & Miscellaneous	0.00	0.00	0.00	0.00	#DIV/0!
Packaging	0.00	0.00	0.00	0.00	#DIV/0!
Other	0.00	0.00	0.00	0.00	#DIV/0!
TOTALS	**0.00**	**0.00**	**0.00**	**0.00**	**#DIV/0!**

NRC Construction, Renovation and Demolition WASTE REDUCTION WORK PLAN

Project Name	0
Project Type (Construction, Renovation or Demolition)	0
Area (sq. m)	0
Site Address	0
Contact Person & Telephone	0
Date	

WASTE CATEGORY AND MATERIAL	Estimated Quantity (Metric Tonnes)	Proposed Action to Reduce, Reuse or Recycle Material (including end-destination)	Projected Quantity (Metric Tonnes)		
			Reuse	Recycle	Landfill
Masonry and Pavement					
Asphalt (cu. m.)	0.00				0.00
Concrete (walls, floors, stairs)	0.00				0.00
Brick, block, etc.	0.00				0.00
Stone (foundation)	0.00				0.00
Glass masonry	0.00				0.00
Marble	0.00				0.00
Granite	0.00				0.00
Clay tile	0.00				0.00
Other	0.00				0.00
Walls and Ceilings					
Drywall (12.5 mm)	0.00				0.00
Drywall (19 mm)	0.00				0.00
Cellulose insulation	0.00				0.00
Fiberglass insulation	0.00				0.00
Solid SM insulation	0.00				0.00
Ceiling tile (19 mm standard)	0.00				0.00
Glass (5 - 6 mm)	0.00				0.00
Acoustic composite (ceilings, walls)	0.00				0.00
Other	0.00				0.00
Windows and Doors					
Doors					
Wood (solid or hollow core)	0.00				0.00
Metal (hollow metal)	0.00				0.00
Garage	0.00				0.00
Windows	0.00				0.00
Wood frame	0.00				0.00
Plastic frame	0.00				0.00
Aluminum frame	0.00				0.00
Door Hardware	0.00				0.00
Locksets	0.00				0.00
Hinges, plates, stops, etc.	0.00				0.00
Other (closers, operators, etc.)	0.00				0.00
Other	0.00				0.00
Wood					
Rough (crating, timber, etc.)	0.00				0.00
Dimension (3 m studs)	0.00				0.00
Plywood (17mm)	0.00				0.00
Hardwood (floor)	0.00				0.00
Other	0.00				0.00
Millwork and Finish Carpentry					
Baseboards and casing (50 mm ht.)	0.00				0.00
Lower cabinets (c/w doors)	0.00				0.00
Upper cabinets (c/w doors)	0.00				0.00
Counters	0.00				0.00
Other	0.00				0.00
Flooring					
Carpet (roll)	0.00				0.00
Carpet tile	0.00				0.00
Sheet vinyl and linoleum	0.00				0.00
Rubber cove or carpet base	0.00				0.00
Terrazzo - 25 mm	0.00				0.00
Ceramic Tiles	0.00				0.00
Other	0.00				0.00
Metal					
Steel (structural, stairs, fabrications, joists, deck, siding)	0.00				0.00
Aluminum (structural, siding)	0.00				0.00
Light Metal	0.00				0.00
Studs	0.00				0.00
Ceiling grid	0.00				0.00
Miscellaneous	0.00				0.00
Other	0.00				0.00
Mechanical					
HVAC					
Solid ducts	0.00				0.00
Flex ducts	0.00				0.00
Metal diffuser	0.00				0.00
Light diffuser (boot only)	0.00				0.00
Plastic grilles	0.00				0.00
VAV boxes	0.00				0.00
Heat coils	0.00				0.00
A/C units, fan coil units, exhaust fans	0.00				0.00
Plumbing	0.00				0.00
Copper piping (12.5 to 19mm)	0.00				0.00
Steel piping (38 to 50mm)	0.00				0.00
Plastic piping (38 to 50mm)	0.00				0.00
Fixtures	0.00				0.00
Sinks (ceramic/porcelain)	0.00				0.00
Sinks (metal)	0.00				0.00
Faucets	0.00				0.00
Water Closet	0.00				0.00
Urinals (wall hung)	0.00				0.00
Other (drinking water fountain, insulation)	0.00				0.00
Electrical					

Wiring					
Data	0.00				0.00
Electrical (aluminum, copper, iron, etc)	0.00				0.00
Junction and outlet boxes (standard)	0.00				0.00
Cover plates	0.00				0.00
Electrical panels	0.00				0.00
Conduit (25 mm)	0.00				0.00
Conduit (50 mm)	0.00				0.00
Lighting					
Fluorescent fixture (600 X 1200)	0.00				0.00
Fluorescent fixture (300 X 1200)	0.00				0.00
Ballast	0.00				0.00
Lamps	0.00				0.00
Complete fixture (600 X 1200)	0.00				0.00
Complete fixture (300 X 1200)	0.00				0.00
Emergency battery lights	0.00				0.00
Exit lights	0.00				0.00
Fire bells/alarms	0.00				0.00
Micellaneous (switches, sensors, etc.)	0.00				0.00
Other	0.00				0.00
Roofing					
Shingles - asphalt	0.00				0.00
Tin	0.00				0.00
Waterproof EDPM	0.00				0.00
Waterproof PVC	0.00				0.00
Tar and gravel	0.00				0.00
Other	0.00				0.00
Specialties & Miscellaneous					
Office Furnishings	0.00				0.00
Furniture (workstations and chairs)	0.00				0.00
Shelving & Filing Cabinets	0.00				0.00
Bulletin and white boards	0.00				0.00
Building Furnishings	0.00				0.00
Window Coverings (rolling shutters, blinds)	0.00				0.00
Signs	0.00				0.00
Lockers	0.00				0.00
Metal partition (toilet)	0.00				0.00
Plastic partition (toilet)	0.00				0.00
Stud-type partition (demountable)	0.00				0.00
Specilaized Equipment	0.00				0.00
Food service equipment	0.00				0.00
Parking control equipment	0.00				0.00
Waste/cleaning equipment	0.00				0.00
Refrigeration equipment	0.00				0.00
Lifts	0.00				0.00
Elevators	0.00				0.00
Escalators	0.00				0.00
Dumbwaiters	0.00				0.00
Communications	0.00				0.00
Telecom raceways/cables	0.00				0.00
Terminals and connectors	0.00				0.00
Other	0.00				0.00
Packaging					
Cardboard Packaging	0.00				0.00
Plastic packaging	0.00				0.00
Other	0.00				0.00
Other					
	0.00				0.00
	0.00				0.00
	0.00				0.00
	0.00				0.00
	0.00				0.00
					0.00
Total	**0.00**		**0.00**	**0.00**	**0.00**

NRC Construction, Renovation and Demolition WASTE REDUCTION WORK PLAN SUMMARY

Project Name	0
Project Type (Construction, Renovation or Demolition)	0
Area (sq. m)	0
Site Address	0
Contact Person & Telephone	0
Date	

Waste Management Summary								
WASTE CATEGORY	**Estimated Quantity (Metric Tonnes)**	**Proposed Action to Reduce, Reuse or Recycle Material (including end-destination)**	**Projected Quantity (Metric Tonnes)**			**Potential Diversion Rate**	**Start date**	**End Date**
			Reuse	**Recycle**	**Landfill**			
Masonry and Pavement	0.00		0.00	0.00	0.00	#DIV/0!		
Walls and Ceilings	0.00		0.00	0.00	0.00	#DIV/0!		
Windows and Doors	0.00		0.00	0.00	0.00	#DIV/0!		
Wood	0.00		0.00	0.00	0.00	#DIV/0!		
Millwork and Finish Carpentry	0.00		0.00	0.00	0.00	#DIV/0!		
Flooring	0.00		0.00	0.00	0.00	#DIV/0!		
Metal	0.00		0.00	0.00	0.00	#DIV/0!		
Mechanical:								
HVAC	0.00		0.00	0.00	0.00	#DIV/0!		
Plumbing	0.00		0.00	0.00	0.00	#DIV/0!		
Fixtures	0.00		0.00	0.00	0.00	#DIV/0!		
Other	0.00		0.00	0.00	0.00	#DIV/0!		
Electrical:								
Wiring	0.00		0.00	0.00	0.00	#DIV/0!		
Lighting	0.00		0.00	0.00	0.00	#DIV/0!		
Other	0.00		0.00	0.00	0.00	#DIV/0!		
Roofing	0.00		0.00	0.00	0.00	#DIV/0!		
Specialties & Miscellaneous	0.00		0.00	0.00	0.00	#DIV/0!		
Packaging	0.00		0.00	0.00	0.00	#DIV/0!		
Other	0.00		0.00	0.00	0.00	#DIV/0!		
TOTAL	**0.00**		**0.00**	**0.00**	**0.00**	**#DIV/0!**		

NRC Construction, Renovation and Demolition WASTE MATERIAL TRACKING FORM
(Entries required for every load leaving the site)

Project Name	0
pe (Construction, Renovation or Demolition)	0
Area (sq. m)	0
Site Address	0
Contact Person & Telephone	0
Date	

Load #	Date	Time	Hauler	If Applicable:		Material Type(s)	Waybill # (if applicable)	Destination	Weight (metric Tonnes)				Comments
				Bin Size (yd^3)	Fill Level				Reuse	Recycling	Unspecified Diversion (Reuse or Recycling)	Landfill	
1	Dec 17/08	3:00pm	Waste Co.	20	3/4	Commingled Recyclates (metals, wood, concrete)	12345	Waste Co.					Waste sent to commingling recycling facility. Total weight and % diversion to be reported by hauler
2	Dec 17/08	4:00pm	Waste Co.	30	Full	Untreated Wood	12346	Waste Co.					Total weight to be reported by hauler
3	Dec 18/08	12:00pm	Waste Co.	20	Over Flowing	Miscellaneous Waste	12347	Landfill					Total weight to be reported by hauler
4	Dec 19/08	12:00pm	Man and His Truck	N/A	N/A	Doors	N/A	Resale					Totals weight estimated by hauler and PM
5													
6													
7													
8													
9													
10													

continue.....

NRC Construction, Renovation and Demolition FINAL DIVERSION REPORT

Project Name	0
Project Type (Construction, Renovation or Demolition)	0
Area (sq. m)	0
Site Address	0
Contact Person & Telephone	0
Date	

Material	Actual Weight Diverted (metric tonnes)		Final Destination and End-Use of Diverted Materials	Total Weight Landfilled (metric tonnes)	TOTAL WEIGHT (metric tonnes)	Diversion Rate
	Re-used	Recycled				
Masonry and Pavement					0	#DIV/0!
Walls and Ceilings					0	#DIV/0!
Metal					0	#DIV/0!
Mechanical:						
HVAC					0	#DIV/0!
Plumbing					0	#DIV/0!
Fixtures					0	#DIV/0!
Other					0	#DIV/0!
Windows and Doors					0	#DIV/0!
Wood					0	#DIV/0!
Millwork and Finish Carpentry					0	#DIV/0!
Flooring					0	#DIV/0!
Electrical:						
Wiring					0	#DIV/0!
Lighting					0	#DIV/0!
Other					0	#DIV/0!
Roofing					0	#DIV/0!
Specialties & Miscellaneous					0	#DIV/0!
Cardboard					0	#DIV/0!
Other Packaging					0	#DIV/0!
Mixed Recycling					0	#DIV/0!
General Waste					0	#DIV/0!
Other					0	#DIV/0!
TOTAL	0	0		0	0	#DIV/0!

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.

.2 Related Sections:

.1 Section 00 10 00 – General Instructions.

.2 Section 01 91 31 – Commissioning (Cx) Plan.

.3 Section 01 91 41 – Commissioning Training.

.4 Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 21142.

.5 Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 80127.

.3 Acronyms:

.1 Cx - Commissioning.

.2 EMCS - Energy Monitoring and Control Systems.

.3 O&M - Operation and Maintenance.

.4 PI - Product Information.

.5 PV - Performance Verification.

.6 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

.1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:

.1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.

.2 Ensure appropriate documentation is compiled into the Operation and Maintenance (O&M) manual.

.3 Effectively train O&M staff.

.2 Contractor to hire a third-party independent Commissioning Agent (Cx Agent) to manage the entire commissioning process.

.3 Departmental Representative assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required. Contractor’s independent third party Cx agent to perform and complete all Cx activities:

.1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.

.2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.

.4 Design Criteria: as per Departmental Representative. To meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

.1 Section 01 91 31 - Commissioning (Cx) Plan

.2 For Cx responsibilities refer to Section 01 91 31 - Commissioning (Cx) Plan.

.3 Cx to be a line item of Contractor's cost breakdown.

.4 Cx activities supplement field quality and testing procedures described in relevant technical sections.

.5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built system is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities includes transfer of critical knowledge to facility operational personnel.

.6 Departmental Representative will issue Interim Acceptance Certificate when:

.1 Completed Cx documentation has been received, reviewed for suitability and approved by Departmental Representative.

.2 Equipment, components and systems have been commissioned.

.3 O&M training has been completed.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

.1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.

.2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 PRE-CX REVIEW

.1 Before Construction:

.1 Review contract documents, confirm by writing to Departmental Representative.

.1 Adequacy of provisions for Cx.

.2 Aspects of design and installation pertinent to success of Cx.

.2 During Construction:

.1 Co-ordinate provision, location and installation of provisions for Cx.

.3 Before start of Cx:

.1 Have completed Cx Plan up-to-date.

.2 Ensure installation of related components, equipment, sub-systems, systems is complete.

.3 Fully understand Cx requirements and procedures.

.4 Have Cx documentation shelf-ready.

.5 Understand completely design criteria and intent and special features.

.6 Submit complete start-up documentation to Departmental Representative.

.7 Have Cx schedules up-to-date.

.8 Ensure systems have been cleaned thoroughly.

.9 Complete TAB procedures on systems, submit TAB reports to Departmental Representative for review and approval.

.10 Ensure "As-Built" system schematics are available.

.4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

.1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.

.2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 SUBMITTALS

.1 Submittals: in accordance with Section 00 10 00 – General Instructions.

.1 Submit no later than 4 weeks after award of Contract:

.1 Name of Contractor's independent third-party Cx agent.

.2 Draft Cx documentation.

.3 Preliminary Cx schedule.

.2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 8 weeks prior to start of Cx.

.3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 8 weeks prior to start of Cx.

.4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

.1 Refer to Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 21142 and Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 80127for requirements and instructions for use.

.2 Departmental Representative to review and approve Cx documentation.

.3 Provide completed and approved Cx documentation to Departmental Representative.

.4 Provide all missing Cx forms and submit to Departmental Representative for approval.

.5 Complete all Cx forms that are provided in Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 21142 and Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 80127 if information is missing.

1.9 COMMISSIONING SCHEDULE

.1 Provide detailed Cx schedule as part of construction schedule in accordance with Section 00 10 00 – General Instructions.

.2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:

.1 Approval of Cx reports.

.2 Verification of reported results.

.3 Repairs, retesting, re-commissioning, re-verification.

.4 Training.

1.10 COMMISSIONING MEETINGS

.1 Convene Cx meetings following project meetings and as required.

.2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.

.3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.

.4 At 60% construction completion stage: the independent third-party Cx agent is to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:

.1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.

.2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.

.5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.

.6 Meeting will be chaired by Contractor’s independent 3rd party Cx Agent, who will record and distribute minutes.

.7 Ensure subcontractors and relevant manufacturer representatives are present at 60% and subsequent Cx meetings and as required.

1.11 STARTING AND TESTING

.1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.12 WITNESSING OF STARTING AND TESTING

.1 Provide 14 days notice prior to commencement.

.2 Departmental Representative to witness of start-up and testing. Departmental Representative to witness Cx and perform point performance validation.

.3 Contractor's independent 3rd party Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.13 MANUFACTURER'S INVOLVEMENT

.1 Factory testing: manufacturer to:

- .1 Coordinate time and location of testing.
- .2 Provide testing documentation for approval by Departmental Representative.
- .3 Arrange for Departmental Representative to witness tests.
- .4 Obtain written approval of test results and documentation from Departmental Representative before delivery to site.

.2 Obtain manufacturer’s installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Departmental Representative.

- .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
- .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.

.3 Integrity of warranties:

- .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
- .2 Verify with manufacturer that testing as specified will not void warranties.

.4 Qualifications of manufacturer's personnel:

- .1 Experienced in design, installation and operation of equipment and systems.
- .2 Ability to interpret test results accurately.
- .3 To report results in clear, concise, logical manner.

1.14 PROCEDURES

.1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.

.2 Conduct start-up and testing in following distinct phases:

- .1 Included in delivery and installation:
  - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
  - .2 Visual inspection of quality of installation.
- .2 Start-up: follow accepted start-up procedures.
- .3 Operational testing: document equipment performance.
- .4 System PV: include repetition of tests after correcting deficiencies.

.5 Post-substantial performance verification: to include fine-tuning.

.3 Correct deficiencies and obtain approval from Departmental Representative after distinct phases have been completed and before commencing next phase.

.4 Document require tests on approved PV forms.

.5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:

.1 Minor equipment/systems: implement corrective measures approved by Departmental Representative.

.2 Major equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by Departmental Representative.

.3 If evaluation report concludes that major damage has occurred, Departmental Representative shall reject equipment.

.1 Rejected equipment to be removed from site and replace with new.

.2 Subject new equipment/systems to specified start-up procedures.

1.15 START-UP DOCUMENTATION

.1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.

.2 Start-up documentation to include:

.1 Factory and on-site test certificates for specified equipment.

.2 Pre-start-up inspection reports.

.3 Signed installation/start-up check lists.

.4 Start-up reports,

.5 Step-by-step description of complete start-up procedures, to permit Departmental Representative to repeat start-up at any time.

1.16 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

.1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.

.2 With assistance of manufacturer develop written maintenance program and submit Departmental Representative for approval before implementation.

.3 Operate and maintain systems for length of time required for commissioning to be completed.

.4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.17 TEST RESULTS

.1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.

.2 Provide manpower and materials, assume costs for re-commissioning.

1.18 START OF COMMISSIONING

.1 Notify Departmental Representative at least 21 days prior to start of Cx.

.2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.19 INSTRUMENTS / EQUIPMENT

.1 Submit to Departmental Representative for review and approval:

.1 Complete list of instruments proposed to be used.

.2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.

.2 Provide the following equipment as required:

.1 2-way radios.

.2 Ladders.

.3 Equipment as required to complete work.

1.20 COMMISSIONING PERFORMANCE VERIFICATION

.1 Carry out Cx:

.1 Under actual operating conditions, over entire operating range, in all modes.

.2 On independent systems and interacting systems.

.2 Cx procedures to be repeatable and reported results are to be verifiable.

.3 Follow equipment manufacturer's operating instructions.

.4 EMCS trending to be available as supporting documentation for performance verification.

1.21 WITNESSING COMMISSIONING

.1 Departmental Representative to witness activities and verify results.

1.22 AUTHORITIES HAVING JURISDICTION

.1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.

.2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.

.3 Provide copies to Departmental Representative within 5 days of test and with Cx report.

1.23 COMMISSIONING CONSTRAINTS

.1 It is necessary to complete Cx of occupancy, weather, and seasonal sensitive equipment and systems before issuance of the Interim Certificate, using, if necessary, simulated thermal loads.

1.24 EXTRAPOLATION OF RESULTS

.1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.25 EXTENT OF VERIFICATION

.1 Elevator systems:

.1 Provide manpower and instrumentation to verify 100 % of reported results, unless specified otherwise in other sections.

.2 Number and location to be at discretion of Departmental Representative.

.3 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.

.4 Review and repeat commissioning of systems if inconsistencies found in more than 20 % of reported results. Repeat verifications shall be performed in accordance to the following unless otherwise specified.

.1 Elevator systems:

.1 Second and subsequent verifications:

.1 Provide manpower and instrumentation to verify 100 % of reported results.

.5 Perform additional commissioning until results are acceptable to Departmental Representative.

1.26 REPEAT VERIFICATIONS

.1 Assume costs incurred by Departmental Representative for third and subsequent verifications where:

.1 Verification of reported results fail to receive Departmental Representative's approval.

.2 Repetition of second verification again fails to receive approval.

.3 Departmental Representative deems Contractor's request for second verification was premature.

1.27 SUNDRY CHECKS AND ADJUSTMENTS

.1 Make adjustments and changes which become apparent as Cx proceeds.

.2 Perform static and operational checks as applicable and as required.

1.28 DEFICIENCIES, FAULTS, DEFECTS

.1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.

.2 Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.29 COMPLETION OF COMMISSIONING

.1 Upon completion of Cx leave systems in normal operating mode.

.2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.

.3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative.

1.30 ACTIVITIES UPON COMPLETION OF COMMISSIONING

.1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.31 TRAINING

.1 In accordance with Section 01 91 41 - Commissioning (Cx) - Training.

1.32 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

.1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.33 OCCUPANCY

.1 Cooperate fully with Departmental Representative during stages of acceptance and occupancy of facility.

1.34 INSTALLED INSTRUMENTATION

.1 Use instruments installed under Contract for TAB and PV if:

.1 Accuracy complies with these specifications.

.2 Calibration certificates have been deposited with Departmental Representative.

.2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.35 PERFORMANCE VERIFICATION TOLERANCES

.1 Application tolerances:

.1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within +/- 10% of specified values.

.2 Instrument accuracy tolerances:

.1 To be of higher order of magnitude than equipment or system being tested.

.3 Measurement tolerances during verification:

.1 Unless otherwise specified actual values to be within +/- 2 % of recorded values.

1.36 OWNER'S PERFORMANCE TESTING

.1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 21142.

.2 Section 14 20 06 – M-50 Modernization of Passenger Elevator No. 80127.

1.2 REFERENCES

.1 Underwriters' Laboratories of Canada (ULC)

1.3 GENERAL

.1 Provide fully functional elevator systems:

- .1 Systems, equipment and components meet user's functional requirements before date of acceptance, and operate consistently at peak efficiencies and within specified energy budgets under normal loads.
- .2 Facility user and O&M personnel have been fully trained in aspects of installed systems.
- .3 Complete documentation relating to installed equipment and systems.

.2 Term "Cx" in this section means "Commissioning".

.3 Use this Cx Plan as master planning document for Cx:

- .1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx.
- .2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures.
- .3 Sets out deliverables relating to O&M, process and administration of Cx.
- .4 Describes process of verification of how built works meet design requirements.
- .5 Produces a complete functional system prior to issuance of Certificate of Occupancy.
- .6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:
  - .1 Overview of Cx.
  - .2 General description of elements that make up Cx Plan.
  - .3 Process and methodology for successful Cx.

.4 Acronyms:

- .1 Cx - Commissioning.
- .2 EMCS - Energy Monitoring and Control Systems.
- .3 MSDS - Material Safety Data Sheets.
- .4 PI - Product Information.
- .5 PV - Performance Verification.
- .6 TAB - Testing, Adjusting and Balancing.
- .7 WHMIS - Workplace Hazardous Materials Information System.

.5 Commissioning terms used in this Section:

.1 Bumping: short term start-up to prove ability to start and prove correct rotation.

.2 Deferred Cx - Cx activities delayed for reasons beyond Contractor's control due to lack of occupancy, weather conditions, need for heating/cooling loads.

1.4 DEVELOPMENT OF 100% CX PLAN

.1 Cx Plan to be 100% completed within 8 weeks of award of contract to take into account:

.1 Approved shop drawings and product data.

.2 Approved changes to contract.

.3 Contractor's project schedule.

.4 Cx schedule.

.5 Contractor's, sub-contractor's, suppliers' requirements.

.6 Project construction team's and Cx team's requirements.

.2 Submit completed Cx Plan to Departmental Representative and obtain written approval.

1.5 REFINEMENT OF CX PLAN

.1 During construction phase, revise, refine and update Cx Plan to include:

.1 Changes resulting from Client program modifications.

.2 Approved design and construction changes.

.2 Revise, refine and update every 6 weeks during construction phase. At each revision, indicate revision number and date.

.3 Submit each revised Cx Plan to Departmental Representative for review and obtain written approval.

.4 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

1.6 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

.1 Departmental Representative to maintain overall responsibility for project and is sole point of contact between members of commissioning team.

.2 NRC’s Project Manager will select Cx Team consisting of following members:

.1 NRC’s design team and client: during construction, will conduct periodic site reviews to observe general progress.

.2 NRC’s design and O&M teams: ensures Cx activities are carried out to ensure delivery of a fully operational project including:

.1 Review of Cx documentation from operational perspective.

.2 Review for performance, reliability, durability of operation, accessibility, maintainability, operational efficiency under conditions of operation.

.3 Protection of health, safety and comfort of occupants and O&M personnel.

.4 Monitoring of Cx activities, training, and development of Cx documentation.

.5 Work closely with members of Cx Team.

.3 Departmental Representative is responsible for:

.1 Monitoring operations Cx activities.

.2 Witnessing, certifying accuracy of reported results.

.3 Witnessing and certifying TAB and other tests.

.4 Ensuring implementation of final Cx Plan.

.5 Performing verification of performance of installed systems and equipment.

.6 Ensuring implementation of Training Plan.

.4 Construction Team: contractor, sub-contractors, suppliers and support disciplines, is responsible for construction/installation in accordance with contract documents, including:

.1 Testing.

.2 TAB.

.3 Performance of Cx activities.

.4 Assigning one person as point of contact with Contractor's independent third party Cx agent and Departmental Representative for administrative and coordination purposes.

.5 Contractor's independent third party Cx agent implements specified Cx activities including:

.1 Organizing Cx.

.2 Performing Cx activities.

.3 Delivery of training and Cx documentation.

.4 Testing

.5 Demonstrations.

.6 Training

.7 Preparation, submission of test reports.

.6 Client: represents lead role in Operation Phase and onwards and is responsible for:

.1 Receiving facility.

.2 Day-To-Day operation and maintenance of facility.

1.7 CX PARTICIPANTS

.1 Employ the following Cx participants to verify performance of equipment and systems:

.1 Installation contractor/subcontractor:

.1 Equipment and systems except as noted.

.2 Equipment manufacturer: equipment specified to be installed and started by manufacturer.

.1 To include performance verification.

.3 Client: responsible for intrusion and access security systems.

.4 Ensure that Cx participant:

.1 Could complete work within scheduled time frame.

.2 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O&M personnel, including:

.1 Modify ventilation rates to meet changes in off-gassing.

.2 Changes to heating or cooling loads beyond scope of EMCS.

.3 Changes to EMCS control strategies beyond level of training provided to O&M personnel.

.4 Redistribution of electrical services.

.5 Modifications of fire alarm systems.

.6 Modifications to voice communications systems.

.5 Provide names of participants to Departmental Representative and details of instruments and procedures to be followed for Cx 3 months prior to starting date of Cx for review and approval.

1.8 EXTENT OF CX

.1 Cx Structural and Architectural Systems:

.1 Architectural and structural:

.1 Vertical transportation systems:

.1 Passenger elevators.

1.9 DELIVERABLES RELATING TO O&M PERSPECTIVES

.1 General requirements:

.1 Compile English documentation.

.2 Documentation to be computer-compatible format ready for inputting for data management.

.2 Provide deliverables:

.1 Warranties.

.2 Project record documentation.

.3 Inventory of spare parts, special tools and maintenance materials.

.4 Maintenance Management System (MMS) identification system used.

.5 WHMIS information.

.6 MSDS data sheets.

.7 Electrical Panel inventory containing detailed inventory of electrical circuitry for each panel board. Duplicate of inventory inside each panel.

1.10 DELIVERABLES RELATING TO THE CX PROCESS

.1 General:

.1 Start-up, testing and Cx requirements, conditions for acceptance and specifications form part of relevant technical sections of these specifications.

.2 Definitions:

.1 Cx as used in this section includes:

.1 Cx of components, equipment, systems, and subsystems.

.2 Factory inspections and performance verification tests.

.3 Deliverables: provide:

.1 Cx Specifications.
.2 Startup, pre-Cx activities and documentation for systems, and equipment.
.3 Completed installation checklists (ICL).
.4 Completed product information (PI) report forms.
.5 Completed performance verification (PV) report forms.
.6 Results of Performance Verification Tests and Inspections.
.7 Description of Cx activities and documentation.
.8 Tests of following witnessed by NRC's design team and Client:
.1 Lobby Elevator ELEV01.
.2 CPFC Elevator ELEV04.
.9 Tests performed by Owner/User.
.10 Training Plans.
.11 Cx Reports.
.12 Prescribed activities during warranty period.

.4 Contractor's independent 3rd party Cx Agent to witness and certify tests and reports of results provided to Departmental Representative.

.5 Departmental Representative to participate.

1.11 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Items listed in this Cx Plan include the following:

.1 Pre-Start-Up inspections: by Departmental Representative prior to permission to start up and rectification of deficiencies to Departmental Representative's satisfaction.
.2 Departmental Representative to use approved check lists.
.3 Departmental Representative will monitor some of these pre-start-up inspections.
.4 Include completed documentation with Cx report.
.5 Conduct pre-start-up tests: conduct pressure, static, flushing, cleaning, and "bumping" during construction as specified in technical sections. To be witnessed and certified by Departmental Representative and does not form part of Cx specifications.
.6 Departmental Representative will monitor some of these inspections and tests.
.7 Include completed documentation in Cx report.

.2 Pre-Cx activities - ARCHITECTURAL AND STRUCTURAL:

.1 Vertical transportation:
.1 Passenger elevators: Lobby Elevator ELEV01, CPFC Elevator ELEV04.

1.12 START-UP

.1 Start up components, equipment and systems.

.2 Equipment manufacturer, supplier, installing specialist sub-contractor, as appropriate, to start-up, under Contractor's direction, following equipment, systems:

.1 Lobby Elevator ELEV01.

.2 CPFC Elevator ELEV04.

.3 Departmental Representative to monitor some of these start-up activities.

.1 Rectify start-up deficiencies to satisfaction of Departmental Representative.

.4 Performance Verification (PV):

.1 Approved Cx Agent to perform.

.1 Repeat when necessary until results are acceptable to Departmental Representative.

.2 Use procedures modified generic procedures to suit project requirements.

.3 Departmental Representative to witness and certify reported results using approved PI and PV forms.

.4 Departmental Representative to approve completed PV reports.

.5 Departmental Representative reserves right to verify up to 30 % of reported results at random.

.6 Failure of randomly selected item shall result in rejection of PV report or report of system startup and testing.

1.13 CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Perform Cx by specified Cx agency using procedures developed by Contractor's independent 3rd party Cx Agent and approved by Departmental Representative.

.2 Departmental Representative to monitor Cx activities.

.3 Upon satisfactory completion, Cx agency performing tests to prepare Cx Report using approved PV forms.

.4 Contractor's independent 3rd party Cx Agent witness, certify reported results of, Cx activities and forward to Departmental Representative.

.5 Departmental Representative reserves right to verify a percentage of reported results at no cost to contract.

1.14 INSTALLATION CHECK LISTS (ICL)

.1 Contractor's independent third party Cx Agent to provide for approval by Departmental Representative all Installation Check List Forms. Forms are to be approved by Department Representative prior to use.

1.15 PRODUCT INFORMATION (PI) REPORT FORMS

.1 Contractor's independent third party Cx Agent to provide for approval by Departmental Representative all Product Information (PI) forms. Forms are to be approved by Departmental Representative prior to use.

1.16 CX SCHEDULES

.1 Prepare detailed Cx Schedule and submit to Departmental Representative for review and approval same time as project Construction Schedule. Include:

.1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, and systems, including:

.1 Design criteria, design intents.

.2 Pre-TAB review: 28 days after contract award, and before construction starts.

.3 Cx agents' credentials: 60 days before start of Cx.

.4 Cx procedures: 3 months after award of contract.

.5 Cx Report format: 3 months after contract award.

.6 Discussion of heating/cooling loads for Cx: 3 months before start-up.

.7 Submission of list of instrumentation with relevant certificates: 21 days before start of Cx.

.8 Notification of intention to start TAB: 21 days before start of TAB.

.9 TAB: after successful start-up, correction of deficiencies and verification of normal and safe operation.

.10 Notification of intention to start Cx: 14 days before start of Cx.

.11 Identification of deferred Cx.

.12 Implementation of training plans.

.13 Cx reports: immediately upon successful completion of Cx.

.14 Emergency evacuation exercises: after 80 % occupancy.

.2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over to Property Manager.

.3 6 months in Cx schedule for verification of performance in all seasons and wear conditions.

.2 After approval, incorporate Cx Schedule into Construction Schedule.

.3 Departmental Representative will monitor progress of Cx against this schedule.

1.17 CX REPORTS

.1 Submit reports of tests, witnessed and certified by Cx Agent Departmental Representative to Departmental Representative who will verify reported results.

.2 Include completed and certified PV reports in properly formatted Cx Reports.

.3 Before reports are accepted, reported results to be subject to verification by Departmental Representative.

1.18 ACTIVITIES DURING WARRANTY PERIOD

.1 Cx activities must be completed before issuance of Interim Certificate, it is anticipated that certain Cx activities may be necessary during Warranty Period, including:

.1 Fine tuning of HVAC systems.

.2 Adjustment of ventilation rates to promote good indoor air quality and reduce deleterious effects of VOCs generated by off-gassing from construction materials and furnishings.

.3 Full-scale emergency evacuation exercises.

1.19 TESTS TO BE PERFORMED BY OWNER/USER

.1 None is anticipated on this project.

1.20 TRAINING PLANS

.1 Refer to Section 01 91 41 - Commissioning (Cx) - Training.

1.21 FINAL SETTINGS

.1 Upon completion of Cx to satisfaction of Departmental Representative, lock control devices in their final positions, indelibly mark settings marked and include in Cx Reports.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 TRAINEES

.1 Trainees: personnel selected for operating and maintaining this facility. Includes Departmental Representative, building operators, maintenance staff, security staff, and technical specialists as required.

.2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.2 INSTRUCTORS

.1 Departmental Representative will provide:

.1 Descriptions of systems.

.2 Instruction on design philosophy, design criteria, and design intent.

.2 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:

.1 Start-Up, operation, shut-down of equipment, components and systems.

.2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.

.3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.

.3 Contractor and equipment manufacturer to provide instruction on:

.1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.3 TRAINING OBJECTIVES

.1 Training to be detailed and duration to ensure:

.1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.

.2 Effective on-going inspection, measurements of system performance.

.3 Proper preventive maintenance, diagnosis and trouble-shooting.

.4 Ability to update documentation.

.5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.4 TRAINING MATERIALS

.1 Instructors to be responsible for content and quality.

.2 Training materials to include:

.1 "As-Built" Contract Documents.

.2 Operating Manual.

.3 Maintenance Manual.

.4 Management Manual.

.5 TAB and PV Reports.

.3 Departmental Representative and Cx Agent will review training manuals.

.4 Training materials to be in a format that permits future training procedures to same degree of detail.

.5 Supplement training materials:

.1 Transparencies for overhead projectors.

.2 Multimedia presentations.

.3 Manufacturer's training videos.

.4 Equipment models.

1.5 SCHEDULING

.1 Include in Commissioning Schedule time for training.

.2 Deliver training during regular working hours, training sessions to be 3 hours in length.

.3 Training to be completed prior to acceptance of facility.

1.6 RESPONSIBILITIES

.1 Be responsible for:

.1 Implementation of training activities,

.2 Coordination among instructors,

.3 Quality of training, training materials,

.2 Departmental Representative will evaluate training and materials.

.3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

1.7 TRAINING CONTENT

.1 Training to include demonstrations by Instructors using the installed equipment and systems.

.2 Content includes:

.1 Review of facility and occupancy profile.

.2 Functional requirements.

.3 System philosophy, limitations of systems and emergency procedures.

.4 Review of system layout, equipment, components and controls.

.5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.

.6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.

.7 Maintenance and servicing.

.8 Trouble-shooting diagnosis.

.9 Inter-Action among systems during integrated operation.

.10 Review of O&M documentation.

.3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 This Section includes requirements for careful removal and salvage, and reconditioning of building components identified for storage at a designated remote site, for storage on site, and subsequent reinstallation forming a part of Project ready for re use at a later date.

1.2 RELATED REQUIREMENTS

.1 [Section 00 10 00 – General Instructions]

.2 [Section 01 74 19 – Waste Management and Disposal]

1.3 DEFINITIONS

.1 Remove and Salvage: Detach items from existing construction and deliver them ready for reuse.

.2 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination Existing Salvaged Work: Coordinate with Departmental Representative for confirmation of materials, components, and items of equipment identified for removal and salvage from their present existing locations and as follows:

.1 Items that are turned over to Departmental Representative.

.2 Off-site or on-site storage locations.

.3 Confirmation of items that are renovated or refurbished ready for reinstallation as a part of Work.

.4 Confirmation of items that Departmental Representative will not re use, but will retain as follows:

.1 Contractor is responsible for loading and handling identified salvaged items using their own forces and equipment.

Part 2 Products

2.1 SALVAGED ITEMS

.1 Items salvaged by Contractor include, but are not limited to:

Work	Deliver To
Diversion of miscellaneous metal mechanical equipment from landfill to appropriate recycling facility (ie. fan coil units, domestic cold water drinking fountains, mechanical piping (sprinkler, plumbing and chilled water), sheet metal ductwork and accessories, etc.)	Off-site applicable recycling facility
Diversion of miscellaneous metal electrical conduits and wiring from landfill through recycling	Off-site applicable recycling facility
Diversion of architectural elements from landfill through re-use/donation to appropriate recycling facility (ie. ceiling grids, metal blinds, metal studs, doors and associated hardware, glazing, etc.)	Off-site applicable re-use or recycling facility
Diversion of miscellaneous packaging materials and cardboard from landfill through recycling facilities (ie. plastic wrap, cardboard, wood pallets, etc.)	Off-site applicable re-use or recycle facility

.2 Confirm with Departmental Representative additional items that appear salvageable prior to disposal.

Part 3 Execution

3.1 SALVAGE

.1 Remove and handle salvageable items from site to minimize damage and to ensure that usability is maintained.

.2 Clean, decontaminate, or remediate hazardous substances (lead based paint, asbestos dust, PCB residue, and similar substances) from salvaged materials so they are safe for reuse or resale.

.3 Place materials on palettes or wrap in protective film to ensure that loose pieces and projections do not cause injury to personnel, and that salvaged items remain as complete units.

.4 Clean items of construction or building debris, or materials that are not a part of salvaged work before delivering to Departmental Representative.

END OF SECTION

1 REFERENCES

.1 Perform all work to meet or exceed the requirements of the Canadian Electrical Code, CSA Standard C22.1 - (latest edition).

.2 Consider CSA Electrical Bulletins in force at time of tender submission, while not identified and specified by number in this Division, to be forming part of related CSA Part II standard.

.3 Do overhead and underground systems in accordance with CSA C22.3 except where specified otherwise.

.4 Where requirements of this specification exceed those of above mentioned standards, this specification shall govern.

.5 Notify the NRC Departmental Representative as soon as possible when requested to connect equipment supplied by NRC which is not CSA approved.

.6 Refer to Sections 01 10 00 & 01 35 30.

2 PERMITS AND FEES

.1 Submit to Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.

.2 Pay all fees required for the performance of the work.

3 START-UP

.1 Instruct the NRC Departmental Representative and operating personnel in the operation, care and maintenance of equipment supplied under this contract.

4 INSPECTION AND FEES

.1 Furnish a Certificate of Acceptance from the Authorized Electrical Inspection Department on completion of work.

.2 Request and obtain Special Inspection approval from the Authorized Electrical Inspection Department for any non-CSA approved control panels or other equipment fabricated by the contractor as part of this contract.

.3 Pay all fees required for inspections.

5 OPERATION & MAINTENANCE (O&M) MANUALS

.1 O&M manuals to include but not limited to

- .1 Letter of warranty
- .2 ESA inspection certificate
- .3 Fire alarm verification report

.4 Updated panel schedule c/w circuit breaker size

.5 Shop drawings

.6 As-builts

.7 Load balancing report

.8 Mechanical equipment start up reports

.9 Seismic review letter

.2 Refer to 00 10 00 for additional information.

6 FINISHES

.1 Shop finish metal enclosure surfaces by removal of rust and scale, cleaning, application of rust resistant primer inside and outside, and at least two coats of finish enamel.

.1 Outdoor electrical equipment "equipment green" finish to EEMAC Y1-1-1955.

.2 Indoor switchgear and distribution enclosures light grey to EEMAC 2Y-1-1958.

.2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

7 ACOUSTICAL PERFORMANCE

.1 In general provide equipment producing minimal sound levels in accordance with the best and latest practices established by the electrical industry.

.2 Do not install any device or equipment containing a magnetic flux path metallic core, such as gas discharge lamp ballasts, dimmers, solenoids, etc., which are found to produce a noise level exceeding that of comparable available equipment.

8 EQUIPMENT IDENTIFICATION

.1 Identify with 3mm (1/8") letter, Brother, P-Touch non-smearing tape, or an alternate approved by the NRC Departmental Representative, all electrical outlets shown on drawings and/or mentioned in the specifications. These are the lighting switches, exit signs, recessed and surface mounted receptacles such as those in offices and service rooms and used to plug in office equipment, telecommunication equipment or small portable tools. Indicate only the source of power (Ex. for a receptacle fed from panel L32 circuit #1: "L32-1").

.2 P-Touch label to be:

.1 Black letters on a white background for normal power circuits.

.2 Black letters on a yellow background for emergency power circuits.

.3 White letters on a red background for fire alarm device.

.3 Light fixtures are the only exceptions for electrical equipment identification (except as noted in 8.14 below). They are not to be identified.

.4 Identify with lamicoid nameplates all electrical equipment shown on the drawings and/or mentioned in the specification such as motor control centers, switchgear, splitters, fused switches, isolation switches, motor starting switches, starters, panelboards, transformers, high voltage cables, industrial type receptacles, junction boxes, control panels, etc.,

regardless of whether or not the electrical equipment was furnished under this section of the specification.

.5 Coordinate names of equipment and systems with other Divisions to ensure that names and numbers match.

.6 Wording on lamicoid nameplates to be approved by the NRC Departmental Representative prior to fabrication.

.7 Provide two sets of lamicoid nameplates for each piece of equipment; one in English and one in French.

.8 Lamicoid nameplates shall identify the equipment, the voltage characteristics and the power source for the equipment. Example: A new 120/240 volt single phase circuit breaker panelboard, L16, is fed from panelboard LD1 circuit 10.

"PANEL L16
120/240 V
FED FROM LD1-10"

PANNEAU L16
120/240 V
ALIMENTE PAR LD1-10

.9 Provide warning labels for equipment fed from two or more sources - "DANGER MULTIPLE POWER FEED" black letters on a yellow background. These labels are available from NRC's Facilities Maintenance group in building M-19.

.10 Lamicoid nameplates shall be rigid lamicoid, minimum 1.5 mm (1/16") thick with:

.1 Black letters engraved on a white background for normal power circuits.

.2 Black letters engraved on a yellow background for emergency power circuits.

.3 White letters engraved on a red background for fire alarm equipment.

.11 For all interior lamicoid nameplates, mount nameplates using two-sided tape.

.12 For all exterior lamicoid nameplates, mount nameplates using self-tapping 2.3 mm (3/32") dia. slot head screws - two per nameplate for nameplates under 75 mm (3") in height and a minimum of 4 for larger nameplates. Holes in lamicoid nameplates to be 3.7 mm (3/16") diameter to allow for expansion of lamicoid due to exterior conditions.

.1 No drilling is to be done on live equipment.

.2 Metal filings from drilling are to be vacuumed from the enclosure interiors.

.13 All lamicoid nameplates shall have a minimum border of 3 mm (1/8"). Characters shall be 9 mm (3/8") in size unless otherwise specified.

.14 Identify lighting fixtures which are connected to emergency power with a label "EMERGENCY LIGHTING/ÉCLAIRAGE D'URGENCE", black letters on a yellow background. These labels are available from NRC's Facilities Maintenance group in building M-19.

.15 Provide neatly typed updated circuit directories in a plastic holder on the inside door of new panelboards.

.16 Carefully update panelboard circuit directories whenever adding, deleting, or modifying existing circuitry.

.17 Identify molded case breaker with lamicoid nameplate.

9 WIRING IDENTIFICATION

.1 Unless otherwise specified, identify wiring with permanent indelible identifying markings, using either numbered or coloured plastic tapes on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding throughout.

10 CONDUIT AND CABLE IDENTIFICATION

.1 All new conduits to be factory painted, colour-coded EMT, type as follows:

.1 Fire alarm – red conduit
.2 Emergency power circuits – yellow conduit
.3 Voice/data – blue conduit
.4 Gas detection system – purple conduit
.5 Building Automation system – orange conduit
.6 Other base building low voltage control system – white conduit
.7 Security system – green conduit
.8 Research center control system – black conduit

.2 Apply paint to the covers of junction boxes and condulets of existing conduits as follows:

.1 Fire alarm – red
.2 Emergency power circuits – yellow
.3 Voice/data – blue
.4 Gas detection system – purple
.5 Building Automation system – orange
.6 Other base building low voltage control system - white
.7 Security system – green
.8 Research center control system - black

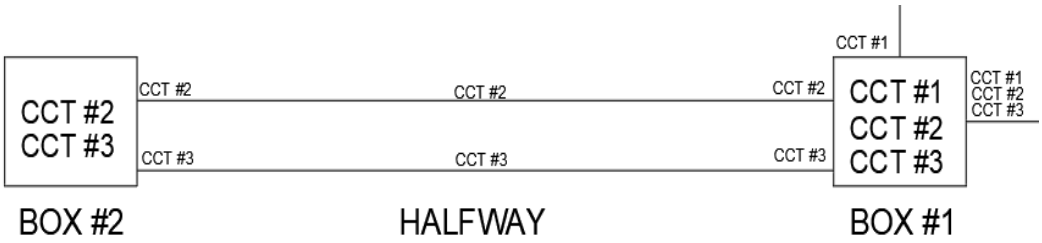
.3 For system running with cable, half-lap wrap with dedicated coloured PVC tape to 100 mm width, tape every 5 m and both sides where cable penetrates a wall.

.4 All other systems to follow site instruction from NRC departmental representative.

.5 Identify all electrical circuits in every junction box and pull box on the box cover with 9mm letter size P-touch label. Identify all electrical circuits on each conduit end where conduit penetrates a wall ,enclosure ,junction box or pull box , and halfway of each conduit run between walls ,enclosures ,junction boxes or pull boxes with 3mm letter size P-touch label..

.6 Identify electrical circuit on each cable 250MCM or larger with lamacoid nameplate, or cable 4/0 or smaller with P-touch label, on every splitter, every 30m of each cable run and cable end where cable penetrates a wall, enclosure, junction box or pull box.

.7 Sample diagram shown as below:



11 MANUFACTURER'S & APPROVALS LABELS

.1 Ensure that manufacturer's registration plates are properly affixed to all apparatus showing the size, name of equipment, serial number, and all information usually provided, including voltage, cycle, phase and the name and address of the manufacturer.

.2 Do not paint over registration plates or approval labels. Leave openings through insulation for viewing the plates. Contractor's or sub-contractor's nameplate not acceptable.

12 WARNING SIGNS AND PROTECTION

.1 Provide warning signs, as specified or to meet requirements of Authorized Electrical Inspection Department and NRC Departmental Representative.

.2 Accept the responsibility to protect those working on the project from any physical danger due to exposed live equipment such as panel mains, outlet wiring, etc. Shield and mark all live parts with the appropriate voltage. Caution notices shall be worded in both English and French.

13 LOAD BALANCE

.1 Measure phase current to new panelboards with normal loads operating at time of acceptance. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes, and revise panelboard schedules.

.2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.

14 MOTOR ROTATION

.1 For new motors, ensure that motor rotation matches the requirements of the driven equipment.

.2 For existing motors, check rotation before making wiring changes in order to ensure correct rotation upon completion of the job.

15 GROUNDING

.1 Thoroughly ground all electrical equipment, cabinets, metal supporting frames, ventilating ducts and other apparatus where grounding is required in accordance with the requirements of the latest edition of the Canadian Electrical Code Part 1, C.S.A. C22.1 and corresponding Provincial and Municipal regulations. Do not depend upon conduits to provide the ground circuits.

.2 Run separate green insulated stranded copper grounding conductors in all electrical conduits including those feeding toggle switches and receptacles.

16 TESTS

.1 Provide any materials, equipment and labour required and make such tests deemed necessary to show proper execution of this work, in the presence of the NRC Departmental Representative.

.2 Correct any defects or deficiencies discovered in the work in an approved manner at no additional expense to the Owner.

.3 Megger all branch circuits and feeders using a 600V tester for 240V circuits and a 1000V tester for 600V circuits. If the resistance to ground is less than permitted by Table 24 of the Code, consider such circuits defective and do not energize.

.4 The final approval of insulation between conductors and ground, and the efficiency of the grounding system is left to the discretion of the local Electrical Inspection Department.

17 COORDINATION OF PROTECTIVE DEVICES

.1 Ensure circuit protective devices such as overcurrent trips, fuses, are installed to values and settings as indicated on the Drawings.

18 WORK ON LIVE EQUIPMENT & PANELS

.1 NRC requires that work be performed on non-energized equipment, installation, conductors and power panels. For purposes of quotation assume that all work is to be done after normal working hours and that equipment, installation, conductors and power panels are to be de-energized when worked upon.

.2 Coordinate all shutdowns with the NRC departmental representative. High voltage (more than 1KV) grounding must be provided by certified electrician.

END OF SECTION

Part 1 General

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Common Work Results - Electrical Section 26 05 00

1.2 MATERIALS

.1 Provide only new equipment and materials, without blemish or defect, bearing Canadian Standards Association or Authorized Electrical Inspection Department labels, and subject to the approval of the NRC Departmental Representative.

.2 After a contract is awarded, utilize alternative methods and/or materials only after receiving the NRC Departmental Representative's approval.

Part 2 Products

2.1 BUILDING WIRES AND GENERAL REQUIREMENTS

.1 Conductor material for branch circuit wiring and grounding:

- .1 Stranded copper.
- .2 Neutral wire: continuous throughout its length without breaks.
- .3 Separate insulated green grounding conductors in all electrical conduits.
- .4 All wire and cable insulation shall meet the C.S.A. Standards for the types and services hereinafter specified. Colours as per section 4-036 of Electrical Code.
- .5 Unless otherwise specified, use wire and cable types as follows:
  - .1 Type R90 XLPE cross-link polyethylene stranded for applications using wires sized No. 8 and larger.
  - .2 Type T90 stranded for applications using wires sized No. 10 and smaller.
  - .3 For fire alarm wiring refer to Section 283100.
  - .4 Approved heat resistant wire for wiring through and at lighting and heating fixtures. Where insulation types are shown on the drawings other types shall not be used unless the specification is more restrictive.
- .6 Use AC90 (BX) cable **only** under the following conditions:
  - .1 Wiring from a junction box to a recessed lighting fixture in suspended ceilings. Cable length not to exceed 1.5 m (5'), or
  - .2 Wiring switches or receptacles in existing or new hollow gypsum partitions, vertical runs only with cable length not to exceed 3.5m (12'), or
  - .3 When specifically called for on drawings or approved in writing by departmental representative.
  - .4 Only AC90 cable of No. 12 AWG will be accepted.
- .7 Use stranded wire no smaller than No. 12 AWG for lighting and power and no smaller than No. 16 AWG for control wiring.

.8 Conductors shall be soft copper properly refined and tinned having a minimum conductivity of 98%.

Part 3 Execution

3.1 BUILDING WIRES

.1 Install building wires as follows:

.1 Make joints, taps and splices in approved boxes with solderless connectors. Joints and/or splices are not acceptable inside a panelboard.

.2 Ensure the lugs accommodate all the strands of the conductor.

.3 Replace any wire or cable showing evidence of mechanical injury.

.4 Use No. 10 AWG for branch circuit wiring extending more than 30 m (100 ft.) to farthest outlet from panel.

.5 Circuit numbers indicated on the drawing are intended as a guide for the proper connection of multi-wire circuits at the panel.

.6 Take care to keep the conductors free from twisting.

.7 Use an approved lubricant for pulling in conduit.

.8 Leave sufficient slack on all runs to permit proper splicing and connection of electrical devices.

.9 Branch circuit wiring of 120 volt applications to be multi-wire utilizing common neutrals. Under no condition shall any switch break a neutral conductor.

.10 Provide and install an approved fire- retardant wrap or coating for PVC jacketed cables installed in a grouped configuration of two or more.

END OF SECTION

Part 1 General

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Common Work Results - Electrical Section 26 05 00

1.2 MATERIALS

.1 Provide only new equipment and materials, without blemish or defect, bearing Canadian Standards Association or Authorized Electrical Inspection Department labels, and subject to the approval of the NRC Departmental Representative.

.2 After a contract is awarded, utilize alternative methods and/or materials only after receiving the NRC Departmental Representative's approval.

Part 2 Products

2.1 WIRE AND BOX CONNECTORS

.1 Pressure type wire connectors sized to fit conductors.

2.2 WIRING TERMINATIONS

.1 Provide first grade wire and cable connectors suitable for the service on which they are used and install them in accordance with the latest trade practice.

.2 Copper compression connectors to CSA C22.2 N0.65 are required sized for conductors

.3 When used in hazardous area, connectors should be certified for such location in Class, Division and Group.

.4 For conductors size of 8 AWG or larger, use bolted or compression solderless type connectors.

.5 Use high temperature connectors and insulation on all connections of high temperature conductors.

.6 Where connector types are called for on the drawings or in the specification, do not use other types.

.7 Lugs, terminals, screws used for termination of wiring to be suitable for copper conductors.

.8 For fire alarm wiring refer to Section 28 31 00.

Part 3 Execution

3.1 INSTALLATION

.1 Install stress cones, terminations, and splices in accordance with manufacturer's instructions.

.2 Bond and ground as required [to CSA C22.2No.41].

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.1-09, Canadian Electrical Code, Part 1, 21st Edition

PART 2 - PRODUCTS

2.1 SPLITTERS

.1 Construction: sheet metal enclosure, welded corners and formed hinged cover suitable for locking in closed position.

.2 Terminations: main and branch lugs to match required size and number of incoming and outgoing conductors as indicated.

.3 Spare Terminals: minimum three spare terminals or lugs on each connection or lug block sized less than 400 A.

2.2 JUNCTION AND PULL BOXES

.1 Construction: welded steel enclosure.

.2 Covers Surface Mounted: screw-on flat, turned edge covers

PART 3 - EXECUTION

3.1 SPLITTER INSTALLATION

.1 Mount plumb, true and square to building lines.

.2 Extend splitters full length of equipment arrangement except where indicated otherwise.

3.2 JUNCTION, PULL BOXES AND CABINETS INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

.2 Install terminal block as indicated in Type T cabinets.

.3 Only main junction and pull boxes are indicated. Install additional pull boxes as required by CSA C22.1

3.3 IDENTIFICATION

.1 Equipment Identification: to Section 26 05 00.

.2 Identification Labels: size 2 indicating system name, voltage and phase or as indicated

END OF SECTION

Part 1 General

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Common Work Results - Electrical Section 26 05 00

1.2 MATERIALS

.1 Provide only new equipment and materials, without blemish or defect, bearing Canadian Standards Association or Authorized Electrical Inspection Department labels, and subject to the approval of the NRC Departmental Representative.

.2 After a contract is awarded, utilize alternative methods and/or materials only after receiving the NRC Departmental Representative’s approval.

Part 2 Products

2.1 FITTINGS

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.

.2 Steel coupling for EMT.

.3 Fittings for liquid-tight flexible conduits shall be liquid-tight connectors.

.4 Provide expansion couplings for all conduits running in slabs through expansion joints. These shall be the type approved for use in concrete with a bonding conductor.

.5 Factory bends are not permitted to be modified. Ensure conduit bends other than factory bends are made with an approved bender. Making offsets and other bends by cutting and rejoining factory bends are not permitted.

2.2 OUTLET BOXES

.1 Size boxes in accordance with CSA-C22.

.2 Unless otherwise specified, provide galvanized steel outlet boxes at least 40mm (1-1/2") deep, single or ganged style, of proper size to accommodate devices used and shall be equipped with covers as necessary of the type designed for the specified fittings. Pull boxes shall be steel and shall be galvanized or painted to prevent rusting. For lighting fixture outlets, use 100mm (4") octagon boxes.

.3 Equip with plaster rings for flush mounting devices in finished walls.

.4 Blank cover plates for boxes without wiring devices.

.5 Equip with centre fixture studs for light fixtures.

.6 Use cast boxes where indicated and for surface mounted wiring. In areas above hung ceilings where appearance is not significant, pressed steel surface boxes may be used.

.7 Supply all outlet boxes and pull boxes sized according to code requirements unless specified otherwise on the drawings.

2.3 SUPPORT HARDWARE

.1 Use 10mm (3/8") threaded rod for suspended unistrut and conduit.

.2 Unless otherwise specified, use 41mm x 41mm (1-5/8" x 1-5/8") galvanized steel unistrut for conduit support systems.

Part 3 Execution

3.1 INSTALLATION

.1 Install outlet boxes as follows:

.1 Support boxes independently of connecting conduits.

.2 Make necessary mounting adjustments to the outlet to match interior finish.

.3 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of construction material.

.4 Where more than one conduit enters a switch or receptacle box on the same side, provide a 100mm (4") minimum square box with a suitable plaster ring.

.5 Location and appearance to be to the NRC Departmental Representative's approval.

END OF SECTION

Part 1 General

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Common Work Results - Electrical Section 26 05 00

1.2 MATERIALS

.1 Provide only new equipment and materials, without blemish or defect, bearing Canadian Standards Association or Authorized Electrical Inspection Department labels, and subject to the approval of the NRC Departmental Representative.

.2 After a contract is awarded, utilize alternative methods and/or materials only after receiving the NRC Departmental Representative's approval.

Part 2 Products

2.1 RACEWAYS

.1 General:

.1 Unless otherwise noted, all wires to run inside raceways, either in ceiling space, open space or surface mounted.

.2 Conduit:

.1 Each length of conduit to be new and bear the CSA Stamp of Approval.

.2 Conduit, unless otherwise noted, to be EMT, no smaller than 16mm (1/2").

.3 Conduit to be coloured as required for systems described in section 260500.9.

.3 Bushings and Connectors:

.1 Insulated type, with the insulation an integral part of the fitting.

.4 Conduit Fastening:

.1 One hole malleable iron straps to secure surface conduits. Two hole straps for conduits larger than 50mm (2").

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits.

.5 Pull Cord:

.1 Polypropylene cord in empty conduit.

.6 Unless specifically called for on the drawings, do not use flexible conduits but it is recognized that there may be applications where this material will be useful, such as equipment connections, etc. In such cases, obtain permission for its use from the NRC Departmental Representative. For tender purposes, assume that flexible conduits will not be permitted unless specifically called for on the drawings or equipment specifications. All flexible conduits for vapour-tight applications shall be liquid-tight flexible conduits (seal-tight).

.7 Provide expansion couplings for all conduits running in slabs through expansion joints. These shall be the type approved for use in concrete with a bonding conductor.

.8 Use AC90 (BX) cable **only** under the following conditions:

.1 Wiring from a junction box to a recessed device, such as lighting fixture, sensor, speaker, BAS control device, etc. in suspended ceilings. Cable length not to exceed straight run from junction box to device plus 1.5 m (5'), or

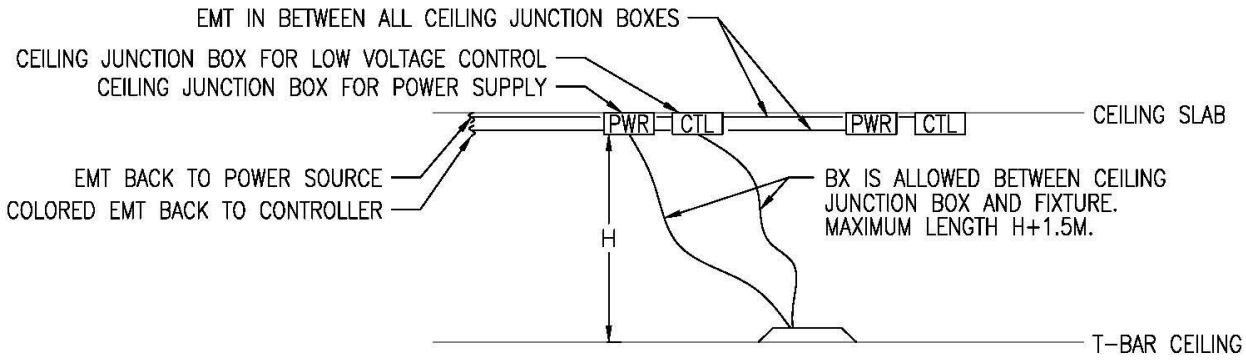
.2 Wiring switches or receptacles in existing or new hollow gypsum partitions, vertical runs only with cable length not to exceed 3.5m (12'), or

.3 When specifically called for on drawings or approved in writing by departmental representative.

.4 AC90 shall not be used in insulated walls or masonry walls.

.5 Only AC90 cable of No. 12 AWG will be accepted for 120V AC circuits.

.6 Sample diagram shown as below:



2.2 SUPPORT HARDWARE

.1 Use 10mm (3/8") threaded rod for suspended unistrut and conduit.

.2 Unless otherwise specified, use 41mm x 41mm (1-5/8" x 1-5/8") galvanized steel unistrut for conduit support systems.

Part 3 Execution

3.1 RACEWAYS

.1 Install raceways (including Teck cable) as follows:

.1 Rigidly supported.

.2 Workmanlike manner.

.3 Maintain maximum headroom.

.4 Concealed in finished area.

.5 Surface-mounted in open area.

.6 Do not pass conduits through structural members except as indicated.

.7 Parallel to or at right angles to the building lines.

.8 Thoroughly ream all conduits at ends and terminate with appropriate locknuts and bushings.

.9 Cause minimum interference in spaces through which they pass.

.10 Plug or cap conduit during construction to protect from dust, dirt or water.

.11 Unless specifically indicated on drawings or with the permission of the NRC Departmental Representative, do not cast conduits in concrete.

.12 Dry conduits out before installing wire.

.13 Mechanically bend conduit of any size. Bend conduit cold.

.14 Do not cut or modify prefabricated bends.

.15 PVC conduit as indicated.

.16 Function and appearance to be to the NRC Departmental Representative's approval.

.17 Seal conduit and cable openings in fire- rated walls and floors with an approved fire stop material.

.18 Seal conduit and cable openings in exterior walls with a weatherproof silicone sealant.

.19 Paint exposed conduits and boxes to match existing wall / ceiling except the colored EMT specified in 260500.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Motors and controls to Sections 26 22 19, 26 29 03 & 26 29 10.

1.2 MATERIALS

.1 Provide only new equipment and materials, without blemish or defect, bearing Canadian Standards Association or Authorized Electrical Inspection Department labels, and subject to the approval of the NRC Departmental Representative.

.2 After a contract is awarded, utilize alternative methods and/or materials only after receiving the NRC Departmental Representative's approval.

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Section 01 10 00.

1.4 IDENTIFICATION

.1 Identification as per Section 26 05 00.

Part 2 Products

2.1 WIRING DEVICES

.1 Receptacles:

.1 Duplex type, CSA type 5-15R, 125 volt, 15A, U ground, specification grade with the following features:

.1 Flush type with parallel blade slots.

.2 Double-wiping contacts.

.3 Double-grounding terminals.

.4 Break-off feature for separate feeds.

.5 One piece body, colour white unless otherwise indicated.

.2 Special receptacles with ampacity and voltage as indicated.

.3 Receptacles of one manufacturer throughout the project.

.4 Standard of acceptance: Hubbell, Leviton, Philips or equivalent approved by NRC Departmental Representative.

.2 Cover Plates:

.1 Cover plates for wiring devices.

.2 Smooth white plastic for wiring devices mounted in flush-mounted outlet box.

.3 Sheet metal cover plates for wiring devices mounted in surface-mounted outlet box.

.4 Multi-outlet covers as indicated.

.3 Splitters, Junction Boxes & Cabinets:

.1 Sheet metal enclosure, welded corners and formed cover, provided as required.

.2 Splitter to be 3 phase, 4 wires, minimum 225A, voltage as indicated. Refer to drawing for quantity of the lugs. Allow minimum two extra lugs for future use, size to match the maximum rating of the existing wire.

Part 3 Execution

3.1 LOCATION OF OUTLETS

.1 The number and general location of outlets for lighting, power, telephones, etc., are to be as shown on the drawings. Install all outlets accurately and uniformly with respect to building details. When centering outlets, make allowance for overhead pipes, ducts, etc. and for variations in wall or ceiling finish, window trim, etc. Reinstall incorrectly installed outlets at no cost to the Owner. Make field power and control connections as indicated.

.2 The location of all outlets as shown on the plans are approximate and are subject to change, up to 3m (10') without extra cost or credit provided the information is given prior to the installation of the outlet.

.3 Unless otherwise specified, locate light switches on latch side of doors. Determine the direction of all door swings from the architectural drawings or on site, not from the electrical drawings.

3.2 MOUNTING HEIGHTS

.1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.

.2 If mounting height of equipment is not indicated verify before proceeding with installation.

.3 Generally, locate outlets as follows: (except those otherwise shown on the drawings):

.1 Local switches 1.2m (3'-11") to centreline.

.2 Wall receptacles 400mm (1'-4") to centreline.

.3 Telephone and data communications outlet 400mm (1'-4") to centreline.

3.3 WIRING DEVICES

.1 Install wiring devices as follows:

.1 Where more than one local device is shown at one location, they are to be set under one cover plate.

.2 Install single throw switches with handle in "up" position when switch closed.

.3 Devices in gang type outlet box when more than one device is required in one location.

.4 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.

.5 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

.6 Install metal barriers where required.

.7 Remove insulation carefully from ends of conductors and connect wiring as required.

.8 Bond and ground as required.

3.4 SPLITTERS AND DEVICES

.1 Installation of splitters, junction boxes, pull boxes & cabinets as follows:

.1 Mount plumb, true and square to the building lines.

.2 Install in inconspicuous but accessible locations.

.3 Install pull boxes so as not to exceed 30 m (100') of conduit run between boxes or as indicated.

END OF SECTION

ELEVATOR MODERNIZATION SPECIFICATIONS

Project Number: 6495
Passenger Elevator No. 21142

NRC Building M-50
1200 Montreal Road, Ottawa, ON

Issued for Tender: April 19, 2024

Prepared By:

PNA Consultants
YOUR ELEVATOR ADVISER

TABLE OF CONTENTS

PART 1 – GENERAL

.1 Scope of Work

.1 This specification covers the partial modernization of one basement traction passenger elevator located in the National Research Council Building M-50 at 1200 Montreal Road, Ottawa, ON.

.2 All equipment to be designed to meet the existing space provisions.

.3 Provide all material, labour, **including overtime**, design, manufacturing, inspection, and testing as required to complete the work as specified in these contract documents.

.4 Arrange and pay for all permits, certificates, inspections and tests required by the governing authorities, including TSSA initial inspection and subsequent inspections.

.5 Where a device or component is mentioned in the singular number, such references shall be understood to mean the contractor shall provide as many of said devices or components as is necessary for the completion of the elevator covered under this specification.

.6 The contractor is responsible to include all related building work required to complete the work.

.2 Description of Systems

.1 The characteristics of the **one** existing basement traction passenger elevator is as follows:

.1	Identification:	Installation No. 21142
.2	Classification:	Passenger
.3	Rated Net Capacity:	1134 kg (2,500 lbs)
.4	Rated Speed:	Retain 0.76 m/s (150 fpm)
.5	No. of Stops:	Four (4)
.6	No. of Openings:	Four (4)
.7	Entrance Type:	Single Speed Centre Opening
.8	Entrance Size:	1070 mm wide x 2,134 mm high

ELEVATOR CONTRACTOR TO CONFIRM ALL INFORMATION, MEASUREMENTS AND FLOOR MARKINGS ON SITE

.3 Related Work to Be Completed By the Elevator Contractor

.1 **Machine Room:**

.1 Provide a licence frame holder for the elevator licence to be installed on the front of the controller door. Indicate on TSSA design submission that licence will be located in the elevator machine room.

.2 Provide a Code Data Tag and an Alteration data plate or laminated copy of the alteration sheet on the controller as per B44 Code requirements. Provide a laminated notice on the controller door of the date of the TSSA initial inspection. Letters and numerals to be a minimum of 12 mm high.

.3 Provide a new metal maintenance cabinet in the machine room.

.4 Provide a new metal garbage can with a lid in the machine room.

.5 Provide sleeve or drip pan protection for the water pipe that runs above the disconnects.

.6 Retain existing active **dedicated** telephone line 24/7 for connection of the communication system in the elevator.

.2 Hoistway

.1 Thoroughly clean down hoistway including the backs of hall door sills, hall door tracks and headers, rails and brackets at completion of work. Wash car rails. Complete all painting as specified in Part 3 Section 13 of the specifications. Contractor shall protect electrical equipment appropriately and will be responsible for any cost incurred should an electric failure occur as a consequence of this cleaning.

.2 Thoroughly wire brush and paint all rusted components in the hoistway.

.3 Patch all redundant holes in the hoistway including areas around hall button or position indicator fixtures where cement or blocks have been removed or altered to install new fixture boxes. Contractors shall be responsible for performing fire stopping, as required for all penetrations through a fire separation. ULC approved fire stopping details shall be installed to provide the appropriate fire resistance rating (FRR).

.4 Remove all redundant elevator equipment from the hoistway.

.3 **Car Top**

.1 Provide updated crosshead data plate on car top as per code requirements. Data plate to indicate as a minimum Contractors name, date of modernization, car speed and capacity.

.2 Provide and permanently fasten a cab alteration data plate on car top as per B44 Code requirements.

.3 Where required, paint a refuge space outline on car top. Refer to Part 3 Section 13 of the specifications.

.4 Provide a moveable LED light with a magnetic base permanently wired to the car top operator box.

.5 Thoroughly wash off and paint the complete car top and crosshead. Refer

to Part 3 Section 13 of the specifications.

.6 Paint the car number and installation number on the crosshead, minimum 50 mm high. Refer to Part 3 Section 13 of the specifications.

.4 **Pit**

.1 Vacuum clean and dry pit area to make ready for painting.

.2 Thoroughly wire brush all pit steel. Paint all pit steel with rust resistant BLACK paint. Paint pit floor GREY. Refer to Part 3 Section 13 of the specifications for painting requirements.

.3 Retain and refurbish existing pit stop switches. Relocate switches to be not behind ladder. Retain and relocate existing conduit to not be behind the ladder. Provide any new conduit and wiring required due to the relocation. Ensure no conduit or switch is behind ladder.

.4 Replace existing pit light with vapour tight 1220mm long LED light and add a second vapour tight 1220mm long LED light in the opposite corner. Provide all conduit and wiring required. Locate lights in a vertical position in locations best suited to maximize light and allow for code required clearances.

.5 Provide and install a new Ground Fault Interrupter Type receptacle. Provide all conduit and wiring required.

.6 Replace the existing light switch with new ILLUMINATED switch. Relocate light switch to be at the top of the pit ladder and within easy reach of the pit entrance. Ensure switch and conduit is not behind the ladder.

.7 Scrape and paint the bottom floor fascia plate with BLACK machinery paint. Refer to Part 3 Section 13 of the specifications for painting requirements.

.5 **Cab**

.1 Clean all cab interior and hall entrance surfaces and polish all stainless steel prior to placing an elevator back to service.

.4 Related Work To Be Completed By The Owner

.1 The Owner is responsible for activating and de-activating all fire and/or smoke sensors in the work area that may be activated as a result of ongoing work relating to the elevator modernisation.

.2 Provide a network connection in the machine room.

.3 Provide an active **dedicated** telephone line 24/7 for connection of the communication system in the elevator. The type of phone line must be compatible for the communication system.

.5 Cut Patch and Make Good

.1 Cut existing surfaces as required to accommodate new work**.**

.2 Take precautions to protect the existing structure from damage.

.3 Retain and pay for the services of a Professional Engineer to locate existing reinforcement and conduit and obtain approval from the Professional Engineer

before coring existing slabs, beams, floors or walls.

.4 Retain and pay for an independent testing company to locate existing reinforcement and conduit in the areas of proposed openings and to mark locations on the surfaces of slabs, floors and walls on which the cores are to be started. X-ray concrete unless other methods can be shown by Contractor to accurately locate reinforcement and conduit.

.5 Remove toppings and finishes prior to locating reinforcement and conduit. Mark locations and sizes of cores and locations of reinforcement and conduit using indelible markers with red for top bars, green for bottom bars and black for cores, openings and conduit. The Professional Engineer will review marked-up locations. If locations are not acceptable to the Engineer, relocate proposed openings and repeat process at no extra cost to the Owner.

.6 Coring: Do not cut existing reinforcement and conduit when coring existing concrete unless approved in advance by the Professional Engineer. Save the complete length of all cores. Label each core with location taken. Make all cores available for review by Engineer.

.7 Patch and make good surfaces cut, damaged or disturbed, to Owner's approval. Match existing material, colour, finish and texture.

.8 Install firestops and smoke seals in accordance with CAN/ULC-S115-2018 around pipe, ductwork, cables and other objects penetrating fire separations to provide fire resistance not less than the fire resistance rating of surrounding floor, ceiling and wall assembly.

.9 When installing stainless steel plates to cover the existing openings, do not use built-up plates. Provide only one plate to cover complete opening.

.6 Procedures - Traction Elevators

.1 Immediately after award of contract, or receipt of a letter of intent to proceed, order all materials for the completion of the work. Complete the documentation for the Registered Design Submission to TSSA. **Provide Consultant with a copy of the completed Registered Design Submission APPLICATION.**

.2 Before any work is performed, conduct a site-specific job hazard analysis (JHA). Provide a copy of the report to the Owner and Consultant.

.3 At the completion of all tests with TSSA sign off and date tests in the logbook. Fill in and date the occurrence book when available.

.4 Within three (3) weeks of expected delivery of the new elevator materials to the site, the Contractor is to advise the Owner of the amount of storage room required and the delivery date to the site.

.5 The Owner does not guarantee on-site storage will be available. In the event storage is available, the Contractor's use shall be at their own risk. Additionally, if available, the Owner does not guarantee storage will be adequate to store all of the equipment required to complete the modernization work.

.6 The Contractor is responsible to be on site to receive all delivered elevator equipment and ensure that it is moved from public areas and immediately moved to the assigned on site storage area.

.7 The Contractor is responsible for all off-site storage costs.

.8 Notify the Owner and Consultant in writing, at least four (4) weeks prior to placing any elevator out of service.

.9 Notify the Owner in writing of any planned power interruptions at least seventy-two (72) hours in advance and make any critical shutdowns after normal hours. Coordinate with the Owner.

.10 Contractor is responsible to file a notice of project with Municipal and/or Provincial authorities prior to commencement of work and submit a copy to the Owner and Consultant.

.11 **Prior to the start of the alteration, weigh the car and counterweight separately and record the weights. Provide Consultant with a digital photo and a written copy of the recorded weights.**

.12 Any modifications to the building structure or contents by the elevator contractor, such as but not limited to, cutting of floor slabs, cutting of wall slabs, removal of cement blocks or railings to install hoisting beams, removing of ceiling tiles or panels or any modifications which may affect the integrity or appearance of the building, must be approved by the Owner and or a Professional Engineer at no cost to the Owner. All changes required are the responsibility of the Elevator Contractor.

.13 Should the Contractor's safety policy require a verification of the load rating and/or fastenings of the existing hoisting beams in the machine room and/or hoistway which may be used by the Contractor, it will be the Contractor's responsibility and costs associated to have the beams inspected by a Registered Professional Engineer. Any temporary changes as required the Engineer's report will be carried out by the Contractor at their cost.

.14 The building components which have been modified by the Elevator Contractor must be returned to their original condition similar to the commencement of the elevator project and be acceptable to the Owner.

.15 Provide a bilingual notice stating "THIS ELEVATOR IS OUT OF SERVICE FOR MODERNISATION" / "TRAVAUX DE MODERNISATION EN COURS" at each floor. These notices should include the Elevator Contractor's name and should be securely attached to each hoistway door.

.16 Where the Elevator Contractor submits for a Minor A or Minor B submission, arrange for the TSSA inspection to be carried out within two (2) weeks of the completion of the work.

.1 Forward a copy of the TSSA inspection report to the Consultant.

.2 A copy of the TSSA inspection report must also be included in the manuals.

.3 The final payment will not be approved until the final TSSA inspection has been carried out and a clear TSSA inspection report is provided.

.17 Before any construction work commences on site, suitably protect all carpeting and flooring. Protection to remain in place until turnover of the elevators. The Contractor will be responsible for cleaning or replacing of any damaged or dirty flooring.

.18 Obtain permission from the Owner before any cutting, welding, grinding or for any work causing sparks or open flames is carried out. Hot work permit must be requested from the owner with a minimum 72 hours notice.

.7 Reference Standards

.1 Comply with all building codes, by-laws, regulations, directives, and ordinances as set forth and mandated by Federal, Provincial, and Municipal Authorities, in effect at the time of installation.

.2 The latest editions of the following Standards as a minimum shall apply:

.1 ASME A17.1-2019/CSA-B44-19 Safety Code For Elevators and Escalators, including latest supplements and Appendix E, Elevator Requirements For Persons with Physical Disabilities.

.2 The Ontario Building Code 2023 and the National Building Code of Canada - 2020.

.3 CAN/CSA-B44.1/ASME A17.5 2019 Elevator and Escalator Electrical Equipment.

.4 CSA Standard C22.1 - 18 Canadian Electrical Code Part 1.

.5 CSA Standard B651-12 Accessible Design for the as Built Environment.

.6 Technical Standards and Safety Act, 2000 O. Reg. 209/01 and O.Reg.155/97 Certification and Training of Elevating Devices Mechanics.

.7 The latest copy of the TSSA Code Adoption Document.

.8 Occupational Health and Safety Act and Regulations for Construction Projects R.S.O 1990, 2010 Edition.

.9 In case of discrepancy, the above standards take precedence over details elsewhere in this specification.

.8 General Requirements

.1 Conform perfectly this work to that of the other trades. Errors, omissions or imperfections in this work will not be justified by errors, omissions, or imperfections of other trades or sub-contractors.

.2 Before beginning work, the successful Elevator Contractor shall submit for approval detailed drawings showing the complete layout of all fixtures for car and corridors, any changes to power arrangement and cab interior refurbishing. These drawings shall be reviewed by the Elevator Consultant before commencing installation. Appropriate drawings shall also be submitted to and approved by any Municipal or Provincial Authorities having jurisdiction. The Elevator Contractor is to completely survey the existing hoistway and machine room to facilitate the preparation of the shop drawings.

.3 The Elevator Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expense for, or on account of, any unpatented or patented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner unless otherwise specifically stipulated in

the contract documents.

.4 The installation of this equipment shall be performed by mechanics skilled and licensed in the installation of elevator machinery and elevator entrances. The Elevator Contractor shall provide adequate supervision of this work.

.5 All Elevator Contractor's employees must be neatly dressed and shall wear uniforms or coveralls with company identification logos.

.6 The Elevator Contractor shall continuously maintain adequate protection of all work from damage and shall protect the Owner's property from injury or loss arising out of this contract. They shall make good any such damage, injury or loss, except such as may be directly caused by agents or employees of the Owner.

.7 The Elevator Contractor shall remove all rubbish as fast as it accumulates. Keep the building and premises clean during the progress of the work, and leave the premises at completion in perfect condition as far as their work is concerned. **The Contractor is not to use the on-site garbage bins unless expressly permitted by the Owner.**

.8 The Elevator Contractor shall not be liable for any loss, damage, or delay caused by acts of government, strikes, lockouts, riot, civil commotion, war, malicious mischief, acts of Nature or any cause beyond his reasonable control.

.9 The Elevator Contractor performing work under the contract shall comply with all applicable provisions of all Federal, Provincial and local labour laws, and with all applicable union regulations contained in the union agreement.

.10 After the award and signing of the contract, all business relating to the work shall be transacted the office of the Consultant unless otherwise provided therein.

.11 The Elevator Contractor shall be registered with the WSIB. During the time this contract is in force, the Elevator Contractor shall carry premises liability insurance in the amount of $5,000,000.00 inclusive, to be covered against any claims from damage to property or for personal injury, including death, which may arise from operation under this contract, whether such operation is carried out by the said Elevator Contractor or by any Sub-contractor or anyone directly or indirectly employed by either of them. Provide Owner with proof of insurance.

.12 The Owner’s insurance policy covers work and equipment actually in place in the building and approved and accepted by the Elevator Consultant. All material and equipment stored on the premises and not actually installed is not included in the Owner’s policy and such material and equipment is stored at the Elevator Contractor’s own risk. The Owner is not responsible to pay for any missing or stolen new non-installed elevator equipment.

.13 The Elevator Consultant shall have general supervision and direction of the elevator work. They are the agent of the Owner only to the extent provided in the contract documents, and when in special instances, they are authorized by the Owner so to act. The Consultant is authorized to stop the work whenever the stoppage is necessary to ensure the proper execution of the contract.

.14 The Elevator Contractor shall visit and thoroughly survey the site to become familiar with the existing conditions and the fusing and feeder wire size to the mainline disconnect switch.

.15 Within one month after the award of the contract, the Contractor shall submit to the Elevator Consultant a copy of the progress payment schedule. No payments will be made until the schedule is reviewed and approved by the Consultant and the Owner.

.16 The work will be thoroughly inspected by the Elevator Consultant during construction and upon completion.

.9 Definitions of Terms

.1 The term Owner, as used herein, refers to: The National Research Council Canada.

.2 The term "Elevator Consultant", as used herein refers to Priestman Neilson & Associates Ltd., 160 Paseo Private, Ottawa, Ontario, K2G 4N6 who when directed by The Owner, shall act as its agent.

.3 The term Electrical Safety Authority, as used herein, refers to: The Electrical Inspection Authority in the Province of Ontario.

.4 The term Elevator Contractor or Contractor, as used herein, refers to any person, partners, firm or corporation having a contract with the owner to furnish labour and materials for the execution of the work herein described.

.5 The term sub-contractor, as used herein, refers to any person, partners, firm or corporation having a contract with the contractor to furnish labour and materials for the execution of the work herein described.

.6 The term “refurbish”, shall mean to carry out all labour or modifications to parts, etc., which will result in returning the original component to a “like new” condition. All refurbished equipment must be acceptable to the Consultant.

.7 Where the terms “furnish” or “provide” are used, it shall mean to supply and install new equipment.

.8 All terms in the specifications that are not otherwise defined shall have the definitions as given in the latest edition of the ASME A17.1-2019/CSA-B44-19 Safety Code for Elevators and Escalators.

.10 Acceptable Fixture Manufacturers

.1 Dupar Controls Inc.

.2 Schaefer Canada.

.3 Alternatives must be approved by the Consultant.

.11 Firefighters’ Emergency Operation

.1 Retain existing level of Firefighter’s emergency operation. Provide new fixtures with key switches and indicators to match the level of firefighter’s emergency operation currently provided.

.12 Fire Operation Panel

.1 The “FIRE OPERATION” switch, the “CALL CANCEL” button, the “STOP” switch, the door open button(s), the door close button(s), the additional visual signal and

the operating instructions shall be grouped together at the top of a main car operating panel behind a locked cover.

.2 The firefighters' operation panel cover shall be openable by the same key that operates the "FIRE OPERATION" switch. The cover shall be permitted to open automatically when the car is on Phase I Emergency Recall Operation and at the recall level.

.3 When the key is in the "FIRE OPERATION" switch, the cover shall not be capable of being closed. When closed, the cover shall be self-locking.

.4 All buttons and switches shall be readily accessible, located not more than 1800 mm (72") above the floor. The front of the cover shall contain the words "FIREFIGHTERS' OPERATION" in red letters at least 10 mm (0.4") high.

.13 Firefighters' Operation Instructions

.1 Instructions for the operation of the elevators on Phase I Emergency Recall shall be permanently incorporated adjacent to the "FIRE RECALL" switch at the designated level. The wording of the instructions shall comply with wording only as shown in figure 2.27.7.1 of the B44 Code.

.2 Instructions for the operation of the elevators on Phase II Emergency In-Car Operation shall be permanently incorporated on the rear of the fire panel door, or adjacent to the operating panel in the cab. The wording of the instructions shall comply with wording only as shown in figure 2.27.7.2 of the B44 Code.

.3 The instructions shall be in letters not less than 3 mm in height and shall be permanently installed and protected against removal or defacement.

.4 All instructions shall be bilingual.

.14 Firefighters' Emergency Operation Key - FEO-K1

.1 Provide a TSSA approved standard firefighters' operation key (FEO-K1).

.2 The key shall be of a tubular type, 7-pin, style 137 construction and have a bitting code of 6143521.

.3 The same FEO-K1 key shall operate the fire recall switch and fire operation panel door.

.4 The key switches shall comply with Clause 2.27.8 and be of the Group 3 Security.

.15 Independent Service Operation

.1 Provide independent service operation by means of a toggle switch in the cab to allow the car to operate independently in response to car calls only.

.2 Park the car with the doors open, and respond to a selected car call by constant pressure on the door close button, provided, that the doors have been closed and the interlock is made-up. Arrange for the doors to reopen if the constant pressure on the door close button is released at any point prior to the car starting.

.3 Place the direction of travel under the control of the attendant. Arrange the operation to cancel all registered car calls, and by-pass registered hall calls. Do not operate hall lanterns when stopping at a floor.

.16 Elevator Performance

.1 Provide smooth acceleration and deceleration of car without perceptible steps so as not to cause passenger discomfort.

.2 Comply with all performance requirements as detailed in Part 3 of this specification.

.17 Shop Drawings

.1 Before beginning work, prepare all drawings necessary to show the general arrangement of the elevator equipment and other data which is called for and are to be submitted for review. Provide these drawings within four (4) weeks of notification of award of the contract.

.2 Include in the shop drawing submissions, product information sheets for all major equipment to be installed.

.3 The review is for the sole purpose of ascertaining conformance with the general design concept and does not mean approval of the design details inherent in the shop drawings, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents.

.4 Submit and electronic version (pdf format) of each shop drawing for Consultant's review. Use Metric units of measurement.

.5 Any measurements included in the shop drawings remain the responsibility of the Contractor to confirm. The shop drawing review process does not include approval of site measurements.

.6 Provide on the shop drawings all information required by the B44 Code. Indicate as a minimum the following information:

.1 Fixture details showing materials and finish.

.2 Car cab details in colour, indicating materials removed and added including the net weight added.

.3 Submit a copy of the TSSA Design Submission Application with the final submission of the shop drawings. Where required, design submission to include a completed copy of the TSSA Cab Weight Alteration Worksheet.

.18 Record Drawings

.1 Before final acceptance of the elevators, provide two (2) sets of reproducible schematic wiring diagrams, including all changes made in final work, covering electrical and solid-state equipment as supplied and installed, with a list of symbols corresponding to identification or markings on both machine room and hoistway apparatus.

.2 All changes to the wiring diagrams must be marked up in RED and stamped by a Professional Electrical Engineer.

.3 Provide a letter from a Professional Engineer confirming that the marked-up drawings are complete and are "as built".

.4 Neatly organize and **laminate all electrical drawings.**

.5 Provide one (1) soft copy of the above information in PDF and AutoCAD format.

.6 Final payment will not be approved until the record drawings have been submitted and approved by the Consultant.

.19 Operation and Maintenance Manuals

.1 Provide all information necessary for the safe and efficient maintenance of the equipment and incorporate into the maintenance manuals. Provide two (2) sets of hard copy manuals and one (1) soft copy. **One complete manual to be left in the elevator machine room and identified on the cover as MACHINE ROOM COPY.**

.2 The maintenance data must include the following information:

.1 Description of system's method of lubrication, operation and control including, video monitor, motor control system, door operation, signals, fire-fighter's service, and special or non-standard features provided.

.2 As built schematic wiring diagrams covering electrical equipment as supplied and installed, including changes made in final work, with a list of symbols corresponding to identification or markings on both machine room and hoistway apparatus.

.3 Copies of Technical Standards and Safety Authority Design Submission and Final Inspection Report, Re-inspection reports, and a copy of the Warranty letter. Copies of the Electrical Safety Authority Inspections.

.4 Parts catalogue giving complete list of repair and replacement parts with cuts and identifying numbers.

.5 A copy of a Transmittal signed by Owner’s Representative indicating that all tagged keys have been received by the authorized representative.

.6 Provide a site specific hard copy of the detailed maintenance control program (MCP) as part of the manual submission. The MCP is to remain in the elevator machine room.

.7 The final progress payment will not be approved until the maintenance manuals are submitted to the Consultant for review.

.20 Maintenance Service - Interim and Warranty Maintenance Program

.1 The maintenance of the elevator shall remain with the existing maintenance contractor until the day the modernization contractor starts work on site.

.2 The Contractor shall provide a One (1) year warranty maintenance term. The term will commence on the first day of the month following the issuance of the certificate of final completion of the modernization project. Include cost of warranty period in base tender price.

.3 The warranty maintenance programs must be carried out in full compliance with the clauses listed below as well as the Owners scope of work for elevators document included as a separate document with the tender.

.4 Perform all Tests and Examinations as required by Section 8.6 of the CSA B44 Safety Code for Elevators, including any Supplements and the TSSA code adoption document (CAD). Should on-site conditions or manufacturers recommendations require more frequent procedures they shall be increased accordingly.

.5 Maintenance to include **MONTHLY** systematic examination, cleaning, adjustment and lubrication of the elevator equipment and the repair or replacement of all defective parts due to normal wear and tear. Use only genuine parts produced by the manufacturer of the equipment.

.6 Perform work at a minimum frequency of one (1) visit per month. Do not remove the unit service during peak traffic periods.

.7 Provide call back service twenty-four (24) hours per day, seven (7) days per week at no additional charge to the Owner. Respond to service and emergency calls within two (2) hours.

.8 Maintain locally, near the place of work, an adequate stock of parts for replacement or emergency purposes. Have qualified personnel under the supervision and in the direct employ of the contractor available to ensure fulfilment of this maintenance service without unreasonable loss of time.

.9 Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

.10 Maintain in the elevator machine room one (1) copy of the schematic wiring diagrams covering electrical equipment as supplied and installed, including changes made in final work, with a list of symbols corresponding to identification or markings on both machine room and hoistway apparatus. Cover in plastic or laminate.

.11 Provide an approved MCP log as required by the CSA B44 Safety Code for Elevators and the current code adoption document.

.12 Provide a permanent log (occurrence log) for the elevator with pre-numbered pages having the following information: date, time, regular maintenance, regular and overtime call back, names of maintenance technician, action taken, work completed and additional repairs required.

.13 The log shall be the property of the Owner and shall be kept on the job site and available at all times for the Owners verification.

.14 Make all entries in ink, legibly, consecutively and without blanks.

.15 Computerized entries are not acceptable.

.16 Adjust the control system for optimum operation towards the end of the warranty maintenance period when the building is occupied.

.21 Power Supply

.1 The existing **600 Volt** power supply will be retained. The elevator contractor is to confirm the existing power supply on site.

.2 Elevator contractor shall design all equipment to suit existing power supply.

.22 Electrical Services Included in This Contract

.1 The Elevator Contractor shall design the new equipment to operate using the existing 3 phase power supply and feeder wiring size to the disconnect switch**.** The voltage supply may fluctuate by ± 10%.

.2 **Any modifications carried out to the existing electrical systems relating to the elevator modernization project such as: new pit lighting and installation of GFI receptacles must be carried out by a licensed electrician and approved by the Owner. The electrician must take out a permit before the work commences.**

.3 All electrical new or modification work is to be inspected by the Electrical Safety Authority at the completion of the work. A copy of the inspection report must be provided to the Consultant. The Contractor is responsible to pay the costs of the permit and inspection fees.

.23 Warranty

.1 The Contractor is to warrant that the materials, the performance and workmanship are first class in every respect and make good any defects not due to ordinary wear and tear which may develop within one (1) year from the date of certificate of final completion of the last elevator.

.2 The Contractor is to warrant that the equipment performs to the standard set out herein.

.3 The use of the elevator during the construction period shall not affect this warranty.

.4 Neither the final payment nor any provision of the Contract documents relieves the Contractor of the responsibility for negligence or faulty materials or workmanship within the extent and period provided by law.

.5 Upon written notice remedy any defects and pay all expenses for any damage to other work resulting from the defects.

.24 Markings

.1 No trademarks shall appear on any piece of equipment visible to the general public.

.25 Use of Elevators for Persons with Physical Disabilities

.1 Comply with the requirements of Appendix E of the B44 Code and all other governing codes and regulations.

.2 Provide raised character and braille floor designations on both jambs of the entrance frames at all floors. Provide a raised star to the left of the floor designation symbol on both jams at the main entry level. All characters to be 50 mm high.

.26 Occupied Premises and Barricades

.1 Take into consideration the fact that this is an occupied building and must continue to function during the course of the modernization with a minimum of disruption.

.2 The Contractor’s employees shall be courteous to the occupants and abide by the

same building rules and regulations required of the occupants.

.3 All work must be performed in a manner that ensures the safety of the occupants. Should it be necessary to perform work where such safety cannot be ensured, make arrangements with the Owner to complete that portion of the work at an agreed time.

.4 Normal working hours are considered to be between 7:00 am and 5:00 pm each Monday to Friday excluding International Union of Elevator Constructors holidays. Staff the Work with a minimum of two employees each day for the duration of the project, except as explicitly directed otherwise by these specifications, by the Owner or Consultant.

.5 Where excessive noise or obstruction is unavoidable, make arrangements with the Owner to complete that portion of the work between the hours of 5:00PM and 7:00AM.

.6 Provide full height barricades as required to protect the Public from hazardous conditions. Obtain Owners approval for the appearance of all hoarding and barricades erected.

.7 All hoarding shall be removed at the end of the installation.

.8 At the end of each day the work area is to be completely cleaned up. Do not leave any construction materials or equipment visible to the building occupants.

.27 Schedule and Cost Breakdown

.1 Within three (3) weeks after receiving notification of contract award, submit to the Owner and Consultant for approval, a bar chart schedule indicating anticipated progress stages for the project.

.2 Include in this schedule, the following information:

.1 Submission of shop drawings after award of contract.

.2 Submission of TSSA Design Submission Application.

.3 Material delivery lead time.

.4 Date of removal of the elevator from service for modernization.

.5 Total modernization time for the elevator.

.6 Final adjusting time.

.7 TSSA Inspection.

.8 Correction of deficiencies.

.9 The date of completion of all work.

.3 Include with the schedule, a lump sum cost breakdown, indicating the percentage of the costs for the items listed below as a minimum.

.1 Engineering and TSSA submittals (maximum 5%).

.2 Equipment Manufacturing and Shop Drawing Costs (maximum 10%).

.3 Total Labour

.4 Electrical Contractor work.

.5 Hoistway door equipment and wiring.

.6 Fixtures.

.7 Cab interior work.

.8 Adjusting and TSSA inspections (maximum of $2500).

.9 Operation and Maintenance Manuals (maximum of $1,500).

.10 Correction of deficiencies (minimum of 5%).

.5 Provide one (1) weeks' notice prior to the completion of the elevator and the date anticipated for the inspection.

.6 Review and update the work schedule as the completion of the work progresses and notify the Consultant in case of modification.

.7 If the work falls behind the schedule, take action as necessary to meet the schedule, including, but not limited to, extra personnel and overtime work, at no additional cost to the Owner.

.8 Pay costs associated with this action unless the delay is caused by strikes, acts of government, riot, civil commotion, war, malicious mischief, act of Nature or any causes beyond the control of the contractor.

.28 Health and Safety Requirements

.1 Comply with the National Building Code of Canada 2015 (Part 8, Safety Measures at Construction and Demolition Sites) and the Province of Ontario Occupational Health and Safety Act and Regulations for Construction projects R.S.O. 1990, 2010 edition.

.2 Comply with requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials; and regarding labelling and the provision of safety data sheets acceptable to Labour Canada.

.3 Prior to commencement of work in the building, provide a site-specific health and safety plan. This plan must include the following as a minimum:

.1 Site specific safety hazard assessment.

.2 Safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 On-site contingency and emergency response plan that addresses the standard operating procedures to be implemented during emergency situations.

.4 Provide a copy of the Contractor's health and safety "lock out and tag out" procedures in project binder in the machine room, on the health and safety board in the machine room or posted next to the mainline disconnect switch in the machine room.

.5 Provide the following additional information in the machine room until the completion of the project:

.1 A copy of the specifications.

.2 A copy of the Contractor's "accident prevention and safety policy" or a copy of the "Elevator Industry Field Employee Safety Handbook".

.29 Powder Actuated Fastening Devices

.1 Do not use powder actuated tools using explosives, unless permitted expressly by the Consultant and approved by the Owner. If allowed, comply with the requirements of CAN3-Z166.2-M85 (use and handling of powder actuated tools).

.30 Overtime Work Included

.1 Contractor to include in the tender for all costs related to any overtime work required to complete the work specified herein.

.2 Carry out any odour or noise generating work such as interior painting, all welding, core drilling, jack hammering, saw cutting and grinding after normal working hours of the building and at a time which is acceptable to the Owner. Thoroughly arrange to ventilate areas painted during off hours.

.3 Building normal working hours are considered 7:00 AM to 5:00 PM Monday to Friday.

.31 Technical Training

.1 Upon completion of the work, arrange with the Consultant to provide a training session for the Owner's staff.

.2 The seminar shall include a complete review of all documentation, operation of equipment, and demonstration of special features. Allow a minimum of one (1) hour for the training session.

.3 Provide the Consultant with written proof that this training session has taken place and the date of the session and the name of the Contractor's representative who conducted the seminar.

PART 2 – PRODUCTS

.1 Components – Replaced and Retained

.1 The following **major** components shall be replaced with new equipment as specified herein.

.1 Car door operator.

.2 Car door detector.

.3 Car and Hall Operating Fixtures.

.4 Car cab interior finishes.

.5 Hoistway door locks and closing devices.

.2 Basic Materials and Design

.1 Include basic materials as follows:

.1 Sheet steel: to ASTM A366M, cold-rolled sheet, commercial quality.

.2 ASTM standard, A480M-99 standard specification for general requirements for flat-rolled stainless and heat-resisting steel plate, sheet, and strip.

.2 All materials and equipment shall be first class in every respect, have at least a three (3) year history of stable operation, and the bidders shall demonstrate these requirements if called upon to do so, prior to the award of any contract. The Contractor shall furnish for approval, all samples as directed, and materials shall be in accordance with the approved samples.

.3 Where practical and subject to approval provide concealed fastenings hidden from public view and designed to withstand normal use.

.4 Use components only which have performed satisfactorily together under conditions of normal use in not less than three (3) other elevator installations of similar design and for a period of at least two (2) years.

.5 Provide only system designs field tested for the application with adequate capacity to meet all performance criteria and to provide long term, reliable operation.

.3 Wiring, Conduit and Fittings

.1 In general, retain and refurbish all duct, wiring and conduit except as noted in these specifications.

.2 Any new wiring must be CSA - B44 Code approved insulated wiring to connect all parts of the equipment including all wiring in hoistway, car top and car enclosure.

.3 Install all new wiring according to prevailing CEC and B44 Code requirements.

.4 Provide insulated wiring having a flame retarding and moisture resisting outer cover.

.5 Run the wires in metal duct or conduit.

.6 Use steel compression type fittings where electrical metallic tubing is used. Fittings with set screws are not acceptable unless a separately identified grounding

conductor is also installed in the raceway.

.7 Provide and connect all new hoistway wiring, travelling cables, car wiring, etc., and all remote alarm indicators or other similar items, from the device to terminal blocks mounted and identified on the controller.

.8 Connect all wires from one live device to another live device, (e.g. from car operating panel to controller) to car terminal blocks and controller terminal blocks.

.9 Check all wires, including spares, for continuity and grounds, and mark each wire by a number and each group as to destination.

.10 Mark all connections on intermediate terminal blocks with corresponding numbers.

.11 Where provided, ensure all flexible conduit is aluminum type.

.12 All wiring that is run in conduit, tubing or troughing must comply with Table 6 of the CEC Part 1.

.13 Do not use armored flexible metal conduit as grounding conductor. Provide a separate ground wire in all flexible metal conduit where grounding is required.

.14 Limit the use of flexible conduit on the car top to items that require movement or periodic adjustment. Excessive use of flexible conduit will be rejected.

.15 All flexible conduit that rests on the car top must be installed in a Uni-Strut which is at least the same height as the conduit.

.16 Provide a separate identified green ground wire to all switches and components connected by flexible conduit, such as, but not limited to, hoistway door locks, car gate switch, hall and car push buttons and limit switches.

.17 All grounding or bonding conductors shall have a continuous outer finish that is green or green with one or more yellow stripes.

.18 Comply with TSSA Enforcement Procedure Bulletin Ref. No. 222/07 relating to proper grounding procedures.

.19 The conductors to the hoistway door locks shall meet the requirements of Rule 2-126 and Clause 38-011 of the Canadian and Ontario Electrical Safety Codes. The wiring must be rated for 200E centigrade and be of the SF type or equivalent.

.20 Do not run any wiring or conduit on the pit floor. Install all wiring and conduit a minimum 600 mm (24”) above pit floor. Securely fasten and brace any conduit which runs across the hoistway above the floor.

.21 All field wiring must be stranded with no splices.

.22 All EMT to be factory painted with the following colour codes:

1. RED – Fire Alarm
2. YELLOW – Emergency Power
3. BLUE – Communication
4. Green – Security
5. Orange - BAS

.4 Travelling Cables

.1 Retain and refurbish existing traveling cables.

.2 Provide and instal any new travelling cables to accommodate new and/or upgraded components as part of this modernization. All travelling cables must be CSA-B44 Code approved flexible travelling cable designed specifically for elevator use. Provide ETT type cable.

.3 Terminate cables on terminal blocks having identifying numbers to facilitate replacement and service.

.4 Provide travelling cable with flame retarding and moisture resisting outer covers.

.5 Suitably suspend the travelling cables to relieve strain in the individual conductors, (using a steel supporting strand with appropriate supports if the suspended weight exceeds 34 kg).

.6 Provide ten percent (10%) additional minimum spare conductor wires in each new travelling cable.

.5 Lubrication

.1 Include means of lubricating bearings requiring periodic lubrication.

.2 When used, provide all grease fittings to fit same gun. Where grease cups are provided, use automatic feed compression type.

.3 Provide visible and easily accessible lubrication points.

.6 Roller Guides

.1 Completely remove the existing car and counterweight roller guide assemblies. Thoroughly wash and clean down the guide rails.

.2 Provide new spring-loaded type roller guides. Rollers shall be a minimum of 152 mm for the car and 83 mm for the counterweight.

.3 Provide each guide with durable, oil resistant and resilient rubber tired ball bearing rollers, to run on three finished rail surfaces.

.4 Use roller tire material that will not develop flat spots after standing idle for 24 hours under average environmental conditions.

.5 Maintain each roller on its respective guide in uniform contact with rail surface at all time by means of substantial springs or by flexible mounting.

.6 Provide guide operation, which is inaudible to passengers in the car or outside of the hoistway with the car operating at rated speed and car fan turned off.

.7 Suspension Ropes and Fastenings

.1 Retain and refurbish existing hoist ropes and fastenings.

.2 Replace any damaged shackles, springs and clips.

.3 Ensure ends of ropes are neatly taped with no loose stands.

.8 Guide Rails and Fastenings

.1 Retain and refurbish existing rails and brackets.

.2 Thoroughly clean down and wash rails and brackets. File joints where required.

.3 Check rail alignment and plumb same within maximum variation of 1.6 mm over any 6.1 m section and with not more than a variation of 0.08 mm in 32 mm.

.4 Check and correct all fastenings, brackets and fish plates to ensure secure and solid attachment of rails.

.9 Spring Buffers, Channels and Supports

.1 Retain and refurbish existing car and counterweight spring buffers, channels and supports. Securely fasten springs in place.

.2 Clean and paint all pit steel with rust resistant BLACK paint.

.3 Replace any worn or badly rusted components.

.4 Provide a data tag permanently attached to each buffer in conformance with the requirements of section 2.22.3.3 of the CSA B44-19 code.

.10 Counterweight

.1 Retain and Refurbish the existing counterweight, thoroughly clean off and examine the frame, bolts, and fastenings for tightness and excessive wear.

.2 Re-balance counterweight to equal the weight of the complete elevator car cab, frame and platform plus 40% to 42.5% of the contract load.

.3 Check runby and post sign in the vicinity of the counterweight buffer indicating the maximum designed runby for this installation.

.4 Provide four (4) separate steel retaining guides to prevent the counterweight from leaving the guide rails in event that the roller guide assemblies leave their attachments. The retaining arrangement is to be fastened to the counterweight frame independent of the primary guiding means. Paint new retaining guides YELLOW.

.5 Paint complete counterweight Yellow in colour.

.11 Car Free-Fall Safety

.1 Retain and refurbish the existing under car safety device and ensure proper operation in accordance with clause 2.17.3 of the B44 Code. Thoroughly wash off the safeties. Clean and lubricate all parts. Repair and/or replace as required to obtain proper operation.

.2 Perform full load overspeed test in the presence of the TSSA Inspector.

.12 Geared Traction Machine

.1 Retain and refurbish existing Machine.

.2 Complete remove all gear oil and flush gear case. Provide all new oil as pre manufacturer’s instructions.

.13 Controllers and Cabinets

.1 Retain and refurbish existing GAL controller.

.2 Provide any new boards, software and wiring required to accommodate new and upgraded components as a part of this modernization.

.3 Make any changes required to the electrical prints to accommodate new and upgraded components as a part of this modernization.

.14 Hoistway Doors

.1 Check and adjust all doors to ensure doors will close smoothly and quietly, with the closing mechanism released and regardless of their position on the track, when a 2.7 kg horizontal force is applied at mid-height on the door in the horizontal motion.

.2 Retain top and bottom hoistway door retainers. Ensure that all retainers are fastened as per design drawings.

.3 Provide all new lower guides on the hoistway doors.

.4 Check and tighten all loose sight guards.

.5 Check all doors for broken welds. Refurbish as required.

.6 Make hoistway doors open fully at all floors.

.7 Thoroughly wash and clean the hoistway side of all doors.

.8 Check structural integrity of the top of the hoistway doors and reinforce where required before re-attaching hanger rollers. Notify Consultant when verifying structural integrity.

.15 Hoistway Access Device

.1 Retain and refurbish existing keyed hoistway access switches in accordance with Clause 2.12.7.1 of B44 Code at the top and bottom landings.

.2 Retain and refurbish existing hoistway door unlocking devices at all floors. Replace any missing collars with new stainless-steel collars for all lunar key holes. Tighten any loose collars.

.16 Hoistway Door Sills and Frames

.1 Retain existing sills, thoroughly clean and check for secure fastening.

.2 Check all door frames for secure fastening to building. Take corrective action where required.

.3 Review each floor level to ensure no tripping hazards exist between the sill and the elevator lobby flooring. Provide options to correct any tripping hazards.

.17 Fascias

.1 Check fastenings, clean and paint all fascias BLACK in colour.

.2 Provide and install a dust cap above the top floor header angled back to the shaft wall at an angle not less than 75 degrees. Paint BLACK in colour.

.18 Hoistway Door Hangers, Tracks, Locks and Closers

.1 Retain and refurbish the existing hoistway door hangers and tracks.

.2 Replace all door rollers to provide a smooth and quiet operation.

.3 Provide complete new GAL door locks and pick up roller assemblies.

.4 Dowel all door pickup roller assemblies after final adjustment.

.5 Replace existing door closers on all hoistway doors with new heavy duty sill mounted spring type closing devices.

.6 Replace all relating cables and sheaves with new.

.19 Car Door Hangers and Track

.1 Provide new GAL header, track and hangers. Provide two (2) new car door rollers for each car door panel.

.2 Adjust rollers and eccentrics to provide smooth and quiet operation.

.20 Car Door Operator

.1 Provide a new **GAL MOVFE 2500-HL belt driven** closed loop heavy duty car door operator. Provide new car door clutch as required.

.2 Locate the controls for adjusting and regulating of the door operator acceleration, deceleration and operating speeds adjacent to the door operator on top of the car cab.

.3 Operate doors positively, reliably and consistently under varying hoistway air pressure conditions.

.4 Open and close door operation to be electrically cushioned at final limits of door travel.

.5 Provide a new **GAL** gate switch for each car door panel. Switch to be operated by a roller attached to each door panel. Provide a separate green ground wire to the switch. Dowel gate switch mounting brackets.

.6 The flexible conduit from the car door operator motor to the control box must be installed in a metal Uni-Strut to protect against obstructions on the car top. Uni-strut must be higher than the flex.

.7 Provide a car door restricted opening device as per B44 Code requirements.

.21 Infrared Proximity Detector

.1 Provide new two-dimensional (2D) proximity detector of similar design to the existing.

.2 Detector to protect the full door opening, such that a person or object passing through the car entrance causes the doors to re-open. Provide 154 beam light curtain.

.3 The zone of protection shall extend from 12.7 mm above the sill to a minimum height of 1,500 mm, on each car door panel.

.4 Device to be reliable and consistent in operation, not affected by humidity or

temperature changes and have inherent long-term reliability with minimum maintenance.

.5 Upon failure of the device, shut the car down at the next available floor, with the doors in the fully open position.

.6 Retain existing door detector and leave in the machine room as a spare.

.22 Reduce Speed Door Closing

.1 Should the doors be held open by the proximity detector for more than 20.0 seconds, sound a buzzer and reduce the door closing kinetic energy to 3.5 j. Time delay to be adjustable.

.23 Car Frame and Platform

.1 Retain the existing car frame and platform. Inspect complete car frame and platform to ensure all bolts are in place and tight and that hoist rope hitches are secure.

.2 Thoroughly examine for any cracks, bends or broken welds, repair where required.

.3 Provide any required reinforcement to relieve car enclosure of any undue stress.

.4 Clean the underside of the car from rust and paint in accordance with Part 3 Section 13.

.5 Scrape and paint the toe guard BLACK in colour.

.6 **Paint the bottom angled portion of the toe guard yellow with angled BLACK stripes.**

.7 Provide and install a new nickel-silver car sill.

.8 Ensure clearance between the car and hall sills is within code requirements. Make all necessary adjustments.

.24 Top of Car Safety Railing

.1 Retain and reuse the existing car top railing. Ensure railing is properly secured and meets all requirements of the latest edition of the TSSA Code Adoption Document. Repair and/or replace as required to meet the requirements of the latest edition of the TSSA Code Adoption Document.

.25 Alarm Bell

.1 Provide an alarm bell located on the car designed to operate under permanent and emergency power conditions.

.2 Alarm button in cab to illuminate when pressed.

.26 Car and Counterweight Weighing

.1 **When a cab interior upgrade is being carried out comply with requirements of the current TSSA code adoption document.**

.2 **Prior to the start and at the completion** of the alteration, weigh the car and counterweight and record the weights.

.3 Provide Consultant with a digital photo of the weighing and copy of the recorded weights.

.4 Provide on the car top and fill in an Auxiliary Weight Data Tag.

.27 Car Doors

.1 Provide new flush steel horizontal slide door finished in stainless-steel No. 4 Satin Finish.

.2 Provide two-point suspension door hangers for each door panel using rollers with resilient sound absorbing wearing surfaces and replaceable hanger tracks. Use rollers no less than 83 mm in diameter.

.3 Use sealed self-lubricating ball or roller bearings sealed to retain grease lubrication and wipers to maintain rollers and track in clean condition.

.4 Absorb upthrust with adjustable eccentric rollers equipped with ball or roller bearings.

.5 Provide two (2) new lower guides on each door.

.6 Provide new hanger rollers.

.7 Adjust car doors for quiet and smooth operation.

.8 Adjust clearance between doors and frames to be no more than 9 mm.

.9 Replace all worn rubber astragals.

.28 Cab Interior Refurbishing

.1 **General**

.1 Replace the existing car cab shell.

.2 Net interior dimensions shall be maximized to existing platform size.

.3 Maximize interior cab height to the extent possible by retaining the existing sling.

.4 All new materials provided shall conform to Clause 2.14.2 of the B44 Code.

.5 Provide and install complete new cab enclosure of minimum 14 gauge satin coat sheet steel walls and 12 gauge satin coat sheet steel canopy. Enclosure walls to be solid and permit removal of raised panels without revealing any wall openings. Comply with ULC Standard CAN/ULC-S102 flame spread rating for cab walls and ceilings and ULC Standard CAN4-S102.2 flame spread rating for cab floors.

.6 Provide and mount a stainless steel, vandal resistant, 11” x 17” notice holder in the cab complete with a keyed lock. Visible area to be full 11” x 17” opening. All glazing shall be of the appropriate safety rating for the installation. Mount on side wall furthest from the door.

.7 Submit shop drawings of cab details for review by the Consultant and Owner.

.2 **Ceiling**

.1 Provide a new, removable type, drop ceiling panel constructed of 0.95 mm stainless steel nº 4 satin finish. Mount ceiling panel as close as possible to the new cab canopy.

.2 Provide in the drop ceiling new, flush mount, MR-16 fixtures and warm white LED lamps complete with silver aluminum rims. Provide pot lights with flexible wiring and plugs to allow for removal of drop ceiling and replacement of fixtures.

.3 Provide an approved type dimmer switch mounted above the drop ceiling to adjust the light intensity in the cab.

.4 Arrange panels to provide access to the emergency exit on the car top.

.3 **Front Return Panels, Transom and Car Door**

.1 Clad the front return panel and transoms with stainless-steel No. 4 Satin Finish.

.2 Clad the car doors with stainless-steel No. 4 Satin Finish.

.4 **Side and Rear Walls**

.1 Provide on the side and rear walls from the base plate to within 50 mm of the underside of the handrail mounting panel, **VERTICAL** applied panels constructed of high density fire rated board and covered with plastic laminate. Colour and pattern to be chosen by the Owner. Provide two (2) panels on each wall. Provide 3 mm stainless steel corner edge on panels.

.2 Panels to be constructed of 11 mm FRPB.

.3 Provide a 150 mm handrail mounting panel clad with stainless steel nº 4 satin finish complete with phenolic backer.

.4 Provide corner reveals of approximately 50 mm between panels and corners. Clad reveal strips in 20 gauge stainless steel nº 4 satin finish.

.5 Provide 3 mm aluminum panel interlock between panels.

.6 Provide on the side walls from the handrail mounting panel to the height of the drop ceiling, **VERTICAL** applied panels constructed of high density fire rated board and covered with plastic laminate. Colour and pattern to be chosen by the Owner. Provide two (2) panels on each wall. Provide 3 mm stainless steel corner edge on panels.

.7 Provide on the rear wall from the handrail mounting panel to the height of the drop ceiling, **VERTICAL** applied panels constructed of 6mm grey smoked safety mirror. Panels to be completely encased in stainless steel protective binder angles or other equal method of protecting panel edges.

.5 **Handrails**

.1 Provide new handrails at 915 mm above floor, on all non-access walls. Design handrails to be removable from inside the car. Space handrail 35 mm to 45 mm from wall.

.2 Handrails to be installed on a 150 mm mounting panel clad with stainless steel nº 4 satin finish complete with phenolic backer.

.3 Handrail to be constructed of **tubular** stainless steel and returned to the wall at each end.

.6 **Kick Plates**

.1 Provide new vented stainless steel kick plates 150 mm high around the perimeter of the cab.

.7 **Car Sills**

.1 Provide and install a new **nickel silver** car sill.

.8 **Flooring**

.1 Remove the existing flooring and sub-flooring.

.2 Provide and install new water resistant plywood subfloor to suit sill height.

.3 Provide and install new vinyl sheet flooring to Owner's choice of colour.

.29 Car Protective Pads

.1 Install suitable pad hooks in the car cab.

.2 Provide one (1) complete set of fire retardant protective pads for the elevator covering all exposed wall surfaces and the front return panel (except car station) and covering from 100 mm to approximately 2,400 mm above the car floor.

.30 Car Ventilation

.1 Provide ventilation by a new two speed fan located in the ceiling of the cab.

.2 Limit total fan noise to 55 dBA as read from 0.9 m above floor with fan on high speed.

.3 Mount fan on top of car and effectively sound isolate system from car to prevent transmission of vibration to car structure.

.31 Car Operating Panel and Service Cabinet

.1 Provide in the car cab, one new car operating panel, with hinged stainless steel face plate and service cabinet.

.2 Locate all buttons in accordance with Appendix E, of the B44 Safety Code for Elevators. Top button to be no more than 1,370 mm above the finished floor. Telephone button to be a minimum 890 mm above the floor.

.3 Provide stainless steel vandal resistant floor buttons. Provide and install raised numerals with braille to the left of each button. Attached plates will not be accepted. Where possible use international symbols. All other markings to be engraved on the faceplate in both official languages.

.4 Common devices to be included in the car station are as follows:

.1 Floor push buttons with integral illumination using White/Blue LED type lights with a minimum 100,000 hour rating. Illuminate button Blue when call is registered and extinguish the call when the car stops at the selected floor.

.2 Provide an audible signal when car button has been activated.

.3 Alarm, door open and door close buttons. Mark buttons with appropriate symbols listed in table 2.26.12.1 of the ASME A17.1-2019/CSA B44-19 Code. Alarm button to be provided with RED illumination.

.4 Lens for Emergency Lighting System as specified elsewhere.

.5 Position indicator as specified elsewhere.

.6 Provide perforation holes for a hands-free communication system, as specified elsewhere in these specifications. Provide beside the PHONE button, a **YELLOW** International Telephone Symbol and engraved wording "HELP/SECOURS". Provide an LED visual indicator and engraving, to indicate to persons with hearing disabilities that their call for assistance has been acknowledged. Phone button to be provided with AMBER illumination.

.7 Phone and alarm button illumination shall remain lit at all times. In the event of a power outage, the illumination shall be maintained through the emergency battery unit in the car station.

.8 Visual and audible signal for Firefighter's Operation.

.9 Audible signal to sound when the car stops at or passes a floor. Signal volume to be adjustable between 50 and 70 dBA.

.5 Provide in the car station, a service cabinet with a hinged **self-locking door**. Provide Metal TOGGLE and KEY SWITCHES inside the service cabinet, appropriately marked by wording or symbols, to control the following:

.1 Car light TOGGLE switch (engrave OFF – ON)

.2 Car ventilating fan TOGGLE switch (engrave 1 – OFF – 2).

.3 Test **button** for emergency lighting

.4 Independent service TOGGLE switch (engrave OFF – ON).

.5 Inspection KEY switch (engrave OFF – ON).

.6 Provide one spare TOGGLE switch.

.7 One GFI receptacle.

.8 Key operated stop switch (engrave Stop – Run).

.9 Volume control knob for the voice enunciation.

.6 Engrave the following on the operating panel as indicated below:

.1 Elevator capacity in Kilograms and Number of Persons.

.2 Elevator number in minimum 50 mm numerals.

.3 TSSA installation number and logo.

.4 Licence located in the machine room in letters 12 mm in height. Engrave with BLACK fill (bilingual).

.7 Submit samples of buttons and layout drawings to Consultant for approval.

.32 Car Position Indicator

.1 Provide a new digital car position indicator located near the top of the car operating panel. Indicator to display identical markings to car operating buttons.

.2 Provide BLUE LED type illumination, 100,000 hour rating, on a high resolution screen display.

.3 Display numbers in segmented format at least 50 mm high.

.4 Provide an audible signal to sound when the car stops at or passes a floor. Signal volume to be adjustable between 50 and 70 dBA.

.5 Arrange letters and numbers appearing on the indicator to illuminate in sequence and to transfer illumination instantaneously between floor levels.

.33 In-Car Lanterns and Gongs

.1 Provide new CE Electronics **SA-130** or similar in-car lanterns with electronic “Chime” type gongs in the entrance. Locate lanterns in car door jamb posts, with the centerline of the fixture 1,830 mm above the floor. Provide two (2) fixtures for each ENTRANCE.

.2 Arrange lanterns so that when the car stops in response to either a car call or a hall call, the in-car lantern, corresponding to the direction of travel, illuminates and the gong operates as the doors are opening. Signal volume to be adjustable between 60 and 90 dBA. Lantern to remain illuminated until the car closes its doors.

.3 In case of over travel arrange the in-car lantern to remain illuminated indicating original direction of travel.

.4 Sound gong once for “UP” and twice for “DOWN” stops.

.5 Lantern fixture plate shall be of stainless steel No. 4 finish and brushed vertically.

.6 Fasteners shall be of the vandal resistant type.

.34 Hall Buttons

.1 Provide one riser of new **surface mount** hall button fixtures identical in design to the car buttons. Provide buttons with integral illumination using 100,000 hour rated **BLUE** LED illumination.

.2 Provide buttons of the same make and model as those in the car stations.

.3 Illuminate corresponding “UP” or “DOWN” call button when call is registered. Extinguish illumination when call has been answered.

.4 Provide an out of service indicator light a minimum of 50 mm by 50 mm in size in each fixture. Indicator to illuminate any time service is denied to the hall buttons.

.5 Provide a digital hall position indicator in ALL hall button fixtures. Display numerals a minimum of 50mm high.

.6 Provide a ground wire to properly ground the hall button fixture **covers**.

.7 Provide stainless steel face plates at all floors.

.8 Provide all cutting, patching, conduit and wiring as required.

.35 Special Hall Station at Designated Level

.1 Provide in the hall button fixture at the designated floor a stainless-steel fixture containing the fire recall key switch with appropriate indicator lights.

.2 The key switch shall be a three (3) position RESET- OFF- ON for the Firefighters Operation service. Provide quality type FEO-K1 key switches of the Group 3 classification.

.3 Provide all cutting, patching, conduit and wiring as required.

.4 Retain and reuse the existing break-the-glass fixture above the ground floor hall door containing the emergency recall keys. Ensure there are a minimum of 2 FEO-K1 keys in the fixture.

.36 Signal Illumination

.1 Illuminate all letters and all numbers with sufficient intensity to produce distinct and well defined indication under ambient lighting conditions.

.37 Audible and Verbal Floor Announcement

.1 Provide verbal floor announcement as per clause E-10.3 of B44 Code.

.2 Provide in the car operating panel, perforation holes for two (2) high powered separate speakers for the verbal floor annunciator device.

.3 Provide a volume control knob in the service panel. Volume to be adjustable from 10 dBA above the ambient to a maximum of 80 dBA measured at the speakers.

.38 Faceplate Fastenings

.1 Fasten all signal fixture face plates securely with unexposed fasteners or with tamper-proof fasteners.

.39 Identification

.1 Provide 100 mm numerals corresponding to floor level on inside of hoistway doors and fascia plates.

.2 Provide all necessary engraving on faceplates as required by the Consultant, in Helvetica medium, upper and lower case.

.3 All fastenings of cover plates for signals, buttons and panels shall be tamper proof type.

.4 Provide tactile indications with minimum 50 mm floor numerals raised 1 mm on both hoistway door panel jambs at each opening. Secure plates in place using pop rivets or a permanent adhesive. Provide finish to match entrance. Locate center-line of numeral 1,525 mm above floor level measured from the base line of the characters.

.5 At the main entry level on both door jambs provide a 50 mm raised star designation to the left of the floor designation number. All characters to comply with Clause E20.2.

.40 Car Emergency Lighting

.1 Provide new battery operated emergency lighting equipment. The lens is to be incorporated into the car operating panel.

.2 Provide general illumination in the car with a minimum of 10 lx intensity 1,200 mm above the car floor and 300 mm in front of the operating panels for at least a four (4) hour period.

.3 Include means for convenient manual operation and testing of the unit in the car station service cabinet.

.4 Design battery unit of sufficient strength to support a load of at least 90 Kg without causing malfunction or damage.

.5 Include means of containing any leakage or spillage of electrolyte.

.6 Arrange battery unit as a source of power for alarm bell during a power failure.

.41 Emergency Communications System in the Car

.1 Comply with clause 2.27.1.1.1 of the B44 Code except that the communication device is to be compatible with the CSA B44-07 version of the code and not updated to comply with the CSA B44-19 version.

.2 Provide a hands free, vandal resistant, emergency communications device containing an internal adjustable volume control speaker and microphone, mounted behind the car station panel to enable two-way voice communication between the car and a location that is readily accessible to authorized and emergency personnel.

.3 The device shall be activated by pressing the HELP button located in the car station and shall automatically ring a telephone number of the Owner's choice. Once activated in the elevator the line shall remain open until disconnected by the receiver. Bilingual **HELP button to be located between 890 mm and 1,220 mm above the floor**. **Provide a raised 6mm high stainless collar around the "HELP" button to prevent accidental activation. Spot weld collar to car operating panel.**

.4 On the same panel as the phone push button, a message shall be displayed that is activated by authorized personnel to acknowledge that communications are established. The message shall be permitted to be extinguished where necessary to display a new message or when the communications are terminated.

.5 The device shall contain a ring sensor which shall allow the initiation of a call to the elevator. The number of rings shall be adjustable. The two-way communication shall not be transmitted to an automatic answering system.

.6 The two-way communications means shall provide on demand, to authorized personnel, information that identifies the building location and elevator number and that assistance is required.

.7 The communications, once established, shall be disconnected only when authorized personnel terminate the call or a timed termination occurs. A timed termination by the communication means in the elevator, with the ability to extend the call by the authorized personnel, is permitted if voice notification is sent by the communication means to authorized personnel a minimum of 3 min after

communication has been established. Upon notification, authorized personnel shall have the ability to extend the call; automatic disconnection shall be permitted if the means to extend are not enacted after 20s of the voice notification.

.8 The communications means shall not use a handset in the car.

.9 Operating instructions shall be incorporated with or adjacent to the phone push button.

.10 Provide all wiring necessary for the complete installation of the system from the device in the elevator to an externally located terminal in the elevator machine room.

.11 If the emergency communication system is connected to the building emergency power supply, it shall automatically transfer to a source of standby or emergency power as required by the applicable building code, after the normal power fails. The power source shall be capable of providing for illumination of the visual indication within the car, and the means of emergency communication for at least four (4) hours; and the audible signaling device for at least one (1) hour.

.42 Bilingual Markings

.1 Engrave identification and instructions at least 0.25 mm deep on operating panels and on all signal equipment in both English and French except where design is such that inference is obvious and readily understood.

.2 All position indicators are to display bilingual characters similar to the bilingual floor markings in the car operating panel.

.43 Keys

.1 Provide six (6) keys for each control device and six (6) FEO-K1 keys for Firefighters Service switches. Supply and install a metal key box for the FEO-K1 keys. Locate box as per Owner's requirements.

.2 **Provide ALL keys to the Owner as soon as the first modernized elevator is returned to service.**

.3 All keys shall be grouped as per clause 8.1.1 of the B44 Code.

.4 Organize keys on suitable key rings with engraved Gravoply discs identifying use of key.

.5 Provide Consultant with a copy of a Transmittal signed by Owner's Representative indicating that all tagged keys have been received by the authorized representative.

.6 Provide a copy of the Transmittal in the maintenance manuals.

.44 Material and Marking of Crosshead Data Plates

.1 All crosshead data plates including the cab alteration weight data tag must comply with Clause 2.16.3.3 of the B44 Code.

.2 All data plates must be permanently fastened to the crosshead with screws or silicone glue. Alternate fastenings will not be accepted.

.3 All information on the data plates must be engraved or permanently marked so as the information cannot be easily removed.

PART 3 – EXECUTION

.1 Workmanship and Procedure

.1 Install all equipment in a first class workmanship manner. Upon completion do all necessary repairs, cleaning, and painting as required to turn the equipment over in “New Condition”.

.2 Removal of Old Equipment

.1 Remove and dispose of all redundant elevator equipment including cab, door equipment and fixtures. Removal to be coordinated with the Consultant to ensure that there are no service disruptions to the daily operations of the building. Equipment removal may be required to be during silent hours.

.2 Remove all redundant wiring in the elevator hoistway and machine room completely back to its source.

.3 Adequately protect the interior of the elevator when moving equipment.

.3 Machine Room Noise Level

.1 Design and install the equipment so that the increase in noise level in the machine room with the elevator running does not exceed 30 dBA, as measured by a sound meter located in the machine room. No noise from the machines to be heard in occupied units.

.2 Measure this noise level using a sound level meter on the “A” scale with an “S” response.

.3 All testing shall be witnessed by the Consultant. Contractor to provide a report confirming compliance with this section.

.4 Welding

.1 All field welds shall be identified with the welder's identification stamp.

.2 Submit a hot work permit during any welding, or any work where there is potential for smoke or sparks.

.3 Follow the fire alarm bypass and fire watch procedures included in the Owner’s front end documentation.

.4 Where welding is performed inside the building, smoke eater devices shall be used to minimize odorous emissions.

.5 Interlock

.1 Permanently dowel interlocks.

.6 Surface Protection

.1 Provide protective coverings for all finished surfaces.

.7 Limit Switches

.1 Subsequent to the performance of safety tests and checks by the Inspecting Authorities, fasten final limit switches and brackets by through bolting or doweling.

.8 Car Balance

.1 Check the static balance of the car.

.2 Adjust the equipment and all guide rollers so that at any point the pressure upon the rollers does not exceed 11 kg with closed doors and empty car cab.

.9 Counterweight Balance

.1 Check the static balance of the counterweight.

.2 Adjust the equipment and all guide rollers so that at any point the pressure upon the rollers does not exceed 11 kg.

.3 Check and adjust as required to ensure that the counterweight is equal to the complete elevator cab plus between 40 to 42.5% of the contract load.

.10 Door Adjustment

.1 Arrange levelling and door opening controls in such a manner that the doors start to open during the levelling zone and the doors are open to three quarters of fully open when the car is stopped level with the floor.

.2 The time required to open the doors measured from start of open to fully open position shall not exceed 2.0 seconds.

.3 The time required to close the doors measured from start of close to fully closed position shall not exceed 3.0 seconds.

.11 Elevator Consultant

.1 The Elevator Consultant has general supervision and direction of the elevator work. They are authorized to stop the work whenever the stoppage is necessary to insure the proper execution of the contract.

.2 The Elevator Contractor will furnish competent personnel and equipment for inspecting and directing speed, load and such other acceptance tests as the Elevator Consultant may deem advisable.

.3 The Elevator Consultant will carry out one (1) Final Inspection and one (1) Re-inspection. The cost of any additional inspections required due to the Elevator Contractors failure to correct any outstanding deficiencies previously listed, will be charged to the Elevator Contractor by the Owner.

.12 Inspections Field Tests and Commissioning

.1 Furnish competent personnel to assist the Consultant during the site inspections and testing of the systems. Make the appropriate corrections until final acceptance of the installations.

.2 The site inspections will be carried out to ensure that the workmanship is in compliance with plans and specifications.

.3 Provide a minimum of three working days' notice to Consultant for testing. Prior to giving notice the contractor shall test all systems to ensure proper operation.

.4 Perform all tests as required by the B44 Code and the Technical Standards and Safety Act, 2000 O. Reg. 209/01.

.5 The Contractor is to provide the services of a licensed mechanic to assist with all TSSA and Consultants inspections until **ALL** deficiencies are corrected in an acceptable manner and the final certificate of completion has been provided.

.6 The inspections will be carried out to ensure that the workmanship is in compliance with plans and specifications.

.7 Upon completion of the elevator provide all personnel, instruments and devices required to perform the following:

.1 Test car and counterweight balance to verify specification requirements.

.2 Test the equipment under full load and no load to verify the speed variation performance requirements.

.3 Test operating times to verify the performance requirements.

.4 Test door operating equipment to verify the performance requirements.

.13 Cleaning and Painting

.1 Upon completion thoroughly clean, remove all indications of rust and paint with low odour paint ONLY, the following:

.1 Car top in rust resistant GREY paint, crosshead in BLACK.

.2 Pit equipment, channels, and buffer supports in rust resistant BLACK paint.

.3 Pit ladder YELLOW.

.4 Pit floor in GREY Floor Enamel.

.5 Horizontal area of the refuge space (where required) in the pit and on car top in YELLOW.

.6 Hoistway side of all fascia plates BLACK.

.7 Car toe guard BLACK and bottom angled portion in BLACK/YELLOW crosshatch.

.8 All necessary touch ups for damages caused during handling of equipment are to be made on site. All paint to be approved by Owner.

.2 Prepare masonry, stucco and concrete surfaces to CGSB 85-GP-31M.

.3 Prepare concrete floors to CGSB 85-GP-32M.

.4 Prepare concrete block and poured concrete walls and ceilings apply:

.1 One coat primer-sealer CGSB 1-GP-119M-Amdt-Sep-80.

.2 Two coats semi-gloss enamel CGSB 1-GP-57M.

.5 For concrete floors apply:

.1 One coat enamel CGSB 1-GP-66M reduced by addition of 1 part CGSB

1-GP-70M thinner to eight parts enamel.

.2 One coat enamel CGSB 1-GP-66M.

.14 Traction Elevator Performance Data Form

.1 After completion of the work on the elevator and before the Consultant's Acceptance Inspection, complete and submit this form to the Consultant. The Consultant will not carry out an Acceptance Inspection until receipt of the completed and signed form.

	CAR 01
CAR DOOR OPEN TIME (sec)	
CAR DOOR CLOSE TIME (sec)	
CAR CALL DWELL TIME (sec)	
HALL CALL DWELL TIME (sec)	
NUDGING TIME OUT (sec)	
DOOR CLOSING STALL FORCE (lbs)	
TYPE OF DOORS	SINGLE SPEED CENTRE OPENING
CAR DOOR ENTRANCE WIDTH	42"
CODE ZONE DISTANCE	2" FROM FULL OPEN TO 2" FROM FULL CLOSE
NUDGING CLOSE TIME IN CODE ZONE DISTANCE (sec)	
TESTS PERFORMED BY:	**DATE:**

.2 This form shall be signed by the person responsible for the performance of the test.

ELEVATOR MODERNIZATION SPECIFICATIONS

Project Number: 6495
Passenger Elevator No. 80127

NRC Building M-50
1200 Montreal Road, Ottawa, ON

Issued for Tender: April 19, 2024

Prepared By:

PNA Consultants
YOUR ELEVATOR ADVISER

TABLE OF CONTENTS

PART 1 – GENERAL

.1 Scope of Work

.1 This specification covers the complete modernization of one roped hydraulic passenger elevator (Elevator #4) located in the National Research Council Building M-50 at 1200 Montreal Road, Ottawa, ON.

.2 All equipment to be designed to meet the existing space provisions.

.3 Provide all material, labour, **including overtime**, design, manufacturing, inspection, and testing as required to complete the work as specified in these contract documents.

.4 Arrange and pay for all permits, certificates, inspections and tests required by the governing authorities, including TSSA initial inspection and subsequent inspections.

.5 Where a device or component is mentioned in the singular number, such references shall be understood to mean the contractor shall provide as many of said devices or components as is necessary for the completion of the elevator covered under this specification.

.6 The contractor is responsible to include all related building work required to complete the work.

.2 Description of Systems

.1 The characteristics of the **one** existing roped hydraulic passenger elevator is as follows:

.1	Identification:	Elevator #4 Installation No. 80127
.2	Classification:	Passenger
.3	Rated Net Capacity:	1360 kg (3,000 lbs)
.4	Rated Speed:	Retain 0.625 m/s (125 fpm)
.5	No. of Stops:	Four (4)
.6	No. of Openings:	Four (4)
.7	Entrance Type:	Single Speed Side Slide
.8	Entrance Size:	1070 mm wide x 2,134 mm high

ELEVATOR CONTRACTOR TO CONFIRM ALL INFORMATION, MEASUREMENTS AND FLOOR MARKINGS ON SITE

.3 Related Work to Be Completed By the Elevator Contractor

.1 **Machine Room:**

.1 Paint the machine room floor, walls and ceiling. Provide two coats of GREY Enamel on floor. Provide two coats of WHITE latex semi-gloss on the walls and ceiling. Refer to Part 3 Section 15 for painting specifications.

.2 Patch flush, all redundant holes in machine room floor and walls relating to the elevator work.

.3 The existing fused mainline disconnect switch may be retained and reused if compatible with the new equipment. If not, provide new fused mainline disconnect. Provide all new conduit and wiring to transformer and elevator controller. Provide correct size fuses as indicated in the controller prints.

.4 The existing fused 120v cab lighting disconnect switch may be retained and reused if compatible with the new equipment. If not, provide new fused 120v disconnect. Provide all new conduit and wiring to elevator controller. Provide 15 Amp fuse in the switch.

.5 Remove existing light fixture. Supply and install a minimum of two (2) new tube style 1220 mm guarded energy efficient LED light fixtures. Locate the new fixtures to suit the positions of the new equipment.

.6 Connect the new elevator lighting to a building circuit that is connected to a source of emergency power.

.7 Provide as per the B44 Code, a permanent sign in elevator machine room indicating the specified temperature and humidity range requirements for the elevator equipment to ensure safe and normal elevator operation.

.8 Provide a licence frame holder for the elevator licence to be installed on the front of the controller door. Indicate on TSSA design submission that licence will be located in the elevator machine room.

.9 Provide a Code Data Tag and an Alteration data plate or laminated copy of the alteration sheet on the controller as per B44 Code requirements. Provide a laminated notice on the controller door of the date of the TSSA initial inspection. Letters and numerals to be a minimum of 12 mm high.

.10 Retain and reuse the existing ground fault interrupter style duplex receptacle.

.11 Retain and reuse the existing metal maintenance cabinet in the machine room.

.12 Provide a new metal garbage can with a lid in the machine room.

.13 The elevator contractor is to Include all regular and overtime costs relating to the operation of the elevator and coordination to assist the telephone, security and camera contractors or electricians for the installation, testing and verification of the various systems relating to the elevator operation.

.14 Retain existing active **dedicated** telephone line 24/7 for connection of the communication system in the elevator.

.2 Hoistway

.1 Thoroughly clean down hoistway including the backs of hall door sills, hall door tracks and headers, rails, and brackets at completion of work. Wash car rails. Complete all painting as specified in Part 3 Section 15 of the specifications. Contractor shall protect electrical equipment appropriately and will be responsible for any cost incurred should an electric failure occur as a consequence of this cleaning.

.2 Thoroughly wire brush and paint all rusted components in the hoistway.

.3 Patch all redundant holes in the hoistway including areas around hall button or position indicator fixtures where cement or blocks have been removed or altered to install new fixture boxes. Contractors shall be responsible for performing fire stopping, as required for all penetrations through a fire separation. ULC approved fire stopping details shall be installed to provide the appropriate fire resistance rating (FRR).

.4 Where required, run all telephone, communication, elevator security and camera lines and conduit in the hoistway, car cab and in the machine room.

.5 Bevel all projections in the hoistway that protrude more than 100 mm. Comply with clause 2.1.6 of the B44 Code. Use non-combustible materials such as, metal plates, expanded metal plates, or fire rated drywall.

.6 Remove all redundant elevator equipment from the hoistway.

.7 Include all regular and overtime costs relating to the operation of the elevator to assist all sub-contractors (including any sub-contractors hired by the Owner) who require access to the interior of the hoistway.

.3 **Car Top**

.1 Provide updated crosshead data plate on car top as per code requirements. Data plate to indicate as a minimum Contractors name, date of modernization, car speed and capacity.

.2 Provide and permanently fasten a cab alteration data plate on car top as per B44 Code requirements.

.3 Where required, paint a refuge space outline on car top. Refer to Part 3 Section 15 of the specifications.

.4 Provide two (2) permanent guarded lights on car top. One light to be a moveable type with a magnetic base. Provide a minimum of 200 Lx over the complete car top. All lamps to be LED type.

.5 Thoroughly wash off and paint the complete car top and crosshead. Refer to Part 3 Section 15 of the specifications.

.6 Paint the car number and installation number on the crosshead, minimum 50 mm high. Refer to Part 3 Section 15 of the specifications.

.7 Legibly and completely fill in and install the governor rope tag on the car top.

.4 **Pit**

.1 Vacuum clean and dry pit area to make ready for painting. Consultant to

verify cleaning of pit prior to painting. Coordinate with Consultant for inspection.

.2 Legibly and completely fill in and install the hoist rope tags on the end of the hoist ropes in the pit.

.3 At the completion of the project, flush the pit drain and confirm that it is clear of blockage.

.4 Thoroughly wire brush all pit steel. Paint all pit steel with rust resistant BLACK paint. Paint pit floor GREY. Refer to Part 3 Section 15 of the specifications for painting requirements.

.5 Retain and refurbish existing metal pit ladder. Extend ladder to at least 1524 mm above the landing sill. Paint the ladder yellow in colour. Arrange ladder rungs to minimize slipping by installing skid resistant material. Ladder to conform to clauses 2.2.4.2.1 to 2.2.4.2.6 of the B44 code. Relocate all obstructions between the ladder rungs and the hoistway wall.

.6 Remove the existing pit stop switch. Provide two (2) new *Draka* EN 418 model disconnect switches in pit. One switch to be located at the code required height of 450 mm above the sill and the other to be located near top of ladder.

.7 Retain and reuse the existing LED pit lights.

.8 Retain and reuse the existing Ground Fault Interrupter Type receptacle.

.9 **Replace the existing light switch with new ILLUMINATED switch. Relocate light switch to be at the top of the pit ladder and within easy reach of the pit entrance.**

.10 Scrape and paint the bottom floor fascia plate with BLACK machinery paint. Refer to Part 3 Section 15 of the specifications for painting requirements.

.5 **Cab**

.1 Clean all cab interior and hall entrance surfaces and polish all stainless steel prior to placing an elevator back to service.

.4 Related Work to Be Completed by the Owner

.1 The Owner is responsible for activating and de-activating all fire and/or smoke sensors in the work area that may be activated as a result of ongoing work relating to the elevator modernization.

.2 The Owner is responsible for providing a network connection in the machine room.

.3 Provide an active **dedicated** telephone line 24/7 for connection of the communication system in the elevator. The type of phone line must be compatible for the communication system.

.4 Provide the services of the base building security contractor to reprogram the card reader in the cab. In general the card reader will be retained and reused, but the contractor will need to hook up the card reader to the new wiring in the cab, install it behind the faceplate of the new car operating panel and test to ensure functionality.

.5 Provide the services of the base building security contractor to provide and install a new security camera in the cab. The intent is to use this camera to comply with the video requirements of article 2.27.1.1.3 of the ASME A17.1-2019/CSA B44-19 Code.

.5 Cut Patch and Make Good

.1 Cut existing surfaces as required to accommodate new work**.**

.2 Take precautions to protect the existing structure from damage.

.3 Retain and pay for the services of a Professional Engineer to locate existing reinforcement and conduit and obtain approval from the Professional Engineer before coring existing slabs, beams, floors or walls.

.4 Retain and pay for an independent testing company to locate existing reinforcement and conduit in the areas of proposed openings and to mark locations on the surfaces of slabs, floors and walls on which the cores are to be started. X-ray concrete unless other methods can be shown by Contractor to accurately locate reinforcement and conduit.

.5 Remove toppings and finishes prior to locating reinforcement and conduit. Mark locations and sizes of cores and locations of reinforcement and conduit using indelible markers with red for top bars, green for bottom bars and black for cores, openings and conduit. The Professional Engineer will review marked-up locations. If locations are not acceptable to the Engineer, relocate proposed openings and repeat process at no extra cost to the Owner.

.6 Coring: Do not cut existing reinforcement and conduit when coring existing concrete unless approved in advance by the Professional Engineer. Save the complete length of all cores. Label each core with location taken. Make all cores available for review by Engineer.

.7 Patch and make good surfaces cut, damaged or disturbed, to Owner’s approval. Match existing material, colour, finish and texture.

.8 Install firestops and smoke seals in accordance with CAN/ULC-S115-2018 around pipe, ductwork, cables and other objects penetrating fire separations to provide fire resistance not less than the fire resistance rating of surrounding floor, ceiling and wall assembly.

.9 When installing stainless steel plates to cover the existing openings, do not use built-up plates. Provide only one plate to cover complete opening.

.6 Procedures - Hydraulic Elevators

.1 Immediately after award of contract, or receipt of a letter of intent to proceed, order all materials for the completion of the work. Complete the documentation for the Registered Design Submission to TSSA. **Provide Consultant with a copy of the completed Registered Design Submission APPLICATION.**

.2 Before any work is performed, conduct a site specific job hazard analysis (JHA). Provide a copy of the report to the Owner and Consultant.

.3 At the completion of all tests with TSSA sign off and date tests in the logbook. Fill in and date the occurrence book when available.

.4 Within three (3) weeks of expected delivery of the new elevator materials to the site, the Contractor is to advise the Owner of the amount of storage room required and the delivery date to the site.

.5 The Owner does not guarantee on-site storage will be available. In the event storage is available, the Contractor's use shall be at their own risk. Additionally, if available, the Owner does not guarantee storage will be adequate to store all of the equipment required to complete the modernization work.

.6 The Contractor is responsible to be on site to receive all delivered elevator equipment and ensure that it is moved from public areas and immediately moved to the assigned on site storage area.

.7 The Contractor is responsible for all off-site storage costs.

.8 Notify the Owner and Consultant in writing, at least four (4) weeks prior to placing any elevator out of service.

.9 Notify the Owner in writing of any planned power interruptions at least seventy-two (72) hours in advance and make any critical shutdowns after normal hours. Coordinate with the Owner.

.10 Contractor is responsible to file a notice of project with Municipal and/or Provincial authorities prior to commencement of work and submit a copy to the Owner and Consultant.

.11 **Prior to the start of the alteration, weigh the car and record the weight. Provide Consultant with a digital photo and a written copy of the recorded weights.**

.12 Any modifications to the building structure or contents by the elevator contractor, such as but not limited to, cutting of floor slabs, cutting of wall slabs, removal of cement blocks or railings to install hoisting beams, removing of ceiling tiles or panels or any modifications which may affect the integrity or appearance of the building, must be approved by the Owner and or a Professional Engineer at no cost to the Owner. All changes required are the responsibility of the Elevator Contractor.

.13 The building components which have been modified by the Elevator Contractor must be returned to their original condition similar to the commencement of the elevator project and be acceptable to the Owner.

.14 Provide a bilingual notice stating "THIS ELEVATOR IS OUT OF SERVICE FOR MODERNISATION" / "TRAVAUX DE MODERNISATION EN COURS" at each floor. These notices should include the Elevator Contractor's name and should be securely attached to each hoistway door.

.15 Where the Elevator Contractor submits for a Minor A or Minor B submission, arrange for the TSSA inspection to be carried out within two (2) weeks of the completion of the work.

.1 Forward a copy of the TSSA inspection report to the Consultant.

.2 A copy of the TSSA inspection report must also be included in the manuals.

.3 The final payment will not be approved until the final TSSA inspection has been carried out and a clear TSSA inspection report is provided.

.16 Before any construction work commences on site, suitably protect all carpeting and flooring. Protection to remain in place until turnover of the elevators. The Contractor will be responsible for cleaning or replacing of any damaged or dirty flooring

.17 Obtain permission from the Owner before any cutting, welding, grinding or for any work causing sparks or open flames is carried out. Hot work permit must be requested from the owner with a minimum 72 hours notice.

.7 Reference Standards

.1 Comply with all building codes, by-laws, regulations, directives, and ordinances as set forth and mandated by Federal, Provincial, and Municipal Authorities, in effect at the time of installation.

.2 The latest editions of the following Standards as a minimum shall apply:

.1 ASME A17.1-2019/CSA-B44-19 Safety Code For Elevators and Escalators, including latest supplements and Appendix E, Elevator Requirements For Persons with Physical Disabilities.

.2 The Ontario Building Code 2023 and the National Building Code of Canada - 2020.

.3 CAN/CSA-B44.1/ASME A17.5 2019 Elevator and Escalator Electrical Equipment.

.4 CSA Standard C22.1 - 18 Canadian Electrical Code Part 1.

.5 CSA Standard B651-12 Accessible Design for the as Built Environment.

.6 Technical Standards and Safety Act, 2000 O. Reg. 209/01 and O.Reg.155/97 Certification and Training of Elevating Devices Mechanics.

.7 The latest copy of the TSSA Code Adoption Document.

.8 Occupational Health and Safety Act and Regulations for Construction Projects R.S.O 1990, 2010 Edition.

.9 In case of discrepancy, the above standards take precedence over details elsewhere in this specification.

.8 General Requirements

.1 Conform perfectly this work to that of the other trades. Errors, omissions or imperfections in this work will not be justified by errors, omissions, or imperfections of other trades or sub-contractors.

.2 Before beginning work, the successful Elevator Contractor shall submit for approval detailed drawings showing the complete layout of the elevator machine room, all fixtures for car and corridors, any changes to power arrangement and cab interior refurbishing. These drawings shall be reviewed by the Elevator Consultant before commencing installation. Appropriate drawings shall also be submitted to and approved by any Municipal or Provincial Authorities having jurisdiction. The Elevator Contractor is to completely survey the existing hoistway and machine room to facilitate the preparation of the shop drawings.

.3 The Elevator Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expense for, or on account of, any unpatented or patented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner unless otherwise specifically stipulated in the contract documents.

.4 The installation of this equipment shall be performed by mechanics skilled and licensed in the installation of elevator machinery and elevator entrances. The Elevator Contractor shall provide adequate supervision of this work.

.5 All Elevator Contractor's employees must be neatly dressed and shall wear uniforms or coveralls with company identification logos.

.6 The Elevator Contractor shall continuously maintain adequate protection of all work from damage and shall protect the Owner's property from injury or loss arising out of this contract. They shall make good any such damage, injury or loss, except such as may be directly caused by agents or employees of the Owner.

.7 The Elevator Contractor shall remove all rubbish as fast as it accumulates. Keep the building and premises clean during the progress of the work, and leave the premises at completion in perfect condition as far as their work is concerned. **The Contractor is not to use the on-site garbage bins unless expressly permitted by the Owner.**

.8 The Elevator Contractor shall not be liable for any loss, damage, or delay caused by acts of government, strikes, lockouts, riot, civil commotion, war, malicious mischief, acts of Nature or any cause beyond his reasonable control.

.9 The Elevator Contractor performing work under the contract shall comply with all applicable provisions of all Federal, Provincial and local labour laws, and with all applicable union regulations contained in the union agreement.

.10 After the award and signing of the contract, all business relating to the work shall be transacted the office of the Consultant unless otherwise provided therein.

.11 The Elevator Contractor shall be registered with the WSIB. During the time this contract is in force, the Elevator Contractor shall carry premises liability insurance in the amount of $5,000,000.00 inclusive, to be covered against any claims from damage to property or for personal injury, including death, which may arise from operation under this contract, whether such operation is carried out by the said Elevator Contractor or by any Sub-contractor or anyone directly or indirectly employed by either of them. Provide Owner with proof of insurance.

.12 The Owner’s insurance policy covers work and equipment actually in place in the building and approved and accepted by the Elevator Consultant. All material and equipment stored on the premises and not actually installed is not included in the Owner’s policy and such material and equipment is stored at the Elevator Contractor’s own risk. The Owner is not responsible to pay for any missing or stolen new non-installed elevator equipment.

.13 The Elevator Consultant shall have general supervision and direction of the elevator work. They are the agent of the Owner only to the extent provided in the contract documents, and when in special instances, they are authorized by the Owner so to act. The Consultant is authorized to stop the work whenever the

stoppage is necessary to ensure the proper execution of the contract.

.14 The Elevator Contractor shall visit and thoroughly survey the site to become familiar with the existing conditions and the fusing and feeder wire size to the mainline disconnect switch.

.15 Within one month after the award of the contract, the Contractor shall submit to the Elevator Consultant a copy of the progress payment schedule. No payments will be made until the schedule is reviewed and approved by the Consultant and the Owner.

.16 The work will be thoroughly inspected by the Elevator Consultant during construction and upon completion.

.9 Definitions of Terms

.1 The term Owner, as used herein, refers to: The National Research Council Canada.

.2 The term "Elevator Consultant", as used herein refers to Priestman Neilson & Associates Ltd., 160 Paseo Private, Ottawa, Ontario, K2G 4N6 who when directed by The Owner, shall act as its agent.

.3 The term Electrical Safety Authority, as used herein, refers to: The Electrical Inspection Authority in the Province of Ontario.

.4 The term Elevator Contractor or Contractor, as used herein, refers to any person, partners, firm or corporation having a contract with the owner to furnish labour and materials for the execution of the work herein described.

.5 The term sub-contractor, as used herein, refers to any person, partners, firm or corporation having a contract with the contractor to furnish labour and materials for the execution of the work herein described.

.6 The term “refurbish”, shall mean to carry out all labour or modifications to parts, etc., which will result in returning the original component to a “like new” condition. All refurbished equipment must be acceptable to the Consultant.

.7 Where the terms “furnish” or “provide” are used, it shall mean to supply and install new equipment.

.8 All terms in the specifications that are not otherwise defined shall have the definitions as given in the latest edition of the ASME A17.1-2019/CSA-B44-19 Safety Code for Elevators and Escalators.

.10 Non-Proprietary Controls

.1 Provide an elevator control and drive system that is totally Non-Proprietary.

.2 Provide a written guarantee from the manufacturer of the equipment, including controller, that the equipment is non-proprietary. This includes:

.1 Parts including circuit boards shall be available for direct purchase from the factory in quantities and not on a one-for-one “exchange only” basis. Parts to be stocked to allow for overnight shipment.

.2 Manufacturer offers engineering support and technician training directly to

any service contractor at reasonable prices.

.3 All diagnostics are on board.

.4 All programming and diagrams required for long-term maintenance are provided with the controller.

.5 The controller will not shut down or alter its functionality in any way after a pre-determined increment of time or use.

.6 All specialized tools required for maintenance of the equipment, including door operator, are supplied with the elevator and shall become the property of the Owner and remain on-site. A list of specialized tools shall be provided by the Contractor.

.11 Acceptable Control Manufacturers

.1 GAL Manufacturing. Provide controller complete with a monitor in the machine room installed on the controller door.

.2 Motion Control Engineering complete with mview or iview monitoring.

.3 Alternatives must be approved by the Consultant.

.12 Only Acceptable Fixture Manufacturer

.1 Dupar Controls Inc.

.2 Schaefer Canada.

.3 Alternatives must be approved by the Consultant.

.13 Simplex Selective Collective Automatic Operation

.1 Provide a micro-processor based simplex selective control system.

.2 Provide **ONE** riser of hall buttons. Install single hall buttons at each terminal floor and UP and DOWN buttons at each intermediate floor with stainless steel faceplates.

.3 Dispatch car to corresponding landing upon momentary pressure of the car or hall call buttons.

.4 When started, either in response to car calls or to hall calls, respond to calls registered for direction in which car is travelling in the order which landing are reached, regardless of sequence in which calls were registered.

.5 If car buttons are not pressed and car starts UP in response to several DOWN calls, proceed to highest DOWN call and reverse to answer other DOWN calls. Answer UP calls similarly when car starts DOWN in response to such calls.

.6 If car stops for hall call and car call is registered within predetermined interval after stop for landing corresponding to direction car was travelling, proceed in same direction regardless of other hall calls registered.

.7 If DOWN hall calls are registered while car is travelling UP do not stop at these landings, but allow these calls to remain registered.

.8 After highest car and hall calls have been answered, reverse car automatically and

respond to DOWN car and hall calls.

.9 Provide separate time delays for car and hall calls to enable passengers to enter or leave the car. Hold car for pre-set interval at landings where stops are made. Time delays to be adjustable from 0 to 60 seconds. Cancel interval upon registration of car call or pressure on door close button.

.10 Permit registered car call to establish direction of travel when car has answered farthest call, even if other hall calls are registered.

.11 When no hall or car calls have been registered for a period of sixty (60) seconds, return elevator to the ground floor landing and park with doors closed.

.14 Call Send Operation

.1 Provide a key switch in the car operating panel to change the operation from simplex selective to call-send operation. Operation to function similar to inspection operation.

.2 Once the key switch in the car is activated the doors will be placed under constant pressure operation and automatic closing of the door will be deactivated to tallow material to be loaded into the car. The door detector and the door close button in the car will also be deactivated.

.3 Once the material is loaded and secured the operator will be required to push the floor button in the car operating panel and then use the door close button on the hall station to close the doors. The elevator will then travel automatically to the chose floor, but the doors will not open automatically. They must be opened manually by pressing the door open button on the hall station at the destination floor. The doors are to operate under constant pressure operation so that if the door open button is released and the doors are not fully open they will close again until the door open button is pressed again.

.4 Once the material is unloaded and the operator turns the key switch in the operating panel back to the normal position the elevator will return to simplex operation.

.15 Next Floor Emergency Stop Feature

.1 In the case of over speed due to maladjustment of equipment, stop elevator at next floor.

.16 Firefighters' Emergency Operation

.1 Provide MANUAL "Firefighters' Emergency Operation", Phase I and II, in accordance with Clause 2.27.3 of the B44 Code and the National Building Code of Canada. The designated level (Ground floor) is sprinklered.

.2 Key Switches and Indicators

1. Provide within sight of, and readily accessible, at the designated level for each single elevator or for each group of elevators, a three position recall key switch.

2. The switch shall be labelled "FIRE RECALL" and engraved in Red lettering a minimum 5 mm high. Fill with BLACK coloured permanent epoxy paint,

the identification “RESET” - “OFF” - “ON” in that order.

3. All signage and engraving to be bilingual.

.17 Fire Operation Panel

.1 The “FIRE OPERATION” switch, the “CALL CANCEL” button, the “STOP” switch, the door open button(s), the door close button(s), the additional visual signal and the operating instructions shall be grouped together at the top of a main car operating panel behind a locked cover.

.2 The firefighters’ operation panel cover shall be openable by the same key that operates the “FIRE OPERATION” switch. The cover shall be permitted to open automatically when the car is on Phase I Emergency Recall Operation and at the recall level.

.3 When the key is in the “FIRE OPERATION” switch, the cover shall not be capable of being closed. When closed, the cover shall be self-locking.

.4 All buttons and switches shall be readily accessible, located not more than 1800 mm (72") above the floor. The front of the cover shall contain the words “FIREFIGHTERS’ OPERATION” in red letters at least 10 mm (0.4”) high.

.18 Firefighters’ Operation Instructions

.1 Instructions for the operation of the elevators on Phase I Emergency Recall shall be permanently incorporated adjacent to the “FIRE RECALL” switch at the designated level. The wording of the instructions shall comply with wording only as shown in figure 2.27.7.1 of the B44 Code.

.2 Instructions for the operation of the elevators on Phase II Emergency In-Car Operation shall be permanently incorporated on the rear of the fire panel door, or adjacent to the operating panel in the cab. The wording of the instructions shall comply with wording only as shown in figure 2.27.7.2 of the B44 Code.

.3 The instructions shall be in letters not less than 3 mm in height and shall be permanently installed and protected against removal or defacement.

.4 All instructions shall be bilingual.

.19 Firefighters’ Emergency Operation Key - FEO-K1

.1 Provide a TSSA approved standard firefighters’ operation key (FEO-K1).

.2 The key shall be of a tubular type, 7-pin, style 137 construction and have a bitting code of 6143521.

.3 The same FEO-K1 key shall operate the elevator emergency power selector switch when provided, the fire recall switch and fire operation panel door.

.4 The key switches shall comply with Clause 2.27.8 and be of the Group 3 Security.

.20 Independent Service Operation

.1 Provide independent service operation by means of a toggle switch in the cab to allow the car to operate independently in response to car calls only.

.2 Park the car with the doors open, and respond to a selected car call by constant pressure on the door close button, provided, that the doors have been closed and the interlock is made-up. Arrange for the doors to reopen if the constant pressure on the door close button is released at any point prior to the car starting.

.3 Place the direction of travel under the control of the attendant. Arrange the operation to cancel all registered car calls, and by-pass registered hall calls. Do not operate hall lanterns when stopping at a floor.

.21 Elevator Performance

.1 Provide smooth acceleration and deceleration of car without perceptible steps so as not to cause passenger discomfort.

.2 Comply with all performance requirements as detailed in Part 3 of this specification.

.22 Shop Drawings

.1 Before beginning work, prepare all drawings necessary to show the general arrangement of the elevator equipment and other data which is called for and are to be submitted for review. Provide these drawings within four (4) weeks of notification of award of the contract.

.2 Include in the shop drawing submissions, product information sheets for all major equipment to be installed.

.3 The review is for the sole purpose of ascertaining conformance with the general design concept and does not mean approval of the design details inherent in the shop drawings, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents.

.4 Submit and electronic version (pdf format) of each shop drawing for Consultant's review. Use Metric units of measurement.

.5 Any measurements included in the shop drawings remain the responsibility of the Contractor to confirm. The shop drawing review process does not include approval of site measurements.

.6 Provide on the shop drawings all information required by the B44 Code. Indicate as a minimum the following information:

.1 A layout of the elevator equipment located in the machine room including all retained and new equipment complete with dimensions and weight. Layout drawings must be prepared and stamped by a Registered Professional Engineer.

.2 Characteristics of the equipment located in the machine room including KVA rating of transformer and heat dissipation of equipment.

.3 Location in the machine room for fire panel connections.

.4 Location of heater, exhaust fan, intake and A/C unit in the machine room.

.5 A section view of the hoistway including elevation of each floor served, pit

depth, and overhead.

.6 The fuse type and amperage for the main line and cab lighting disconnect switches.

.7 The specified temperature and humidity range requirements for the elevator equipment to ensure safe and normal elevator operation.

.8 Fixture details showing materials and finish.

.9 Car cab details in colour, indicating materials removed and added including the net weight added.

.10 Locations and size of trap doors and access doors and load on hoist beam and location of trolley beams.

.11 As part of the shop drawing submissions provide the requirements for the fire alarm modifications to the existing system. As a minimum, indicate the location of the smoke sensors, the contact arrangement (n/o or n/c) from the smoke sensors to the elevator machine room, the number and size of signal wiring to the machine room from the fire alarm panel.

.12 **Submit a copy of the TSSA Design Submission Application with the final submission of the shop drawings. Where required, design submission to include a completed copy of the TSSA Cab Weight Alteration Worksheet.**

.23 Record Drawings

.1 Before final acceptance of the elevators, provide two (2) sets of reproducible schematic wiring diagrams, including all changes made in final work, covering electrical and solid-state equipment as supplied and installed, with a list of symbols corresponding to identification or markings on both machine room and hoistway apparatus.

.2 All changes to the wiring diagrams must be marked up in RED and stamped by a Professional Electrical Engineer.

.3 Provide a letter from a Professional Engineer confirming that the marked-up drawings are complete and are “as built”.

.4 Neatly organize and **laminate all electrical drawings.**

.5 Provide one (1) soft copy of the above information in PDF and AutoCAD format.

.6 Final payment will not be approved until the record drawings have been submitted and approved by the Consultant.

.24 Operation and Maintenance Manuals

.1 Provide all information necessary for the safe and efficient maintenance of the equipment and incorporate into the maintenance manuals. Provide two (2) sets of hard copy manuals and one (1) soft copy. **One complete manual to be left in the elevator machine room and identified on the cover as MACHINE ROOM COPY.**

.2 The maintenance data must include the following information:

.1 Description of system's method of lubrication, operation and control including, video monitor, motor control system, door operation, signals, fire-fighter's service, and special or non-standard features provided.

.2 As built schematic wiring diagrams covering electrical equipment as supplied and installed, including changes made in final work, with a list of symbols corresponding to identification or markings on both machine room and hoistway apparatus.

.3 Copies of Technical Standards and Safety Authority Design Submission and Final Inspection Report, Re-inspection reports, and a copy of the Warranty letter. Copies of the Electrical Safety Authority Inspections.

.4 The fully completed test data forms from the Contractor indicating the dates and the results of the automatic fire recall test from the building fire alarm system. The name of the elevator technician who carried out the tests will also be included in the affidavit. **The manuals will not be approved until this information is provided.**

.5 Parts catalogue giving complete list of repair and replacement parts with cuts and identifying numbers.

.6 A copy of a Transmittal signed by Owner’s Representative indicating that all tagged keys have been received by the authorized representative.

.7 Provide a site specific hard copy of the detailed maintenance control program (MCP) as part of the manual submission. The MCP is to remain in the elevator machine room.

.8 The final progress payment will not be approved until the maintenance manuals are submitted to the Consultant for review.

.25 Maintenance Service - Interim and Warranty Maintenance Program

.1 The maintenance of the elevator shall remain with the existing maintenance contractor until the day the modernization contractor starts work on site.

.2 The Contractor shall provide a One (1) year warranty maintenance term. The term will commence on the first day of the month following the issuance of the certificate of final completion of the modernization project. Include cost of warranty period in base tender price.

.3 The warranty maintenance programs must be carried out in full compliance with the clauses listed below as well as the Owners scope of work for elevators document included as a separate document with the tender.

.4 Perform all Tests and Examinations as required by Section 8.6 of the CSA B44 Safety Code for Elevators, including any Supplements and the TSSA code adoption document (CAD). Should on-site conditions or manufacturers recommendations require more frequent procedures they shall be increased accordingly.

.5 Maintenance to include **MONTHLY** systematic examination, cleaning, adjustment and lubrication of the elevator equipment and the repair or replacement of all defective parts due to normal wear and tear. Use only genuine parts produced by

the manufacturer of the equipment.

.6 Perform work at a minimum frequency of one (1) visit per month. Do not remove the unit service during peak traffic periods.

.7 Provide call back service twenty-four (24) hours per day, seven (7) days per week at no additional charge to the Owner. Respond to service and emergency calls within two (2) hours.

.8 Maintain locally, near the place of work, an adequate stock of parts for replacement or emergency purposes. Have qualified personnel under the supervision and in the direct employ of the contractor available to ensure fulfilment of this maintenance service without unreasonable loss of time.

.9 Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

.10 Maintain in the elevator machine room one (1) copy of the schematic wiring diagrams covering electrical equipment as supplied and installed, including changes made in final work, with a list of symbols corresponding to identification or markings on both machine room and hoistway apparatus. Cover in plastic or laminate.

.11 Provide an approved MCP log as required by the CSA B44 Safety Code for Elevators and the current code adoption document.

.12 Provide a permanent log (occurrence log) for the elevator with pre-numbered pages having the following information: date, time, regular maintenance, regular and overtime call back, names of maintenance technician, action taken, work completed and additional repairs required.

.13 The log shall be the property of the Owner and shall be kept on the job site and available at all times for the Owners verification.

.14 Make all entries in ink, legibly, consecutively and without blanks.

.15 Computerized entries are not acceptable.

.16 Adjust the control system for optimum operation towards the end of the warranty maintenance period when the building is occupied.

.26 Power Supply

.1 The existing **600 Volt** power supply will be retained. The elevator contractor is to confirm the existing power supply on site.

.2 Elevator contractor shall design all equipment to suit existing power supply.

.27 Electrical Services Included in This Contract

.1 The Elevator Contractor shall design the new equipment to operate using the existing 3 phase power supply and feeder wiring size to the disconnect switch**.** The voltage supply may fluctuate by ± 10%.

.2 The Elevator Contractor shall be responsible for providing a true earth ground, increased feeder wire size to the disconnect switch, shielding, or bonding as required to suit the new elevator equipment. The true earth ground wire is to be

the same size as the feeder wires. The Owner is not responsible to provide these requirements.

.3 **Any modifications carried out to the existing electrical systems relating to the elevator modernization project such as: new pit and machine room lighting,-installation of GFI receptacles and all new wiring and piping from the mainline disconnect to the controller must be carried out by a licensed electrician and approved by the Owner. The electrician must take out a permit before the work commences.**

.4 All electrical new or modification work is to be inspected by the Electrical Safety Authority at the completion of the work. A copy of the inspection report must be provided to the Consultant. The Contractor is responsible to pay the costs of the permit and inspection fees.

.28 Warranty

.1 The Contractor is to warrant that the materials, the performance and workmanship are first class in every respect and make good any defects not due to ordinary wear and tear which may develop within one (1) year from the date of certificate of final completion of the last elevator.

.2 The Contractor is to warrant that the equipment performs to the standard set out herein.

.3 The use of the elevator during the construction period shall not affect this warranty.

.4 Neither the final payment nor any provision of the Contract documents relieves the Contractor of the responsibility for negligence or faulty materials or workmanship within the extent and period provided by law.

.5 Upon written notice remedy any defects and pay all expenses for any damage to other work resulting from the defects.

.29 Markings

.1 No trademarks shall appear on any piece of equipment visible to the general public.

.30 Use of Elevators for Persons with Physical Disabilities

.1 Comply with the requirements of Appendix E of the B44 Code and all other governing codes and regulations.

.2 Provide raised character and braille floor designations on both jambs of the entrance frames at all floors. Provide a raised star to the left of the floor designation symbol on both jams at the main entry level. All characters to be 50 mm high.

.31 Occupied Premises and Barricades

.1 Take into consideration the fact that this is an occupied building and must continue to function during the course of the modernization with a minimum of disruption.

.2 The Contractor’s employees shall be courteous to the occupants and abide by the same building rules and regulations required of the occupants.

.3 All work must be performed in a manner that ensures the safety of the occupants. Should it be necessary to perform work where such safety cannot be ensured, make arrangements with the Owner to complete that portion of the work at an agreed time.

.4 Normal working hours are considered to be between 7:00 am and 5:00 pm each Monday to Friday excluding International Union of Elevator Constructors holidays. Staff the Work with a minimum of two employees each day for the duration of the project, except as explicitly directed otherwise by these specifications, by the Owner or Consultant.

.5 Where excessive noise or obstruction is unavoidable, arrange with the Owner to complete that portion of the work between the hours of 5:00 p.m. and 7:00 a.m.

.6 Provide full height barricades as required to protect the Public from hazardous conditions. Obtain Owners approval for the appearance of all hoarding and barricades erected.

.7 All hoarding shall be removed at the end of the installation.

.8 At the end of each day the work area is to be completely cleaned up. Do not leave any construction materials or equipment visible to the building occupants.

.32 Schedule and Cost Breakdown

.1 Within three (3) weeks after receiving notification of contract award, submit to the Owner and Consultant for approval, a bar chart schedule indicating anticipated progress stages for the project.

.2 Include in this schedule, the following information:

.1 Submission of shop drawings after award of contract.

.2 Submission of TSSA Design Submission Application.

.3 Material delivery lead time.

.4 Date of removal of the elevator from service for modernization.

.5 Total modernization time for the elevator.

.6 Final adjusting time.

.7 TSSA Inspection.

.8 Correction of deficiencies.

.9 The date of completion of all work.

.3 Include with the schedule, a lump sum cost breakdown, indicating the percentage of the costs for the items listed below as a minimum.

.1 Engineering and TSSA submittals (maximum 5%).

.2 Equipment Manufacturing and Shop Drawing Costs (maximum 10%).

.3 Total Labour

.4 Pumping unit and controller.

.5 Electrical Contractor work.

.6 Hoistway door equipment and wiring.

.7 Fixtures.

.8 Cab interior work.

.9 Adjusting and TSSA inspections (maximum of $2500).

.10 Operation and Maintenance Manuals (maximum of $1,500).

.11 Correction of deficiencies (minimum of 5%).

.5 Provide one (1) weeks' notice prior to the completion of the elevator and the date anticipated for the inspection.

.6 Review and update the work schedule as the completion of the work progresses and notify the Consultant in case of modification.

.7 If the work falls behind the schedule, take action as necessary to meet the schedule, including, but not limited to, extra personnel and overtime work, at no additional cost to the Owner.

.8 Pay costs associated with this action unless the delay is caused by strikes, acts of government, riot, civil commotion, war, malicious mischief, act of Nature or any causes beyond the control of the contractor.

.33 Health and Safety Requirements

.1 Comply with the National Building Code of Canada 2015 (Part 8, Safety Measures at Construction and Demolition Sites) and the Province of Ontario Occupational Health and Safety Act and Regulations for Construction projects R.S.O. 1990, 2010 edition.

.2 Comply with requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials; and regarding labelling and the provision of safety data sheets acceptable to Labour Canada.

.3 Prior to commencement of work in the building, provide a site specific health and safety plan. This plan must include the following as a minimum:

.1 Site specific safety hazard assessment.

.2 Safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 On-site contingency and emergency response plan that addresses the standard operating procedures to be implemented during emergency situations.

.4 Provide a copy of the Contractor's health and safety "lock out and tag out" procedures in project binder in the machine room, on the health and safety board in the machine room or posted next to the mainline disconnect switch in the machine room.

.5 Provide the following additional information in the machine room until the completion of the project:

.1 A copy of the specifications.

.2 A copy of the Contractor's "accident prevention and safety policy" or a copy of the "Elevator Industry Field Employee Safety Handbook".

.34 Powder Actuated Fastening Devices

.1 Do not use powder actuated tools using explosives, unless permitted expressly by the Consultant and approved by the Owner. If allowed, comply with the requirements of CAN3-Z166.2-M85 (use and handling of powder actuated tools).

.35 Overtime Work Included

.1 Contractor to include in the tender for all costs related to any overtime work required to complete the work specified herein.

.2 Carry out any odour or noise generating work such as interior painting, all welding, core drilling, jack hammering, saw cutting and grinding after normal working hours of the building and at a time which is acceptable to the Owner. Thoroughly arrange to ventilate areas painted during off hours.

.3 Building normal working hours are considered 7:00 a.m. to 5:00 p.m., Monday to Friday.

.36 Technical Training

.1 Upon completion of the work, arrange with the Consultant to provide a training session for the Owner's staff.

.2 The seminar shall include a complete review of all documentation, operation of equipment, and demonstration of special features. Allow a minimum of one (1) hour for the training session.

.3 Provide the Consultant with written proof that this training session has taken place and the date of the session and the name of the Contractor's representative who conducted the seminar.

PART 2 – PRODUCTS

.1 Components – Replaced and Retained

.1 The following **major** components shall be replaced with new equipment as specified herein.

.1 Controller.

.2 All wiring and travelling cables.

.3 Pumping unit and control valve.

.4 All hydraulic fluid.

.5 Hydraulic oil line and couplings.

.6 Car door operator.

.7 Car door detector.

.8 Top of car control box.

.9 Car and Hall Operating Fixtures.

.10 Hoistway levelling device.

.11 Car cab interior finishes.

.12 Hoistway door locks and closing devices.

.2 Basic Materials and Design

.1 Include basic materials as follows:

.1 Sheet steel: to ASTM A366M, cold-rolled sheet, commercial quality.

.2 ASTM standard, A480M-99 standard specification for general requirements for flat-rolled stainless and heat-resisting steel plate, sheet, and strip.

.3 Hydraulic pipe and fittings: to CSA B44.

.2 All materials and equipment shall be first class in every respect, have at least a three (3) year history of stable operation, and the bidders shall demonstrate these requirements if called upon to do so, prior to the award of any contract. The Contractor shall furnish for approval, all samples as directed, and materials shall be in accordance with the approved samples.

.3 Where practical and subject to approval provide concealed fastenings hidden from public view and designed to withstand normal use.

.4 Use major elevator components from standard product line of one manufacturer unless otherwise approved by the Consultant.

.5 Use components only which have performed satisfactorily together under conditions of normal use in not less than three (3) other elevator installations of similar design and for a period of at least two (2) years.

.6 Provide only system designs field tested for the application with adequate capacity to meet all performance criteria and to provide long term, reliable operation.

.3 Wiring, Conduit and Fittings

.1 Provide **all** new CSA - B44 Code approved insulated wiring to connect all parts of the equipment including all wiring in hoistway, car top and car enclosure. Existing duct or conduit conforming to current CSA/C22.1 CEC Code may be used.

.2 Install all new wiring according to prevailing CEC and B44 Code requirements.

.3 Provide insulated wiring having a flame retarding and moisture resisting outer cover.

.4 Run the wires in metal duct or conduit.

.5 Use steel compression type fittings where electrical metallic tubing is used. Fittings with set screws are not acceptable unless a separately identified grounding conductor is also installed in the raceway.

.6 Provide and connect all hoistway wiring, travelling cables, car wiring, etc., and all remote alarm indicators or other similar items, from the device to terminal blocks mounted and identified on the controller.

.7 Provide a separate junction box, mounted on the side of the controller in the machine room, with terminals for the connection of "non-elevator" devices, such as telephones, in-car camera and card reader interface and connect from the elevator controller to this junction box, as required.

.8 Provide ten percent (10%) additional minimum spare wires. Tape the ends of the wires and properly and legibly identify all spare wires. Identify wires on both ends.

.9 Connect all wires from one live device to another live device, (e.g. from car operating panel to controller) to car terminal blocks and controller terminal blocks.

.10 Check all wires, including spares, for continuity and grounds, and mark each wire by a number and each group as to destination.

.11 Mark all connections on intermediate terminal blocks with corresponding numbers.

.12 Where provided, ensure all flexible conduit is aluminum type.

.13 Mark all individual wires by numbered adhesive waterproof markers. Identify wires with multi-wire cables by colour code.

.14 Label all terminal and junction boxes as to their function with permanently attached waterproof labels.

.15 Label group of wires and multi-wire cables and mark all terminals with waterproof markers.

.16 Provide stranded field wire with no splices.

.17 Attach to the controller a legible list, neat and waterproof, showing wiring runs, colour codes and numerical codes.

.18 Provide additional auxiliary disconnect switches and wiring as required to suit the machine room layout.

.19 All wiring that is run in conduit, tubing or troughing must comply with Table 6 of the CEC Part 1.

.20 Do not use armored flexible metal conduit as grounding conductor. Provide a separate ground wire in all flexible metal conduit where grounding is required.

.21 Limit the use of flexible conduit on the car top to items that require movement or periodic adjustment. Excessive use of flexible conduit will be rejected.

.22 All flexible conduit that rests on the car top must be installed in a Uni-Strut which is at least the same height as the conduit.

.23 Provide a separate identified green ground wire to all switches and components connected by flexible conduit, such as, but not limited to, hoistway door locks, car gate switch, hall and car push buttons and limit switches.

.24 All grounding or bonding conductors shall have a continuous outer finish that is green or green with one or more yellow stripes.

.25 Comply with TSSA Enforcement Procedure Bulletin Ref. No. 222/07 relating to proper grounding procedures.

.26 The conductors to the hoistway door locks shall meet the requirements of Rule 2-126 and Clause 38-011 of the Canadian and Ontario Electrical Safety Codes. The wiring must be rated for 200E centigrade and be of the SF type or equivalent.

.27 Neatly tie up or lace up and identify all spare wires in the controller.

.28 Do not run any wiring or conduit on the pit floor. Install all wiring and conduit a minimum 600 mm (24”) above pit floor. Securely fasten and brace any conduit which runs across the hoistway above the floor.

.29 All EMT to be factory painted with the following colour codes:

1. RED – Fire Alarm
2. YELLOW – Emergency Power
3. BLUE – Communication
4. Green – Security
5. Orange - BAS

.4 Travelling Cables

.1 Replace all travelling cables with new CSA-B44 Code approved flexible travelling cable designed specifically for elevator use. Provide ETT type cable.

.2 Terminate cables on terminal blocks having identifying numbers to facilitate replacement and service.

.3 Provide travelling cable with flame retarding and moisture resisting outer covers.

.4 Suitably suspend the travelling cables to relieve strain in the individual conductors, (using a steel supporting strand with appropriate supports if the suspended weight exceeds 34 kg).

.5 Provide ten percent (10%) additional minimum spare conductor wires in each travelling cable.

.6 Provide in the travelling cables at least three (3) twisted pairs (minimum 20 gauge) of uninterrupted shielded wires for the security card reader in the cab.

.7 Provide in the travelling cables, at least six (6) spare twisted pairs (minimum 20 gauge) of uninterrupted shielded wires for future electronic equipment.

.5 Lubrication

.1 Include means of lubricating bearings requiring periodic lubrication.

.2 When used, provide all grease fittings to fit same gun. Where grease cups are provided, use automatic feed compression type.

.3 Provide visible and easily accessible lubrication points.

.6 Roller Guides

.1 Retain and refurbish the existing car and follower guide roller guide assemblies. Thoroughly wash and clean down the guide rails.

.2 Replace all rollers.

.3 Lubricate all pivot points and springs and replace any damaged or broken pins and springs.

.4 Provide each guide with durable, oil resistant and resilient rubber tired ball bearing rollers, to run on three finished rail surfaces.

.5 Use roller tire material that will not develop flat spots after standing idle for 24 hours under average environmental conditions.

.6 Maintain each roller on its respective guide in uniform contact with rail surface at all time by means of substantial springs or by flexible mounting.

.7 Provide guide operation, which is inaudible to passengers in the car or outside of the hoistway with the car operating at rated speed and car fan turned off.

.7 Suspension Ropes and Fastenings

.1 Provide new steel wire rope constructed for elevator service, equal in design and type as those provided by the original manufacturer, for the suspension of the elevator car.

.2 Ropes installed on any one elevator, shall be from the same factory production run.

.3 Provide approved type wedge socket wire rope fastenings.

.4 Provide individual compression springs on one end to equalize tension in ropes.

.5 The returned end of the wire ropes on wedge clamp fastenings are to be secured with two (2) retaining clips. The first clip is to be set approximately 50 mm (2”) above the top of the wedge clamp, the second clip at 100 mm (4”) above the first clip. The end of the wire rope is to be bound and tied or taped to prevent injury.

.6 Provide minimum **9 mm** diameter metal anti-rotation devices to secure all terminations after installation to prevent rotation of fastenings in hitch plates.

.7 Lang lay hoist ropes are not acceptable.

.8 Provide all new slack rope devices with an enclosed manually reset switch that shall cause the electric power to be removed from the hydraulic machine pump

motor and the control valves should any rope become slack.

.8 Guide Rails and Fastenings

.1 Retain and refurbish existing rails and brackets.

.2 Thoroughly clean down and wash rails and brackets. File joints where required.

.3 Check rail alignment and plumb same within maximum variation of 1.6 mm over any 6.1 m section and with not more than a variation of 0.08 mm in 32 mm.

.4 Check and correct all fastenings, brackets and fish plates to ensure secure and solid attachment of rails.

.9 Spring Buffers, Channels and Supports

.1 Retain and refurbish existing car spring buffers, channels and supports. Securely fasten springs in place.

.2 Clean and paint all pit steel with rust resistant BLACK paint.

.3 Replace any worn or badly rusted components.

.4 Provide a data tag permanently attached to each buffer in conformance with the requirements of section 2.22.3.3 of the CSA B44-19 code.

.10 Car Free-Fall Safety

.1 Retain and refurbish the existing under car safety device and ensure proper operation in accordance with clause 2.17.3 of the B44 Code. Thoroughly wash off the safeties. Clean and lubricate all parts. Repair and/or replace as required to obtain proper operation.

.2 Perform full load overspeed test in the presence of the TSSA Inspector.

.11 Car Overspeed Governor and Rope

.1 Provide a new Hollister Whitney self-resetting overspeed governor and wire rope designed to suit the existing speed and capacity of the elevator.

.2 Provide a new governor tension sheave in the pit.

.3 Provide and install a governor overspeed switch in conformance with section 2.18.4 of the ASME 17.1-2019/CSA-B44-19 Safety Code for Elevators.

.4 Upon activation activation of the overspeed switch, the elevator controller will automatically initiate a slowdown and stop the car at the next floor.

.5 A stopped car will park with the doors open until the switch is manually reset.

.6 Calibration of the governor shall be checked in the presence of the TSSA inspector.

.12 Open Door Inspection Operation

.1 Provide in the controller switches marked “CAR DOOR BYPASS” and “LANDING DOOR BYPASS”.

.2 Provide circuitry that will prepare the control system so that, when an inspection

operation is activated, the car may be moved with open door contacts in accordance with clause 2.26.1.5 of the B44 Code.

.13 Top of Car Inspection Operation

.1 Provide new Top-Of-Car Inspection operation with open door circuits in accordance with clause 2.26.1.4.2 of the B44 Code.

.14 Door Circuit Monitoring System

.1 Provide means to monitor the position of the car doors while the car is in the landing zone in accordance with clause 2.26.5 of the B44 Code.

.15 Limit Switches

.1 Replace all slowdown and final limit switches. Provide new wiring to all switches.

.2 Dowel all new final limit brackets to the rails after final adjustment.

.3 Hoistway switches shall be silent in their operation and inaudible to passengers in the car with the fan turned off.

.16 Controllers and Cabinets

.1 Remove existing controller and cabinet and **retain for use by the Owner**. Coordinate with the Project Manager at the time of removal for the exact storage location.

.2 Provide and install a new controller enclosed in enamelled, ventilated, sheet steel cabinets. Include hinged doors for easy access.

.3 Provide contacts to ensure maximum conductivity with a wiping action to prevent sticking and fusion.

.4 Provide electronic time delay devices which employ stable capacitors or crystals as time base.

.5 Wiring on the controller, whether control or field wiring, must be done in neat, workman like order and all connections made to studs and terminals by means of grommets or similar connections.

.6 All relays, contactors, fuses and printed circuit board components, etc., shall be clearly marked by means of tags not easily removable.

.7 Provide digital display and keyboard or touchscreen as part of the control system.

.8 Provide any required boards and software for security card reader interface.

.17 Computing Devices

.1 Isolate the inputs to micro-processors from external devices (such as push-buttons) and isolate the outputs to external devices (such as indicators) by means of relays or optical devices.

.2 Provide the control program on read-only-memory with a minimum of 40% spare capacity, to allow for future programming modifications and extension.

.3 Provide for separate regulated power supplies to serve each micro-processor

system.

.18 Hoistway Car Position System

.1 Replace existing system with a maintenance-free car position system, electrically coupled to the controller.

.2 Design system to provide the controller with precise information as to the absolute position of the elevator within the hoistway.

.3 Provide solid state devices for position and direction indication, speed reduction, levelling, door zone and related signals.

.4 Do not use electro-mechanical stepper switches.

.5 Design the unit so that the parts are readily accessible for replacement and adjustment.

.19 Solid-State Hardware

.1 Mount solid-state devices, except for high power silicon controlled rectifiers and rectifiers, on removable printed circuit boards.

.2 Gold plate the contact points of edge connectors.

.3 Provide plated through holes for double sided boards.

.4 Make all connections to the printed circuits on the printed circuit boards by means of properly dimensioned pads.

.5 “Patched” connections will not be accepted.

.6 Design solid-state devices for a high load of noise immunity.

.7 Incorporate electrical noise suppression devices in the power supplies and the inputs and outputs associated with the solid-state circuits.

.20 Control Circuit Grounding

.1 Arrange the control circuits so that one side of the control power supply for external circuits is grounded to facilitate testing and trouble shooting.

.21 Power Unit

.1 Provide a new **ITI Hydraulik Submersible** fully enclosed self-contained unit with structural steel base to support the storage tank.

.2 Provide a means of secondary oil containment with a drain.

.3 Permanently secure the tank in place and provide complete vibration isolation between the tank and the building using a minimum of 50 mm thick isolation pads.

.4 Design size of power unit for 80 starts per hour.

.5 Provide a positive displacement pump of the direct drive screw type, designed especially for oil-hydraulic elevator service, delivering a steady discharge with minimum pulsation. Design for mechanical efficiency of at least 85% under full rated load, with no more than 10% variation between no load and full load on the elevator.

.6 Provide a master oil control valve unit assembly comprising:

.1 Relief valve - externally adjustable, capable of bypassing the total oil flow without increasing back pressure more than 10% above that needed to barely open the valve.

.2 Check valve - designed to support the fully loaded elevator at rest on a column of oil, and to close quietly without allowing any perceptible reverse flow.

.3 Up-start valve - externally adjustable and designed to bypass oil flow during initial start to relieve load on the motor; to close slowly and to provide for smooth Up-starts.

.4 Up-level valve - externally adjustable and designed to assure smooth Up- stops through bypassing oil flow.

.5 Down valve - externally adjustable, and designed to control acceleration, lowering speed, down-levelling speed as well as stopping, so as to provide for smooth starts and stops in the down direction.

.6 Manual valve - designed for manual lowering of the elevator car.

.7 Shut-off valve - designed to isolate oil in the storage tank and permit adjusting the elevator without having to remove oil from the tank.

.8 Strainers - of the self-cleaning type and designed to prevent fouling the control valve system.

.7 Construct the storage tank of welded sheet steel complete with a tight-fitting cover, a protected vent, an exterior oil level gauge, a drain, and a filtering screen over the suction inlet. Provide for storage capacity equal to the volume needed to lift the elevator to the top landing, plus at least 10% additional reserve.

.8 Limit the increase of ambient noise in the cab to under 4dBA when the elevator travels either UP or DOWN anywhere in the hoistway.

.9 Provide a mainline strainer of the self-cleaning type in each oil line, with a 60 mesh element and a magnetic drain plug.

.10 Provide hydraulic oil with a minimum flash point of 204 degrees C and viscosity of approximately 30 seconds at 37.5 degrees C.

.11 Provide a low-pressure switch in conformance with clause 3.26.8 of the B44 Code.

.22 Silencer

.1 Provide and install a new MEI silencer in the oil line **in the tank or as close to the valve as possible**. Properly support the silencer using an adjustable stand with rubber isolation between the stand and the silencer.

.23 Motor

.1 Provide a new pump motor designed for a minimum of 80 starts per hour.

.2 Do not exceed CEMA design B locked rotor current.

.3 Design for a minimum locked rotor torque of 150% and minimum breakdown torque of 200% at normal voltage.

.4 Provide data plate showing motor connections.

.5 Limit starting current of elevator motor to not more than 3 times full load running current.

.6 Provide Class F motor insulation.

.7 Provide thermal overload protection for motor.

.8 Protect motor against damage caused by transfer of power from or to emergency power supply.

.9 Design the equipment to operate at plus or minus 10 percent variation of supply voltage and 3 percent variation of supply frequency, without affecting elevator performance. Provide protective devices for over-voltage and under-voltage conditions.

.10 In the pump motor controller provide a means to detect an increase in the rise of the oil temperature in the hydraulic driving machine above its maximum operating temperature. Comply with Clause 3.26.6. 5 of the B44 Code.

.24 Solid State Motor Controller

.1 Provide a CSA approved modular microcomputer controller to provide solid state soft starting.

.2 Provide the following protection during the starting and running modes.

.1 Start fault.

.2 Line fault.

.3 Temperature fault.

.4 Stall motor.

.3 Provide LED indicators for advisory status and fault annunciation.

.4 Design controller to be capable of delivering its rated current in ambient temperatures ranging from 0°C to 50°C.

.25 Low Oil and Temperature Control

.1 Provide low oil and temperature control feature designed to automatically cause up-travelling car to descend to lower terminal landing if reservoir oil level is insufficient or if the oil temperature rises above manufacturer's recommendations.

.2 Open car and hoistway doors automatically at lower terminal landing Inactivate control buttons in car operating panel except for the door-open button.

.3 Provide a manual reset.

.26 Car Stall Protection

.1 Automatically return the car to the bottom landing and open the power operated doors if the car should stall as a result of a relay failure or valve failure while ascending. Restore service by opening and closing the main line switch.

.27 Two-way Levelling

.1 Include automatic two-way levelling device. Approach landing stops at reduced speed from either direction of travel.

.2 Level with accuracy of 6 mm under varying load conditions.

.28 Temperature Control

.1 Install thermostatically controlled heaters or other means to maintain fluid viscosity within limits necessary to provide consistent, reliable operation at all times.

.29 Emergency Return

.1 Provide battery operated emergency power unit with automatic charger to maintain sufficient power to lower elevator in accordance with Clause 3.26.10 of the B44 Code.

.2 Arrange equipment so that in the event of loss of normal power the elevator will automatically return to the lowest floor level.

.3 With car parked level at the lowest floor permit the doors to open automatically.

.30 Hydraulic Oil

.1 Provide new approved type hydraulic oil designed for elevator use, and 80 starts per hour.

.2 Use a **biodegradable hydraulic fluid** designed for elevator use. Provide a permanent bilingual sign on the pumping unit indicating “Use only **biodegradable** oil”.

.31 Oil Line Piping

.1 Provide all new oil line and couplings.

.2 Provide an additional shut-off valve in the pit designed to isolate the oil in the line and permit changing of the packing gland without draining the line.

.3 Provide new overflow line from cylinder heads to an overflow pail in the pit. Ensure pail is securely fastened to prevent it from overturning in the event of water infiltration in the pit.

.4 Limit the use of 90º couplings where possible. Use 45º couplings wherever possible. Extensive use of 90º couplings will be rejected.

.5 Use supporting isolators for all piping in the machine room, hoistway and pit. Where piping penetrates a wall, provide resilient sleeves to prevent direct contact.

.6 A marking shall be applied to accessible piping that is located outside the elevator machine room or hoistway stating “Elevator Hydraulic Line” in letters that are at least 19 mm (0.75”) high in a contrasting colour. The marking shall be visible after installation and applied at intervals not greater than 3,000 mm (120”).

.32 Plunger and Cylinder

.1 Retain and refurbish the existing plungers and cylinders. Inspect and smooth any

imperfections in the plungers.

.2 Provide new gland packings in the cylinder heads.

.33 Sound Isolation

.1 Provide a sound isolation coupling in pipeline between pump and cylinders

.34 Hoistway Doors

.1 Check and adjust all doors to ensure doors will close smoothly and quietly, with the closing mechanism released and regardless of their position on the track, when a 2.7 kg horizontal force is applied at mid-height on the door in the horizontal motion.

.2 Retain top and bottom hoistway door retainers. Ensure that all retainers are fastened as per design drawings.

.3 Provide all new lower guides on the hoistway doors.

.4 Check and tighten all loose sight guards.

.5 Check all doors for broken welds. Refurbish as required.

.6 Make hoistway doors open fully at all floors.

.7 Thoroughly wash and clean the hoistway side of all doors.

.8 Check structural integrity of the top of the hoistway doors and reinforce where required before re-attaching hanger rollers. Notify Consultant when verifying structural integrity.

.35 Hoistway Access Device

.1 Provide at bottom and top landings new keyed hoistway access switches in accordance with Clause 2.12.7.1 of B44 Code.

.2 Locate switch in hall door sight guard or hall button fixture and engrave “Hoistway Access” with direction arrows on face plate. Include enable switch in service panel. A separate access fixture is also acceptable. Switch to be located between 1220 and 1825 vertically above the floor and no more than 300mm away from the hoistway entrance.

.3 Retain and refurbish existing hoistway door unlocking devices at all floors. Replace any missing collars with new stainless-steel collars for all lunar key holes. Tighten any loose collars.

.36 Hoistway Door Sills and Frames

.1 Retain existing sills, thoroughly clean and check for secure fastening.

.2 Check all door frames for secure fastening to building. Take corrective action where required.

.3 Review each floor level to ensure no tripping hazards exist between the sill and the elevator lobby flooring. Provide options to correct any tripping hazards.

.37 Fascias

.1 Check fastenings, clean and paint all fascias BLACK in colour.

.2 Provide and install a dust cap above the top floor header angled back to the shaft wall at an angle not less than 75 degrees. Paint BLACK in colour.

.38 Hoistway Door Hangers, Tracks, Locks and Closers

.1 Retain and refurbish the existing hoistway door hangers and tracks.

.2 Replace all door rollers to provide a smooth and quiet operation.

.3 Provide complete new GAL door locks and pick up roller assemblies.

.4 Dowel all door pickup roller assemblies after final adjustment.

.5 Remove existing door closers on all hoistway doors and provide new heavy duty spirator type closing devices for each hoistway door panel at all levels.

.39 Car Door Hangers and Track

.1 Provide new GAL header, track and hangers. Provide two (2) new car door rollers for the car door.

.2 Adjust rollers and eccentrics to provide smooth and quiet operation.

.40 Car Door Operator

.1 Provide a new **GAL MOVFE 2500-HL belt driven** closed loop heavy duty car door operator. Provide new car door clutch as required.

.2 Locate the controls for adjusting and regulating of the door operator acceleration, deceleration, and operating speeds adjacent to the door operator on top of the car cab.

.3 Operate doors positively, reliably and consistently under varying hoistway air pressure conditions.

.4 Open and close door operation to be electrically cushioned at final limits of door travel.

.5 Provide a new **GAL** gate switch for the car door. Switch to be operated by a roller attached to each door panel. Provide a separate green ground wire to the switch. Dowel gate switch mounting brackets.

.6 The flexible conduit from the car door operator motor to the control box must be installed in a metal Uni-Strut to protect against obstructions on the car top. Uni-strut must be higher than the flex.

.7 Provide a car door restricted opening device as per B44 Code requirements.

.41 Infrared Proximity Detector

.1 Provide new three-dimensional (3D) proximity detector. Provide red/green indicator lights on the face of the detector to highlight the door movement.

.2 Detector to protect the full door opening, such that a person or object passing through the car entrance causes the doors to re-open. Provide 154 beam light

curtain.

.3 The zone of protection shall extend from 12.7 mm above the sill to a minimum height of 1,500 mm, on each car door panel.

.4 Device to be reliable and consistent in operation, not affected by humidity or temperature changes and have inherent long-term reliability with minimum maintenance.

.5 Upon failure of the device, shut the car down at the next available floor, with the doors in the fully open position.

.6 Device shall detect approaching objects in conformance with section 2.13.5.3 of the CSA B44-19 Code.

.7 Device shall be provided with a means of self-monitoring in conformance with section 2.13.5.5 of the CSA B44-19.

.42 Reduce Speed Door Closing

.1 Should the doors be held open by the proximity detector for more than 20.0 seconds, sound a buzzer and reduce the door closing kinetic energy to 3.5 j. Time delay to be adjustable.

.43 Car Frame and Platform

.1 Retain the existing car frame and platform. Inspect complete car frame and platform to ensure all bolts are in place and tight and that hoist rope hitches are secure.

.2 Thoroughly examine for any cracks, bends or broken welds, repair where required.

.3 Provide any required reinforcement to relieve car enclosure of any undue stress.

.4 Clean the underside of the car from rust and paint in accordance with Part 3 Section 15.

.5 Scrape and paint the toe guard BLACK in colour.

.6 **Paint the bottom angled portion of the toe guard yellow with angled BLACK stripes.**

.7 Retain and refurbish existing nickel-silver car sill.

.8 Ensure clearance between the car and hall sills is within code requirements. Make all necessary adjustments.

.44 Top of Car Operating Device Equipment

.1 Provide a **new** stationary top of car control box with an alarm bell designed to operate on normal and emergency power, GFI duplex receptacle, and guarded LED work light.

.2 Provide and install two (2) permanent guarded lights on car top. One light fixture to be the moveable type with a magnetic base or with the ability to be stored securely on the car top. Provide and install LED bulbs for all lights.

.45 Alarm Bell

.1 Provide an alarm bell located on the car designed to operate under permanent and emergency power conditions.

.2 Alarm button in cab to illuminate when pressed.

.46 Car Weighing

.1 **When a cab interior upgrade is being carried out comply with requirements of the current TSSA code adoption document.**

.2 **Prior to the start and at the completion** of the alteration, weigh the car and. record the weight.

.3 Provide Consultant with a digital photo of the weighing and copy of the recorded weight.

.4 Provide on the car top and fill in an Auxiliary Weight Data Tag.

.47 Car Doors

.1 Retain and refurbish existing car door. Re-clad cab side of door with stainless steel No. 4 Satin Finish.

.48 Cab Interior Refurbishing

.1 **General**

.1 Thoroughly clean, sand and prepare surfaces to receive new materials. Refurbish interiors as specified herein.

.2 **Completely remove as much of the redundant material as possible to keep the car weight to a minimum.**

.3 All fastenings for new materials to be concealed.

.4 All new materials provided shall conform to Clause 2.14.2 of the B44 Code.

.5 Provide and mount a stainless steel, vandal resistant, 11” x 17” notice holder in the cab complete with a keyed lock. Visible area to be full 11” x 17” opening. All glazing shall be of the appropriate safety rating for the installation. Mount on side wall furthest from the door.

.6 Submit shop drawings of cab details for review by the Consultant and Owner.

.2 **Ceiling**

.1 Completely remove existing egg crate drop ceiling and ceiling mounted lighting fixtures. Patch all redundant holes.

.2 Provide a new, removable type, drop ceiling panel constructed of 0.95 mm stainless steel n^{o} 4 satin finish. Mount ceiling panel as close as possible to the new cab canopy.

.3 Provide in the drop ceiling new, flush mount, MR-16 fixtures and warm white LED lamps complete with silver aluminum rims. Provide pot lights

with flexible wiring and plugs to allow for removal of drop ceiling and replacement of fixtures.

.4 Provide an approved type dimmer switch mounted above the drop ceiling to adjust the light intensity in the cab.

.5 Arrange panels to provide access to the emergency exit on the car top.

.3 **Front Return Panels, Transom and Car Door**

.1 Clad the front return panel and transoms with stainless-steel No. 4 Satin Finish.

.2 Clad the car doors with stainless-steel No. 4 Satin Finish.

.4 **Side and Rear Walls**

.1 Completely remove all existing hang on wall panels.

.2 Provide on the side and rear walls from the base plate to within 50 mm of the underside of the handrail mounting panel, **VERTICAL** applied panels constructed of high density fire rated board and covered with plastic laminate. Colour and pattern to be chosen by the Owner. Provide two (2) panels on each wall. Provide 3 mm stainless steel corner edge on panels.

.3 Panels to be constructed of 11 mm FRPB.

.4 Provide a 150 mm handrail mounting panel clad with stainless steel nº 4 satin finish complete with phenolic backer.

.5 Provide corner reveals of approximately 50 mm between panels and corners. Clad reveal strips in 20 gauge stainless steel nº 4 satin finish.

.6 Provide 3 mm aluminum panel interlock between panels.

.7 Provide on the side walls from the handrail mounting panel to the height of the drop ceiling, **VERTICAL** applied panels constructed of high density fire rated board and covered with plastic laminate. Colour and pattern to be chosen by the Owner. Provide two (2) panels on each wall. Provide 3 mm stainless steel corner edge on panels.

.8 Provide on the rear wall from the handrail mounting panel to the height of the drop ceiling, **VERTICAL** applied panels constructed of 6mm grey smoked safety mirror. Panels to be completely encased in stainless steel protective binder angles or other equal method of protecting panel edges.

.5 **Handrails**

.1 Provide new handrails at 915 mm above floor, on all non-access walls. Design handrails to be removable from inside the car. Space handrail 35 mm to 45 mm from wall.

.2 Handrails to be installed on a 150 mm mounting panel clad with stainless steel nº 4 satin finish complete with phenolic backer.

.3 Handrail to be constructed of **tubular** stainless steel and returned to the wall at each end.

.6 **Kick Plates**

.1 Provide new vented stainless steel kick plates 150 mm high around the perimeter of the cab.

.7 **Car Sills**

.1 Retain and refurbish existing **nickel silver** car sill.

.8 **Flooring**

.1 Remove the existing flooring and sub-flooring.

.2 Provide and install new water resistant plywood subfloor to suit sill height.

.3 Provide and install new vinyl sheet flooring to Owner's choice of colour.

.49 Car Protective Pads

.1 Install suitable pad hooks in the car cab.

.2 Provide one (1) complete set of fire retardant protective pads for the elevator covering all exposed wall surfaces and the front return panel (except car station) and covering from 100 mm to approximately 2,400 mm above the car floor.

.50 Car Ventilation

.1 Provide ventilation by a new two speed fan located in the ceiling of the cab.

.2 Limit total fan noise to 55 dBA as read from 0.9 m above floor with fan on high speed.

.3 Mount fan on top of car and effectively sound isolate system from car to prevent transmission of vibration to car structure.

.51 Car Operating Panel and Service Cabinet

.1 Provide in the car cab, one new car operating panel, with hinged stainless steel face plate and service cabinet.

.2 Locate all buttons in accordance with Appendix E, of the B44 Safety Code for Elevators. Top button to be no more than 1,370 mm above the finished floor. Telephone button to be a minimum 890 mm above the floor.

.3 Provide stainless steel vandal resistant floor buttons. Provide and install raised numerals with braille to the left of each button. Attached plates will not be accepted. Where possible use international symbols. All other markings to be engraved on the faceplate in both official languages.

.4 Common devices to be included in the car station are as follows:

.1 Floor push buttons with integral illumination using White/Blue LED type lights with a minimum 100,000 hour rating. Illuminate button Blue when call is registered and extinguish the call when the car stops at the selected floor.

.2 Provide an audible signal when car button has been activated.

.3 Alarm, door open and door close buttons. Mark buttons with appropriate symbols listed in table 2.26.12.1 of the ASME A17.1-2019/CSA B44-19 Code. Alarm button to be provided with RED illumination.

.4 Lens for Emergency Lighting System as specified elsewhere.

.5 Position indicator as specified elsewhere.

.6 Provide perforation holes for a hands-free communication system, as specified elsewhere in these specifications. Provide beside the PHONE button, a **YELLOW** International Telephone Symbol and engraved wording “HELP/SECOURS”. Provide an LED visual indicator and engraving, to indicate to persons with hearing disabilities that their call for assistance has been acknowledged. Phone button to be provided with AMBER illumination.

.7 Phone and alarm button illumination shall remain lit at all times. In the event of a power outage, the illumination shall be maintained through the emergency battery unit in the car station.

.8 Provide a flush mounted, translucent, smoked Plexiglas 7 mm lens large enough to accommodate the existing card reader.

.9 Visual and audible signal for Firefighter’s Operation.

.10 Audible signal to sound when the car stops at or passes a floor. Signal volume to be adjustable between 50 and 70 dBA.

.5 Provide in the car station, a service cabinet with a hinged **self-locking door**. Provide Metal TOGGLE and KEY SWITCHES inside the service cabinet, appropriately marked by wording or symbols, to control the following:

.1 Car light TOGGLE switch (engrave OFF – ON)

.2 Car ventilating fan TOGGLE switch (engrave 1 – OFF – 2).

.3 Test **button** for emergency lighting

.4 Independent service TOGGLE switch (engrave OFF – ON).

.5 Inspection KEY switch (engrave OFF – ON).

.6 Provide one spare TOGGLE switch.

.7 One GFI receptacle.

.8 Key operated stop switch (engrave Stop – Run).

.9 Volume control knob for the voice enunciation.

.10 Special Service (Call-Send) KEY Switch (engrave: OFF – ON)

.6 Engrave the following on the operating panel as indicated below:

.1 Elevator capacity in Kilograms and Number of Persons.

.2 Elevator number in minimum 50 mm numerals.

.3 TSSA installation number and logo.

.4 Licence located in the machine room in letters 12 mm in height. Engrave with BLACK fill (bilingual).

.7 Submit samples of buttons and layout drawings to Consultant for approval.

.52 Car Position Indicator

.1 Provide a new digital car position indicator located near the top of the car operating

panel. Indicator to display identical markings to car operating buttons.

.2 Provide BLUE LED type illumination, 100,000 hour rating, on a high resolution screen display.

.3 Display numbers in segmented format at least 50 mm high.

.4 Provide an audible signal to sound when the car stops at or passes a floor. Signal volume to be adjustable between 50 and 70 dBA.

.5 Arrange letters and numbers appearing on the indicator to illuminate in sequence and to transfer illumination instantaneously between floor levels.

.53 Hall Position Indicators

.1 Provide above the hall door at the main lobby a new flush mount digital hall position indicator mounted horizontally. Install in location of existing indicator.

.2 Use BLUE LED type illumination, 100,000 hour rating, on a high resolution screen display. Display letters and numbers in segmented format at least 50 mm high.

.3 Ensure that the new stainless steel faceplate covers the existing cut-out.

.4 Provide all cutting and patching as required to accommodate the new fixtures.

.5 Engrave the elevator number on the position indicator faceplate. Number to be a minimum of 50 mm high.

.54 In-Car Lanterns and Gongs

.1 Provide new CE Electronics **SA-130** or similar in-car lanterns with electronic “Chime” type gongs in the entrance. Locate lanterns in car door jamb posts, with the centerline of the fixture 1,830 mm above the floor. Provide two (2) fixtures for each ENTRANCE.

.2 Arrange lanterns so that when the car stops in response to either a car call or a hall call, the in-car lantern, corresponding to the direction of travel, illuminates and the gong operates as the doors are opening. Signal volume to be adjustable between 60 and 90 dBA. Lantern to remain illuminated until the car closes its doors.

.3 In case of over travel arrange the in-car lantern to remain illuminated indicating original direction of travel.

.4 Sound gong once for “UP” and twice for “DOWN” stops.

.5 Lantern fixture plate shall be of stainless steel No. 4 finish and brushed vertically.

.6 Fasteners shall be of the vandal resistant type.

.55 Hall Buttons

.1 Provide one riser of new **surface mount** hall button fixtures identical in design to the car buttons. Provide buttons with integral illumination using 100,000 hour rated **BLUE** LED illumination.

.2 Provide buttons of the same make and model as those in the car stations.

.3 Provide door open and close buttons so connected to operate only when the car

is in call-send operation and when the car is stopped level at the floor where the buttons are located.

.4 Illuminate corresponding “UP” or “DOWN” call button when call is registered. Extinguish illumination when call has been answered.

.5 Provide an out of service indicator light a minimum of 50 mm by 50 mm in size in each fixture. Indicator to illuminate any time service is denied to the hall buttons.

.6 Provide a ground wire to properly ground the hall button fixture **covers**.

.7 Provide stainless steel face plates at all floors.

.8 Provide all cutting, patching, conduit and wiring as required.

.56 Special Hall Station at Designated Level

.1 Provide in the hall button fixture at the designated floor a stainless-steel fixture containing the fire recall key switch with appropriate indicator lights.

.2 The key switch shall be a three (3) position RESET- OFF- ON for the Firefighters Operation service. Provide quality type FEOK1 key switches of the Group 3 classification.

.3 Provide all cutting, patching, conduit and wiring as required.

.4 Provide at the designated level near the elevator hoistway an identified metal box containing the emergency recall keys.

.57 Signal Illumination

.1 Illuminate all letters and all numbers with sufficient intensity to produce distinct and well defined indication under ambient lighting conditions.

.58 Audible and Verbal Floor Announcement

.1 Provide verbal floor announcement as per clause E-10.3 of B44 Code.

.2 Provide in the car operating panel, perforation holes for two (2) high powered separate speakers for the verbal floor annunciator device.

.3 Provide a volume control knob in the service panel. Volume to be adjustable from 10 dBA above the ambient to a maximum of 80 dBA measured at the speakers.

.59 Faceplate Fastenings

.1 Fasten all signal fixture face plates securely with unexposed fasteners or with tamper-proof fasteners.

.60 Identification

.1 Provide 100 mm numerals corresponding to floor level on inside of hoistway doors and fascia plates.

.2 Provide all necessary engraving on faceplates as required by the Consultant, in Helvetica medium, upper and lower case.

.3 All fastenings of cover plates for signals, buttons and panels shall be tamper proof type.

.4 Provide tactile indications with minimum 50 mm floor numerals raised 1 mm on both hoistway door panel jambs at each opening. Secure plates in place using pop rivets or a permanent adhesive. Provide finish to match entrance. Locate center-line of numeral 1,525 mm above floor level measured from the base line of the characters.

.5 At the main entry level on both door jambs provide a 50 mm raised star designation to the left of the floor designation number. All characters to comply with Clause E20.2.

.6 Provide at each floor a bilingual elevator corridor call station pictograph as per figure 2.27.9 of the B44 code.

.7 Identify the elevator at the recall level. If possible, engrave the elevator number on the hall position indicator plate. Alternatively, provide a metal plate permanently installed with rivets or a permanent type glue. Number to be a minimum of 50 mm high.

.61 Car Emergency Lighting

.1 Provide new battery operated emergency lighting equipment. The lens is to be incorporated into the car operating panel.

.2 Provide general illumination in the car with a minimum of 10 lx intensity 1,200 mm above the car floor and 300 mm in front of the operating panels for at least a four (4) hour period.

.3 Include means for convenient manual operation and testing of the unit in the car station service cabinet.

.4 Design battery unit of sufficient strength to support a load of at least 90 Kg without causing malfunction or damage.

.5 Include means of containing any leakage or spillage of electrolyte.

.6 Arrange battery unit as a source of power for alarm bell during a power failure.

.62 Emergency Communications System in the Car

.1 Comply with clause 2.27.1.1.1 of the B44 Code.

.2 Provide a hands free, vandal resistant, emergency communications device containing an internal adjustable volume control speaker and microphone, mounted behind the car station panel to enable two-way voice communication between the car and a location that is readily accessible to authorized and emergency personnel.

.3 The device shall be activated by pressing the HELP button located in the car station and shall automatically ring a telephone number of the Owner's choice. Once activated in the elevator the line shall remain open until disconnected by the receiver. Bilingual **HELP button to be located between 890 mm and 1,220 mm above the floor**. **Provide a raised 6mm high stainless collar around the "HELP" button to prevent accidental activation. Spot weld collar to car operating panel.**

.4 On the same panel as the phone push button, a message shall be displayed that is activated by authorized personnel to acknowledge that communications are

established. The message shall be permitted to be extinguished where necessary to display a new message or when the communications are terminated.

.5 On the same panel as the phone push button, messages shall be displayed that permit authorized personnel to communicate with and obtain responses from a trapped passenger(s), including a passenger(s) who cannot verbally communicate or hear.

.6 The device shall contain a ring sensor which shall allow the initiation of a call to the elevator. The number of rings shall be adjustable. The two-way communication shall not be transmitted to an automatic answering system.

.7 On the same panel as the phone push button, a message shall be displayed that is activated by the authorized personnel to indicate when help is on the way. The message shall continue to be displayed until a new message is displayed or the communications are terminated.

.8 The two-way communications means shall provide on demand, to authorized personnel, information that identifies the building location and elevator number and that assistance is required.

.9 The communications, once established, shall be disconnected only when authorized personnel terminate the call or a timed termination occurs. A timed termination by the communication means in the elevator, with the ability to extend the call by the authorized personnel, is permitted if voice notification is sent by the communication means to authorized personnel a minimum of 3 min after communication has been established. Upon notification, authorized personnel shall have the ability to extend the call; automatic disconnection shall be permitted if the means to extend are not enacted after 20s of the voice notification.

.10 The communications means shall not use a handset in the car.

.11 Operating instructions shall be incorporated with or adjacent to the phone push button.

.12 A means to display video to observe passengers at any location on the car floor, to authorized personnel for entrapment assessment, shall be provided.

.13 Provide all wiring necessary for the complete installation of the system from the device in the elevator to an externally located terminal in the elevator machine room.

.14 If the emergency communication system is connected to the building emergency power supply, it shall automatically transfer to a source of standby or emergency power as required by the applicable building code, after the normal power fails. The power source shall be capable of providing for illumination of the visual indication within the car, and the means of emergency communication for at least four (4) hours; and the audible signaling device for at least one (1) hour.

.63 Emergency Communications System in the Car Verification

.1 Comply with Clause 2.27.1.1.6 of the B44 Code

.2 Provide a minimum of one illuminated visual and audible signal for each group of elevators controlled by the Fire Recall Switch. Provide a stainless-steel faceplate.

.3 The visual signal is to be located at the designated level in the Fire Recall Switch

Panel.

.4 Provide all bilingual engraving as required.

.64 Bilingual Markings

.1 Engrave identification and instructions at least 0.25 mm deep on operating panels and on all signal equipment in both English and French except where design is such that inference is obvious and readily understood.

.2 All position indicators are to display bilingual characters similar to the bilingual floor markings in the car operating panel.

.65 Keys

.1 Provide six (6) keys for each control device and six (6) FEO-K1 keys for Firefighters Service switches. Supply and install a metal key box for the FEO-K1 keys. Locate box as per Owner's requirements.

.2 **Provide ALL keys to the Owner as soon as the first modernized elevator is returned to service.**

.3 All keys shall be grouped as per clause 8.1.1 of the B44 Code.

.4 Organize keys on suitable key rings with engraved Gravoply discs identifying use of key.

.5 Provide Consultant with a copy of a Transmittal signed by Owner's Representative indicating that all tagged keys have been received by the authorized representative.

.6 Provide a copy of the Transmittal in the maintenance manuals.

.66 Material and Marking of Crosshead Data Plates

.1 All crosshead data plates including the cab alteration weight data tag must comply with Clause 2.16.3.3 of the B44 Code.

.2 All data plates must be permanently fastened to the crosshead with screws or silicone glue. Alternate fastenings will not be accepted.

.3 All information on the data plates must be engraved or permanently marked so as the information cannot be easily removed.

PART 3 – EXECUTION

.1 Workmanship and Procedure

.1 Install all equipment in a first class workmanship manner. Upon completion do all necessary repairs, cleaning, and painting as required to turn the equipment over in “New Condition”.

.2 Arrangement of Equipment

.1 Arrange equipment in machine room so that equipment can be removed for repairs or replacement without dismantling or removing other equipment components.

.2 Arrange equipment for clear passage.

.3 Arrange equipment according to shop drawings.

.4 Accommodate equipment in provided space according to above mentioned requirements.

.3 Removal of Old Equipment

.1 Remove and dispose of all redundant elevator equipment **(except for the controller)** including pumping unit, oil, and door operator. Removal to be coordinated with the Project Manager to ensure that there are no service disruptions to the daily operations of the building. Equipment removal may be required to be during silent hours.

.2 Remove all redundant wiring in the elevator hoistway and machine room completely back to its source.

.3 Adequately protect the interior of the elevator when moving equipment.

.4 Machine Room Noise Level

.1 Design and install the equipment so that the increase in noise level in the machine room with the elevator running does not exceed 30 dBA, as measured by a sound meter located in the machine room. No noise from the machines to be heard in occupied units.

.2 Measure this noise level using a sound level meter on the “A” scale with an “S” response.

.3 All testing shall be witnessed by the Consultant. Contractor to provide a report confirming compliance with this section.

.5 Welding

.1 All field welds shall be identified with the welder's identification stamp.

.2 Submit a hot work permit during any welding, or any work where there is potential for smoke or sparks.

.3 Follow the fire alarm bypass and fire watch procedures included in the Owner’s front end documentation.

.4 Where welding is performed inside the building, smoke eater devices shall be used

to minimize odorous emissions.

.6 Interlock

.1 Permanently dowel interlocks.

.7 Surface Protection

.1 Provide protective coverings for all finished surfaces.

.8 Limit Switches

.1 Subsequent to the performance of safety tests and checks by the Inspecting Authorities, fasten final limit switches and brackets by through bolting or doweling.

.9 Car Balance

.1 Check the static balance of the car.

.2 Adjust the equipment and all guide rollers so that at any point the pressure upon the rollers does not exceed 11 kg with closed doors and empty car cab.

.10 Operating Time

.1 Adjust the equipment so that the elapsed time to travel one typical floor does not exceed 14.5 to 15.5 seconds in both directions.

.2 Measure this time as follows:

.1 The time starts when the fully opened doors begin to close and continues until the car is stopped level with the next floor and the car and hall doors are open to three-quarters of their fully open position.

.2 Floor level is considered to be within 6 mm of level.

.3 The time is measured with full load in the car and in both directions of travel.

.4 The power door operation for the hall and car doors conforms to the elevator safety code requirements.

.5 Adjust the equipment so that for other conditions of loading, the time does not vary more than five percent (5%).

.6 Adjust the equipment so that the operating time, as set out above, is compatible with dependable, consistent operation without undo wear or excessive maintenance and can be readily maintained over the life of the elevator installation.

.7 Adjust the equipment so that with the control adjusted to give the required time, the elevator operates under smooth acceleration and retardation and provides a comfortable and agreeable ride to the passengers.

.11 Door Adjustment

.1 Arrange levelling and door opening controls in such a manner that the doors start to open during the levelling zone and the doors are open to three quarters of fully open when the car is stopped level with the floor.

.2 The time required to open the doors measured from start of open to fully open position shall not exceed 2.5 seconds.

.3 The time required to close the doors measured from start of close to fully closed position shall not exceed 3.5 seconds.

.12 Ride Performance

.1 Acceleration/Deceleration

.1 Adjust the equipment to allow the car to start, accelerate, decelerate and stop smoothly.

.13 Elevator Consultant

.1 The Elevator Consultant has general supervision and direction of the elevator work. He is authorized to stop the work whenever the stoppage is necessary to insure the proper execution of the contract.

.2 The Elevator Contractor will furnish competent men and equipment for inspecting and directing speed, load and such other acceptance tests as the Elevator Consultant may deem advisable.

.3 The Elevator Consultant will carry out one (1) Final Inspection and one (1) Re-inspection. The cost of any additional inspections required due to the Elevator Contractors failure to correct any outstanding deficiencies previously listed, will be charged to the Elevator Contractor by the Owner.

.14 Inspections Field Tests and Commissioning

.1 Furnish competent personnel to assist the Consultant during the site inspections and testing of the systems. Make the appropriate corrections until final acceptance of the installations.

.2 The site inspections will be carried out to ensure that the workmanship is in compliance with plans and specifications.

.3 Provide a minimum of three working days' notice to Consultant for testing. Prior to giving notice the contractor shall test all systems to ensure proper operation.

.4 Perform all tests as required by the B44 Code and the Technical Standards and Safety Act, 2000 O. Reg. 209/01.

.5 The Contractor is to provide the services of a licensed mechanic to assist with all TSSA and Consultants inspections until **ALL** deficiencies are corrected in an acceptable manner and the final certificate of completion has been provided.

.6 The Contractor is to provide the services of a licensed mechanic to assist with all fire alarm testing until ALL tests are completed in an acceptable manner and the final certificate of completion has been provided.

.7 The inspections will be carried out to ensure that the workmanship is in compliance with plans and specifications.

.8 Upon completion of the elevator provide all personnel, instruments and devices required to perform the following:

.1 Test car balance to verify specification requirements.

.2 Test the equipment under full load and no load to verify the speed variation performance requirements.

.3 Test operating times to verify the performance requirements.

.4 Test door operating equipment to verify the performance requirements.

.5 Test the ride to verify the performance requirements.

.6 Test the battery operated lowering feature.

.7 Perform all electrical readings and complete technical data forms required by the specifications.

.8 Test the elevator for three (3) consecutive hours with no load operating from floor to floor, with or without door operation.

.9 Test the elevator for three (3) consecutive hours with 100% load operating from floor to floor, with or without door operation.

.10 Test the elevator for three (3) consecutive hours operating from floor to floor with door operation. Provide barricades and signage to indicate that an elevator test is in progress.

.15 Cleaning and Painting

.1 Upon completion thoroughly clean, remove all indications of rust and paint with low odour paint ONLY, the following:

.1 Machine room equipment in Enamel paint.

.2 Machine room floor in GREY Floor Enamel.

.3 Machine room walls in WHITE Latex semi-gloss.

.4 Car top in rust resistant GREY paint, crosshead in BLACK.

.5 Pit equipment, channels, and buffer supports in rust resistant BLACK paint.

.6 Pit ladder YELLOW.

.7 Pit floor in GREY Floor Enamel.

.8 Horizontal area of the refuge space (where required) in the pit and on car top in YELLOW.

.9 Hoistway side of all fascia plates BLACK.

.10 Car toe guard BLACK and bottom angled portion in BLACK/YELLOW crosshatch.

.11 All necessary touch ups for damages caused during handling of equipment are to be made on site. All paint to be approved by Owner.

.2 Prepare masonry, stucco and concrete surfaces to CGSB 85-GP-31M.

.3 Prepare concrete floors to CGSB 85-GP-32M.

.4 Prepare concrete block and poured concrete walls and ceilings apply:

.1 One coat primer-sealer CGSB 1-GP-119M-Amdt-Sep-80.

.2 Two coats semi-gloss enamel CGSB 1-GP-57M.

.5 For concrete floors apply:

.1 One coat enamel CGSB 1-GP-66M reduced by addition of 1 part CGSB 1-GP-70M thinner to eight parts enamel.

.2 One coat enamel CGSB 1-GP-66M.

.16 Hydraulic Elevator Performance Data Form

.1 After completion of the work on the elevator and before the Consultant's Acceptance Inspection, complete and submit this form to the Consultant. The Consultant will not carry out an Acceptance Inspection until receipt of the completed and signed form.

	CAR 04
CAR SPEED UP EMPTY CAR(fpm)	
CAR SPEED DOWN EMPTY CAR(fpm)	
CAR SPEED UP FULL LOAD(fpm)	
CAR SPEED DOWN FULL LOAD(fpm)	
FLIGHT TIME UP (seconds)	
FLIGHT TIME DOWN (seconds)	
CAR DOOR OPEN TIME (sec)	
CAR DOOR CLOSE TIME (sec)	
CAR CALL DWELL TIME (sec)	
HALL CALL DWELL TIME (sec)	
NUDGING TIME OUT (sec)	
DOOR CLOSING STALL FORCE (lbs)	
LEVELLING ACCURACY (“)	
TYPE OF DOORS	SINGLE SLIDE
CAR DOOR ENTRANCE WIDTH	42”
CODE ZONE DISTANCE	2” FROM FULL OPEN TO 2” FROM FULL CLOSE
NUDGING CLOSE TIME IN CODE ZONE DISTANCE (sec)	
UP OVERTRAVEL (inches)	
DOWN OVERTRAVEL (inches)	
WORKING PRESSURE (psi)	
RELIEF PRESSURE (psi)	
SAFETY SLIDE DISTANCE (inches)	
GOVERNOR OVERSPEED SWITCH TRIP (fpm)	
SAFETY APPLICATION TRIP SPEED (fpm)	
TESTS PERFORMED BY:	**DATE:**

.2 This form shall be signed by the person responsible for the performance of the test.

March 24, 2024

National Research Council Canada
1200 Montreal Road
Ottawa, Ontario K1A 0R6

Attention: Kaitlin Hebb, Construction Project Manager

Subject: **Project-Specific Designated Substances and Hazardous Materials Survey**
M-50, Elevators #1 and #4 Machine Room Modifications
1200 Montreal Road, Ottawa, Ontario
Englobe Reference: 02402375.000

1.0 INTRODUCTION

Englobe Corporation (Englobe) was retained by National Research Council Canada (NRC) to conduct a Designated Substances and Hazardous Materials Survey (DSHMS) in support of the M-50, Elevators #1 and #4 Machine Room Modifications Project, located at 1200 Montreal Road in Ottawa, Ontario.

The Designated Substances Report (DSR) is required under the *Ontario Occupational Health and Safety Act* in order to identify designated substances that may be present within the project areas. The *Canada Labour Code* also stipulates under Part II, Section 124, that every employer shall ensure that the health and safety at work of every person employed by the employer is protected. By having a DSS conducted, the Project Manager will be able to inform his or her employees, contractors, and tenants of any designated substances that may be present and possibly disturbed throughout the project area.

Englobe completed a visual evaluation of building materials for the presence of suspected designated substances and hazardous materials on March 18th, 2024. As part of the survey, select materials were sampled and submitted for laboratory analysis to confirm asbestos and lead content.

2.0 SCOPE OF WORK

The survey implemented by Englobe was completed in accordance with Section 30 of the *Occupational Health and Safety Act, R.S.O. 1990, Chapter 0.1*. Designated Substances, as identified under the *Ontario Occupational Health and Safety Act*, are as follows:

- Acrylonitrile,
- Arsenic,
- Asbestos,
- Benzene,
- Coke Oven Emissions,
- Ethylene Oxide,
- Isocyanates,
- Lead,
- Mercury,
- Silica, and
- Vinyl Chloride.

Other Hazardous Materials which are not classified as designated substances, but were included as part of the survey and considered pertinent due to applicable regulations, best practice guidelines, and/or potential risks to human health and/or the environment, are:

- Polychlorinated Biphenyls (PCBs),
- Halocarbons,
- Mould,
- Other Hazardous Materials (where deemed pertinent).

3.0 METHODOLOGY

3.1. Site Assessment

The purpose of the survey program was to identify designated substances and hazardous materials that may be disturbed during future work operations associated with the project. The survey was non-destructive in nature and was limited to the areas outlined in the following drawings provided by NRC:

- Elevator Machine Room 034, HVAC Construction and Schedules. Project 6243-M-50 Lobby Elevator #1 Fan Coil Unit. Dated February 2024.
- Elevator Machine Room C005, HVAC Demolition and Schedules. Project 6242-M-50 CPFC Elevator #4 Exhaust Fan. Dated February 2024.

Representative photographs are included in Appendix A. Laboratory certificates of analysis are included in Appendix B. A drawing with sample locations is included in Appendix C. A Statement of Limitations is included in Appendix D.

3.2. Asbestos-Containing Material Methodology

The methodology employed for asbestos-containing materials included identifying the presence of ACMs via collecting and analyzing suspect bulk material samples.

ACMs can be divided into two categories: friable and non-friable materials. A friable ACM is a material that can be crumbled, powdered, or pulverized by hand pressure and can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials such as sprayed fireproofing and textured coatings. Non-friable materials are materials that will generally release fibres only when cut or shaped. Common non-friable ACMs include vinyl floor products, drywall joint compound, plaster, and mortars. Some of these products may become friable with time or when disturbed.

In Ontario, a material is defined as an ACM if the material has a minimum asbestos content of 0.5 per cent (%) by dry weight, as per O. Reg. 278/05 *Asbestos on Construction Projects and in Buildings and Repair Operations* enabled under the *Occupational Health and Safety Act (R.S.O. 1990, Chapter 0.1),* as amended.

Representative bulk samples of suspected ACMs were collected by Englobe during the site investigation. Samples were collected to meet the bulk sampling requirements stipulated in O.Reg. 278/05, as amended. Bulk samples were analyzed by Paracel Laboratories Ltd. (Paracel). Paracel is an accredited laboratory through the Canadian Association for Laboratory Accreditation Inc. (CALA). The bulk samples were analyzed using polarised light microscopy (PLM). All bulk asbestos samples collected by Englobe were

analyzed using the regulated Ontario detection limit of 0.5%. Samples followed a stop-positive methodology, where the remaining samples in a series would not be analyzed if any one sample in the series had a concentration of asbestos greater than or equal to 0.5%.

3.3. Lead-Containing Material Methodology

In Canada, the Federal Canada Consumer Product Safety Act's *Surface Coating Materials Regulations SOR/2016-193* has lowered the allowable concentration of lead in paints for new consumer products to 0.009% lead content by weight (90 ppm). For the purposes of the survey and this report, paint applications having concentrations of lead above 90 ppm are considered lead-containing.

Representative lead paint samples were collected and submitted by Englobe for lead content analysis. The samples were analyzed by Paracel. Paracel is certified under CALA to perform lead in paint sample analysis. The samples were analysed by Paracel using Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) in accordance with EPA 6020 – Digestion – ICP-MS.

3.4. PCB-Containing Equipment Methodology

Equipment that may contain PCBs (e.g., electrical transformers and fluorescent light ballasts) can often be identified by examining manufacturer's labels. For safety reasons, Englobe personnel do not remove the ballast shields from fluorescent light fixtures to examine the ballast codes unless the electrical circuit for the lighting has been tagged and locked out by a qualified electrician. When possible, the manufacture name and catalogue number is recorded. Where not clearly labelled as "Non-PCB", the information presented on the ballast labels can be compared with the Environment Canada document entitled "Identification of Lamp Ballasts Containing PCBs (Revised August 1991)" to confirm PCB content, or assumed to contain PCBs, as applicable.

3.5. Halocarbon-Containing Equipment Methodology

Equipment that may contain halocarbons (e.g., air conditioning and refrigeration equipment) can often be identified by examining manufacturer's labels. The investigation of halocarbons was performed through the identification of equipment requiring refrigerants as part of the survey process followed by an evaluation for labels on the equipment (indicating the type of refrigerant present), as applicable.

3.6. Other Designated Substances and Hazardous Materials Methodology

The methodology for the identification of other Designated Substances and hazardous materials followed the same visual evaluation methodology as the investigation for asbestos and lead in surface coatings. During the survey, other identified Designated Substances were visually identified based on the surveyor's historical knowledge of these substances. These substances/materials were identified, and locations noted, as deemed applicable.

4.0 FINDINGS

The following sections outline the complete findings of all accessible designated substances and hazardous building materials that were assessed within the project areas.

Englobe made attempts to evaluate the project areas to identify hazardous materials present. In spite of these efforts, some designated substances or hazardous materials may be concealed and not observed at the time of the survey. As such, should any previously unidentified suspect designated substances or hazardous materials be encountered as part of future work, these materials are to be treated as designated substances or hazardous materials and handled accordingly, unless additional assessment confirms otherwise.

4.1. Asbestos

Table 1 below presents the findings of bulk asbestos material samples collected from and applicable to the project areas, based on visual observations at the time of the site survey.

Table 1: Summary of Bulk Samples Analyzed for Asbestos Content by PLM			
Sample I.D.	Sample Location	Material Description	Asbestos Content (%)
2402375-01 A	Room 034	Brick Mortar	None Detected
2402375-01 B			
2402375-01 C			
2402375-02 A	**Room 034**	**Aircell pipe insulation**	**60% Chrysotile**
2402375-02 B			Not Analyzed (Stop Positive)
2402375-02 C			Not Analyzed (Stop Positive)
2402375-03 A	Room 033	Pipe insulation canvas associated with fiberglass pipes	None Detected
2402375-03 B			
2402375-03 C			
2402375-04 A	Room C004/C005	Concrete Block Mortar	None Detected
2402375-04 B			
2402375-04 C			
2402375-05 A	Room C005	Pipe Insulation Canvas associated with fiberglass pipes	None Detected
2402375-05 B			
2402375-05 C			
2402375-06 A	Room C005	Grey Duct Mastic on joints of ducting	None Detected
2402375-06 B			
2402375-06 C			
2402375-07 A	Room C010A	Drywall Joint Compound	None Detected
2402375-07 B			
2402375-07 C			
2402375-08 A	Exterior	Grey Foundation Parge	None Detected
2402375-08 B			
2402375-08 C			
2402375-09 A	Exterior	Grey Exhaust Caulking	None Detected
2402375-09 B			
2402375-09 C			

Table 1: Summary of Bulk Samples Analyzed for Asbestos Content by PLM			
Sample I.D.	Sample Location	Material Description	Asbestos Content (%)
2402375-10 A	Exterior	Exhaust Well Caulking	None Detected
2402375-10 B			
2402375-10 C			

Note: **Bold** items contain regulated amounts of asbestos (≥0.5%), as per O.Reg. 278/05, as amended

4.1.1. Asbestos-Containing Materials

Based on bulk sampling and subsequent laboratory analysis, the following materials observed within the project areas contain regulated amounts of asbestos:

- Friable aircell pipe insulation, sampled in room 034 contains 60% Chrysotile asbestos (Englobe Sample ID: 2402375-02 A-C). There is less than 1 linear metre of this material is present and in poor condition.

4.1.2. Assumed Asbestos-Containing Materials

The following materials observed within the project area could not be sampled due to limited accessibility.

- Friable pipe elbows/fittings, grey cement compound located in room C005, should be assumed to contain asbestos. These elbows were not accessible for sampling as they were located behind mechanical equipment. Three (3) pipe elbows were noted in good condition.

4.1.3. Non-Asbestos Containing Materials

Based on bulk sampling and subsequent laboratory analysis, the following materials observed within the project areas do not contain regulated amounts of asbestos:

- Brick mortar sampled in room 034 (Englobe Sample ID: 2402375-01 A-C),
- Canvas on pipe run insulation (associated with fibreglass pipe insulation) in room 033 (Englobe Sample ID: 2402375-03 A-C),
- Concrete block mortar sampled in room C004/C005 (Englobe Sample ID: 2402375-04 A-C),
- Canvas on pipe run insulation (associated with fibreglass pipe insulation) sampled in room C005 (Englobe Sample ID: 2402375-05 A-C),
- Grey duct mastic sampled in room C004/C005 (Englobe Sample ID: 2402375-06 A-C),
- Drywall joint compound sampled in room C010A (Englobe Sample ID: 2402375-07 A-C),
- Exterior grey foundation parge (Englobe Sample ID: 2402375-08 A-C),
- Exterior grey exhaust caulking (Englobe Sample ID: 2402375-09 A-C), and
- Exterior grey exhaust well caulking (Englobe Sample ID: 2402375-10 A-C).

4.2. Lead

Table 2 below presents the findings of bulk lead in paint and mortar samples collected from and applicable to the project area, based on visual observations at the time of the site survey.

Table 2: Summary of Bulk Samples Analyzed for Lead in Paint by ICP-MS			
Sample I.D.	Sample Location	Material Description	Lead Content (ppm)
2402375-LP01	Room 034	Brick Mortar	2
2402375-LP02	Room C004	White Paint on Canvas	14

Based on bulk sampling and subsequent laboratory analysis, the following paints observed within the project areas contain concentrations of lead less than the Federal Canada Consumer Product Safety Act's limit of 90 ppm:

- Brick mortar in room 034 contains 2 ppm lead (Englobe Sample ID: 2402375-LP01) and
- White paint on pipe canvas contains 14 ppm lead (Englobe Sample ID: 2402375-LP02).

No other lead samples were collected by Englobe for lead content analysis, as other paints and surface coatings encountered in the project areas were in good condition and sampling without matrix interference (i.e. removing the paint without the substrate material) would have proved difficult. All other paints and surface coatings in the project areas shall be assumed to contain detectable concentrations of lead, unless specific bulk sampling and laboratory analysis confirms otherwise.

The following materials are assumed to contain lead until bulk sampling and laboratory analysis proved otherwise:

- Solder on copper piping and
- Cast iron drainpipe caulking.

4.3. Mercury

Mercury is assumed to be present in the following building materials:

- Fluorescent light tubes contain mercury in a vapour form and in the phosphor coating in the T8 lamp tubes.

4.4. Silica

Based on the historical composition of building materials, silica is assumed to be present in the following materials:

- Concrete and cement building elements,
- Drywall,
- Interior and exterior masonry,
- Mortars, and
- Cementitious parging.

4.5. Other Designated Substances and Hazardous Materials

The following Designated Substances and Hazardous Materials were neither observed nor suspected of being present in forms or quantities that would impact work operations associated with the project:

- Acrylonitrile,
- Arsenic,
- Benzene,
- Coke Oven Emissions,
- Ethylene Oxide,
- Isocyanates,
- Vinyl Chloride,
- PCBs,
- Mould,
- Halocarbons.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the site investigation, sampling, and analysis, the following designated substances and hazardous materials are present in forms and quantities in the project area:

- Asbestos,
- Lead,
- Mercury, and
- Silica.

Englobe's recommendations for each material, which are based upon both regulatory compliance and best practice guidelines, are included in the following sections below.

5.1. Asbestos

The disturbance of ACMs on construction and demolition projects is governed by the *Canada Occupational Health and Safety Regulations* and in the province of Ontario is governed by O.Reg. 278/05, as amended. These regulations classify all asbestos disturbances as Low Risk (Type 1), Moderate Risk (Type 2), or High Risk (Type 3), each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions and must be removed prior to demolition. In the event of conflict between regulations, the more stringent procedures apply.

Identified friable ACMs require a minimum of Moderate Risk abatement procedures when removing or disturbing one (1) square metre or less of the material. Should demolition, disturbance, or repair be required of more than one (1) square metre of friable ACM, High-Risk abatement procedures are required. The removal of pipe insulation can be completed using moderate-risk glovebag procedures, provided the pipe insulation is in good condition and the glovebag can be maintained throughout the removal process. If this condition cannot be met, than more stringent (Type 2 or Type 3 containments) are required.

The transport and disposal of asbestos waste is governed by O. Reg. 347/90 – *General – Waste Management*, as amended. This regulation requires that asbestos waste be sealed in appropriately labelled,

double containers resistant to puncture and tears. The waste must be disposed at a licensed waste disposal site.

The time weighted average exposure limit (TWAEL) for airborne asbestos is prescribed by O.Reg. 490/09 *Designated Substances*, as amended, and the *Canada Labour Code, Occupational Health, and Safety Regulations*. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne asbestos levels that exceed this TWAEL.

The following recommendations apply to ACMs and suspected ACMs:

- Appropriate work procedures and precautionary measures must be used, as outlined in O.Reg. 278/05, as amended, and the *Canada Occupational Health and Safety Regulations*, as amended, when performing work that may disturb ACMs or suspected ACMs, including prior to building demolition.
- Disturbance and/or removal of ACMs must be appropriately recorded as part of the building's Asbestos Management Plan.
- Before undertaking any work activity that involves asbestos-containing materials, an Asbestos Exposure Control Plan shall be developed, in accordance with the requirements of the *Canada Occupational Health and Safety Regulations*, which includes classification of asbestos specific work activities, onsite labelling of ACMs, and education/training of applicable federal employees specific to ACMs.
- Disposal of asbestos waste is controlled by the Ontario Environmental Protection Act, Regulation 347/90, *General – Waste Management*, as amended. This regulation requires that asbestos waste be sealed in double containers resistant to puncture and tears, and appropriately labelled. The waste must be disposed at a licensed waste disposal site. Proper notification must be issued to the site representative prior to transportation of waste. The transport of the waste to the disposal site is controlled by the federal Transportation of Dangerous Goods Act, 1992 (TDGA) and Ontario Dangerous Goods Transportation Act.
- If ACMs or suspected ACMs become damaged and worker exposure to the material is likely to occur, the damaged material must be repaired or removed following work procedures outlined in O. Reg. 278/05, as amended, and *Canada Occupational Health, and Safety Regulations,* as amended.

5.2. Lead

The Occupational Health and Safety Branch (OHS) of the Ontario Ministry of Labour, Immigration, Training and Skills Development (MLITSD) have published Guideline: Lead on Construction Projects. This document classifies all lead disturbances as Type 1, Type 2a, Type 2b, Type 3a or Type 3b work, and assigns different levels of respiratory protection and work procedures for each classification. Disturbance of lead-containing coatings shall follow the procedures of this guideline document.

Paints and other surface coatings containing elevated concentrations of lead can pose a health risk to humans if ingested or inhaled. Such lead-containing surface coatings are also a risk to the environment with the potential to contaminate soil and groundwater. Surface coatings with elevated lead content can also pose a health risk to workers while completing renovations within the building.

Although the Canada Consumer Product Safety Act's *Surface Coating Materials Regulations SOR/2016-193*, as amended, has set a limit of 90 parts per million (ppm) for surface coating materials, there may be a potential for exposure to high levels of airborne lead depending on the work activities performed that disturb

the lead-containing materials, even at low lead content concentrations. Conducting a risk assessment to assess the potential for exposure to lead should be performed to determine the need to follow work procedures such as those in the MoL guideline referenced above.

In the event of conflict between lead precautionary measures and other precautionary measures (e.g., asbestos, silica), the more stringent procedures shall apply.

The time weighted average exposure limit (TWAEL) for airborne lead is prescribed by O.Reg. 490/09 *Designated Substances*, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne lead levels that exceed this TWAEL.

The disposal of construction waste containing lead is governed by O. Reg. 347/90 - *General – Waste Management*, as amended. The transport of the waste to the disposal site is controlled by the federal TDGA and the Ontario Dangerous Goods Transportation Act. Materials with elevated concentrations of lead should be subject to Toxicity Characteristic Leaching Procedure (TCLP) testing to determine toxicity with respect to lead prior to disposal, in accordance with O. Reg. 347/90, as amended.

Prior to or during renovation work, the following procedures should be performed for lead-containing materials that are anticipated to be disturbed:

- Copper solder can be cut a small distance (e.g., 50 mm) from the soldered joints to avoid direct disturbance of the lead material

5.3. Mercury

There is no regulation that specifically governs the disturbance of mercury on construction projects.

The TWAEL for mercury is prescribed by Ontario Regulation 490/09 Designated Substances, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne mercury levels that exceed this TWAEL.

Liquid mercury is classified as a hazardous waste under O. Reg. 347/90, as amended. The transport of the waste to a disposal site is controlled by O. Reg. 347/90 and by the federal TDGA and the Ontario Dangerous Goods Transportation Act. It is now common practice to recycle fluorescent light tubes, recovering the component materials, and avoiding the generation of hazardous waste.

5.4. Silica

The Occupational Health and Safety Branch of the Ontario MLITSD has published *Guideline: Silica on Construction Projects*. This document classifies all silica disturbances as Type 1, Type 2, or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. This guideline should be followed during disturbance of silica-containing materials. It is preferable to use more stringent dust suppression techniques and engineering controls as opposed to relying on respiratory protection to control worker exposure. Respiratory protection should only be relied on as a last resort when dust suppression techniques and engineering controls fail to control worker exposure.

The TWAEL for airborne silica is prescribed by O.Reg. 490/09 *Designated Substances*, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne silica levels that exceed this exposure limit.

6.0 CLOSURE

A Statement of Limitations, which forms an integral part of this report, is included in Appendix D.

We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

Yours very truly,

Englobe Corp.

Angeline Snow, B.Tech., AMRT, C.E.T.
Senior Project Manager
Angeline.Snow@englobecorp.com

Kyle Thompson, B.Sc., WRT, C.E.T.
Director of Operations - HHS
Kyle.Thompson@englobecorp.com

APPENDICES

Appendix A	Representative Photographs
Appendix B	Laboratory Certificates of Analysis
Appendix C	Drawing with Sample Locations
Appendix D	Statement of Limitations

Property and Confidentiality

“This report can only be used for the purposes stated therein. Any use of the report must take into consideration the object and scope of the mandate by virtue of which the report was prepared, as well as the limitations and conditions specified therein and the state of scientific knowledge at the time the report was prepared. Englobe Corp. provides no warranty and makes no representations other than those expressly contained in the report.

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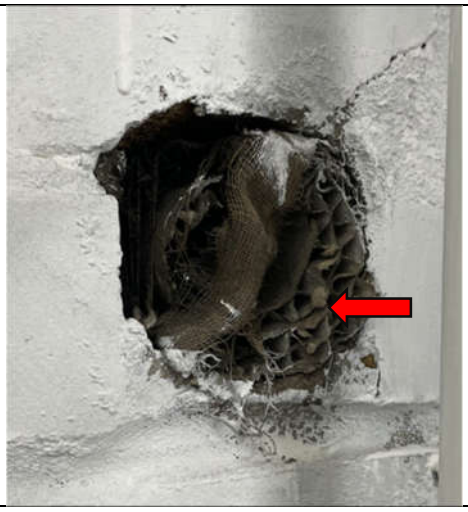
If tests have been carried out, the results of these tests are valid only for the sample described in this report.

Englobe Corp.’s subcontractors who have carried out on-site or laboratory work are duly assessed according to the purchase procedure of our quality system. For further information, please contact your project manager.”

Appendix A
Representative Photographs

ENGLOBE

Photo	**1** 	**2** 
Sample ID	2402375-02 A-C	NA
Material Description	Asbestos-containing aircell pipe run insulation in room 034	Assumed to be asbestos-containing pipe elbow insulation in room C005
Photo	**3** 	**4** 
Sample ID	2402375-LP01	2402375-LP02
Material Description	Brick mortar	White paint on pipe run insulation

Appendix B
Laboratory Certificates of Analysis

ENGLOBE

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www.paracellabs.com

Certificate of Analysis

Englobe Corp. (Ottawa)

2713 Lancaster Road, Unit 101
Ottawa, ON K1B 5R6
Attn: Angeline Snow

Client PO: M50
Project: 02402375.000
Custody: 70194

Report Date: 21-Mar-2024
Order Date: 18-Mar-2024

Order #: 2412037

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2412037-01	2402375-01 A
2412037-02	2402375-01 B
2412037-03	2402375-01 C
2412037-04	2402375-02 A
2412037-05	2402375-02 B
2412037-06	2402375-02 C
2412037-07	2402375-03 A
2412037-08	2402375-03 B
2412037-09	2402375-03 C
2412037-10	2402375-04 A
2412037-11	2402375-04 B
2412037-12	2402375-04 C
2412037-13	2402375-05 A
2412037-14	2402375-05 B
2412037-15	2402375-05 C
2412037-16	2402375-06 A
2412037-17	2402375-06 B
2412037-18	2402375-06 C
2412037-19	2402375-07 A
2412037-20	2402375-07 B
2412037-21	2402375-07 C
2412037-22	2402375-08 A
2412037-23	2402375-08 B
2412037-24	2402375-08 C
2412037-25	2402375-09 A
2412037-26	2402375-09 B

Approved By:

Emma Diaz

Senior Analyst

Certificate of Analysis

Client: Englobe Corp. (Ottawa)

Client PO: M50

Report Date: 21-Mar-2024

Order Date: 18-Mar-2024

Project Description: 02402375.000

2412037-27	2402375-09 C
2412037-28	2402375-10 A
2412037-29	2402375-10 B
2412037-30	2402375-10 C

Certificate of Analysis

Client: Englobe Corp. (Ottawa)

Client PO: M50

Report Date: 21-Mar-2024

Order Date: 18-Mar-2024

Project Description: 02402375.000

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2412037-01	18-Mar-24	Grey	Mortar	No	**Client ID: 2402375-01 A**	
					Non-Fibers	100
2412037-02	18-Mar-24	Grey	Mortar	No	**Client ID: 2402375-01 B**	
					Non-Fibers	100
2412037-03	18-Mar-24	Grey	Mortar	No	**Client ID: 2402375-01 C**	
					Non-Fibers	100
2412037-04	18-Mar-24	Grey	Air Cell	**Yes**	**Client ID: 2402375-02 A**	
					Chrysotile	60
					Non-Fibers	40
2412037-05	18-Mar-24	Grey	Air Cell		**Client ID: 2402375-02 B**	
					not analyzed, positive stop	
2412037-06	18-Mar-24	Grey	Air Cell		**Client ID: 2402375-02 C**	
					not analyzed, positive stop	
2412037-07	18-Mar-24	Silver/Beige	Pipe Canvas	No	**Client ID: 2402375-03 A**	
					Cellulose	45
					MMVF	10
					Non-Fibers	45
2412037-08	18-Mar-24	Silver/Beige	Pipe Canvas	No	**Client ID: 2402375-03 B**	
					Cellulose	45
					MMVF	10
					Non-Fibers	45
2412037-09	18-Mar-24	Silver/Beige	Pipe Canvas	No	**Client ID: 2402375-03 C**	
					Cellulose	45
					MMVF	10
					Non-Fibers	45
2412037-10	18-Mar-24	Grey	Mortar	No	**Client ID: 2402375-04 A**	
					Non-Fibers	100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2412037-11	18-Mar-24	Grey	Mortar	No	**Client ID: 2402375-04 B**	
					Non-Fibers	100
2412037-12	18-Mar-24	Grey	Mortar	No	**Client ID: 2402375-04 C**	
					Non-Fibers	100
2412037-13	18-Mar-24	Silver/white	Pipe Canvas	No	**Client ID: 2402375-05 A**	
					Cellulose	40
					Non-Fibers	60
2412037-14	18-Mar-24	Silver/white	Pipe Canvas	No	**Client ID: 2402375-05 B**	
					Cellulose	40
					Non-Fibers	60
2412037-15	18-Mar-24	Silver/white	Pipe Canvas	No	**Client ID: 2402375-05 C**	
					Cellulose	40
					Non-Fibers	60
2412037-16	18-Mar-24	Grey	Mastic	No	**Client ID: 2402375-06 A**	
					Non-Fibers	100
2412037-17	18-Mar-24	Grey	Mastic	No	**Client ID: 2402375-06 B**	
					Non-Fibers	100
2412037-18	18-Mar-24	Grey	Mastic	No	**Client ID: 2402375-06 C**	
					Non-Fibers	100
2412037-19	18-Mar-24	White	Drywall Joint Compound	No	**Client ID: 2402375-07 A**	
					Non-Fibers	100
2412037-20	18-Mar-24	White	Drywall Joint Compound	No	**Client ID: 2402375-07 B**	
					Non-Fibers	100
2412037-21	18-Mar-24	White	Drywall Joint Compound	No	**Client ID: 2402375-07 C**	
					Non-Fibers	100

Certificate of Analysis

Client: Englobe Corp. (Ottawa)

Client PO: M50

Report Date: 21-Mar-2024

Order Date: 18-Mar-2024

Project Description: 02402375.000

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2412037-22	18-Mar-24	Grey	Parge	No	**Client ID: 2402375-08 A**	
					Non-Fibers	100
2412037-23	18-Mar-24	Grey	Parge	No	**Client ID: 2402375-08 B**	
					Non-Fibers	100
2412037-24	18-Mar-24	Grey	Parge	No	**Client ID: 2402375-08 C**	
					Non-Fibers	100
2412037-25	18-Mar-24	Grey	Caulking	No	**Client ID: 2402375-09 A**	
					Non-Fibers	100
2412037-26	18-Mar-24	Grey	Caulking	No	**Client ID: 2402375-09 B**	
					Non-Fibers	100
2412037-27	18-Mar-24	Grey	Caulking	No	**Client ID: 2402375-09 C**	
					Non-Fibers	100
2412037-28	18-Mar-24	Grey	Caulking	No	**Client ID: 2402375-10 A**	
					Non-Fibers	100
2412037-29	18-Mar-24	Grey	Caulking	No	**Client ID: 2402375-10 B**	
					Non-Fibers	100
2412037-30	18-Mar-24	Grey	Caulking	No	**Client ID: 2402375-10 C**	
					Non-Fibers	100

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

** **Analytes in bold indicate asbestos mineral content.**

Certificate of Analysis

Client: Englobe Corp. (Ottawa)

Client PO: M50

Report Date: 21-Mar-2024

Order Date: 18-Mar-2024

Project Description: 02402375.000

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	Lab Accreditation	Analysis Date
Asbestos, PLM Visual Estimation	AppE to SubE of 40CFR Part763 and EPA/600/R-93/116	1 - Mississauga	CALA 3762	20-Mar-24

Mississauga Lab: 15 - 6800 Kitimat Rd Mississauga, Ontario, L5N 5M1

Work Order Revisions | Comments

None

PARACEL LABORATORIES LTD.

Paracel ID: 2412037

Office
19 St. Laurent Blvd.
, Ontario K1G 4J8
0-749-1947
cel@paracellabs.com

Chain of Custody
(Lab Use Only)
№ 70194

Page 1 of 1

Client Name: Englobe Corp	Project Reference: MSD
Contact Name: Angeline Shaw	Quote #: 24-032
Address: 101-2113 Lanaster Ottawa, ON K1B 5R6	PO #: 0240237S.000
Telephone: 877-300-4580	Email Address: angeline.shaw@englobecorp.com + kyle.thompson@englobecorp.com

Turnaround Time:
☐ Immediate ☐ 1 Day
☐ 4 Hour ☐ 2 Day
☐ 8 Hour ☑ 3 Day
☐ Regular
Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☑ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☑ ON ☐ QC ☐ AB ☐ SK ☐ Other:

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☑ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number:

	Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	2402375-01 A-C	Mar 18	-	PLM	Brick mortar	☑
2	2402375-02 A-C	"	-	"	air cell paper	☑
3	2402375-03 A-C	"	-	"	pipe canvas	☑
4	2402375-04 A-C	"	-	"	concrete block mortar	☑
5	2402375-05 A-C	"	-	"	pipe canvas	☑
6	2402375-06 A-C	"	-	"	drew duct mastic	☑
7	2402375-07 A-C	"	-	"	drywall joint compound	☑
8	2402375-08 A-C	"	-	"	exterior parge	☑
9	2402375-09 A-C	"	-	"	exterior exhaust caulking	☑
10	2402375-10 A-C	"	-	"	exterior ~~window~~ exhaust well caulk	☑
11						☐
12						☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: Hdelk

Relinquished By (Sign): Angeline Shaw	Received at Depot:	Received at Lab: 2:50	Verified By: 3:0
Relinquished By (Print): Angeline Shaw			
Date/Time: Mar 18/24 11:04	Date/Time: Mar 18/24 11:05	Date/Time: Mar 18 24	Date/Time: Mar 18 24

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Certificate of Analysis

Englobe Corp. (Ottawa)
2713 Lancaster Road, Unit 101
Ottawa, ON K1B 5R6
Attn: Angeline Snow

Client PO: M50
Project: 02402375.000
Custody: 141104

Report Date: 21-Mar-2024
Order Date: 18-Mar-2024

Order #: 2412036

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2412036-01	2402375-LP01 brick mortar
2412036-02	2402375-LP02 paint on canvas

Approved By:

Mark Foto

Mark Foto, M.Sc.
Lab Supervisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	19-Mar-24	19-Mar-24
Solids, %	CWS Tier 1 - Gravimetric	20-Mar-24	21-Mar-24

Certificate of Analysis

Report Date: 21-Mar-2024

Client: **Englobe Corp. (Ottawa)**

Order Date: 18-Mar-2024

Client PO: **M50**

Project Description: 02402375.000

	Client ID:	2402375-LP01 brick mortar	2402375-LP02 paint on canvas	-	-		
	Sample Date:	18-Mar-24 09:10	18-Mar-24 09:30	-	-	-	-
	Sample ID:	2412036-01	2412036-02	-	-		
	Matrix:	Other	Paint	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	100	-	-	-	-	-
Metals							
Lead	5 ug/g	-	14 [1]	-	-	-	-
Lead	1 ug/g	2	-	-	-	-	-

Certificate of Analysis

Report Date: 21-Mar-2024

Client: **Englobe Corp. (Ottawa)**

Order Date: 18-Mar-2024

Client PO: **M50**

Project Description: 02402375.000

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals								
Lead	ND	1	ug/g					

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	12.5	1	ug/g	12.7			1.3	30	
Physical Characteristics									
% Solids	88.4	0.1	% by Wt.	88.7			0.4	25	

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	49.9	1	ug/g	5.1	89.6	70-130			

Qualifier Notes:

Sample Qualifiers :

1: Complete separation of paint from substrate not possible for this sample and a small amount of substrate has been included in the paint digestion.
Applies to Samples: 2402375-LP02 paint on canvas

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

PARACEL LABORATORIES LTD.

Paracel ID: 2412036

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2412036	№ 141104

Client Name: Englobe Corp
Contact Name: Angeline Snow
Address: 101-2313 Lancaster Ottawa, ON K1B 5R6
Telephone: 877-300-4500

Project Ref: M50
Quote #:
PO #: 0240237 5.000
E-mail: angeline.snow@englobecorp.com kyle.thompson@englobecorp.com

Page 1 of 1

Turnaround Time

☐ 1 day ☑ 3 day
☐ 2 day ☐ Regular
Date Required: _____

☐ REG 153/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ____
For RSC: ☐ Yes ☐ No

Other Regulation

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun: _____
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analysis

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Lead				
1	2402375-LP01 brick mortar	P	-	1	Mar 18	9:10								X				
2	2402375-LP02 paint on canvas	P	-	1	Mar 18	9:30								X				
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

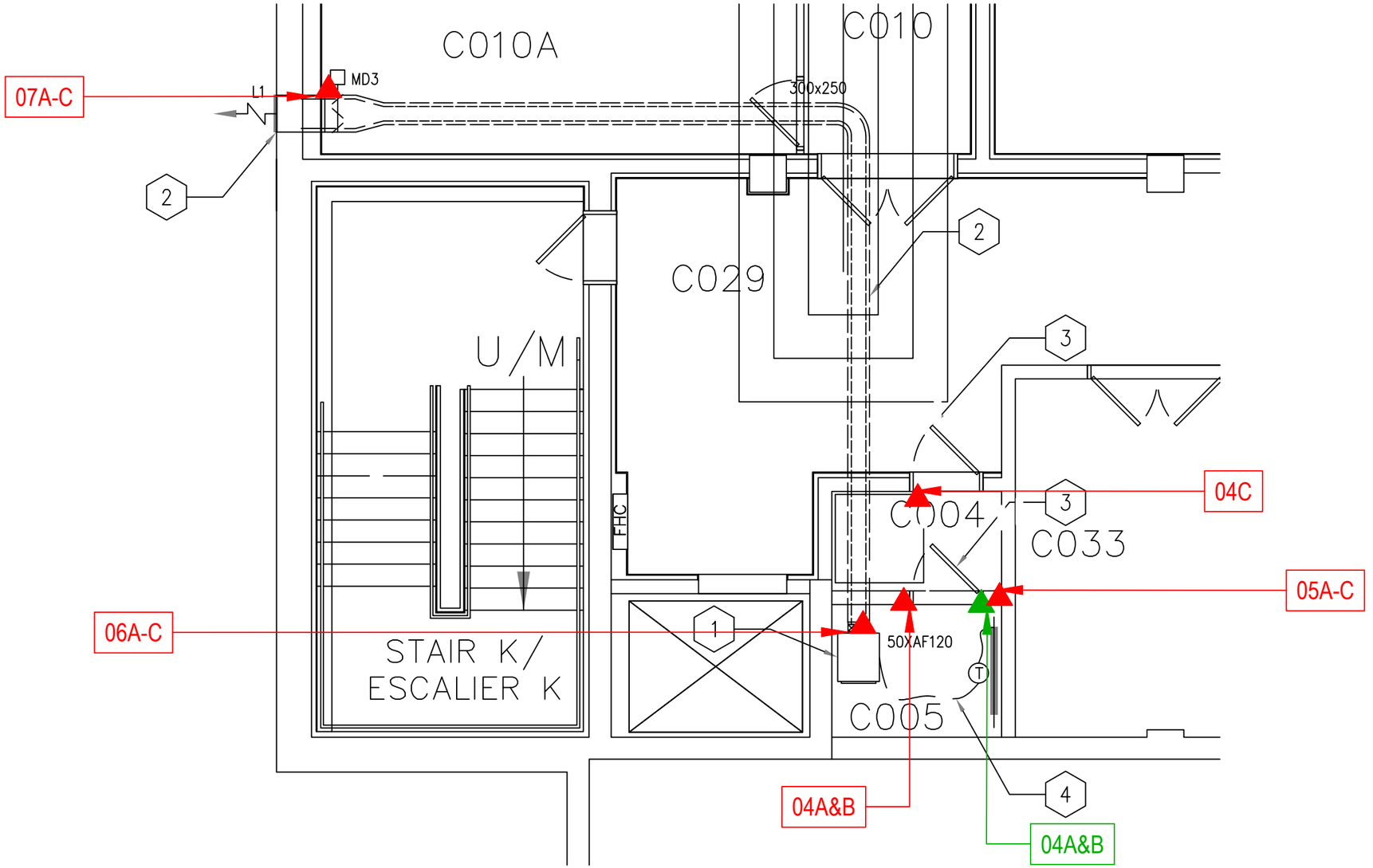
Comments:

Method of Delivery: Walk-in

Relinquished By (Sign): Angeli Snow	Received By Driver/Depot:	Received At Lab:	Verified By: Hiral
Relinquished By (Print): Angeline Snow	Date/Time:	Date/Time: Mar 18/24 11:05	Date/Time: Mar 18, 24 | 11:18
Date/Time: Mar 18/24 11:04	Temperature: °C	Temperature: °C	pH Verified: ☐ By:

Appendix C
Drawing with Sample Locations

ENGLOBE



SOURCE:
Client Drawing

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Bulk Asbestos Samples
- Bulk Lead Samples

1:4 000

0 40 80 120 160 200 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	3/27/2024		

Client: NRC (National Research Council Canada

Site: MONTREAL ROAD CAMPUS

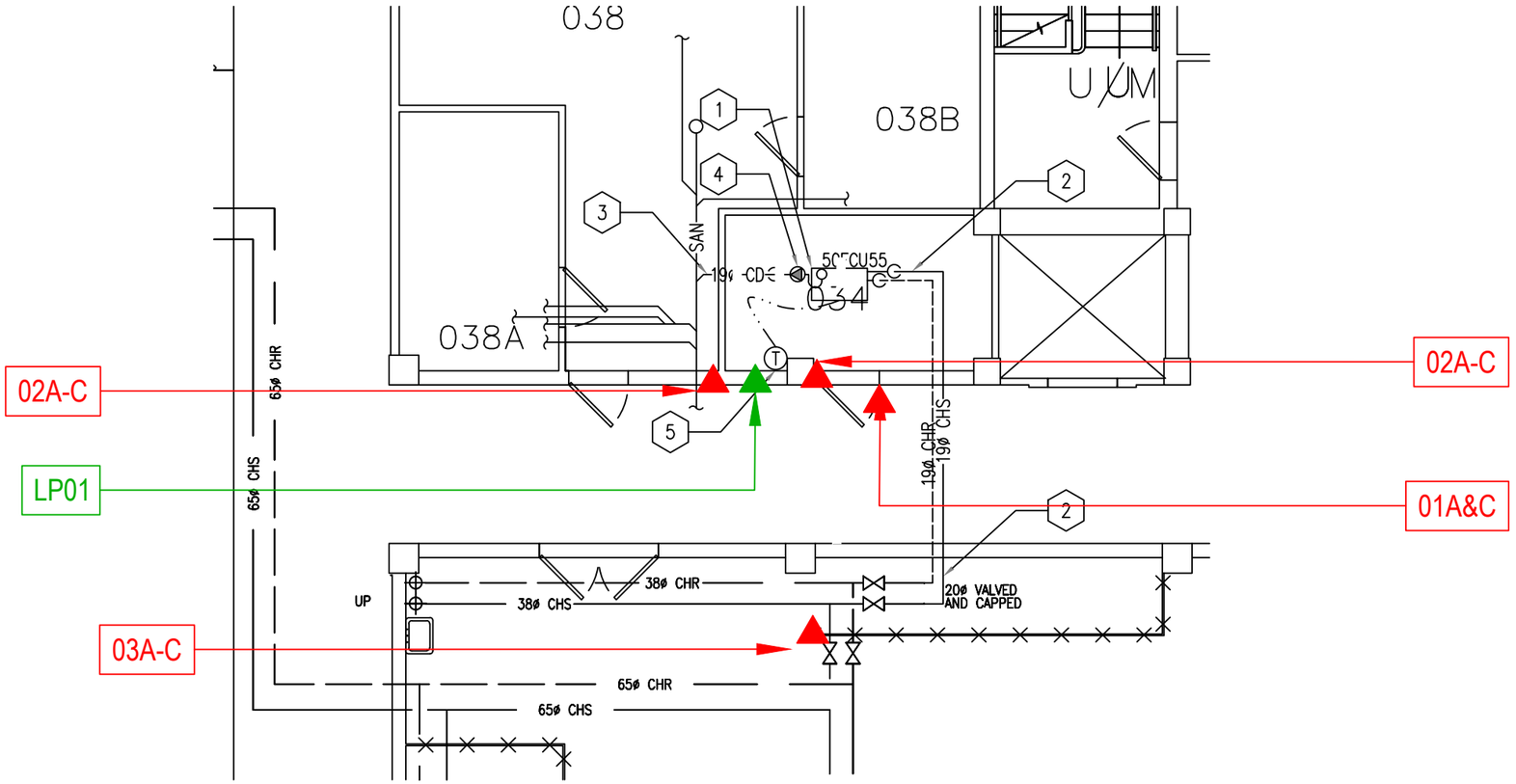
Report Title: Building M-50, Elevators #1 & #4 Machine Room Modifications, Project-Specific Designated Substances Survey

Drawing Title: Sample Locations

Designed By	Scale
A.S.	As shown
Drawn By	**Date**
D.R.	March 2024
Approved By	**Project No.**
A.S.	02402375.000

Figure No. **1**

2713 Lancaster Road Suite 101, Ottawa, Ontario K1B 5R6 Tel: 1-877-300-4800 Website: www.englobecorp.com



SOURCE:
Client Drawing

Note

1. This drawing shall be read in conjunction with the associated technical report.

Legend

- Bulk Asbestos Samples
- Bulk Lead Samples

1:4 000

0 40 80 120 160 200 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	8/15/2023		

Client
NRC (National Research Council Canada

Site
MONTREAL ROAD CAMPUS

Report Title
Building M-50, Elevators #1 & #4 Machine Room Modifications, Project-Specific Designated Substances Survey

Drawing Title
Sample Locations

Designed By	Scale
A.S.	As shown
Drawn By	**Date**
D.R.	March 2024
Approved By	**Project No.**
A.S.	02402375.000

Figure No.
2

2713 Lancaster Road Suite 101, Ottawa, Ontario K1B 5R6 Tel: 1-877-300-4800 Website: www.englobecorp.com

Appendix D
Statement of Limitations

ENGLOBE

Statement of Limitations

This report (hereinafter, the “Report”) was prepared by Englobe Corporation (hereinafter the “Company”) and is provided for the sole and exclusive use and benefit of National Research Council Canada (“Client”). Ownership in and copyright for the contents of the Report belong to the Company.

No other person is authorized to rely on, use, copy, duplicate, reproduce or disseminate this Report, in whole or in part and for any reason whatsoever, without the express prior written consent of the Company. Any person using this Report, other than the person(s) to whom it is directly addressed, does so entirely at its own risk. The Company assumes no responsibility or liability in connection with decisions made or actions taken based on the Report, or the observations and/or comments contained within the Report. Others with interest in the site and/or subject matter of this Report should undertake their own investigations and studies to determine how or if they or their plans could be affected.

This Report should be considered in its entirety; selecting specific portions of the Report may result in the misinterpretation of the content.

The work performed by the Company was carried out in accordance with the terms and conditions specified in the Professional Services Agreement between the Company and the Client, in accordance with currently accepted engineering standards and practices and in a manner consistent with the level of skill, care and competence ordinarily exercised by members of the same profession currently practicing under similar conditions and like circumstances in the same jurisdiction in which the services were provided. Standards, guidelines, and practices may change over time; those which were applied to produce this Report may be obsolete or unacceptable later.

The findings, recommendations, suggestions, or opinions expressed in this Report reflect the Company’s best professional judgment based on observations and/or information reasonably available at the time the work was performed, as appropriate for the scope, work schedule and budgetary constraints established by the Client. No other warranty or representation, expressed or implied, is included in this Report including, but not limited to, that the Report deals with all issues potentially applicable to the site and/or that the Report deals with any and all of the important features of the site, except as expressly provided in the scope of work.

This Report has been prepared for the specific site, development, building, design or building assessment objectives and/or purposes that were described to the Company by the Client. The applicability and reliability of the content of this Report, subject to the limitations provided herein, are only valid to the extent that there has been no material alteration or variation thereto, and the Company expressly disclaims any obligation to update the Report. However, the Company reserves the right to amend or supplement this Report based on additional information, documentation or evidence made available to it.

The Company makes no representation concerning the legal significance of its findings, nor as to the present or future value of the property, or its fitness for a particular purpose and hereby disclaims any responsibility or liability for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

Since the passage of time, natural occurrences, and direct or indirect human intervention may affect the views, conclusions, and recommendations (if any) provided in this Report, it is intended for immediate use.

This Statement of Limitations forms an integral part of the Report.

In preparing this Report, the Company has relied in good faith on information provided by others and has assumed that such information is factual, accurate and complete. The Company accepts no responsibility or liability for any deficiency, misstatement or inaccuracy in this Report resulting from the information provided, concealed, or not fully disclosed by those individuals.

The assessment should not be considered a comprehensive audit that covers and eliminates all present, past, and future risks. The information presented in this Report is based on data collected during the completion of the site assessment conducted. The overall site/building conditions were extrapolated based on information collected at specific sampling locations. Professional judgement was exercised in gathering and analyzing data; however, no sampling methodology can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Consequently, the actual site/building conditions between the sampling points may vary. In addition, analysis has been carried out only for the parameters identified, and it should not be inferred that other hazardous materials are not present.

It is recommended practice that the Company be retained during subsequent phases of the project, to confirm that the conditions throughout the site do not deviate materially from those encountered throughout the sampling program.

Any results from a third-party laboratory or other subcontractors reported herein have been carried out by others, and the Company cannot warrant their accuracy.

This Report is based on the assumption that the design features relevant to our work will be in accordance with applicable codes, standards, and guidelines of practice and constructed substantially in accordance with the Report. If there are any changes to the site development or building construction features, or there is any additional information that was not otherwise available at the time the work was performed, the Company should be retained to review the implications thereof to the contents of this Report. The design recommendations expressed in this Report are applicable only to the project described therein.

No attempt was made to dismantle, inspect, or test existing equipment other than that which is specifically noted in the report.

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 be 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 Nothwithstanding 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 that 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.

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 or 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 "superintendant" 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 ths 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 o 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 proved 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 GC303.3 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, ar 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 wiring 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 that

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 n 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 Contactor.

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 INSUANCE 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 a t 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.

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
PR # 942448
Security Classification / Classification de sécurité UNCLASSIFIED

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 **NRC**	2. Branch or Directorate / Direction générale ou Direction RPPM
3. a) Subcontract Number / Numéro du contrat de sous-traitance	3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant TBD

4. Brief Description of Work / Brève description du travail
M50 Elevator #1 & #4 Modernizations - Public Tender

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 ☑	**NATO / OTAN** ☐	**Foreign / Étranger** ☐

7. b) Release restrictions / Restrictions relatives à la diffusion

No release restrictions / Aucune restriction relative à la diffusion ☑	All NATO countries / Tous les pays de l'OTAN ☐	No release restrictions / Aucune restriction relative à la diffusion ☐
Not releasable / À ne pas diffuser ☐		
Restricted to: / Limité à : ☐	Restricted to: / Limité à : ☐	Restricted to: / Limité à : ☐
Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :

7. c) Level of information / Niveau d'information

PROTECTED A / PROTÉGÉ A ☐	NATO UNCLASSIFIED / NATO NON CLASSIFIÉ ☐	PROTECTED A / PROTÉGÉ A ☐
PROTECTED B / PROTÉGÉ B ☐	NATO RESTRICTED / NATO DIFFUSION RESTREINTE ☐	PROTECTED B / PROTÉGÉ B ☐
PROTECTED C / PROTÉGÉ C ☐	NATO CONFIDENTIAL / NATO CONFIDENTIEL ☐	PROTECTED C / PROTÉGÉ C ☐
CONFIDENTIAL / CONFIDENTIEL ☐	NATO SECRET / NATO SECRET ☐	CONFIDENTIAL / CONFIDENTIEL ☐
SECRET / SECRET ☐	COSMIC TOP SECRET / COSMIC TRÈS SECRET ☐	SECRET / SECRET ☐
TOP SECRET / TRÈS SECRET ☐		TOP SECRET / TRÈS SECRET ☐
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) ☐		TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) ☐

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

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets? ☑ No / Non ☐ Yes / Oui
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 :

9. Will the supplier require access to extremely sensitive INFOSEC information or assets? ☑ No / Non ☐ Yes / Oui
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?

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

☑ RELIABILITY STATUS / COTE DE FIABILITÉ	☐ CONFIDENTIAL / CONFIDENTIEL	☐ SECRET / SECRET	☐ TOP SECRET / TRÈS SECRET
☐ TOP SECRET– SIGINT / TRÈS SECRET – SIGINT	☐ NATO CONFIDENTIAL / NATO CONFIDENTIEL	☐ NATO SECRET / NATO SECRET	☐ COSMIC TOP SECRET / COSMIC TRÈS SECRET
☐ 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? ☐ No / Non ☑ Yes / Oui
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?
If Yes, will unscreened personnel be escorted? ☐ No / Non ☑ Yes / Oui
Dans l'affirmative, le personnel en question sera-t-il escorté?

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? ☑ No / Non ☐ Yes / Oui
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?

11. b) Will the supplier be required to safeguard COMSEC information or assets? ☑ No / Non ☐ Yes / Oui
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?

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? ☑ No / Non ☐ Yes / Oui
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?

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? ☑ No / Non ☐ Yes / Oui
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?

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency? ☑ No / Non ☐ Yes / Oui
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?

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 A	PROTECTED PROTÉGÉ B	PROTECTED PROTÉGÉ C	CONFIDENTIAL CONFIDENTIEL	SECRET	TOP SECRET TRES SECRET
Information / Assets Renseignements / Biens																
Production																
IT Media / Support TI																
IT Link / Lien électronique																

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?
La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE?

☑ No / Non ☐ Yes / Oui

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

PART D - AUTHORIZATION / PARTIE D - AUTORISATION

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

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
Kaitlin Hebb	Project Manager	

Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
343-598-2040		Kaitlin.Hebb@nrc-cnrc.gc.ca	

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

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
Marika Rioux	Analyst, Security in Contracting	

Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	Date
343-542-6839			

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)	Title - Titre	Signature

Telephone No. - N° de téléphone	Facsimile No. - N° de télécopieur	E-mail address - Adresse courriel	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

Instructions for completion of a Security Requirements Check List (SRCL)

The instruction sheet should remain attached until Block #17 has been completed.

GENERAL - PROCESSING THIS FORM

The project authority shall arrange to complete this form.

The organization security officer shall review and approve the security requirements identified in the form, in cooperation with the project authority.

The contracting security authority is the organization responsible for ensuring that the suppliers are compliant with the security requirements identified in the SRCL.

All requisitions and subsequent tender / contractual documents including subcontracts that contain PROTECTED and/or CLASSIFIED requirements must be accompanied by a completed SRCL.

It is important to identify the level of PROTECTED information or assets as Level "A," "B" or "C," when applicable; however, certain types of information may only be identified as "PROTECTED". No information pertaining to a PROTECTED and/or CLASSIFIED government contract may be released by suppliers, without prior written approval of the individual identified in Block 17 of this form.

The classification assigned to a particular stage in the contractual process does not mean that everything applicable to that stage is to be given the same classification. Every item shall be PROTECTED and/or CLASSIFIED according to its own content. If a supplier is in doubt as to the actual level to be assigned, they should consult with the individual identified in Block 17 of this form.

PART A - CONTRACT INFORMATION

Contract Number (top of the form)
This number must be the same as that found on the requisition and should be the one used when issuing an RFP or contract. This is a unique number (i.e. no two requirements will have the same number). A new SRCL must be used for each new requirement or requisition (e.g. new contract number, new SRCL, new signatures).

1. Originating Government Department or Organization
Enter the department or client organization name or the prime contractor name for which the work is being performed.

2. Directorate / Branch
This block is used to further identify the area within the department or organization for which the work will be conducted.

3. a) Subcontract Number
If applicable, this number corresponds to the number generated by the Prime Contractor to manage the work with its subcontractor.

b) Name and Address of Subcontractor
Indicate the full name and address of the Subcontractor if applicable.

4. Brief Description of Work
Provide a brief explanation of the nature of the requirement or work to be performed.

5. a) Will the supplier require access to Controlled Goods?
The Defence Production Act (DPA) defines "Controlled Goods" as certain goods listed in the Export Control List, a regulation made pursuant to the *Export and Import Permits Act* (EIPA). Suppliers who examine, possess, or transfer Controlled Goods within Canada must register in the Controlled Goods Directorate or be exempt from registration. More information may be found at www.cgd.gc.ca.

b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations?
The prime contractor and any subcontractors must be certified under the U.S./Canada Joint Certification Program if the work involves access to unclassified military data subject to the provisions of the Technical Data Control Regulations. More information may be found at www.dlis.dla.mil/jcp.

6. Indicate the type of access required

Identify the nature of the work to be performed for this requirement. The user is to select one of the following types:

a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets?

The supplier would select this option if they require access to PROTECTED and/or CLASSIFIED information or assets to perform the duties of the requirement.

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.

The supplier would select this option if they require regular access to government premises or a secure work site only. The supplier will not have access to PROTECTED and/or CLASSIFIED information or assets under this option.

c) Is this a commercial courier or delivery requirement with no overnight storage?

The supplier would select this option if there is a commercial courier or delivery requirement. The supplier will not be allowed to keep a package overnight. The package must be returned if it cannot be delivered.

7. Type of information / Release restrictions / Level of information

Identify the type(s) of information that the supplier may require access to, list any possible release restrictions, and if applicable, provide the level(s) of the information. The user can make multiple selections based on the nature of the work to be performed.

Departments must process SRCLs through PWGSC where:

- contracts that afford access to PROTECTED and/or CLASSIFIED foreign government information and assets;
- contracts that afford foreign contractors access to PROTECTED and/or CLASSIFIED Canadian government information and assets; or
- contracts that afford foreign or Canadian contractors access to PROTECTED and/or CLASSIFIED information and assets as defined in the documents entitled Identifying INFOSEC and INFOSEC Release.

a) Indicate the type of information that the supplier will be required to access

Canadian government information and/or assets

If Canadian information and/or assets are identified, the supplier will have access to PROTECTED and/or CLASSIFIED information and/or assets that are owned by the Canadian government.

NATO information and/or assets

If NATO information and/or assets are identified, this indicates that as part of this requirement, the supplier will have access to PROTECTED and/or CLASSIFIED information and/or assets that are owned by NATO governments. NATO information and/or assets are developed and/or owned by NATO countries and are not to be divulged to any country that is not a NATO member nation. Persons dealing with NATO information and/or assets must hold a NATO security clearance and have the required need-to-know.

Requirements involving CLASSIFIED NATO information must be awarded by PWGSC. PWGSC / CIISD is the Designated Security Authority for industrial security matters in Canada.

Foreign government information and/or assets

If foreign information and/or assets are identified, this requirement will allow access to information and/or assets owned by a country other than Canada.

b) Release restrictions

If **Not Releasable** is selected, this indicates that the information and/or assets are for **Canadian Eyes Only (CEO)**. Only Canadian suppliers based in Canada can bid on this type of requirement. NOTE: If Canadian information and/or assets coexists with CEO information and/or assets, the CEO information and/or assets must be stamped **Canadian Eyes Only (CEO)**.

If **No Release Restrictions** is selected, this indicates that access to the information and/or assets are not subject to any restrictions.

If **ALL NATO countries** is selected, bidders for this requirement must be from NATO member countries only.

NOTE: There may be multiple release restrictions associated with a requirement depending on the nature of the work to be performed. In these instances, a security guide should be added to the SRCL clarifying these restrictions. The security guide is normally generated by the organization's project authority and/or security authority.

c) Level of information

Using the following chart, indicate the appropriate level of access to information/assets the supplier must have to perform the duties of the requirement.

PROTECTED	CLASSIFIED	NATO
PROTECTED A	CONFIDENTIAL	NATO UNCLASSIFIED
PROTECTED B	SECRET	NATO RESTRICTED
PROTECTED C	TOP SECRET	NATO CONFIDENTIAL
	TOP SECRET (SIGINT)	NATO SECRET
		COSMIC TOP SECRET

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?
If Yes, the supplier personnel requiring access to COMSEC information or assets must receive a COMSEC briefing. The briefing will be given to the "holder" of the COMSEC information or assets. In the case of a "personnel assigned" type of contract, the customer department will give the briefing. When the supplier is required to receive and store COMSEC information or assets on the supplier's premises, the supplier's COMSEC Custodian will give the COMSEC briefings to the employees requiring access to COMSEC information or assets. If Yes, the Level of sensitivity must be indicated.

9. Will the supplier require access to extremely sensitive INFOSEC information or assets?
If Yes, the supplier must provide the Short Title of the material and the Document Number. Access to extremely sensitive INFOSEC information or assets will require that the supplier undergo a Foreign Ownership Control or Influence (FOCI) evaluation by CIISD.

PART B - PERSONNEL (SUPPLIER)

10. a) Personnel security screening level required

Identify the screening level required for access to the information/assets or client facility. More than one level may be identified depending on the nature of the work. Please note that Site Access screenings are granted for access to specific sites under prior arrangement with the Treasury Board of Canada Secretariat. A Site Access screening only applies to individuals, and it is not linked to any other screening level that may be granted to individuals or organizations.

RELIABILITY STATUS	CONFIDENTIAL	SECRET
TOP SECRET	TOP SECRET (SIGINT)	NATO CONFIDENTIAL
NATO SECRET	COSMIC TOP SECRET	SITE ACCESS

If multiple levels of screening are identified, a Security Classification Guide must be provided.

b) May unscreened personnel be used for portions of the work?

Indicating Yes means that portions of the work are not PROTECTED and/or CLASSIFIED and may be performed outside a secure environment by unscreened personnel. The following question must be answered if unscreened personnel will be used:

Will unscreened personnel be escorted?

If No, unscreened personnel may not be allowed access to sensitive work sites and must not have access to PROTECTED and/or CLASSIFIED information and/or assets.

If Yes, unscreened personnel must be escorted by an individual who is cleared to the required level of security in order to ensure there will be no access to PROTECTED and/or CLASSIFIED information and/or assets at the work site.

PART C - SAFEGUARDS (SUPPLIER)

11. INFORMATION / ASSETS

a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information and/or assets on its site or premises?

If Yes, specify the security level of the documents and/or equipment that the supplier will be required to safeguard at their own site or premises using the summary chart.

b) Will the supplier be required to safeguard COMSEC information or assets?

If Yes, specify the security level of COMSEC information or assets that the supplier will be required to safeguard at their own site or premises using the summary chart.

PRODUCTION

c) Will the production (manufacture, repair and/or modification) of PROTECTED and/or CLASSIFIED material and/or equipment occur at the supplier's site or premises?

Using the summary chart, specify the security level of material and/or equipment that the supplier manufactured, repaired and/or modified and will be required to safeguard at their own site or premises.

INFORMATION TECHNOLOGY (IT)

d) Will the supplier be required to use its IT systems to electronically process and/or produce or store PROTECTED and/or CLASSIFIED information and/or data?

If Yes, specify the security level in the summary chart. This block details the information and/or data that will be electronically processed or produced and stored on a computer system. The client department and/or organization will be required to specify the IT security requirements for this procurement in a separate technical document. The supplier must also direct their attention to the following document: Treasury Board of Canada Secretariat - Operational Security Standard: Management of Information Technology Security (MITS).

e) Will there be an electronic link between the supplier's IT systems and the government department or agency?

If Yes, the supplier must have their IT system(s) approved. The Client Department must also provide the Connectivity Criteria detailing the conditions and the level of access for the electronic link (usually not higher than PROTECTED B level).

SUMMARY CHART

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.

For users completing the form **online** (via the Internet), the Summary Chart is automatically populated by your responses to previous questions.

PROTECTED	CLASSIFIED	NATO	COMSEC
PROTECTED A	CONFIDENTIAL	NATO RESTRICTED	PROTECTED A
PROTECTED B	SECRET	NATO CONFIDENTIAL	PROTECTED B
PROTECTED C	TOP SECRET	NATO SECRET	PROTECTED C
	TOP SECRET (SIGINT)	COSMIC TOP SECRET	CONFIDENTIAL
			SECRET
			TOP SECRET

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".

b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?

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).

PART D - AUTHORIZATION

13. Organization Project Authority

This block is to be completed and signed by the appropriate project authority within the client department or organization (e.g. the person responsible for this project or the person who has knowledge of the requirement at the client department or organization). This person may on occasion be contacted to clarify information on the form.

14. Organization Security Authority

This block is to be signed by the Departmental Security Officer (DSO) (or delegate) of the department identified in Block 1, or the security official of the prime contractor.

15. Are there additional instructions (e.g. Security Guide, Security Classification Guide) attached?

A Security Guide or Security Classification Guide is used in conjunction with the SRCL to identify additional security requirements which do not appear in the SRCL, and/or to offer clarification to specific areas of the SRCL.

16. Procurement Officer

This block is to be signed by the procurement officer acting as the contract or subcontract manager.

17. Contracting Security Authority

This block is to be signed by the Contract Security Official. Where PWGSC is the Contract Security Authority, Canadian and International Industrial Security Directorate (CIISD) will complete this block.

Instructions pour établir la Liste de vérification des exigences relatives à la sécurité (LVERS)

La feuille d'instructions devrait rester jointe au formulaire jusqu'à ce que la case 17 ait été remplie.

GÉNÉRALITÉS - TRAITEMENT DU PRÉSENT FORMULAIRE

Le responsable du projet doit faire remplir ce formulaire.

L'agent de sécurité de l'organisation doit revoir et approuver les exigences de sécurité qui figurent dans le formulaire, en collaboration avec le responsable du projet.

Le responsable de la sécurité des marchés est le responsable chargé de voir à ce que les fournisseurs se conforment aux exigences de sécurité mentionnées dans la LVERS.

Toutes les demandes d'achat ainsi que tous les appels d'offres et les documents contractuels subséquents, y compris les contrats de sous-traitance, qui comprennent des exigences relatives à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS doivent être accompagnés d'une LVERS dûment remplie.

Il importe d'indiquer si les renseignements ou les biens PROTÉGÉS sont de niveau A, B ou C, le cas échéant; cependant, certains types de renseignements peuvent être indiqués par la mention « PROTÉGÉ » seulement. Aucun renseignement relatif à un contrat gouvernemental PROTÉGÉ ou CLASSIFIÉ ne peut être divulgué par les fournisseurs sans l'approbation écrite préalable de la personne dont le nom figure à la case 17 de ce formulaire.

La classification assignée à un stade particulier du processus contractuel ne signifie pas que tout ce qui se rapporte à ce stade doit recevoir la même classification. Chaque article doit être PROTÉGÉ et/ou CLASSIFIÉ selon sa propre nature. Si un fournisseur ne sait pas quel niveau de classification assigner, il doit consulter la personne dont le nom figure à la case 17 de ce formulaire.

PARTIE A - INFORMATION CONTRACTUELLE

Numéro du contrat (au haut du formulaire)
Ce numéro doit être le même que celui utilisé sur la demande d'achat et services et devrait être celui utilisé dans la DDP ou dans le contrat. Il s'agit d'un numéro unique (c.-à-d. que le même numéro ne sera pas attribué à deux besoins distincts). Une nouvelle LVERS doit être utilisée pour chaque nouveau besoin ou demande (p. ex. un nouveau numéro de contrat, une nouvelle LVERS, de nouvelles signatures).

1. Ministère ou organisme gouvernemental d'origine
Inscrire le nom du ministère ou de l'organisme client ou le nom de l'entrepreneur principal pour qui les travaux sont effectués.

2. Direction générale ou Direction
Cette case peut servir à fournir plus de détails quant à la section du ministère ou de l'organisme pour qui les travaux sont effectués.

3. a) Numéro du contrat de sous-traitance
S'il y a lieu, ce numéro correspond au numéro généré par l'entrepreneur principal pour gérer le travail avec son sous-traitant.

b) Nom et adresse du sous-traitant
Indiquer le nom et l'adresse au complet du sous-traitant, s'il y a lieu.

4. Brève description du travail
Donner un bref aperçu du besoin ou du travail à exécuter.

5. a) Le fournisseur aura-t-il accès à des marchandises contrôlées?
La *Loi sur la production de défense* (LPD) définit « marchandises contrôlées » comme désignant certains biens énumérés dans la Liste des marchandises d'exportation contrôlée, un règlement établi en vertu de la *Loi sur les licences d'exportation et d'importation* (LLEI). Les fournisseurs qui examinent, possèdent ou transfèrent des marchandises contrôlées à l'intérieur du Canada doivent s'inscrire à la Direction des marchandises contrôlées ou être exemptés de l'inscription. On trouvera plus d'information à l'adresse www.cgp.gc.ca.

b) 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?
L'entrepreneur et tout sous-traitant doivent être accrédités en vertu du Programme mixte d'agrément Etats-Unis / Canada si le travail comporte l'accès à des données militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques. On trouvera plus d'information à l'adresse www.dlis.dla.mil/jcp/.

6. Indiquer le type d'accès requis

Indiquer la nature du travail à exécuter pour répondre à ce besoin. L'utilisateur doit choisir un des types suivants :

a) Le fournisseur et ses employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS?

Le fournisseur choisit cette option s'il doit avoir accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS pour accomplir le travail requis.

b) 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.

Le fournisseur choisit cette option seulement s'il doit avoir accès régulièrement aux locaux du gouvernement ou à un lieu de travail protégé. Le fournisseur n'aura pas accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS en vertu de cette option.

c) S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit?

Le fournisseur choisit cette option s'il y a nécessité de recourir à un service de messagerie ou de livraison commerciale. Le fournisseur ne sera pas autorisé à garder un colis pendant la nuit. Le colis doit être retourné s'il ne peut pas être livré.

7. Type d'information / Restrictions relatives à la diffusion / Niveau d'information

Indiquer le ou les types d'information auxquels le fournisseur peut devoir avoir accès, énumérer toutes les restrictions possibles relatives à la diffusion, et, s'il y a lieu, indiquer le ou les niveaux d'information. L'utilisateur peut faire plusieurs choix selon la nature du travail à exécuter.

Les ministères doivent soumettre la LVERS à TPSGC lorsque:

- les marchés prévoient l'accès aux renseignements et aux biens de nature PROTÉGÉS et/ou CLASSIFIÉS étrangers ;
- les marchés prévoient aux entrepreneurs étrangers l'accès aux renseignements et aux biens de nature PROTÉGÉS et/ou CLASSIFIÉS canadiens; ou
- les marchés prévoient aux entrepreneurs étrangers ou canadiens l'accès aux renseignements et aux biens de nature PROTÉGÉS et/ou CLASSIFIÉS tels que définis dans les documents intitulés Moyens INFOSEC détermination et Divulgation de INFOSEC.

a) Indiquer le type d'information auquel le fournisseur devra avoir accès

Renseignements et/ou biens du gouvernement canadien

Si des renseignements et/ou des biens canadiens sont indiqués, le fournisseur aura accès à des renseignements et/ou à des biens PROTÉGÉS et/ou CLASSIFIÉS appartenant au gouvernement canadien.

Renseignements et/ou biens de l'OTAN

Si des renseignements et/ou des biens de l'OTAN sont indiqués, cela signifie que, dans le cadre de ce besoin, le fournisseur aura accès à des renseignements et/ou à des biens PROTÉGÉS et/ou CLASSIFIÉS appartenant à des gouvernements membres de l'OTAN. Les renseignements et/ou les biens de l'OTAN sont élaborés par des pays de l'OTAN ou leur appartiennent et ne doivent être divulgués à aucun pays qui n'est pas un pays membre de l'OTAN. Les personnes qui manient des renseignements et/ou des biens de l'OTAN doivent détenir une autorisation de sécurité de l'OTAN et avoir besoin de savoir.

Les contrats comportant des renseignements CLASSIFIÉS de l'OTAN doivent être attribués par TPSGC. La DSICI de TPSGC est le responsable de la sécurité désigné relativement aux questions de sécurité industrielle au Canada.

Renseignements et/ou biens de gouvernements étrangers

Si des renseignements et/ou des biens de gouvernements étrangers sont indiqués, ce besoin permettra l'accès à des renseignements et/ou à des biens appartenant à un pays autre que le Canada.

b) Restrictions relatives à la diffusion

Si **À ne pas diffuser** est choisi, cela indique que les renseignements et/ou les biens sont **réservés aux Canadiens**. Seuls des fournisseurs canadiens installés au Canada peuvent soumissionner ce genre de besoin. NOTA : Si des renseignements et/ou des biens du gouvernement canadien coexistent avec des renseignements et/ou des biens réservés aux Canadiens, ceux-ci doivent porter la mention **Réservé aux Canadiens**.

Si **Aucune restriction relative à la diffusion** est choisi, cela indique que l'accès aux renseignements et/ou aux biens n'est assujetti à aucune restriction.

Si **Tous les pays de l'OTAN** est choisi, les soumissionnaires doivent appartenir à un pays membre de l'OTAN.

NOTA : Il peut y avoir plus d'une restriction s'appliquant à une demande, selon la nature des travaux à exécuter. Pour ce genre de contrat, un guide de sécurité doit être joint à la LVERS afin de clarifier les restrictions. Ce guide est généralement préparé par le chargé de projet et/ou le responsable de la sécurité de l'organisme.

c) Niveau d'information

À l'aide du tableau ci-dessous, indiquer le niveau approprié d'accès aux renseignements et/ou aux biens que le fournisseur doit avoir pour accomplir les travaux requis.

PROTÉGÉ	CLASSIFIÉ	NATO
PROTÉGÉ A	CONFIDENTIEL	NATO NON CLASSIFIÉ
PROTÉGÉ B	SECRET	NATO DIFFUSION RESTREINTE
PROTÉGÉ C	TRÈS SECRET	NATO CONFIDENTIEL
	TRÈS SECRET (SIGINT)	NATO SECRET
		COSMIC TRÈS SECRET

8. Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?
Si la réponse est Oui, les membres du personnel du fournisseur qui doivent avoir accès à des renseignements ou à des biens COMSEC doivent participer à une séance d'information COMSEC. Cette séance sera donnée au « détenteur autorisé » des renseignements ou des biens COMSEC. Dans le cas des contrats du type « personnel affecté », cette séance sera donnée par le ministère client. Lorsque le fournisseur doit recevoir et conserver, dans ses locaux, des renseignements ou des biens COMSEC, le responsable de la garde des renseignements ou des biens COMSEC de l'entreprise donnera la séance d'information COMSEC aux membres du personnel qui doivent avoir accès à des renseignements ou à des biens COMSEC.

9. Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?
Si la réponse est Oui, le fournisseur doit indiquer le titre abrégé du document, le numéro du document et le niveau de sensibilité. L'accès à des renseignements ou à des biens extrêmement délicats INFOSEC exigera que le fournisseur fasse l'objet d'une vérification Participation, contrôle et influence étrangers (PCIE) effectuée par la DSICI.

PARTIE B - PERSONNEL (FOURNISSEUR)

10. a) Niveau de contrôle de la sécurité du personnel requis

Indiquer le niveau d'autorisation de sécurité que le personnel doit détenir pour avoir accès aux renseignements, aux biens ou au site du client. Selon la nature du travail, il peut y avoir plus d'un niveau de sécurité. Veuillez noter que des cotes de sécurité sont accordées pour l'accès à des sites particuliers, selon des dispositions antérieures prises auprès du Secrétariat du Conseil du Trésor du Canada. La cote de sécurité donnant accès à un site s'applique uniquement aux personnes et n'est liée à aucune autre autorisation de sécurité accordée à des personnes ou à des organismes.

COTE DE FIABILITÉ	CONFIDENTIEL	SECRET
TRÈS SECRET	TRÈS SECRET (SIGINT)	NATO CONFIDENTIEL
NATO SECRET	COSMIC TRÈS SECRET	ACCÈS AUX EMPLACEMENTS

Si plusieurs niveaux d'autorisation de sécurité sont indiqués, un guide de classification de sécurité doit être fourni.

b) Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?

Si la réponse est Oui, cela veut dire que certaines tâches ne sont pas PROTÉGÉES et/ou CLASSIFIÉES et peuvent être exécutées à l'extérieur d'un environnement sécurisé par du personnel n'ayant pas d'autorisation de sécurité. Il faut répondre à la question suivante si l'on a recours à du personnel n'ayant pas d'autorisation de sécurité :

Le personnel n'ayant pas d'autorisation de sécurité sera-t-il escorté?

Si la réponse est Non, le personnel n'ayant pas d'autorisation de sécurité ne pourra pas avoir accès à des lieux de travail dont l'accès est réglementé ni à des renseignements et/ou à des biens PROTÉGÉS et/ou CLASSIFIÉS.

Si la réponse est Oui, le personnel n'ayant pas d'autorisation de sécurité devra être escorté par une personne détenant la cote de sécurité requise, pour faire en sorte que le personnel en question n'ait pas accès à des renseignements et/ou à des biens PROTÉGÉS et/ou CLASSIFIÉS sur les lieux de travail.

PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)

11. RENSEIGNEMENTS / BIENS :

a) Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?

Si la réponse est Oui, préciser, à l'aide du tableau récapitulatif, le niveau de sécurité des documents ou de l'équipement que le fournisseur devra protéger dans ses installations.

b) Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?

Si la réponse est Oui, préciser, à l'aide du tableau récapitulatif, le niveau de sécurité des renseignements ou des biens COMSEC que le fournisseur devra protéger dans ses installations.

PRODUCTION

c) Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?

Préciser, à l'aide du tableau récapitulatif, le niveau de sécurité du matériel que le fournisseur fabriquera, réparera et/ou modifiera et devra protéger dans ses installations.

TECHNOLOGIE DE L'INFORMATION (TI)

d) 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?

Si la réponse est Oui, préciser le niveau de sécurité à l'aide du tableau récapitulatif. Cette case porte sur les renseignements qui seront traités ou produits électroniquement et stockés dans un système informatique. Le ministère/organisme client devra préciser les exigences en matière de sécurité de la TI relativement à cet achat dans un document technique distinct. Le fournisseur devra également consulter le document suivant : Secrétariat du Conseil du Trésor du Canada – Norme opérationnelle de sécurité : Gestion de la sécurité des technologies de l'information (GSTI).

e) Y aura-t-il un lien électronique entre les systèmes informatiques du fournisseur et celui du ministère ou de l'agence gouvernementale?

Si la réponse est Oui, le fournisseur doit faire approuver ses systèmes informatiques. Le ministère client doit aussi fournir les critères de connectivité qui décrivent en détail les conditions et le niveau de sécurité relativement au lien électronique (habituellement pas plus haut que le niveau PROTÉGÉ B).

TABLEAU RÉCAPITULATIF

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.

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.

PROTÉGÉ	CLASSIFIÉ	NATO	COMSEC
PROTÉGÉ A	CONFIDENTIEL	NATO DIFFUSION RESTREINTE	PROTÉGÉ A
PROTÉGÉ B	SECRET	NATO CONFIDENTIEL	PROTÉGÉ B
PROTÉGÉ C	TRÈS SECRET	NATO SECRET	PROTÉGÉ C
	TRÈS SECRET (SIGINT)	COSMIC TRÈS SECRET	CONFIDENTIEL
			SECRET
			TRÈS SECRET

12. a) La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE?

Si la réponse est Oui, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de

sécurité » au haut et au bas du formulaire.

b) La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?

Si la réponse est Oui, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquer qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).

PARTIE D - AUTORISATION

13. Chargé de projet de l'organisme

Cette case doit être remplie et signée par le chargé de projet pertinent (c.-à-d. la personne qui est responsable de ce projet ou qui connaît le besoin au ministère ou à l'organisme client. On peut, à l'occasion, communiquer avec cette personne pour clarifier des renseignements figurant sur le formulaire.

14. Responsable de la sécurité de l'organisme

Cette case doit être signée par l'agent de la sécurité du ministère (ASM) du ministère indiqué à la case 1 ou par son remplaçant ou par le responsable de la sécurité du fournisseur.

15. Des instructions supplémentaires (p. ex. Guide de sécurité, Guide de classification de la sécurité) sont-elles jointes?

Un Guide de sécurité ou un Guide de classification de sécurité sont utilisés de concert avec la LVERS pour faire part d'exigences supplémentaires en matière de sécurité qui n'apparaissent pas dans la LVERS et/ou pour éclaircir certaines parties de la LVERS.

16. Agent d'approvisionnement

Cette case doit être signée par l'agent des achats qui fait fonction de gestionnaire du contrat ou du contrat de sous-traitance.

17. Autorité contractante en matière de sécurité

Cette case doit être signée par l'agent de la sécurité du marché. Lorsque TPSGC est le responsable de la sécurité du marché, la Direction de la sécurité industrielle canadienne et internationale (DSICI) doit remplir cette case.