



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Travaux publics et Services gouvernementaux
Canada

Place Bonaventure, portail Sud-Oue
800, rue de La Gauchetière Ouest
7^e étage, suite 7300

Montréal

Québec

H5A 1L6

FAX pour soumissions: (514) 496-3822

INVITATION TO TENDER

APPEL D'OFFRES

**Tender To: Public Works and Government Services
Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

Soumission aux: Travaux Publics et Services Gouvernementaux Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Vendor/Firm Name and Address

Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Travaux publics et Services gouvernementaux Canada
Place Bonaventure, portail Sud-Oue
800, rue de La Gauchetière Ouest
7^e étage, suite 7300
Montréal
Québec
H5A 1L6

Title - Sujet ICAO – Modernization of Elevator Co	
Solicitation No. - N° de l'invitation EF930-183291/A	Date 2018-04-25
Client Reference No. - N° de référence du client R.090928.001	GETS Ref. No. - N° de réf. de SEAG PW-\$MTC-560-14855
File No. - N° de dossier MTC-8-41003 (560)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2018-05-24	
Time Zone Fuseau horaire Heure Avancée de l'Est HAE	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Ghali, Camille	Buyer Id - Id de l'acheteur mtc560
Telephone No. - N° de téléphone (514) 607-2190 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: MINISTERE DES TRAVAUX PUBLICS ET SERVICES GOUVERNEMENTAUX CANADA PL.BONAVENTURE,PORTAIL S-E,BUR.7300 800 RUE DE LA GAUCHETIERE O. MONTREAL Québec H5A1L6 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée .	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

INVITATION TO TENDER

THIS PROCUREMENT CONTAINS A SECURITY REQUIREMENT

IMPORTANT NOTICE TO BIDDERS

TENDER DOCUMENTS: Firms intending to submit tenders on this project should obtain tender documents through the website

<https://www.achatsetventes-buyandsell.gc.ca/>

PROMPT PAYMENT IN THE CONSTRUCTION INDUSTRY

Prompt Payment Principles

Public Services and Procurement Canada advocates that construction-related payments should follow these three principles:

- **Promptness:** The department will review and process invoices promptly. If disputes arise, Public Services and Procurement Canada will pay for items not in dispute, while working to resolve the disputed amount quickly and fairly
- **Transparency:** The department will make construction payment information such as payment dates, company names, contract and project numbers, publicly available; likewise, contractors are expected to share this information with their lower tiers
- **Shared responsibility:** Payers and payees are responsible for fulfilling their contract terms including their obligations to make and receive payment, and to adhere to industry best practices

For more information: <http://www.tpsgc-pwgsc.gc.ca/biens-property/divulgarion-disclosure/psdic-ppci-eng.html>

THIS DOCUMENT CONTAINS AN INDUSTRIAL SECURITY REQUIREMENT

For further instructions please consult "Special Instruction to Bidders", SI09, "Industrial Security Related Requirements" and "Supplementary Conditions" SC01 "Industrial Security Related Requirements, Document Safeguarding Location".

PWGSC UPDATE ON ASBESTOS USE

Effective April 1, 2016, all Public Works and Government Services Canada (PWGSC) contracts for new construction and major rehabilitation will prohibit the use of asbestos-containing materials. Further information can be found at <http://www.tpsgc-pwgsc.gc.ca/comm/vedette-features/2016-04-19-00-eng.html>

ADDITION OF TERMINOLOGY

Take note of the additional paragraph to be included in clause R2810D identified in SC03.

ELEVATOR MAINTENANCE REQUIREMENT

This solicitation includes elevator(s) maintenance as part of the works. Refer to the Supplementary Conditions SC04

TABLE OF CONTENTS

SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01	Bid Documents
SI02	Enquiries during the Solicitation Period
SI03	Mandatory/Optional Site Visit
SI04	Revision of Bid
SI05	Bid Results
SI06	Insufficient Funding
SI07	Bid Validity Period
SI08	Construction Documents
SI09	Industrial Security Related Requirements
SI10	Web Sites
SI11	Financial Bid

R2710T GENERAL INSTRUCTIONS - CONSTRUCTION SERVICES - BID SECURITY REQUIREMENTS (GI) (2017-09-21)

The following GI's are included by reference and are available at the following Web Site <https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

GI01	Integrity Provisions - Bid
GI02	Completion of Bid
GI03	Identity or Legal Capacity of the Bidder
GI04	Applicable Taxes
GI05	Capital Development and Redevelopment Charges
GI06	Registry and Pre-qualification of Floating Plant
GI07	Listing of Subcontractors and Suppliers
GI08	Bid Security Requirements
GI09	Submission of Bid
GI10	Revision of Bid
GI11	Rejection of Bid
GI12	Bid Costs
GI13	Procurement Business Number
GI14	Compliance with Applicable Laws
GI15	Approval of Alternative Materials
GI16	Performance Evaluation
GI17	Conflict of Interest-Unfair Advantage
GI18	Code of Conduct for Procurement—bid

Solicitation No. - N° de l'invitation

EF930-183291/A

Client Ref. No. - N° de réf. du client

R.090928.001

Amd. No. - N° de la modif.

File No. - N° du dossier

MTC-8-41003

Buyer ID - Id de l'acheteur

mtc560

CCC No./N° CCC - FMS No/ N° VME

CONTRACT DOCUMENTS (CD)

SUPPLEMENTARY CONDITIONS (SC)

- SC01 Requirements for Security of Documents Safeguarding location
- SC02 Insurance Terms
- SC03 Interpretation
- SC04 Elevator Maintenance Requirement

BID AND ACCEPTANCE FORM (BA)

- BA01 Identification
- BA02 Business Name and Address of Bidder
- BA03 The Offer
- BA04 Bid Validity Period
- BA05 Acceptance and Contract
- BA06 Construction Time
- BA07 Bid Security
- BA08 Signature

APPENDIX 1 - INTEGRITY PROVISIONS – LIST OF NAMES

APPENDIX 2 - LISTING OF SUBCONTRACTORS

APPENDIX 3 - VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

ANNEX "A" SECURITY REQUIREMENT CHECK LIST (SRCL)

ANNEX "B" CERTIFICATE OF INSURANCE

ANNEX "C" VOLUNTARY REPORTS FOR APPRENTICES EMPLOYED DURING THE CONTRACT

SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 BID DOCUMENTS

1. The following are the bid documents:

- a. Invitation to Tender - Page 1;
- b. Special Instructions to Bidders;
- c. General Instructions - Construction Services - Bid Security Requirements R2710T (2017-09-21)
- d. Clauses & Conditions identified in "Contract Documents";
- e. Drawings and Specifications;
- f. Bid and Acceptance Form and related Appendix(s); and
- g. Any amendment issued prior to solicitation closing.

Submission of a bid constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

2. General Instructions - Construction Services - Bid Security Requirements R2710T is incorporated by reference and is set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:
<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

Bids sent by fax will not be accepted

SI02 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to the Contracting Officer named on the Invitation to Tender - Page 1 as early as possible within the solicitation period. Except for the approval of alternative materials as described in GI15 of R2710T, enquiries should be received no later than **ten (10)** calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may not result in an answer being provided.
2. To ensure consistency and quality of the information provided to Bidders, the Contracting Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.
3. All enquiries and other communications related to this bid sent throughout the solicitation period are to be directed ONLY to the Contracting Officer named on the Invitation to Tender - Page 1. Failure to comply with this requirement may result in the bid being declared non-responsive.

SI03 MANDATORY/OPTIONAL SITE VISIT

There will be an optional (but highly recommended) site visit on **Thursday, May 10, 2018 at 10:30** local. Interested bidders must go directly to the site of the works. The meeting point will be at the lobby of the ICAO building.

SI04 REVISION OF BID

A bid may be revised by letter or facsimile in accordance with GI10 of R2710T. The facsimile number for receipt of revisions is [\(514\) 496-3822](#).

SI05 BID RESULTS

1. A public bid opening will be held in the office designated on the Front Page "Invitation to Tender" for the receipt of bids shortly after the time set for solicitation closing.
2. Following solicitation closing, bid results may be obtained by calling at No. [\(514\) 496-3388](#)

SI06 INSUFFICIENT FUNDING

N/A

SI07 BID VALIDITY PERIOD

1. Canada reserves the right to seek an extension to the bid validity period prescribed in BA04 of the Bid and Acceptance Form. Upon notification in writing from Canada, Bidders shall have the option to either accept or reject the proposed extension.
2. If the extension referred to in paragraph 1. of SI07 is accepted, in writing, by all those who submitted bids, then Canada shall continue immediately with the evaluation of the bids and its approvals processes.
3. If the extension referred to in paragraph 1. of SI07 is not accepted in writing by all those who submitted bids then Canada shall, at its sole discretion, either
 - a. continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or
 - b. cancel the invitation to tender.
4. The provisions expressed herein do not in any manner limit Canada's rights in law or under GI11 of R2710T.

SI08 CONSTRUCTION DOCUMENTS

The successful Contractor will be provided with one paper copy of the sealed and signed drawings, the specifications and the amendments upon acceptance of the offer. Additional copies, up to a maximum two (2), will be provided free of charge upon request by the Contractor. Obtaining more copies shall be the responsibility of the Contractor including costs.

SI09 INDUSTRIAL SECURITY RELATED REQUIREMENTS

1. **At bid closing, the Bidder must hold a valid** Security Clearance as indicated in section SC01 of the Supplementary Conditions. Failure to comply with this requirement will render the Bid non-compliant and no further consideration will be given to the Bid.
2. The successful Bidder's personnel, as well as any subcontractor and its personnel, who are required to perform any part of the Work pursuant to the subsequent contract must meet the mandatory security

requirement as indicated in section SC01 of the Supplementary Conditions. **Individuals who do not have the required level of security will not be allowed on site.** It is the responsibility of the successful Bidder to ensure that the security requirements are met throughout the performance of the contract. Canada will not be held liable or accountable for any delays or additional costs associated with the successful Bidder's non-compliance with the mandatory security requirement.

3. For additional information on security requirements, bidders should consult the Web site Industrial Security Program

SI10 WEB SITES

The connection to some of the Web sites in the solicitation documents is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Treasury Board Appendix L, Acceptable Bonding Companies
<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494§ion=text#appl>

Buy and Sell <https://www.achatsetventes-buyandsell.gc.ca>

Canadian economic sanctions <http://www.international.gc.ca/sanctions/index.aspx?lang=eng>

Contractor Performance Evaluation Report (Form PWGSC-TPSGC 2913)
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913.pdf>

Bid Bond (form PWGSC-TPSGC 504) <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/504.pdf>

Performance Bond (form PWGSC-TPSGC 505) <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/505.pdf>

Labour and Material Payment Bond (form PWGSC-TPSGC 506)
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/506.pdf>

Standard Acquisition Clauses and Conditions (SACC) Manual
<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

PWGSC, Industrial Security Services <http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html>

PWGSC, Code of Conduct and Certifications
<http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/contexte-context-eng.html>

Construction and Consultant Services Contract Administration Forms Real Property Contracting
<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>

Declaration Form
<http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html>

Trade agreements
<https://buyandsell.gc.ca/policy-and-guidelines/Policy-and-Legal-Framework/Trade-Agreements>

SI11 FINANCIAL BID

The total amount of the bid excludes taxes

CONTRACT DOCUMENTS (CD)

1. The following are the contract documents:

- a. Contract Page when signed by Canada;
- b. Duly completed Bid and Acceptance Form and any Appendices attached thereto;
- c. Drawings and Specifications;
- d. General Conditions and clauses

GC1	General Provisions – Construction Services	R2810D	(2017-08-17);
GC2	Administration of the Contract-	R2820D	(2016-01-28);
GC3	Execution and Control of the Work	R2830D	(2015-02-25);
GC4	Protective Measures	R2840D	(2008-05-12);
GC5	Terms of Payment	R2850D	(2016-01-28);
GC6	Delays and Changes in the Work	R2860D	(2016-01-28);
GC7	Default, Suspension or Termination of Contract	R2870D	(2008-05-12);
GC8	Dispute Resolution	R2880D	(2016-01-28);
GC9	Contract Security	R2890D	(2014-06-26);
GC10	Insurance	R2900D	(2008-05-12);
Allowable Costs for Contract Changes under GC6.4.1		R2950D	(2015-02-25);
Supplementary Conditions			
- e. Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
- f. Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
- g. Any amendment or variation of the contract documents that is made in accordance with the General Conditions.

2. The documents identified by title, number and date above are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:
<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>
3. The language of the contract documents is the language of the Bid and Acceptance Form submitted.

SUPPLEMENTARY CONDITIONS (SC)

SC01 SECURITY CLEARANCE RELATED REQUIREMENTS, DOCUMENT SAFEGUARDING

The following security requirement (SRCL and related clauses) applies and form part of the Contract.

SECURITY REQUIREMENT FOR CANADIAN SUPPLIER: PWGSC FILE # EF930-18-3291

1. The Contractor/Offeror must, at all times during the performance of the Contract/Standing Offer, hold a valid Designated Organization Screening (DOS), issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).
2. The Contractor/Offeror personnel requiring access to sensitive work site(s) must EACH hold a valid **RELIABILITY STATUS**, granted or approved by CISD/PWGSC. Until the security screening of the Contractor personnel required by this Contract has been completed satisfactorily by CISD, PWGSC, the Contractor personnel **MAY NOT ENTER** sites without an escort.
3. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.
4. The Contractor/Offeror must comply with the provisions of the:
 - a) Security Requirements Check List and security guide (if applicable), attached at Annex A;
 - b) *Industrial Security Manual* (Latest Edition).

SC02 INSURANCE TERMS

1) Insurance Contracts

- (a) The Contractor must, at the Contractor's expense, obtain and maintain insurance contracts in accordance with the requirements of the Certificate of Insurance. Coverage must be placed with an Insurer licensed to carry out business in Canada.
- (b) Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract. The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

2) Period of Insurance

- (a) The policies required in the Certificate of Insurance must be in force from the date of contract award and be maintained throughout the duration of the Contract.
- (b) The Contractor must be responsible to provide and maintain coverage for Products/Completed Operations hazards on its Commercial General Liability insurance policy, for a period of six (6) years beyond the date of the Certificate of Substantial Performance.

3) **Proof of Insurance**

- (a) Before commencement of the Work, and no later than thirty (30) days after contract award, the Contractor must deposit with Canada a Certificate of Insurance on the form attached herein.
- (b) Upon request by Canada, the Contractor must provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the Certificate of Insurance.

4) **Insurance Proceeds**

In the event of a claim, the Contractor must, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

5) **Deductible**

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

SC03 INTERPRETATION

R2810D General Condition GC1.1.2 Terminology is modified to include the following,

“Architectural and Engineering Services”:

Mean's services to provide a range of investigation and recommendation reports, planning, design, preparation, or supervision of the construction, repair, renovation or restoration of a work and includes contract administration services, for real property projects.

“Construction Services”:

Means construction, repair, renovation or restoration of any work except a vessel and includes; the supply and erection of a prefabricated structure; dredging; demolition; environmental services related to a real property; or, the hire of equipment to be used in or incidentally to the execution of any construction services referred to above.

“Facility Maintenance Services”:

Means services related to activities normally associated with the maintenance of a facility and keeping spaces, structures and infrastructure in proper operating condition in a routine, scheduled, or anticipated fashion to prevent failure and/or degradation including inspection, testing, servicing, classification as to serviceability, repairs, rebuilding and reclamation, as well as cleaning, waste removal, snow removal, lawn care, replacement of flooring, lighting or plumbing fixtures, painting and other minor works.

SC04 ELEVATOR MAINTENANCE REQUIREMENT

1. This solicitation includes an elevator maintenance requirement. The work for maintenance must be provided in accordance with the Section **14 90 00** of the Specifications. For details refer to the technical specifications. The maintenance requirement is to commence on the date of the issuance of the Certificate of Completion of the work and continue until the expiry of the warranty period.

Solicitation No. - N° de l'invitation

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

EF930-183291/A

mtc560

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No./N° CCC - FMS No/ N° VME

R.090928.001

MTC-8-41003

BID AND ACCEPTANCE FORM (BA)

BA01 IDENTIFICATION

The projected works under the current mandate are mainly the modernization (replacement) of controllers, car and floors fixtures, door operators, all wiring, console replacement, and minor related work for the 12 existing elevators.

BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

Address: _____

Telephone: _____ Fax: _____ PBN: _____

E-mail address: _____

Industrial Security Program Organisation Number (ISP ORG#) _____
(when required)

BA03 THE OFFER

The Bidder offers to Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the Total Bid Amount of

\$ _____ excluding Applicable Taxe(s).
(amount in numbers)

BA04 BID VALIDITY PERIOD

The bid shall not be withdrawn for a period of sixty [60] days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT

Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents identified in Contract Documents (CD).

BA06 CONSTRUCTION TIME

The Contractor must perform and complete the Work within (52) weeks from the date of notification of acceptance of the offer.

BA07 BID SECURITY

The Bidder is enclosing bid security with its bid in accordance with GI08 - Bid Security Requirements of R2710T - General Instructions - Construction Services - Bid Security Requirements.

BA08 SIGNATURE

Name and title of person authorized to sign on behalf of Bidder (Type or print)

Signature

Date

APPENDIX 2 - LISTING OF SUBCONTRACTORS

- 1) In accordance with GI07 - Listing of Subcontractors and Suppliers of R2710T- General Instructions - Construction Services - Bid Security Requirements, the Bidder should provide a list of Subcontractors with his Bid.
- 2) The Bidder should submit the list of Subcontractors and for any portion of the Work valued at 20% or greater of the submitted Bid Price.

	Subcontractor	Division	Estimated value of work
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

APPENDIX 3 - VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

(page 1 of 2)

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA APPRENTICE PROCUREMENT INITIATIVE

1. To encourage employers to participate in apprenticeship training, Bidders, bidding on construction and maintenance contracts by Public Works and Government Services Canada (PWGSC) are being asked to sign a voluntary certification, signaling their commitment to hire and train apprentices.
2. Canada is facing skills shortages across various sectors and regions, especially in the skilled trades. Equipping Canadians with skills and training is a shared responsibility. The Government of Canada made a commitment to support the use of apprentices in federal construction and maintenance contracts. Contractors have an important role in supporting apprentices through hiring and training and are encouraged to certify that they are providing opportunities to apprentices as part of doing business with the Government of Canada.
3. The Government of Canada is encouraging apprenticeships and careers in the skilled trades. In addition, the government offers a tax credit to employers to encourage them to hire apprentices. Information on this tax measure administered by the Canada Revenue Agency can be found at: www.cra-arc.gc.ca. Employers are also encouraged to find out what additional information and supports are available from their respective provincial or territorial jurisdiction.
4. Signed certifications on page 2 of 2 will be used to better understand contractor use of apprentices on Government of Canada maintenance and construction contracts and may inform future policy and program development.
5. The Contractor hereby certifies the following:

In order to help meet demand for skilled trades people, the Contractor agrees to use, and require its subcontractors to use, reasonable commercial efforts to hire and train registered apprentices, to strive to fully utilize allowable apprenticeship ratios * and to respect any hiring requirements prescribed by provincial or territorial statutes

The Contractor hereby consents to this information being collected and held by PWGSC, and Employment and Social Development Canada to support work to gather data on the hiring and training of apprentices in federal construction and maintenance contracts.

To support this initiative, a voluntary certification signaling the Contractor's commitment to hire and train apprentices is available at page 2 of 2.

If you accept fill out and sign page 2 of 2.

** The journeyman-apprentice ratio is defined as the number of qualified/certified journeymen that an employer must employ in a designated trade or occupation in order to be eligible to register an apprentice as determined by provincial/territorial (P/T) legislation, regulation, policy directive or by law issued by the responsible authority or agency.*

Solicitation No. - N° de l'invitation

EF930-183291/A

Client Ref. No. - N° de réf. du client

R.090928.001

Amd. No. - N° de la modif.

File No. - N° du dossier

MTC-8-41003

Buyer ID - Id de l'acheteur

mtc560

CCC No./N° CCC - FMS No/ N° VME

Voluntary Certification

(To be filled out and returned with bid on a voluntary basis)

(page 2 of 2)

Note: The contractor will be asked to fill out a report every six months or at project completion as per sample "Voluntary Reports for Apprentices Employed during the Contract" provided at Annex C

Name: _____

Signature: _____

Company Name: _____

Company Legal Name: _____

Solicitation Number: _____

Number of company employees: _____

Number of apprentices planned to be working on this contract: _____

Trades of those apprentices:

Solicitation No. - N° de l'invitation

EF930-183291/A

Client Ref. No. - N° de réf. du client

R.090928.001

Amd. No. - N° de la modif.

File No. - N° du dossier

MTC-8-41003

Buyer ID - Id de l'acheteur

mtc560

CCC No./N° CCC - FMS No/ N° VME

ANNEX A - SECURITY REQUIREMENT CHECK LIST (SRCL)

Solicitation No. - N° de l'invitation

EF930-183291/A

Client Ref. No. - N° de réf. du client

R.090928.001

Amd. No. - N° de la modif.

File No. - N° du dossier

MTC-8-41003

Buyer ID - Id de l'acheteur

mtc560

CCC No./N° CCC - FMS No/ N° VME

ANNEX B - CERTIFICATE OF INSURANCE (Not required at solicitation closing)**CERTIFICATE OF INSURANCE**

Page 1 of 2

Travaux publics et
Services gouvernementaux
CanadaPublic Works and
Government Services
Canada

Description and Location of Work

Contract No.

Modernization elevators' controllersProject No.
R.090928.001

Name of Insurer, Broker or Agent	Address (No., Street)	City	Province	Postal Code
Name of Insured (Contractor)	Address (No., Street)	City	Province	Postal Code
Additional Insured				
<i>Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services</i>				

Type of Insurance	Insurer Name and Policy Number	Inception Date D / M / Y	Expiry Date D / M / Y	Limits of Liability		
Commercial General Liability				Per Occurrence	Annual General Aggregate	Completed Operations Aggregate
Umbrella/Excess Liability				\$	\$	\$
				\$	\$	\$
Builder's Risk / Installation Floater				\$		
				\$	Aggregate	
				<input type="checkbox"/> Per Incident <input type="checkbox"/> Per Occurrence		\$
				\$		
				<input type="checkbox"/> Per Incident <input type="checkbox"/> Per Occurrence		Aggregate
				\$		\$
Insert other type of insurance as required				\$		

I certify that the above policies were issued by insurers in the course of their Insurance business in Canada, are currently in force and include the applicable insurance coverage's stated on page 2 of this Certificate of Insurance, including advance notice of cancellation / reduction in coverage.

Name of person authorized to sign on behalf of Insurer(s) (Officer, Agent, Broker)

Telephone number

Signature

Date D / M / Y

CERTIFICATE OF INSURANCE Page 2 of 2

General

The insurance policies required on page 1 of the Certificate of Insurance must be in force and must include the insurance coverage listed under the corresponding type of insurance on this page.

The policies must insure the Contractor and must include Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services as an additional Insured.

The insurance policies must be endorsed to provide Canada with not less than thirty (30) days notice in writing in advance of a cancellation of insurance or any reduction in coverage.

Without increasing the limit of liability, the policies must protect all insured parties to the full extent of coverage provided. Further, the policies must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

Commercial General Liability

The insurance coverage provided must not be substantially less than that provided by the latest edition of IBC Form 2100.

The policy must either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:

- (a) Blasting.
- (b) Pile driving and caisson work.
- (c) Underpinning.
- (d) Removal or weakening of support of any structure or land whether such support be natural or otherwise if the work is performed by the insured contractor.

The policy must have the following minimum limits:

- (a) **\$5,000,000** Each Occurrence Limit;
- (b) **\$10,000,000** General Aggregate Limit per policy year if the policy contains a General Aggregate; and
- (c) **\$5,000,000** Products/Completed Operations Aggregate Limit.

Umbrella or excess liability insurance may be used to achieve the required limits.

Builder's Risk / Installation Floater

The insurance coverage provided must not be less than that provided by the latest edition of IBC Forms 4042 and 4047.

The policy must permit use and occupancy of any of the projects, or any part thereof, where such use and occupancy is for the purposes for which a project is intended upon completion.

The policy may exclude or be endorsed to exclude coverage for loss or damage caused by asbestos, fungi or spores, cyber and terrorism.

The policy must have a limit that is **not 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 Canada at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy must be changed to reflect the revised contract value.

The policy must provide that the proceeds thereof are payable to Canada or as Canada may direct in accordance with GC10.2, "Insurance Proceeds" (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2900D/2>).

Other types of Insurance

To be inserted below according to specifics of project.

ANNEX C - VOLUNTARY REPORT FOR APPRENTICES EMPLOYED DURING THE CONTRACT (Sample)

(This report is not required at bid deposit)

The Contractor should compile and maintain records on the number of apprentices and their trade that were hired to work on the contract.

The Contractor should provide this data in accordance with the format below. If no apprentices were hired during the contract period, the Contractor should still provide a "nil" report.

The data should be submitted to the Contracting Authority either six months after contract award or at the end of the contract, whichever comes first.

Number of apprentices hired	Trade

RECEIVED

MAR 22 2018

Government
of CanadaGouvernement
du Canada

Contract Number / Numéro du contrat

EF930-18-3291

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

TBS/SCT 350-103(2004/12)

Security Classification / Classification de sécurité

UNCLASSIFIED

Canada



Government of Canada
Gouvernement du Canada

Contract Number / Numéro du contrat

EF930-18-3291

Security Classification / Classification de sécurité
UNCLASSIFIED

PART A (continued) / PARTIE A (suite)

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS? ☒ No ☐ Yes
Non Oui

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?
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate? ☒ No ☐ Yes
Non Oui

Short Title(s) of material / Titre(s) abrégé(s) du matériel :

Document Number / Numéro du document :

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

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

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

Special comments:

Commentaires spéciaux :

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.

REMARQUE : Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work?
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail? ☐ No ☒ Yes
Non Oui

If Yes, will unscreened personnel be escorted?
Dans l'affirmative, le personnel en question sera-t-il escorté? ☐ No ☒ Yes
Non Oui

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

INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises?
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS? ☒ No ☐ Yes
Non Oui

11. b) Will the supplier be required to safeguard COMSEC information or assets?
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC? ☒ No ☐ Yes
Non Oui

PRODUCTION

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ? ☒ No ☐ Yes
Non Oui

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

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS? ☒ No ☐ Yes
Non Oui

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale? ☒ No ☐ Yes
Non Oui

TBS/SCT 350-103(2004/12)

Security Classification / Classification de sécurité

UNCLASSIFIED

Canada



Government of Canada
Gouvernement du Canada

Contract Number / Numéro du contrat

EF930-18-3291

Security Classification / Classification de sécurité
UNCLASSIFIED

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

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

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

SUMMARY CHART / TABLEAU RÉCAPITULATIF

Category Catégorie	PROTECTED PROTÉGÉ			CLASSIFIED CLASSIFIÉ			NATO					COMSEC				
	A	B	C	CONFIDENTIAL	SECRET	TOP SECRET	NATO RESTRICTED	NATO CONFIDENTIAL	NATO SECRET	COSMIC TOP SECRET	PROTECTED PROTÉGÉ			CONFIDENTIAL	SECRET	TOP SECRET
				CONFIDENTIEL		TRÈS SECRET	NATO DIFFUSION RESTREINTE	NATO CONFIDENTIEL		COSMIC TRÈS SECRET	A	B	C	CONFIDENTIEL		TRÈS 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, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.

12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?

La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?

☒ No
Non ☐ Yes
Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).

Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquez qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).

SPECIFICATIONS



ICAO

Modernization of elevator controllers

Project no : R.090928.001

**Public Work and Government
Services Canada**

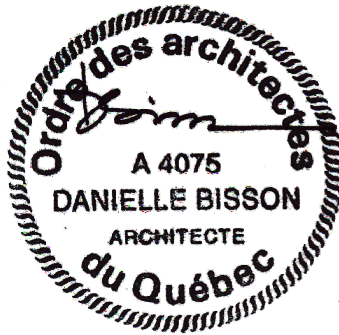
**Issued for bid
April 23rd, 2018**

BFAD file n° :180208

BISSONFORTIN
ARCHITECTURE + DESIGN

SPECIFICATIONS
Issued for bid, April 23rd, 2018

ARCHITECTS : BISSON FORTIN ARCHITECTURE + DESIGN



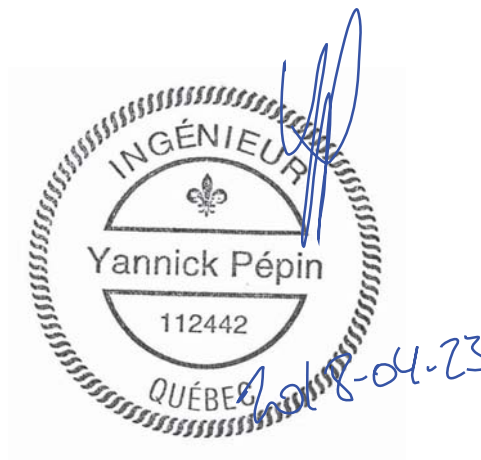
Danielle Bisson, Architect PA LEED BD+C

END OF SECTION

SPECIFICATIONS
Issued for bid, April 23rd, 2018

ELEVATOR
CONSULTANTS :

EXIM



Yannick Pépin, Engineer

END OF SECTION

SPECIFICATIONS
Issued for bid, April 23rd, 2018

ELECTRICAL
ENGINEER :

SHELLEX GROUPE-CONSEIL INC.

GRAND FORMAT



François Fournier, Engineer

END OF SECTION

**NUMBER
OF PAGES**

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

00 01 07	Seals page	3
00 01 10	Table of contents	3
00 01 15	List of documents	1

DIVISION 01 – GENERAL REQUIREMENTS

01 11 01	Work related general information	3
01 14 00	Work restrictions	4
01 31 19	Project meetings	2
01 32 16.19	Construction progress schedule – Bar (GANTT) chart	3
01 33 00	Submittal procedures	5
01 35 29.06	Health and safety requirements	21
01 41 00	Regulatory requirements	2
01 45 00	Quality control	3
01 51 00	Temporary utilities	2
01 52 00	Construction facilities	3
01 56 00	Temporary barriers and enclosures	3
01 61 00	Common product requirements	4
01 71 00	Examination and preparation	1
01 73 00	Execution	2
01 74 00	Cleaning	3
01 74 19	Waste management and disposal	2
01 77 00	Closeout procedures	2
01 78 00	Closeout submittals documents/elements	7
01 79 00	Demonstration and training	2
01 79 00.13	Demonstration and training for building commissioning	3
01 91 13	General commissioning requirements	8
01 91 13.13	Commissioning (CX) plan	8
01 91 13.16	Commissioning forms	12
01 92 00	Facility operation	4

DIVISION 02 – EXISTING CONDITIONS

02 41 00.08	Demolition – Minor works	4
02 81 00	Hazardous materials	4

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

07 84 00	Fire stopping	4
07 92 00	Joint sealants	6

DIVISION 08 – OPENINGS

08 11 00	Metal doors and frames	5
----------	------------------------	---

**NUMBER
OF PAGES**

DIVISION 09 – FINISHES

09 21 99	Partitions for minor works	5
09 91 99	Painting for minor works	5

DIVISION 14 CONVEYING EQUIPMENT

14 00 00	Additional general conditions	11
14 20 06	Elevators 1 to 12	27
14 70 10	Computerized central console	4
14 70 20	Control console for special operation	5
14 70 30	Intercommunication system	6
14 90 00	Elevator & freight elevator maintenance	13

DIVISION 26 – ELECTRICAL

26 05 00	Common work results for electrical	7
26 05 20	Wire and box connectors (0-1000 V)	2
26 05 21	Wires and cables (0-1000 V)	1
26 05 22	Connectors and terminations	2
26 05 28	Grounding-secondary	2
26 05 29	Hangers and supports for electrical systems	1
26 05 31	Splitters, junction, pull boxes and cabinets	2
26 05 32	Outlet boxes, conduit boxes and fittings	2
26 05 34	Conduits, conduit fastenings and conduit fittings	3
26 27 26	Wiring devices	2
26 28 23	Disconnect switches – Fused and non-fused	1

APPENDIX A

HSE Danger log for the ICAO headquarters	4
------------------------------------------	---

APPENDIX B

Pictures existing elevators	12
-----------------------------	----

APPENDIX C

Sketch – New car operating panel	5
----------------------------------	---

APPENDIX D

Architectural drawings	10
------------------------	----

**NUMBER
OF PAGES**

APPENDIX E

Electrical drawings	4
---------------------	---

APPENDIX F

Forms	2
-------	---

END OF SECTION

SPECIFICATIONS :

Specifications prepared by BISSON FORTIN ARCHITECTURE + DESIGN / EXIM / SHELLEX GROUPE CONSEIL INC., issued for bid, April 23rd, 2018

APPENDIX :

Appendix A	HSE danger log for the ICAO headquarters
Appendix B	Pictures existing elevators
Appendix C	Sketch – New car operating panel
Appendix D	Architectural drawings (11x17)
	A01 Phasing plan
	A02 Schematic section
	A03 Basement level 1 (S1)
	A04 Level – A plan
	A05 Level – 1 plan
	A06 Level – 5 plan (and similar levels)
	A07 Level – 17 plan
	A08 Level – 18 plan
	A09 Enlarge elevator plans
	A10 SCC plan and details / Enlargement
Appendix E	Electrical drawings (11x17)
	E01 Key plan – ICAO – Level A
	E02 Key plan – ICAO – Level 1
	E03 Details level 1 & level 18
	E04 Notes
Appendix F	Forms

END OF SECTION

PART 1 GENERAL

1.1 MAINTENANCE OF OPERATIONS

- .1 The work will not in any case interfere with the operations of ICAO.

1.2 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from the Departmental Representative.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to the Departmental Representative, in writing, any defects which may interfere with proper execution of Work.
 - .1 Periodically, maintenance work will be carried out by service suppliers designated by the Departmental Representative. The Contractor will be advised two (2) days in advance, except in case of emergencies at which time these designated suppliers will be given access without delay.
 - .2 Plan for a fire drill done annually at the building and during which all activities must be interrupted for a period representing half a day.
- .3 Use only subcontractors approved by the Departmental Representative for the following work :
 - .1 Division 28, Fire Alarm System :
 - .1 The fire alarm system contractor will be identified during a call for tender for a distinct project under the responsibility of BGIS. The general contractor shall anticipate the cost of this contractor before knowing the identity of who it will be.
 - .2 The contractor of the current project shall coordinate the activity of the fire alarm specialist, according to the work realisation schedule in different phases (see tender administrative document for more details).

1.3 FUTURE WORK

- .1 Insure that Work avoids encroachment into areas required for future work.

1.4 WORK SEQUENCE

- .1 Construct Work in stages to accommodate the Departmental Representative's use of premises during construction.
 - .2 Co-ordinate Progress Schedule.
 - .3 Required stages:
 - .1 Refer to phasing plans.
 - .4 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
 - .5 Maintain fire access/control.
-

1.5 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work and for storage to allow:
 - .1 The Departmental Representative occupancy.
 - .2 Work by other contractors.
 - .3 Public usage.
- .2 Co-ordinate use of premises under direction of Departmental Representative.
- .3 Before the beginning of each Work phase, take pictures of the site in the presence of the Departmental Representative, in order to document existing site conditions.
- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract. Refer to section 01 14 00 and to drawings for spaces made available to the Contractor.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .7 At completion of operations, existing work: equal to or better than that which existed before new work started.

1.6 OCCUPANCY BY THE DEPARTMENTAL REPRESENTATIVE

- .1 The Departmental Representative will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with the Departmental Representative in scheduling operations to avoid disturbing normal occupant's activities and to avoid conflicts and to facilitate the Departmental Representative usage.

1.7 PARTIAL OCCUPANCY BY THE DEPARTMENTAL REPRESENTATIVE

- .1 Schedule and substantially complete designated portions of Work for the Departmental Representative's occupancy prior to Substantial Performance of entire Work.
- .2 Execute Certificate of Substantial Performance for each designated portion of Work prior to the occupancy by the Departmental Representative shall allow:
 - .1 Access for the Departmental Representative personnel.
 - .2 Operation of HVAC and electrical systems.

1.8 ITEMS SUPPLIED BY THE DEPARTMENTAL REPRESENTATIVE

- .1 Departmental Representative Responsibilities:
 - .1 Inspect deliveries and available stored materials jointly with Contractor.
 - .2 Submit claims for transportation damage.
 - .3 Arrange for replacement of damaged, defective or missing items.
 - .2 Contractor Responsibilities:
 - .1 Carry, receive and unload products at site.
 - .2 Inspect deliveries jointly with the Departmental Representative; record shortages, and damaged or defective items.
 - .3 Handle products at site, including unpacking and storage.
 - .4 Protect products from damage.
 - .5 Assemble, install, connect, adjust, and finish products.
 - .6 Provide installation inspections required by public authorities.
-

- .7 Repair or replace items damaged by Contractor or subcontractor on site (under his control).
- .3 List of the Departmental Representative furnished items:
 - .1 Not used.

1.9 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .2 For moving workers and material, refer to section 01 14 00.

1.10 REQUIRED DOCUMENTS

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

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 Not used.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide other temporary means to maintain security of goods and present people.
- .4 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. The contractor will be allowed to use the assigned sanitary facility located on level A. Refer to the drawings in Annex D.
- .5 Use only elevators existing building elevators n^{os} 1 and 11 for moving workers and material.
 - .1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.
 - .2 Protect to the satisfaction to the Departmental Representative the walls of the elevators before using them.
 - .3 Protect installations against for damage and provide safety of equipment and overloading of existing equipment.
 - .4 Once elevators 1 and 11 are stopped for work to be executed, coordinate the use of an alternative elevator with Departmental Representative.
- .6 Closures: protect work temporarily until permanent enclosures are completed.
- .7 A space of approximately 43 m² at level 17 will be provided for the Contractor, for the installation of a site office and storage. Refer to drawings for exact location. Note: cellular telephone communication waves are available in this space.
- .8 Rest zone for Contractor's personnel.
 - .1 Contractor site office or elevator mechanical rooms.
- .9 Materials, equipment and components removed from the elevators will remain property of the Departmental Representative for the entire duration of the work and shall remain available for use.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, occupants and public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
-

1.4 EXISTING SERVICES

- .1 Before commencement work, define extent and location of utility pipes located within the work zone and advise Departmental Representative.
- .2 Submit to the approval of Departmental Representative a detailed timetable related to the interruption or closing of installations or active work, including communication services or electrical power. Respect approved timetable and inform parties affected by this disturbance.
- .3 When non identified utility piping are found, immediately inform Departmental Representative and prepare a written description.
- .4 Protect, relocate or maintain in service the utility pipes that are functional. When non-functional pipes are discovered during the work, they are to be capped according to ways authorized by the relevant authorities.
- .5 Keep log and record location of utility pipes that are maintained, relocated or abandoned.
- .6 Notify Departmental Representative, public service and utility companies of intended interruption of services and obtain required permission.
 - .1 Where Work involves breaking into or connecting to existing services, give the Departmental Representative 48 hours of notice for necessary minor interruption of mechanical or electrical service throughout course of work. Where Work involves major interruptions of existing services, give the Departmental Representative a 1 week notice. Keep duration of interruptions to minimum. Carry out interruptions on the weekends only.
 - .2 The Contractor should assume the costs for temporary installations in the potential interruption of the fire alarm network, electrical network or other.
- .7 Provide for personnel traffic.
- .8 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

- .1 Work will be executed in seven (5) phases (groups 1-2-3-4-5) in accordance with the tender documents.
 - .1 Group 1
 - .1 SCC preparatory work (Security Control Center)
 - .1 Installation of new phone cabin.
 - .2 Installation on new console + temporary connection: work to be done on weekends.
 - .3 Related architectural and engineering Work.
 - .4 Time schedule: shall not exceed November 23rd, 2018.
 - .2 Work on main electrical power lines and empty conduits shall November 23rd, 2018.
 - .3 Work at elevators 1 and 9: duration of the work shall not exceed 6 business weeks including commissioning.
 - .2 Groups 2 to 5 (inclusively)
 - .1 Duration of the upgrade work for each one of the groups shall not exceed 6 business weeks, including commissioning.
 - .3 Work of the phases (groups) 2 to 5 will not be started before the partial substantial completion of the previous phase has been formalized. Refer to section 01 78 00 - Closeout submittals.
 - .4 Refer to phasing plan in Annex D.

- .5 The Departmental Representative reserves the right to modify the sequence of Work in order to respond to operational requirements without additional costs.
- .6 The Departmental Representative reserves the right to postpone the beginning of a phase by several days in order to respond to operational requirements up to a maximum of 10 business days, without additional costs.
- .7 Substantial completion will be done later on May 31st, 2019.
- .2 Paint in public area or Departmental Representative occupied areas Monday to Friday from 18:00 to 6:00am only or on Saturdays, Sundays, and statutory holidays.
- .3 Carry out noise generating work from 18:00 p.m. to 7:00 a.m. The noise generating work includes drilling, usage of impact tools, hammers, any type of work generating vibrations in concrete slabs, pumping of oil from cylinders, all type of work generating noise or vibrations that can be perceived in the occupied areas.
- .4 The work of Division 14 and the work in the mechanical rooms can be done during the day. Subject to the foregoing and articles 1.4.7 and 1.5.3 of this section, all work must be done evenings between 6:00 p.m. and 6 a.m., Monday through Friday, or the weekend.
- .5 Submit schedule in accordance with Section 01 32 16.19 - Construction Progress Schedule - Bar (GANTT) Chart.
- .6 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .7 Keep within limits of work and avenues of ingress and egress.
- .8 Ingress and egress of Contractor vehicles at site is limited to the receiving dock for this activity only. The Contractor's staff may not use the public parking.
- .9 The shipping/receiving zone is only for shipping or loading equipment. No parking is permitted. No storage of materials shall be tolerated. Normal hours of operation shall be from 8:30 a.m. to 4:30 p.m.
 - .1 Loading dock: Overhead clearance of 3m8 and Length of 7m9.
- .10 For all uses of the shipping/receiving zone, arrangement must be made 48 hours in advance with the Departmental Representative in order to have access and coverage by a security member.
 - .1 All construction materials must be brought by the loading dock at all times; no other ICAO Headquarters' entries shall be used.
 - .2 Security must be present at all times to open garage and loading dock doors and during the entire time doors are open.
 - .3 All materials loaded on the dock must be removed immediately and stored in an approved location.
- .11 The handling of materials to be transported to different work zones must be made between 6:00 a.m. – 8:00 a.m.
- .12 At the end of each shift, replace temporary security barricades and walls to allow access to the various offices and rooms during the operation hours of the building.

1.6 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

- .2 Security clearances:
 - .1 All personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter premises.
 - .2 Obtain requisite clearance, as instructed, for each individual required to enter premises.
 - .3 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.
 - .4 Contractor's personnel will require satisfactory industrial PWGSC initiated security screening in order to access the premises on site to do the work.
- .3 Security escort:
 - .1 Personnel employed on this project must be escorted by a security agent when executing work in non-public areas during normal working hours. Personnel must be escorted in all areas after normal working hours.
 - .2 Submit an escort request according to Departmental Representative's procedure at least 3 days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.
 - .3 Any escort request may be cancelled free of charge if notification of cancellation is given at least twenty four (24) hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.
 - .4 Calculation of costs will be based on average hourly rate of security officer for minimum of four (4) hours per day for late service request and for late cancellations.
 - .5 The Contractor and his workers must, without exception, follow the access request previously submitted. Under no circumstances will they be permitted to request access to a room which was not included in their initial request to the accompanying Commissioner. Access will be steadfastly denied.
- .4 The Contractor, his workers and their materials/tools brought along must pass a thorough security check (metal detector, X-ray) each time they enter the building. If a location within the work zone has been defined and approved by a BGIS representative, the Contractor may leave his tools during work, but BGIS shall not be responsible for loss, damage or theft.

1.7 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.

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 Not used.

1.2 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work.
- .2 Except for the first meeting, distribute written notice for a meeting five (5) days in advance of meeting date to Departmental Representative.
- .3 Meetings will be held at ICAO, at Place Bonaventure or at the Consultant's business place.
- .4 Meeting minutes will be written and distributed by the Departmental Representative.
- .5 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 FIRST PRECONSTRUCTION MEETING

- .1 A few days after award of Contract, the Departmental Representative will request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative or their major representatives, Contractor and elevator Subcontractors, will be in attendance at this meeting (other Subcontractors at the request of the Departmental Representative).
- .3 Agenda of meeting to be prepared by the Departmental Representative.

1.4 PROGRESS MEETINGS

- .1 Establish a calendar of the meetings that will be held every two (2) weeks during course of Work and two (2) weeks prior to project completion.
 - .2 Major Subcontractors involved in Work and Departmental Representative, as well as their major representatives, and site superintendents must be present at these meetings.
 - .3 Notify parties minimum five (5) days prior to first meeting.
 - .4 Meeting minutes will be written and distributed by the Departmental Representative.
 - .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
-

- .11 Review proposed changes for effects on construction schedule and on completion date.
- .12 Health and security on site.
- .13 Other business.

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 Not used.

1.2 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 .Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five (5) day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of a major deliverable item.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately ten (10) working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
-

- .2 Submit to Departmental Representative within five (5) working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within five (5) working days of receipt of acceptance of Master Plan.

1.5 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Work Schedule.
- .2 Each phase (group) will be subjected to a provisional partial acceptance in accordance with section 01 77 00 Closeout Procedures and Commissioning sections 01 79 00, 01 79 00.13, 01 91 13, 01 91 13.13, 01 91 13.16 et 01 92 00.
- .3 Contractor's Construction Progress Schedule must identify for each phase (group) the target dates for the following milestones:
 - .1 Shop Drawings.
 - .2 Purchasing of material.
 - .3 Dates of preparatory work (beginning and end).
 - .4 Decommissioning start date for each elevator of each group and beginning of work.
 - .5 Equipment delivery date.
 - .6 Commissioning date for each elevator of each group.
 - .7 Partial substantial completion date for each phase (groups).
 - .8 End of project documents.
 - .9 Refer to drawings in Annex D for phase identification (groups).

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules to the Contractor within five (5) working days.
- .3 Revise impractical schedule and resubmit within five (5) working days following receipt of comments.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule per phase (group) includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Demolition.
 - .6 Interior Architecture (Walls, Floors, Millwork).
 - .7 Electrical.
 - .8 Fire Systems.
 - .9 Vertical transport
 - .10 Testing and Commissioning.
 - .11 Supplied equipment long delivery items.

1.8 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress. Project schedule is also to be submitted with each monthly progress billing request.
- .2 Include as part of Project Schedule, narrative report as required in article 1.7 of section 01 33 00 identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.
- .3 Submit planning of the work to come three (3) weeks in advance.

1.9 RÉUNIONS DE PROJET

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

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 Not used

1.2 REFERENCES

- .1 Not used.

1.3 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample 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 coordinated 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 coordinated.
- .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.

1.4 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 drawings stamped and signed by professional engineer registered or licensed in Province of Québec.
-

- .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 coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .4 Allow 10 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 Representative in writing of revisions other than those requested.
 - .7 Accompany submissions with transmittal letter, in duplicate, 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 The affected discipline, the specifications section and article (wherever appropriate).
 - .4 Name and address of:
 - .1 Contractor
 - .2 Subcontractor.
 - .3 Supplier.
 - .4 Manufacturer.
 - .5 Description of each drawing, technical data sheet, test report.
 - .6 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .7 Details of appropriate portions of Work as applicable:
 - .1 Fabrication material and details.
 - .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 one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
-

-
- .11 Submit one electronic copy 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 one copy 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 three (3) years of date of contract award for project.
 - .13 Submit one (1) electronic copy 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 one electronic copy 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 one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
 - .17 Submit six (6) printed copies and one (1) electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental.
 - .18 Delete information not applicable to project.
 - .19 Supplement standard information to provide details applicable to project.
 - .20 If upon review by Ministry, no errors or omissions are discovered or if only minor corrections are made, printed and electronic 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.
 - .21 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that the Ministry 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.
-

1.5 SAMPLES

- .1 Submit for review samples in triplicate 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 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.

1.6 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.7 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic and one (1) hard copy of colour digital photography in jpg format, standard resolution monthly with progress statement and as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints:
 - .1 Viewpoints and their location as determined by Departmental Representative.
- .4 Frequency of photographic documentation: weekly and before concealment of Work, or as directed by Departmental Representative.

1.8 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

PART 2– PRODUCTS

2.1 NOT USED

- .1 Not Used.
-

PART 3 – EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PARTIE 1 GENERAL

GENERAL NOTE: in this section the term “site” includes all the facilities located at the site where the work is taking place (construction site, buildings, access, infrastructure, parkings, bays, etc.).

1.1 RELATED REQUIREMENTS

- .1 Annex A – HSE Danger Log for the ICAO Headquarters.
- .2 Annex F – Forms.

1.2 REFERENCES

- .1 Province of Québec
 - .1 Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting occupational health and safety).
 - .2 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, the site-specific prevention program, as outlined in the article “GENERAL REQUIREMENTS”, at least 10 days prior to the start of work.
- .3 Departmental Representative will review Contractor's site-specific prevention program and provide comments to Contractor within 10 days after receipt of the document. Revise plan as appropriate and resubmit to Departmental Representative within 5 days after receipt of comments from Departmental Representative. Departmental Representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental Representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4 Departmental Representative's review of Contractor's site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor's overall responsibility for construction Health and Safety during the work.
- .5 Submit copies of Contractor's authorized representative's construction site health and safety inspection reports to Departmental Representative, at least once a week.
- .6 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

The investigation report shall contain at least the following:

- .1 date, time and place of accident;
 - .2 name of sub-contractor involved in the accident;
 - .3 number of persons involved and condition of wounded;
-

- .4 witness identification;
 - .5 detailed description of tasks performed at the time of the accident;
 - .6 equipment being used to accomplish the tasks performed at the time of the accident;
 - .7 corrective measures taken immediately after the accident;
 - .8 causes of the accident;
 - .9 preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental Representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals and Section 02 81 01 - Hazardous Materials. Contractor must also keep one copy of these documents on the construction site.
- .9 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental Representative.
- .10 Submit to Departmental Representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article "GENERAL REQUIREMENTS" of this section.
- .11 Submit to Departmental Representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
- .1 first aid in the workplace and cardiopulmonary resuscitation;
 - .2 work likely to release asbestos dust (mandatory for all work where asbestos is present);
 - .3 work in confined spaces (mandatory for all work in confined spaces);
 - .4 lockout-tagout procedures (mandatory for all work requiring lockout);
 - .5 safely operating forklift trucks (mandatory for all forklift usage);
 - .6 safely operating elevating work platforms (mandatory for the use of all elevating platforms);
 - .7 any other requirement of Regulations or the safety program.
- In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
- .12 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental Representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

1.4 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNESST before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental Representative.
- At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental Representative.
- .2 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
-

- .3 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

1.5 HAZARD ASSESSMENT

- .1 The contractor must perform construction site specific safety hazard assessment related to project.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental Representative no later than 5 days after the committee meeting.

1.7 REGULATORY REQUIREMENTS

- .1 Do the Work in accordance with Section 01 41 00 - Regulatory Requirements.
- .2 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.
- .3 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .4 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that Code.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.9 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).
 - .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
-

- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental Representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.
- .5 Install bilingual risk and danger posters on the work site.

1.10 WORK PERFORMED BY EXTERNAL CONTRACTORS

- .1 On this construction site, it is anticipated that work will be performed by an external contractor that has not been hired by the Contractor:
 - .1 Replacement of fire alarm panels.
- .2 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental Representative to perform certain work. In return, these external contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental Representative prior to the start of the work of each contractor (see the wording in the article HEALTH AND SAFETY SUBORDINATION AGREEMENT)

1.11 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.

The safety program must include at least the following:

- .1 Company safety and health policy;
- .2 Description of the stages of the work;
- .3 Total costs, schedule and projected workforce curves;
- .4 Flow chart of safety and health responsibilities;
- .5 Physical and material layout of the construction site;
- .6 Risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
- .7 Identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";
- .8 Identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";
- .9 Training requirements;
- .10 Procedures in case of accident/injury;
- .11 Written commitment from all parties to comply with the safety program;
- .12 Construction site inspection checklist based on the preventive measures;
- .13 Emergency response plan which shall contain at least the following:
 - .1 Construction site evacuation procedures;
 - .2 Identification of resources (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge of the construction site;
 - .4 Identification of the first-aid attendants;

- .5 Communication organizational chart (including the person responsible for the site and the Departmental Representative);
 - .6 Training required for those responsible for applying the plan;
 - .7 Any other information needed, in the light of the construction site's characteristics. If available the Departmental Representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental Representative.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental Representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental Representative.
- .4 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .5 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .6 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental Representative on demand.
- .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental Representative on demand.
- .8 The Departmental Representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .9 The Departmental Representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.12 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed..
- At the worksite there is in particular the presence of the following:
- .1 Confined spaces;
 - .2 Tight spaces and risky areas;
 - .3 Lockout-tagout work;
 - .4 Electrical Work;
 - .5 Scaffolding;
 - .6 Loud Work;
 - .7 Demolition Work;
 - .8 Use of ladders and stepladders;

- .9 Electrical extension cords;
- .10 Area maintenance;
- .11 Refer to Annex A - HSE Danger Log for the ICAO Headquarters.

The Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in its prevention program all risks that have been identified.

1.13 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC

- .1 The worksite is occupied by employees and/or the public during the following times: 6:00 a.m. and 6:00 p.m. The Contractor shall consider the following specific requirements for the protection of employees and / or the public:
 - .1 The site barriers shall be locked.
 - .2 The SCC activities are operational 24h a day and shall remain operational at all times.
 - .3 Risk that building occupants may access construction site: comply with measures provided in Section 01 41 00 – Regulatory Requirements and Section 01 56 00 – Temporary Barriers and Enclosures, and to Annex A.
 - .4 Risks related to tool, material and equipment circulation in the building: comply with measures provided in Section 01 14 00 – Regulatory Requirements and to Annex A.
 - .5 Fire risks: work permits will be required. A work permit must be filled and submitted to BGIS for approval at least 48 hours in advance
 - .6 If a particular high-risk work is indicated on the work permit, such as work in confined spaces, hot work and lockout, additional permits or documents must be filled out by the contractor in order to undertake work. If this type of high-risk work is added during work, the BGIS Team Lead must be notified immediately and must give authorization to perform the work.

These requirements must be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and / or the public on the site.

1.14 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.15 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de la sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:
 - .1 Have a safety officer certificate issued by the CNESST;
 - .2 Have site-related working experience of at least 5 years specific to the activities associated with the present project;
 - .3 Have working knowledge of occupational health and safety regulations in the workplace;

- .4 be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;
- .5 Be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
- .6 Be on construction site at all times during execution of work;
- .7 Inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.
- .8 Keep a daily log of actions taken and submitting a copy to Departmental Representative each week.

The safety officer's certificate shall be submitted to the Departmental Representative before the start of the work.

- .2 When the hiring of a safety officer is not required or if this person is hired by the Departmental Representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental Representative before the start of work.

1.16 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental Representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
 - .1 Notice of construction site opening;
 - .2 Identification of Principal Contractor;
 - .3 Company OSH policy;
 - .4 Site-specific prevention program;
 - .5 Emergency plan;
 - .6 Minutes of worksite committee meetings;
 - .7 Names of worksite committee representatives;
 - .8 Names of the first-aid attendants;
 - .9 Action reports and correction notices issued by the CNESST.

1.17 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental Representative in accordance with the article "ACTION AND INFORMATION SUBMITTALS" in this section.
 - .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental Representative or his agent.
 - .3 Submit to Departmental Representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
-

- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental Representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental Representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.18 PREVENTION OF VIOLENCE

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental Representative.

1.19 USE OF PUBLIC ROADS

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.20 LOCKOUT-TAGOUT

- .1 For all work on electrically or otherwise energized equipment, the Contractor shall draw up and implement a general lockout-tagout procedure and submit it to the Departmental Representative.
- .2 Supervisors and all workers concerned by work requiring lockout-tagout must have received training on lockout-tagout procedures by a recognized organization; Contractor shall submit training certificates to the Departmental Representative.
- .3 Before starting the lockout-tagout procedure of a piece of equipment on an occupied site, Contractor must coordinate his work with the representative of the site if the interruption of the power sources can have an impact on the operations of the site or on its occupants.
- .4 Contractor must designate a qualified person as responsible for the lockout-tagout and must make sure that that person prepares a lockout-tagout data sheet for each piece of equipment involved. The lockout-tagout data sheet must be submitted to the Departmental Representative at least 48 hours before the beginning of the work. The Departmental Representative will review the data sheet with the representative of the site if the work takes place in an existing building. The data sheets for lockout-tagout must contain at least the following information:
 - .5 description of work to carry out;
 - .6 identification, description and location of the circuit and/or ~~piece of~~ equipment to lockout-tagout;
 - .7 identification of energy sources that feeds the ~~piece of~~ equipment;

- .8 identification of each cutout point;
- .9 sequence of lockout-tagout and the release of residual energy as well as the sequence of unlocking;
- .10 list of material needed for the lockout-tagout;
- .11 method of verification of zero energy implementation;
- .12 name and signature of the person who prepared the data sheet.

When required by the Departmental Representative, Contractor must record all this information on the site's representative form.

- .13 At the time of lockout-tagout, the person responsible must date the data sheet and ensure that each worker involved in the work on the circuit/~~piece of~~ equipment to lockout-tagout puts his name on the data sheet and signs it.

1.21 ELECTRICAL WORK

- .1 Contractor shall ensure that all electrical work is executed by qualified employees in accordance with the provincial regulation respecting vocational training and qualification.
- .2 Contractor shall respect all requirements of standard CSA Z462 *Workplace Electrical Safety Standard*.
- .3 No repairs or alterations shall be carried out on any live equipment except where complete disconnection of the equipment is not feasible.
- .4 Contractor shall respect all requirements prescribed in paragraph "LOCKOUT-TAGOUT" in this section.
- .5 Contractor shall advise in writing the Departmental Representative of all the work that cannot be done with de-energized equipment and obtain his authorization. Contractor shall demonstrate to the Departmental Representative that it is impossible to do the work with de-energized equipment and provide all the information necessary to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) before the beginning of the work, excluding for the exceptions indicated in standard CSA Z462 Workplace electrical safety.
- .6 The energized electrical work permit on must contain at least the following elements:
 - .1 Description of the circuit and equipment and its location;
 - .2 Justification for having to do the work in an energized condition;
 - .3 Description of safe work practices to apply;
 - .4 Results of the shock hazard analysis;
 - .5 Limit of the protective perimeter against electric shocks;
 - .6 Results of the arc flash hazard analysis;
 - .7 Description of the arc flash protection boundary;
 - .8 Description of the personal protective equipment required;
 - .9 Description of the means to limit access to unqualified persons;
 - .10 Proof that an information session has been carried out;
 - .11 Approval signature of the energized electrical work (by a person in authority or by the owner).

- .7 If for the operational requirements of the occupants of the site the representative of the site requires that the Contractor performs work in an energized condition, the Contractor shall obtain all the information required to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) and have it signed by the representative of the site assigned by the Departmental Representative before the beginning of the work.

1.22 ASBESTOS EXPOSURE

It is not anticipated that the work covered by the present specifications involves the manipulation of materials containing asbestos; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of containing asbestos, the Contractor must immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain asbestos, the Contractor shall comply with the following requirements.

Prior to starting any work likely to emit asbestos dust, the Contractor must:

- .1 Provide a written procedure for the work, identifying the risk level of the work (low, moderate, high), as defined in section 3.23 of the *Code de sécurité pour les travaux de construction* S-2.1, r- 4, (Safety code for the construction industry). This procedure must take into account all the requirements of that section 3.23.
- .2 Submit certificates that demonstrate that all workers involved in the work have received training on asbestos hazards and on the procedure required in the preceding paragraph.
- .3 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.23 FUNGAL CONTAMINATION

It is not anticipated that the work covered by the present specifications involves the manipulation of materials contaminated by mould; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor must immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain mould, the Contractor shall comply with the following requirements.

Prior to starting any work where workers are likely to be in contact with materials contaminated by mould, the Contractor must:

- .1 Provide a written procedure for the work which respects all the requirements of the *Code de sécurité pour les travaux de construction* S-2.1, r- 4, (Safety code for the construction industry), as well as the requirements indicated in the document “*Mould Guidelines for the Canadian Construction Industry*” published by the Canadian Construction Association (<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>).
- .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.24 EXPOSURE TO SILICA

For any interior or exterior work generating silica, the Contractor must respect the following requirements, in addition to those in the *Code de sécurité pour les travaux de construction* S-2.1, r.4 (Safety code for the construction industry).

- .1 Work in wet environment or use tools with the inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high-efficiency filters not to propagate dust in the environment.

- .2 Clean surfaces and tools with water, never with compressed air.
- .3 Sand and pickle surfaces by using an abrasive containing less than 1% of silica (also called amorphous silica).
- .4 Install shields or other containment device to prevent silica dust from migrating toward other workers or the public.
- .5 Wear individual respiratory and ocular protection equipment during all the operations that could generate silica dust in accordance with the requirements of the *Code de sécurité pour les travaux de construction*, S-2.1, r.4 (Safety code for the construction industry).
- .6 Wear coveralls to prevent contamination outside the construction site.
- .7 Do not eat, drink, or smoke in a dusty environment.
- .8 Wash the hands and the face before drinking, eating or smoking.

1.25 LEAD-BASE PAINT REMOVAL

Prior to all work where workers are likely to handle materials containing lead-base paint or other substances containing lead; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor must immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain mould, the Contractor shall comply with the following requirements.

Prior to starting any work where workers are likely to be in contact with materials contaminated by lead-base paint or other materials containing lead, the Contractor must:

- .1 Provide a written procedure for the work which respects all the requirements of the *Code de sécurité pour les travaux de construction* S-2.1, r- 4, (Safety code for the construction industry), as well as the requirements indicated in the document “*Guideline for Lead on Construction Projects*” published by the Ontario Ministry of Labour (http://www.labour.gov.on.ca/english/hs/pdf/gl_lead.pdf). If there is a discrepancy between the Québec regulation and the Ontario document, the most stringent requirement shall apply.
- .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.26 EXPOSURE TO ANIMAL’S FECAL DROPPINGS

Prior to all work where workers are likely to come in contact with materials contaminated by animal’s fecal droppings, the Contractor must:

- .1 Provide a written procedure for the work which respects all the requirements of the *Code de la sécurité pour les travaux de construction* S-2.1, r- 4, (Safety code for the construction industry), as well as the requirements indicated in the document “*Des fientes de pigeons dans votre lieu de travail: méfiez-vous*” (Pigeon droppings in your workplace: Beware” published by the CNESST (http://www.csst.qc.ca/publications/100/Documents/DC100_1331_1web2.pdf)
- .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.27 RESPIRATORY PROTECTION

1. Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 *Selection, use and care of respirators*. Submit the certificates of the fit testingS to the Departmental Representative on demand.

1.28 FALL PROTECTION

- .1 Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
- .2 Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- .3 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- .4 Define the limits of the danger zone around each elevating platform.
- .5 All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
- .6 Everyone who works within two metres from a fall hazard of three metres or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.
- .7 Despite the requirements of the regulation, the Departmental Representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than three metres.

1.29 SCAFFOLDINGS

In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who uses scaffoldings must respect the following requirements:

- .1 Foundation
 - .1 Scaffoldings shall be installed on a solid foundation so that it does not slip or rock.
 - .2 Contractors wishing to install scaffoldings on a roof, overhang, canopy or awning shall submit their calculations and loads, as well as plans signed and sealed by an engineer to the Departmental Representative and obtain his authorization before beginning installation.
- .2 Assembly, bracing and mooring
 - .1 All scaffoldings shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
 - .2 Where a situation requires the removal of part of the scaffoldings (e.g., crosspieces), the Contractor shall submit to the Departmental Representative an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
 - .3 For scaffoldings where the span between two supports is greater than three metres, the Contractor shall provide the Departmental Representative an assembly plan signed and sealed by an engineer.

- .3 Protection against falls during assembly
 - .1 Workers exposed to the risk of falling more than three metres shall be protected against falls at all times during assembly.
 - .4 Platforms
 - .1 Scaffolding platforms shall be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
 - .2 If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry)
 - .3 ScaffoldingS of four sections (or six metres) high or more shall have a full platform covering the entire surface between the putlogs every three metres high or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.
 - .5 Guardrails
 - .1 A guardrail shall be installed on every landing.
 - .2 Cross braces shall not be considered as guardrails.
 - .3 If the platforms are not covering the entire surface between the putlogs, the guardrail must be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
 - .4 Where scaffoldings has four sections (or six metres) high or more and full platforms are required, the guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.
 - .6 Access
 - .1 The Contractor shall ensure that access to the scaffoldings does not compromise worker safety.
 - .2 Where the platforms of the scaffoldings are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.
 - .3 Notwithstanding the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), stairs shall be installed on all scaffoldings that have six or more rows of uprights or is six sections (or nine metres) high or higher.
 - .7 Protection of the public and occupants
 - .1 When scaffoldings are installed in a zone accessible to the public, the Contractor shall take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffolding.
 - .2 Contractor must install covered walkways, nets or other similar devices to protect workers, the public and the occupants against falling objects. The means of protection must be approved by the Departmental Representative.
 - .8 Engineering plans
 - .1 In addition to those required by the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Departmental Representative reserves the right to require engineering plans for other types or configurations of scaffoldings.
 - .2 A plan signed and sealed by an engineer is required for all scaffoldings that will be covered with a canvas, a tarpaulin or any other material that has wind resistance.
 - .3 A certificate of conformity signed by an engineer is required in all cases where an engineering plan is required and this, before anybody uses the facility. A copy of these documents must be available on the construction site at all times.
-

- .9 Work in high places
 - .1 It shall be noted that as soon as a harness equipped with energy absorber is worn, the worker must have training in height/protection against falls. Also, considered as work in high places:
 - .1 Once a scaffolding is utilized and the workers' feet are at more than 6' (2m).
 - .2 Once a hoisting device is utilized (ex.: elevator platforms – articulated arm – vertical lift, etc.).
 - .3 Once as Work on a ladder surpass 15 continuous minutes and that the worker must use both hands to work (which obligates the use of a A/P type harness + positioning rope).
 - .4 **Only exception: Work using a stepladder (respecting: the maximum of 1 hour of continuous work / prohibiting the use of the two last steps and platform of stepladder).**

1.30 CONFINED SPACES

In addition to the requirements of the provincial regulation applicable to confined spaces, the Contractor must respect the requirements in the following paragraphs.

The Departmental Representative reserves the right, depending on the nature of the risk of the confined spaces, of the work to be done and/or of the level of competence in confined spaces demonstrated by the Contractor, to require from the latter that he use the services of a firm specialized in health and safety or in confined space work to perform the analysis of the risks inherent to the confined spaces, to complete the entry permit, to conduct surveillance of the work or for any other task related to the work in confined spaces.

- .1 Information on confined spaces existing on the construction site
 - .1 The following presents a non-exclusive list of the confined spaces that the Contractor will likely have to access during this project:
 - .2 *List of confined spaces*
 - .3 The Contractor shall take into consideration each of these confined spaces and must also add to this list the confined spaces that he is likely to build/install during this project.
- .2 Person in charge of the health and safety for the work in confined spaces
 - .1 The Contractor shall designate a person to be in charge of the health and safety for the work in confined spaces. This person shall be qualified, as defined in the article 297 of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Occupational Health and Safety Regulation). This person must be present at all times during work in confined spaces and must make sure that all the requirements of the regulation and the ones specified in this section are respected. This person must amongst other things fill out and issue the entry permit for the confined spaces.
- .3 Training
 - .1 All persons having access to a confined space, including the person in charge and the watcher of the confined space shall have completed training on entry in confined spaces.
 - .2 All persons who have to use supplied-air respirator to access the confined spaces shall have completed training on the use of these apparatus.
 - .3 All persons identified as rescuers for confined spaces shall have completed training on confined spaces rescue.
 - .4 Each training required in the preceding paragraphs must be provided by a firm specialized in health and safety or in confined spaces.
 - .5 The training certificates of the persons mentioned above must be submitted to the Departmental Representative before the beginning of the work in confined spaces.

.4 Risk assessment of confined spaces

- .1 For each of the confined spaces listed at the beginning of this article, the Contractor must obtain the necessary information from the site representative and proceed to the assessment of the risk inherent to each confined space and relative to:
 - .1 the prevailing internal atmosphere, namely the concentration of oxygen, inflammable gases and vapours, combustible or explosive dusts as well as the categories of contaminants likely to be present in this enclosed area or nearby;
 - .2 the fact that the natural or mechanical ventilation is insufficient
 - .3 The materials that are present there and that can cause the worker to sink, to be buried or to drown, such as sand, grain or a liquid;
 - .4 the interior configuration;
 - .5 pipes and conduits penetrating the confined space;
 - .6 energies such as electricity, moving mechanical parts, heat stress, noise and hydraulic energy;
 - .7 ignition sources such as open flames, lighting, welding and cutting, static electricity or sparks;
 - .8 all other particular circumstances, such as the presence of vermin, rodents or insects.

These risk assessments must be done by the person in charge of the health and safety of the work in confined spaces. They must be submitted to the Departmental Representative for analysis at least 10 days before the proposed date for the work in confined spaces and they must also include the following information:

- .1 location of the confined space;
- .2 description of the confined space;
- .3 dimensions of the confined space;
- .4 number, location and dimensionS of the openings;
- .5 content of the confined space (material, substances, etc.)
- .6 date of the assessment;
- .7 name and signature of the person who conducted the assessment and the name of his employer.

The Contractor must repeat the same process for each of the confined spaces that he will build/install during this project.

.5 Confined spaces entry permits

- .1 At least 5 days before the scheduled date for the work in a confined space the Contractor must submit for analysis to the Departmental Representative a copy of each entry permit specific to the confined spaces where he must access. The entry permits must be completed by the person in charge of the health and safety of the work in confined spaces, and must contain the following information as a minimum:
 - .1 description of the work that will be carried out and the method of work, including the materials and tools needed to do this work;
 - .2 description of the risks and corresponding preventive measures according to the risk assessment inherent to the confined space done previously and according to the work to be carried out;
 - .3 safety equipment that will be used to control the risks of confined spaces (e.g.: fan, gas detectors, local exhaust ventilation, personal protective equipment, etc.);
 - .4 rescue procedure covering at least the following:
 - .5 means of communication between the supervisor of the confined space and the workers in the confined space;
 - .6 lifesaving equipment specific to each confined space;

- .7 confirmation that the municipal emergency response service has been advised that work in confined spaces would be going on at this specific construction site and that they may intervene do to a confined space rescue; otherwise, the Contractor must identify the workers on the construction site that will act as rescuers in a confined space in the case where such rescuers must enter the confined space (rescue training is mandatory);
 - .8 location of telephone and phone number of the municipal emergency response service (if applicable);
 - .9 date of entry permit;
 - .10 name of person who issued the permit and the name of his employer;
 - .11 name of the confined space safety watcher and the name of his employer;
 - .12 name of the workers who must enter the confined space and the name of each one's employer.
 - .2 In cases where the site representative requires the use of a confined space entry permit specific to his site, the Contractor must comply with the requirements of that permit.
- .6 Medical surveillance
- .1 The Contractor must submit to the Departmental Representative a medical certificate dated in the last two years for all persons who must use a supplied-air respirator. The certificate must confirm the ability of each person to use this type of apparel.
 - .2 It is recommended that the persons who have to work in sewer collection systems or other similar systems be vaccinated against diphtheria, tetanus and hepatitis "B".
- .7 Requirements while working in confined spaces
- .1 Before each entry into a confined space, the person in **charge** of the health and safety for the work in confined spaces shall take readings of oxygen concentration, flammable gases and all toxic gases likely to be present and record these readings on the entry permit required earlier.
 - .2 No worker can access the confined space if the following requirements are not respected:
 - .1 the concentration of oxygen shall be greater than or equal to 19.5% and less than or equal to 23%;
 - .2 the concentration of inflammable gases or vapours shall be less than or equal to 10% of the lower explosion limit;
 - .3 the concentration of other gases must not exceed the standards prescribed in annex I of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Occupational Health and Safety Regulation).
 - .3 If the oxygen and gas concentrations measured respect the regulatory values, the person in charge of the health and safety for the work in confined spaces must ensure that all preventive measures indicated on the permit are in place and then must complete the entry permit (date, time, signatures, etc.) before issuing the permit and allow entry into the confined space.
 - .4 A permit is only valid for one work shift; the Contractor must submit a new permit for each extra shift.
 - .5 During the work inside the confined space, the gas concentration must be measured continuously and the gas detector must be installed at ~~the level of the~~ the breathing area of the workers. If the conditions inside the confined space are such that the workers might not hear/see the detector's alarm, the Contractor must find a way for the confined space safety watcher to watch the concentration measures while maintaining the measurements at the level of the breathing zone of the workers.
 - .6 If the work is organized in a way that the workers are scattered far away from each other in a large confined space, the Contractor needs to provide additional gas detectors.
-

- .7 The Contractor must provide the gas detectors and maintain them in good condition. He must be able to show that the gas detectors used have been calibrated and adjusted by the person in **charge** of the health and safety for the work in confined spaces or by a qualified person, in accordance with the manufacturer's recommendations. The Departmental Representative can at all times have the accuracy of the measuring devices checked. In the event of the failure of a detection device, the work must be stopped immediately and all workers must leave the confined space.
- .8 The manufacturer's manual of the gas detectors must be available on the construction site.
- .9 The Contractor shall provide a ventilation system to keep concentrations of contaminants below the regulatory limits.
- .10 If work generating contaminants are performed (welding, use of products, etc.), the Contractor must, if needed, install an aspiration system for the contaminants so that the regulatory values of air quality can be maintained at all times.
- .11 If a detecting device alarm goes off, all workers shall leave the confined space. The measured levels of concentration must then be recorded on the entry permit. The Contractor shall then find the source of contamination, neutralize it, ventilate the confined space to eliminate contaminant residues and authorize access to the confined space only when concentrations of oxygen and gas have returned to normal.
- .12 Compressed gas cylinders or welding equipment shall not be brought into confined spaces: this equipment shall remain outside and shall not block entrances or exits; all cylinders shall be properly secured.
- .13 Tools and electrical devices used to work in the confined spaces shall be grounded and, when necessary, designed to be explosion-proof. All equipment must be connected to a ground fault interrupter outlet or to a step-down transformer. The Contractor shall, at his own cost, hire a qualified electrician to adjust power receptacles and/or circuit breakers that he intends to use which do not meet these criteria.
- .14 The Contractor shall obtain a Hot Work Permit and respect the requirements to that effect when the work to be carried out includes hot work.
- .15 The Contractor must assign a competent person to assume the duties of confined space safety watcher. The supervisor shall be exclusively dedicated to these duties and must constantly remain outside of the confined space as long as there is a worker in it. He must also:
 - .1 ensure that the entry permit has been filled, signed and posted near the confined space;
 - .2 be familiar with the work procedure specific to the confined space and ensure that it is respected;
 - .3 ensure continuous communication with all the workers in the confined space and ensure that all the equipment required in case of emergency is present;
 - .4 have a good knowledge of the backup-ventilation systems and ensure their proper functioning for the duration of the work;
 - .5 prevent access to unauthorized persons;
 - .6 ensure that the conditions around the confined space zone is not a health or security risk for the workers inside the confined space;
 - .7 initiate the emergency procedure if needed.
- .16 The same person may act as a confined space safety watcher and as the person in charge of the health and safety of the work in confined spaces, provided all requirements of both functions are met.

1.31 LIFTING LOADS WITH CRANE OR BOOM TRUCK

- .1 When applicable, unless specified otherwise, the Contractor must prepare a hoisting plan and submit it to the Departmental Representative for all lifting operations done with a crane or a boom truck at least 5 days before these lifting operations begin. The hoisting plan must contain at a minimum the information listed at the end of this article.

- .2 The hoisting plan must be signed and sealed by an engineer for the following lifting operations:
 - .1 lifting of concrete panels;
 - .2 lifting mechanical/electrical equipment on a roof or on the floor of a building;
 - .3 lifting of loads encroaching on the public road;
 - .4 lifting large dimensions or very heavy loads;
 - .5 all other lifting operation, in accordance with the requirements of the Departmental Representative.
- .3 In addition to the above requirements, the Contractor must plan the hoisting operations in a way as to avoid that the loads pass over the occupied zones on the site. When there is no alternative, the hoisting plan must absolutely be signed and sealed by an engineer and must guarantee the security of the occupants in that zone; the plan must also be approved by the Departmental Representative. The Departmental Representative can, if he deems necessary, require that the work be done at night or on weekends.
- .4 Upon the beginning of the work on the construction site, the Contractor must submit the list of the hoisting plans anticipated for the whole project to the Departmental Representative. That list shall be updated as needed if changes occur during the work.
- .5 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all cranes and boom truck cabs.
- .6 The entire lifting area shall be marked off to prevent the entry of non-authorized persons.
- .7 The Contractor shall carefully inspect all of the slings and lifting accessories and make sure that those in poor condition are destroyed and scrapped.
- .8 Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.

MINIMUM CONTENT OF HOISTING PLAN

- .1 Sketch indicating at a minimum, the location of the crane, the surrounding facilities, the zone covered by the hoisting operations, the pedestrian's pathways and vehicular routes, the security perimeter, etc.
 - .2 Weight of loads
 - .3 Dimensions of loads
 - .4 List of hoisting devices and weight of each
 - .5 Total weight lifted
 - .6 Maximum height of obstacles to clear
 - .7 Height of loads lifting relative to the surface of the roof (in the case of loads to be placed on roofs)
 - .8 Use of guide cables
 - .9 Type of crane used
 - .10 Crane capacity
 - .11 Boom length
 - .12 Boom angle
 - .13 Crane's radius of action
 - .14 Deployment of stabilizers
 - .15 Percentage usage of the crane's capacity
 - .16 Verification confirmation of hoisting equipment
 - .17 Identification of the crane operator and the person responsible for the hoisting operations with date and signatures
-

1.32 HOT WORK

Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.

- .1 Before the beginning of each shift of work and for each sector, the Contractor must obtain a "Hot Work Permit" emitted by the person responsible for the site. Refer to HSE Danger Log for the ICAO Headquarters in Annex A.
- .2 A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
- .3 The Contractor must appoint an individual to do continuous monitoring of the fire risks for a period of one (1) hour after the end of the shift of hot work. This individual shall sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
- .4 When the hot work is done in areas where there is combustible materials or where the walls, ceilings or floors are made of or covered with combustible materials, a final inspection of the work area must be scheduled four (4) hours after the work has finished. Unless specified otherwise by the Departmental Representative, the Contractor must assign a person to carry out this monitoring.
- .5 Welding and cutting
In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:
 - .1 Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
 - .2 Air extraction system with filters must be used for all welding and cutting work performed inside.
 - .3 Stop all activities producing flammable or combustible gas, vapours or dust in the vicinity of the welding or cutting work.
 - .4 Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
 - .5 Store all oxygen cylinders more than 6 metres from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in the article 3.13.4 of the *Code de sécurité pour les travaux de construction, S-2, r. 6* (Safety code for the construction industry)
 - .6 Store the cylinders far from all heat sources.
 - .7 Not to store the cylinders close to the staircases, exits, corridors and elevators.
 - .8 Do not put acetylene in contact with metals such as silver, mercury, copper and alloys of brass having more than 65% copper, to avoid the risk of an explosive reaction.
 - .9 Check that welding equipment with electric arc has the necessary tension and are grounded.
 - .10 Ensure that the conducting wires of the electric welding equipment are not damaged.
 - .11 Place the welding equipment on a flat ground away from the bad weather.
 - .12 Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
 - .13 Move away or protect the combustible materials which are closer than 15 metres from the welding work.
 - .14 Prohibition to weld or cut any closed container.
 - .15 Do not perform any cutting, welding or work with a naked flame on a container, a tank, a pipe or other container containing a flammable or explosive substance unless:
 - .1 They have been cleaned and air samples indicating that work can be done without danger has been taken; and
 - .2 Provisions to ensure the safety of the workers have been made.

1.33 INTERIOR USE OF INTERNAL COMBUSTION ENGINES

- .1 In addition to respecting article 3.10.17 of the Code de sécurité pour les travaux de construction (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
- .2 The use of a gas-powered equipment inside a building is prohibited even if the building is provided with openings.
- .3 The use of other equipment powered by an internal combustion engine inside a building must be submitted to the approval of the Departmental Representative.
- .4 For the use of any piece of equipment powered by an internal combustion engine inside a building, even if the building is provided with openings, the Contractor must install a ventilation system able to maintain the concentrations of toxic gases below the regulatory values. The stale air shall be exhausted outside the building.
 - .1 Before using equipment powered by an internal combustion engine, the Contractor must plan and write the following:
 - .2 Number of fans to install;
 - .3 Power of the fans;
 - .4 Location of the fans;
 - .5 Dimensions of the openings that will be open during the work.
- .5 During the operation of equipment with internal combustion engine, the Contractor must measure the concentrations of carbon monoxide and nitrogen oxides in the work area and at the breathing area of the workers; the concentration levels measured must be recorded in a register every 30 minutes that must be available for consultation.
- .6 If work is in an occupied building, the Contractor must also measure the concentrations of carbon monoxide and nitrogen oxides in the rooms next to the work area and the concentration levels measured must be recorded in a register every 30 minutes.
- .7 If the carbon monoxide or nitrogen oxides detector alarm goes off during the work, the Contractor must stop the work and take the corrective measures required before resuming the work.
- .8 A portable fire extinguisher must be available at all times in the work area during the use of equipment with internal combustion engines.
- .9 The equipment must be maintained at a safe distance from all combustible material.
- .10 The storage of fuel for any equipment with internal combustion engine is prohibited inside a building.

1.34 HEALTH AND SAFETY SUBORDINATION AGREEMENT

Project: _____ **Address:** _____

EXTERNAL CONTRACTOR

I hereby agree to submit to the authority of (name of the Principal Contractor's business) _____, which is the Principal Contractor for the project indicated above during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to:

- inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times;
- apply the prevention program that is specific to the activities that we carry out under this project;
- inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and
- follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.

Name of representative: _____

Name of business: _____

Description of work to be done on the construction site: _____

Approximate dates of work (start-end): _____

Signature: _____ Date: _____

PRINCIPAL CONTRACTOR

I hereby agree to allow the business (name of external contractor) _____ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PWGSC's Departmental Representative of this and to provide documentary evidence of my actions or dealings with the Contractor.

Name of representative: _____

Name of the Principal Contractor's business: _____

Signature: _____ Date: _____

Submit a completed and signed copy to PWGSC's Departmental Representative

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

- .1 This Section references to laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction, and other legally enforceable requirements applicable to Work and that are; or become, in force during performance of Work.

1.2 RELATED REQUIREMENTS

- .1 Section 02 41 00.08 – Demolition – Minor works
- .2 Annex A – HSE Danger log for the ICAO Headquarters.

1.3 REFERENCES AND CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC-2015) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, the stricter requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.
- .3 Unless otherwise indicated, the contractor shall use the latest applicable version of all referenced codes and standards mentioned in the drawings and technical specifications.

1.4 HAZARDOUS MATERIAL DISCOVERY

- .1 According to studies carried out in 2014 by the Departmental Representative, no hazardous material has been reported within the Work zone.
- .2 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.
- .3 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.
- .4 Mold: stop work immediately when material resembling mold is encountered during demolition work. Notify Departmental Representative.

1.5 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.
-

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: Except as otherwise specified, the Contractor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
 - .1 Regulatory requirements and fees in force on date of Bid submission, and
 - .2 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

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 Not used.

1.2 INSPECTION

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

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work, except for the following:
 - .1 Inspections and tests required by laws, ordinance, rules, regulations or public policy instructions.
 - .2 Inspections and tests exclusively carried out for the Contractor's convenience.
 - .3 Tests, fine-tuning and balancing of handling systems as well as networks and electrical and mechanical installations.
 - .4 Factory testing and certificate of conformity.
 - .5 Tests that must be carried out by the Contractor under the supervision of the Ministry Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect, correct defect and irregularities as advised by Departmental Representative at no cost to Ministry Representative. Pay costs for retesting and re-inspection.

1.4 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
-

- .2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

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

1.7 REPORTS

- .1 As required, submit inspection and test reports to Ministry Representative.
- .2 Provide copies to subcontractor and manufacturers of work being inspected or tested.

1.8 TESTS AND MIX DESIGNS

- .1 As required furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.9 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
 - .2 Construct mock-ups in locations acceptable to Departmental Representative as specified in specific Section.
 - .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
 - .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
 - .5 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.
-

1.10 MILL TESTS

- .1 As required, submit mill test certificates as required in specification Sections.

1.11 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems as required in specification sections.

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 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 TEMPORARY HEATING AND VENTILATION

- .1 The Departmental Representative will assume the costs associated to the necessary ventilation and heating for the work.

1.4 TEMPORARY POWER AND LIGHT

- .1 Departmental Representative will provide and pay for temporary power during construction for temporary lighting and operating of power tools. The electrical supply available on site is 120/208v, 3phases, 4f, 30A.
- .2 Arrange for connection with appropriate connection to the existing electrical services in accordance with the Canadian Electrical Code and provide for communication equipment. Assume cost for installation, maintenance and disconnection.
- .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lux.
- .4 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.5 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone and data hook up, lines equipment necessary for own use and use of Departmental Representative.

1.6 FIRE PROTECTION

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

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 Not used.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.3 INSTALLATION AND REMOVAL

- .1 Provide, put in place and build necessary construction facilities necessary for carrying out Work as soon as possible. Refer to section 01 14 00 Work Restrictions.
- .2 Remove from site all such work after use.
- .3 Prepare an overall plan indicating the proposed location for the site office and storage and show the path of circulation for the workers and materials. Refer to section 01 14 00 - Regulatory requirements.

1.4 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ladders, swing staging and platforms necessary for carrying out Work.

1.5 LIFTING EQUIPMENT

- .1 Supply, install, maintain and maneuver the winches to be used by construction personnel and for transporting of materials and equipment. Take necessary financial arrangements with subContractors for the use of lifting equipment.
- .2 Operation of winches to be entrusted to skilled workers.

1.6 ELEVATORS AND FREIGHT ELEVATOR

- .1 Existing service elevators no's 1 and 11 to be used by construction personnel and transporting of materials. Co-ordinate use with Departmental Representative.
 - .2 When service elevators mentioned above are halted for work to be executed, coordinate an alternative elevator with Departmental Representative to be temporarily available.
 - .3 Provide protective coverings and/or protective sleeving for finish surfaces of cars and entrances in elevators.
-

- .4 The service elevators are not for the exclusive use of the Contractor and the Building's operation will have priority over the work of the Contractor.

1.7 SITE STORAGE/LOADING

- .1 Use storage space provided for that purpose and as shown on the drawings and according to requirements prescribed in section 01 14 00 - Work Restrictions.
- .2 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .3 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.8 OFFICES

- .1 Set up office in space provided for that purpose as shown on the drawings and as prescribed in section 01 14 00 - Work Restrictions.
- .2 Provide marked and fully stocked first-aid case in a readily available location.

1.9 SANITARY FACILITIES

- .1 Use of a specific sanitary facility on level A will be permitted, refer to drawings in Annex D.

1.10 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.

1.11 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Do not store new or salvaged material within construction facilities.

1.12 CONTAINERS

- .1 Contractor shall install a garbage container at the location provided for this purpose at loading dock. The garbage container can be placed at loading dock for 8 months as soon as Work begins (October 1st, 2018).
- .2 Refer to section 01 74 19 – Waste Management and Disposal.

1.13 PARKING HEIGHT CLEARANCE

- .1 Take note that the public parking maximum clearance height is 3.8 meters.
-

1.14 HEAT AND SMOKE DETECTOR

- .1 This building is protected by heat and smoke detectors relayed to the security station. All work performed in the sectors with a smoke detector, including housekeeping maintenance, must be authorized by a BGIS Representative, since the smoke detectors also detect dust, humidity, etc. More specifically, when work can affect the fire safety system, a request to bypass the fire safety systems must be submitted to the Departmental Representative. The Contractor will be held responsible for service outages detrimental to a client's operation if he forgets to deactivate the detectors before work activities.

1.15 SPRINKLER SYSTEM

- .1 This building is protected by a sprinkler system connected to the building's fire alarm panel. All work activities in proximity to these panels must be performed with great caution.

1.16 EMERGENCY EXITS

- .1 Emergency exits must remain accessible and clean at all times. Locating emergency stairs: Two emergency stairs per floor in the office tower, a third starting at the 5th floor upwards, and four more in the conference centre. The emergency stairs lead directly outside the building and are clearly identified by a backlit sign "Sortie - Exit".

1.17 FIRE ALARM – EVACUATION

- .1 In case of a fire alarm, the Contractor and his team must evacuate the premises like all other occupants, no exception. Team Lead for the Contractor must notify the Rescue Manager in charge upon exit of the building that all team members have evacuated and he must reach the collection point for the area in which he was working. The Contractor is responsible to train his team on the building's emergency procedures at the beginning of his mandate and at the beginning of every shift, if necessary.

1.18 COLLECTION POINTS

- .1 For the occupants and Contractors/workers: Victoria Square Park.

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 09 21 99 – Partition for minor works
- .2 Section 09 91 99 – Painting for minor works
- .3 Annex A – HSE Danger log for the ICAO Headquarters.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-O121-M1978 (R2003), Douglas Fir Plywood.

1.3 INSTALLATION AND REMOVAL

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

1.4 DUST TIGHT SCREENS / TEMPORARY PARTITIONS - GENERAL

- .1 Provide dust tight screens or partitions in compliance with prescription in article 1.5 to localize dust generating activities, and for protection of workers, finished areas of Work and public.
 - .2 Maintain and relocate protection until such work is complete.
 - .3 Build and maintain temporary partitions according to following prescriptions:
 - .1 Erect temporary partitions outside of office hours and in compliance with requirements of Building Specific Health, Safety and Environment Plan.
 - .2 All temporary partitions will be self-supporting, screwing or fastening will not be permitted on existing finishes. Floor supports must be secured safely and not be an obstacle to building occupants' circulation.
 - .3 Partitions and temporary facilities must be installed in order to prevent building occupants and the public from moving them.
 - .4 A duplicate of the keys for temporary partition doors locks will be provided to Departmental Representative.
 - .5 Unless otherwise indicated, install temporary partitions at 1200 mm in front of landing doors and at 300 mm on each side of them, allowing access to call buttons for elevators that are not subject to the Work in the current phase, making certain that the corridor width does not get reduced to less than 1100 mm.
 - .6 Coordinate in advance with Departmental Representative the installation of any temporary partition.
 - .7 All temporary partitions will be fitted with required signage as prescribed in the Building Specific Health, Safety and Environment Plan.
 - .8 Transportation of materials will be done outside normal office hours, as prescribed in the Building Specific Health, Safety and Environment Plan.
 - .9 Do not screw or anchor temporary partitions in the existing finish materials that are to remain.
-

1.5 TEMPORARY PARTITIONS – SPECIFIC REQUIREMENTS

- .1 Elevators 1 to 6 (one at a time according to phasing)
 - .1 On each served level, for the whole duration of the work for the current phase, erect sturdy temporary partitions from slab to ceiling, with one hour fire rating, a door with a 45 minutes fire protection rating and a lock kept locked at all times.
 - .2 Maintain at all times circulation and access to the public to elevators that are not part of the current phase of work.
 - .3 At mechanical room levels, install a 900 mm high security barricade indicating danger. Anticipate that the Departmental Representative might need access to these levels in order to assure proper building operations (rate of once per month).
 - .4 Install temporary partitions in a manner that a free available width of 1100 mmm in corridors is provided for.
- .2 Elevators 7 and 8 (one at a time according to phasing)
 - .1 At every serviced level, for the whole duration of the current phase, erect sturdy temporary partitions from slab to ceiling, with one hour fire rating, a door with a 45 minutes fire protection rating and a lock kept locked at all times.
 - .2 At mechanical room levels, install a 900 mm high security barricade indicating danger. Anticipate that the Departmental Representative might need access to these levels in order to assure proper building operations (rate of once per month).
 - .3 Install temporary partitions in a manner that a free available width of 1100 mmm in corridors is provided for.
- .3 Elevators 9 and 10 (one at a time according to phasing)
 - .1 Level 01 and last served level: for the whole duration of the current phase, erect sturdy temporary partitions from slab to ceiling, with one hour fire rating, a door with a 45 minutes fire protection rating and a lock kept locked at all times.
 - .2 Other levels: for the duration of the intervention, at each concerned level, erect a 1830 mm high sturdy temporary partitions.
 - .3 Aux niveaux salles de mécanique : mettre en place une barricade de sécurité de 900 mm de haut pour signaler le danger. Prévoir que le Représentant du Ministère pourra avoir besoin d'accéder à ces niveaux pour assurer les opérations de l'immeuble (fréquence d'environ 1 fois par mois).
 - .4 Installer les cloisons temporaires de manière à laisser une largeur libre de 1100 mm dans les corridors.
- .4 Temporary partitions with one hour fire rating to following construction: 92 mm metal studs with high density stone wool and type X gypsum board panel 16 mm on each side. Tape joints on interior face and tape joints and paint in grey exterior face.
- .5 Provide for temporary doors with a 45 minutes fire protection rating and paint in grey all temporary doors and frames.
- .6 Refer to sections 08 11 00 - Metal doors and frames, 09 21 99 - Partitions for minor works, and 09 91 99 - Painting for minor works.

PART 2 - PRODUCTS

2.1 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule three (3) days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

2.2 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

PART 3– EXECUTION

3.1 NOT USED

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards. List of standards reference writing organizations is contained in pertinent sections.
- .2 Conform to these reference standards, as specifically requested in specifications and in all applicable versions.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.3 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
-

- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet and panel materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Ministry Representative.
- .9 Touch-up damaged factory finished surfaces to Ministry Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Ministry Representative. Unload, handle and store such products.

1.7 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
 - .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that he will establish course of action.
 - .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.
-

1.8 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Ministry Representative, whose decision is final.

1.9 CO-ORDINATION

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

1.10 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Ministry Representative.

1.11 REMEDIAL WORK

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

1.12 LOCATION OF FIXTURES

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

1.13 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
 - .2 Prevent electrolytic action between dissimilar metals and materials.
 - .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
 - .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
 - .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
-

- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.14 FASTENINGS - EQUIPMENT

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

1.15 PROTECTION OF WORK IN PROGRESS

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

1.16 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed in Building Orientation Guide with minimum of disturbance to Work, and/or building occupants.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

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 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings. The Contractor must coordinate at least 48 hours in advance a visit to verify the installations with the building's maintenance personnel during the day, between 6:00 am and 6:00 pm, Monday to Friday.
- .2 Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.

1.4 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain approval for actual location.

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 Annex A – HSE Danger log for the ICAO Headquarters.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.3 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.4 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.5 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
 - .2 Fit several parts together, to integrate with other Work.
-

- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 - Firestopping, full thickness of the construction element.
- .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

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 Annex A – HSE Danger log for the ICAO Headquarters.

1.2 REFERENCES

- .1 The Workplace Hazardous Materials Information System (WHMIS) / Health Canada.
 - .1 Material Safety Data Sheet (MSDS).

1.3 PROJECT CLEANLINES

- .1 Proceed to daily cleaning of public spaces that have been soiled consecutively to the execution of work.
- .2 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .3 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .4 Make necessary arrangements and obtain required permits from the relevant authorities in order to eliminate debris and waste materials.
 - .1 For recycling refer to section 01 74 19 – Waste Management and Disposal.
 - .2 Eliminate debris and waste materials outside of work site.
- .5 On site, provide for only one container for debris and waste material evacuation. The container shall be installed at the delivery dock, as prescribed in Section 01 52 00 – Construction Facilities.
- .6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.4 CLEANING WORK

- .1 The Contractor shall conform to the Workplace Hazardous Materials Information System (WHMIS) legislation and assure that the Material Safety Data Sheet of all dangerous products that he uses be permanently kept in the building where such products are stored, that they are kept up to date when he buys his products and that each container be properly labelled. The Contractor shall demonstrate to the Departmental Representative, to his satisfaction, that all employees have completed with satisfaction the WHMIS training.
-

- .2 The Contractor must ensure that non compatible chemical products be stored in a way that they don't get in contact with one another.
- .3 Ensure that workers wear appropriate gloves when using cleaning products.
- .4 Ensure protection to public from slipping on wet floors when they are being washed.

1.5 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and ceilings, elevator cab, floors as well as any other material and equipment incorporated in the work.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .13 Remove dirt and other disfiguration from exterior surfaces.
- .14 Broom clean and wash hard surfaces affected by the work.
- .15 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment affected by the work.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse/recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
-

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 RESIDUAL MATERIAL MANAGEMENT GOALS

- .1 PWGSC's Residual Material Management Goal is to reduce total construction/renovation/demolition (CRD) residual materials sent to landfill sites by 75%. Provide the Departmental Representative with documentation certifying that CRD residual material management has been extensively practiced (recycling, reuse of recyclable and reusable materials).

1.2 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by the Departmental Representative.
- .2 Unless specified otherwise, materials for removal become the Contractor's property.
- .3 Stockpile waste in a container as indicated in section 01 52 00 – Construction Facilities.
- .4 Separate waste from salvaged items. Transport and deliver waste to licensed disposal facility specialized in waste sorting.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify the Departmental Representative.
- .7 Protect surface drainage, mechanical and electrical facilities from damage and blockage.
- .8 Separate and store materials produced during dismantling of structures in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
 - .1 On-site source separation is recommended.
 - .2 Provide waybills for sorted materials.

1.3 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Remove materials on-site as Work progresses.
- .3 **For the entire length of Work (8 months target) transport containers to waste sorting facility. Plan for a maximum of 5 transport trips. Provide a report for each trip.**
- .4 The container will be at the Departmental Representative's disposition and may use it for other projects.

1.4 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference with, or disturbance to, normal use of premises.
 - .2 Maintain security measures established by existing facility.
-

1.5 SCHEDULING

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

1.6 CLEANING

- .1 Separate at source residual materials to be reused or recycled and put them in the locations indicated.
- .2 Clean-up work area as work progresses.
- .3 Remove tools and residual and waste materials on completion of Work, and leave work area in a clean and orderly condition.

1.7 JOB SITE WASTE STATEMENT (JSWS)

- .1 Schedule A – Job Site Waste Statement (JSWS) for construction, renovation and demolition projects.

Materials	Rerouted actual weight (tons)		Destination and final use of rerouted materials	Total buried weight (tons)	TOTAL WEIGHT (tons)	Rerouted rate
	Reused	Recycled				
Masonry and pavement						
Walls and ceilings						
Metals						
Mechanics						
HVAC						
Plumbing						
Sanitary equipment						
Others						
Doors and windows						
Wood						
Woodwork and millwork						
Floor covering						
Electricity						
Wiring						
Lighting						
Others						
Roofing						
Specialties and miscellaneous items						
Cardboard						
Other packaging						
Mixed recycling						
General Waste						
Others						
TOTAL						

END OF SECTION

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

- .1 Not used

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Partial acceptance of phases and of Work Procedures:
 - .1 Contractor must present and submit the list of incorporated work at each phase and integrate it in the schedule of cost breakdown.
 - .2 Contractor's Inspection: Contractor must conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative's inspection.
 - .3 Departmental Representative's Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .4 Completion Tasks: submit written certificates in English and French that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Certificates required by Utility companies: submitted.
 - .5 Operation of systems: demonstrated to Departmental Representative.
 - .6 Commissioning of mechanical systems: completed in accordance with 01 91 13 - General Commissioning (Cx) Requirements and copies of final Commissioning Report submitted to Departmental Representative.
 - .7 Work: complete and ready for final inspection.
 - .5 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
 - .6 Declarations of Substantial Performances: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .7 Commencement of Lien and Warranty Periods: date of Departmental Representative's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
 - .8 Final Payment:
 - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .9 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 – Waste Management and Disposal.

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 00 00 – Additional General Conditions.

1.2 REFERENCES

- .1 Not used.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting two to three (2 to 3) weeks prior to partial substantial contract completion of each phase with contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review manufacturer's installation instructions and warranty requirements.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Four (4) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative four (3) final copies of operating and maintenance manuals **in English and French**.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.
- .5 Fill and supply form for: re-routed final waste for construction projects, renovation and demolition.

1.5 FORMAT

- .1 Organize data as instructional manual.
 - .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
 - .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
-

- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
 - .9 Site Directives.
 - .10 Minutes of meetings
 - .11 SST file.
 - .12 Commissioning reports;
 - .13 SIGE equipment list.

- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colors for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .2 Field changes of dimension and detail.
 - .3 Changes made by change orders.
 - .4 Details not on original Contract Drawings.
 - .5 References to related shop drawings and modifications.
 - .6 The referenced regulations on shop drawings and on related modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.9 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
 - .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
 - .3 Include installed color coded wiring diagrams.
 - .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
-

- .1 Include regulation, control, stopping, shut-down, and emergency instructions.
- .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed color coded piping diagrams.
- .12 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .13 Include test and balancing reports as specified in Section 01 45 00 - Quality Control and 01 91 13 - General Commissioning (Cx) Requirements.
- .14 Additional requirements: as specified in individual specification sections.

1.10 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and color and texture designations.
 - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.11 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to location as directed by Departmental Representative; place and store.
- .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to [site] [location as directed]; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

1.12 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.13 WARRANTIES AND BONDS

- .1 The 12 months warranty period will enter into force on the date stated for the partial substantial completion date of each group of elevators (group 6).
 - .2 For the extended warranty of work covered under section 14 00 00 and related work, refer to section 14 00 00.
 - .3 For maintenance service for all elevators, refer to sections 14 00 00 and 14 90 00.
 - .4 Develop warranty management plan to contain information relevant to Warranties.
 - .5 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative's approval.
 - .6 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
 - .7 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
 - .8 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
-

- .9 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within [ten] days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
 - .10 Leave date of beginning of time of warranty until Date of Substantial Performance is determined.
 - .11 Ten (10) months warranty inspections to be planned, measured from time of partial acceptance, to be made together with Departmental Representative.
 - .12 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include notably the elevators and freight elevator, the pumps, motors, transformers and commissioning services.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
 - .4 Contractor's plans for attendance at ten (10) months post-construction warranty inspections.
 - .5 Procedure and status of tagging of equipment covered by extended warranties.
 - .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
 - .13 Respond in timely manner to oral or written notification of required construction warranty repair work.
 - .14 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.
-

1.14 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

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 Not used

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Demonstrate operation and maintenance of equipment and systems to Departmental Representative (2) weeks prior to date of final inspection.
- .2 Departmental Representative: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
- .3 Preparation:
 - .1 Verify conditions for demonstration and instructions comply with requirements.
 - .2 Verify designated personnel are present.
 - .3 Ensure equipment has been inspected and put into operation in accordance with Section 14.
 - .4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements and equipment and systems are fully operational.
- .4 Demonstration and Instructions:
 - .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at [scheduled] [agreed upon] times, at the equipment location.
 - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .3 Review contents of manual in detail to explain aspects of operation and maintenance.
 - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.
- .5 Time Allocated for Instructions: ensure amount of time required for instruction of each item of equipment or system as follows:
Section 14 - Elevators: 14 hours of instruction spread over several formations

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit schedule of time and date for demonstration of each item of equipment and each system (2) weeks prior to designated dates, for Departmental Representative's approval.
 - .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
 - .4 Give time and date of each demonstration, with list of persons present.
 - .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.
-

1.4 QUALITY ASSURANCE

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Departmental Representative personnel.
 - .2 Provide written report that demonstration and instructions have been completed.

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 Not used

1.2 TRAINEES

- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Property Manager, 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.

1.3 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.

1.4 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.

1.5 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 Project Manager, Commissioning Manager and Property Manager 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.

1.6 SCHEDULING

- .1 Include in Commissioning Schedule time for training.
- .2 Training must be provided during the working hours of the three (3) working shifts of the Departmental Representative.
- .3 Training to be completed prior to acceptance of facility.
- .4 Extent of training: estimate length of training required for the equipment or system of elevators in Division 14 according to the following indications:
 - .1 3 general safety trainings of 2 hours each.
 - .2 1 in-depth training for SPAC-OACI of 2 hours
 - .3 2 trainings for the programming of 3 hours each

1.7 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.

1.8 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.

1.9 VIDEO-BASED TRAINING

- .1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval 3 months prior to commencement of scheduled training.
- .2 On-Site training videos:
 - .1 Videotape training sessions for use during future training.
 - .2 To be performed after systems are fully commissioned.
 - .3 Organize into several short modules to permit incorporation of changes.
- .3 Production methods to be professional quality.

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 Not used

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 BMM.
 - .3 Effectively train O&M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .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.
- .3 design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.
- .4 AFD managed projects the term Departmental Representative in Cx specifications to be interpreted as AFD Service Provider.
- .5 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 EMCS - Energy Monitoring and Control Systems.
 - .5 O&M - Operation and Maintenance.
 - .6 PI - Product Information.
 - .7 PV - Performance Verification.
 - .8 TAB - Testing, Adjusting and Balancing.

1.3 COMMISSIONING OVERVIEW

- .1 Section 01 91 13.13 - Commissioning (Cx) Plan.
 - .2 For Cx responsibilities refer to Section 01 91 13.13 - 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 facility 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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than 4 weeks after award of Contract:
 - .1 Name of Contractor's 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 01 91 13.16 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms for requirements and instructions for use.
- .2 Departmental Representative to review and approve Cx documentation.
- .3 Provide completed and approved Cx documentation to Departmental Representative.

1.9 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule in accordance with Section 01 32 16.19 - Construction Progress Schedules - Bar (GANTT) Chart.
- .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: Section 01 32 16.19 - Construction Progress Schedules - Bar (GANTT) Chart and as specified herein.
- .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. Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart. Departmental Representative 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 Departmental Representative, 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.
- .3 Contractor's 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 manufacturers 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 remove 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.

1.23 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.

1.24 EXTENT OF VERIFICATION

- .1 Laboratory areas:
 - .1 Provide manpower and instrumentation to verify up to 100 % of reported results.
-

- .2 Elsewhere:
 - .1 Provide manpower and instrumentation to verify up to 30 % of reported results, unless specified otherwise in other sections.
- .3 Number and location to be at discretion of Departmental Representative.
- .4 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
- .5 Review and repeat commissioning of systems if inconsistencies found in more than 20% of reported results.
- .6 Perform additional commissioning until results are acceptable to Departmental Representative.

1.25 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.

1.26 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.

1.27 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.

1.28 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.

1.29 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.

1.30 TRAINING

- .1 In accordance with Section 01 79 00 - Demonstration and training and 01 79 00.13 – Demonstration and training for building commissioning.

1.31 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

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

1.32 OCCUPANCY

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

1.33 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.

1.34 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.

1.35 DEPARTMENTAL REPRESENTATIVE 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 Not used

1.2 REFERENCES

- .1 Public Works and Government Services Canada (PWGSC)
 - .1 PWGSC - Commissioning Guidelines CP.4 -3rd edition-[03].
- .2 Underwriters' Laboratories of Canada (ULC)

1.3 GENERAL

- .1 Provide a fully functional facility:
 - .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 O&M personnel have been fully trained in aspects of installed systems.
 - .3 Optimized life cycle costs.
 - .4 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 Produces a complete functional system prior to issuance of Certificate of Occupancy.
 - .5 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 BMM - Building Management Manual.
 - .3 EMCS - Energy Monitoring and Control Systems.
 - .4 MSDS - Material Safety Data Sheets.
 - .5 PI - Product Information.
 - .6 PV - Performance Verification.
 - .7 TAB - Testing, Adjusting and Balancing.
 - .8 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 95% completed before added into Project Specifications.
- .2 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.
- .3 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 4 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 Project Manager will select Cx Team consisting of following members:
 - .1 PWGSC Design Quality Review Team: during construction, will conduct periodic site reviews to observe general progress.
 - .2 PWGSC Quality Assurance Commissioning Manager: 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, development of Cx documentation.
 - .5 Work closely with members of Cx Team.
 - .3 Departmental Representative is responsible for:
 - .1 Organizing Cx.
 - .2 Monitoring operations Cx activities.
 - .3 Witnessing, certifying accuracy of reported results.
 - .4 Witnessing and certifying TAB and other tests.
 - .5 Developing BMM.
 - .6 Ensuring implementation of final Cx Plan.
 - .7 Performing verification of performance of installed systems and equipment.
 - .8 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 Delivery of training and Cx documentation.
- .5 Assigning one person as point of contact with Consultant and PWGSC Cx Manager for administrative and coordination purposes.
- .5 Contractor's Cx agent implements specified Cx activities including:
 - .1 Demonstrations.
 - .2 Training.
 - .3 Testing.
 - .4 Preparation, submission of test reports.
- .6 Property Manager: 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 Specialist subcontractor: equipment and systems supplied and installed by specialist subcontractor.
- .4 Specialist Cx agency:
 - .1 Possessing specialist qualifications and installations providing environments essential to client's program but are outside scope or expertise of Cx specialists on this project.
- .5 Client: responsible for intrusion and access security systems.
- .6 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.
- .7 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 RISK ASSESSMENT

- .1 Not Used

1.9 EXTENT OF CX

- .1 Cx Structural and Architectural Systems:
 - .1 Architectural and structural:
 - .1 Vertical transportation systems:

- .1 Elevators 1 to 12.
- .2 Computerized central console
- .3 Control Console for Special Operations
- .4 Intercommunication system
- .5 Real-Mode elevator operation testing with fire alarm systems and emergency power.

1.10 DELIVERABLES RELATING TO O&M PERSPECTIVES

- .1 General requirements:
 - .1 Compile English and French 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.

1.11 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, subsystems, and integrated systems.
 - .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 Description of Cx of integrated systems and documentation.
 - .9 Tests performed by [Owner/User].
 - .10 Training Plans.
 - .11 Cx Reports.
 - .12 Prescribed activities during warranty period.
- .4 Departmental Representative to witness and certify tests and reports of results provided to Departmental Representative.
- .5 Departmental Representative to participate.

1.12 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

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

- .1 Pre-Start-Up inspections: by Consultant prior to permission to start up and rectification of deficiencies to Consultant's satisfaction.
- .2 Consultant to use approved check lists.
- .3 Consultant will monitor all 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 Consultant and does not form part of Cx specifications.
- .6 Consultant 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 Elevators 1 to 12.
 - .2 Computerized central console
 - .3 Control Console for Special Operations
 - .4 Intercommunication system

1.13 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.
- .3 Consultant to monitor all of these start-up activities.
 - .1 Rectify start-up deficiencies to satisfaction of Consultant.
- .4 Performance Verification (PV):
 - .1 Approved Cx Agent to perform.
 - .1 Repeat when necessary until results are acceptable to Consultant.
 - .2 Use procedures modified generic procedures to suit project requirements.
 - .3 Consultant to witness and certify reported results using approved PI and PV forms.
 - .4 Consultant to approve completed PV reports and provide to Departmental Representative.
 - .5 Consultant 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.

1.14 CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Perform Cx by specified Cx agency using procedures developed by Consultant and approved by Departmental Representative.
 - .2 Consultant to monitor Cx activities.
 - .3 Upon satisfactory completion, Cx agency performing tests to prepare Cx Report using approved PV forms.
 - .4 Consultant to 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.
-

1.15 CX OF INTEGRATED SYSTEMS AND RELATED DOCUMENTATION

- .1 Cx to be performed by specified Cx specialist, using procedures developed by Consultant and approved by Departmental Representative.
- .2 Tests to be witnessed by Consultant and documented on approved report forms.
- .3 Upon satisfactory completion, Cx specialist to prepare Cx Report, to be certified by Consultant and submitted to Departmental Representative for review.
- .4 Departmental Representative reserves right to verify percentage of reported results.
- .5 Integrated systems to include:
 - .1 Fire alarm systems.
 - .2 Emergency power system
- .6 Identification:
 - .1 In later stages of Cx, before hand-over and acceptance Consultant, Contractor, Project Manager, Property Manager and Cx Manager to co-operate to complete inventory data sheets and provide assistance to PWGSC in full implementation of MMS identification system of components, equipment, sub-systems, systems.

1.16 INSTALLATION CHECK LISTS (ICL)

- .1 Refer to Section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.17 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Refer to Section 01 91 13.16 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.18 PERFORMANCE VERIFICATION (PV) REPORT

- .1 Refer to Section 01 91 13.16 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.19 DELIVERABLES RELATING TO ADMINISTRATION OF CX

- .1 General:
 - .1 Because of risk assessment, complete Cx of occupancy, weather and seasonal-sensitive equipment and systems in these areas before building is occupied.

1.20 CX SCHEDULES

- .1 Prepare detailed [critical path] Cx Schedule and submit to Consultant for review and approval same time as project Construction Schedule. Include:
 - .1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, systems and integrated systems, including:
 - .1 Design criteria, design intents.
 - .2 Pre-TAB review: 28 days after contract award, and before construction starts.
 - .3 Cx procedures: 3 months after award of contract.
 - .4 Cx Report format: 3 months after contract award.
 - .5 Submission of list of instrumentation with relevant certificates: 21 days before start of Cx.
 - .6 Notification of intention to start TAB: 21 days before start of TAB.

- .7 TAB: after successful start-up, correction of deficiencies and verification of normal and safe operation.
- .8 Notification of intention to start Cx: 14 days before start of Cx.
- .9 Notification of intention to start Cx of integrated systems: after Cx of related systems is completed [14]days before start of integrated system Cx.
- .10 Identification of deferred Cx.
- .11 Implementation of training plans.
- .12 Cx reports: immediately upon successful completion of Cx.
- .2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over to [Property Manager].
- .2 After approval, incorporate Cx Schedule into Construction Schedule.
- .3 Consultant, Contractor, Contractor's Cx agent, and Departmental Representative will monitor progress of Cx against this schedule.

1.21 CX REPORTS

- .1 Submit reports of tests, witnessed and certified by 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.

1.22 PRELIMINARY AND FINAL CX

- .1 Not Used.

1.23 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 Live mode tests of elevators on the fire alarm system.
 - .2 Live mode tests of elevators on emergency power system.

1.24 TESTS TO BE PERFORMED BY DEPARTMENTAL REPRESENTATIVE/USER

- .1 None is anticipated on this project.

1.25 TRAINING PLANS

- .1 Refer to Section 01 79 00.13 - Demonstration and Training for Building Commissioning.

1.26 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.

1.27 PAYMENTS FOR CX

- .1 Not Used.
-

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 Not used

1.2 INSTALLATION/START-UP CHECK LISTS

- .1 Include the following data:
 - .1 Product manufacturer's installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
- .2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists will be required for specific project conditions.
- .3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.
- .4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.
- .5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
- .2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative's approval.

1.4 PERFORMANCE VERIFICATION (PV) FORMS

- .1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
 - .2 PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.
 - .3 Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.
-

1.5 SAMPLES OF COMMISSIONING FORMS

- .1 Departmental Representative will develop and provide to Contractor required project-specific Commissioning forms in electronic format complete with specification data.
- .2 Revise items on Commissioning forms to suit project requirements.
- .3 Samples of Commissioning forms and a complete index of produced to date will be attached to this section.

1.6 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS

- .1 When additional forms are required, but are not available from Departmental Representative develop appropriate verification forms and submit to Departmental Representative for approval prior to use.
 - .1 Additional commissioning forms to be in same format as provided by Departmental Representative.

1.7 COMMISSIONING FORMS

- .1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.
 - .2 Strategy for Use:
 - .1 Departmental Representative provides Contractor project-specific Commissioning forms with Specification data included.
 - .2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
 - .3 Confirm operation as per design criteria and intent.
 - .4 Identify variances between design and operation and reasons for variances.
 - .5 Verify operation in specified normal and emergency modes and under specified load conditions.
 - .6 Record analytical and substantiating data.
 - .7 Verify reported results.
 - .8 Form to bear signatures of recording technician and reviewed and signed off by Departmental Representative
 - .9 Submit immediately after tests are performed.
 - .10 Reported results in true measured SI unit values.
 - .11 Provide Departmental Representative with originals of completed forms.
 - .12 Maintain copy on site during start-up, testing and commissioning period.
 - .13 Forms to be both hard copy and electronic format with typed written results in Building Management Manual in accordance with Section [01 92 00 - Facility operation].
-

1.8 TEST DATA FORM - ELEVATOR

PERFORMANCE VERIFICATION (PV)

Elevator no : _____

Date : _____

Test Description	Result
Nominal Speed	m/s
Full load speed	m/s
Speed governor	Type _____
- Tripping speed :	_____ m/s
- Overspeed switch :	_____ m/s
Car safeties overspeed test – nominal load	
- Tripping speed :	_____ m/s
- Stopping distance :	_____ mm
- Platform level	_____ mm/meter
Car buffer test at nominal loads & speed	
Counterweight buffer test	
Break test at nominal loads & speed – down direction	mm
Auxiliary break (rope gripper) – operation	
Safety switch	
Final terminal stopping devices (up & down)	
Pit stop switch	
Top of car stop switch	
Top of car inspection unit	
Top of car emergency exit switch	
Overspeed stop by 'Drive'	
Overspeed stop by PLC or CPU	
Overspeed stop by auxiliary PLC or CPU	
Electrical security circuit check	
Emergency light	
Emergency Recall Operation - Phase I	
Emergency In-Car Operation – Phase II	
Communication system	
Emergency power operation	
Currents measurement (AC currents at controller) :	
Ascending – no load	UP
Descending – no load	DOWN
Ascending – balanced loads	UP
Descending – balanced loads	DOWN
Ascending – nominal loads	UP
Descending – nominal loads	DOWN
Ascending start at nominal loads	UP
Descending start at nominal loads	DOWN

Note: Fill the table and check if the result is correct

Note : Table continued on next page

TEST DATA FORM – ELEVATOR (CONTINUED)

PERFORMANCE VERIFICATION (PV)

Elevator no : _____

Date : _____

Test Description	Result
Setting & Clearance:	
Operating Time – up	m/s
Operating Time – down	m/s
Door Open Time	sec
Door Close Time	sec
Door Dwell - Car Call	sec
Door Dwell – Hall Call	sec
Door Nudging Time	sec
Ambient Noise Level	dBa
Door Noise Level	dBa
Running Noise Level	dBa
Door Force (door closing pressure)	lbs
Leveling	mm
Pre-Opening	mm
Counterweight balancing	%
Load weight system setting	%
Top clearance	mm
Bottom clearance	mm
Top runby	mm
Bottom runby	mm

Note: Fill the table and check if the result is correct

Identification & signature :

Elevator – Name & Title

Compagny name

1.9 TEST DATA FORM - VARIABLE SPEED DRIVES (FACTORY TESTING)

PERFORMANCE VERIFICATION (PV)

Elevator no : _____

Date : _____

Factory test report must be submitted before commissioning of the device, showing the test results, the instruments used, followed by test procedures and conclusions. The test report must be dated and signed by authorized personnel; it should be clear, easy to read and understand.

Test Description	Result
Voltage wave form output;	
Recovery time transient voltage (50% and 100% load);	
Output voltage regulation;	
Performance testing 100% load;	
Balancing of output voltage;	
Control of output frequency;	
Overload capacity;	
Operation of safety devices and controls;	
Compensation circuit line loss:	
Harmonic ratio (THD);	
Balancing of input voltage;	
Each safety device;	
Other tests as required;	

Note: Fill the table and check if the result is correct

Identification & signature :

Elevator – Name & Title

Compagny name

1.10 TEST DATA FORM - COMPUTERIZED CENTRAL CONSOLE

PERFORMANCE VERIFICATION (PV)

Console no : _____

Date : _____

Test Description	Result
Check the functionality of all features	
Check the following features:	
A menu for the selection of displays and functions	
Display elevators per group, including the floors served by each group of elevators, on separate display	
Indicate car position and moving direction	
Indicate hall calls recorded	
Indicate hall calls assignment to elevators	
Indicate car calls for each elevator	
Indicate elevator status (on or fault)	
Indicate door status	
Indicate out of service mode	
Indicate independent service	
Indicate emergency recall operation	
Indicate emergency power operation	
Indicate time and date, from the group controller in real time	
Check the functionality of the following operations (in a timely manner or time slot):	
Block hall and car calls by floor;	
Limit, using access code, car calls by floor;	
Show elevators per group;	
Place car calls;	
Parking at programmable floor;	
Put out of service one or more car;	

Note: Fill the table and check if the result is correct

Note : Table continued on next page

TEST DATA FORM – COMPUTERIZED CENTRAL CONSOLE (CONTINUED)

PERFORMANCE VERIFICATION (PV)

Console no : _____

Date : _____

Test Description	Result
Check the historical and statistical module.	
History viewing	
Printing of an event report, as well as graphics for one or more days, for one or more elevator.	
Analysis and printing of the breakdown history and operation status, for a time range defined by the user.	
Analysis and printing of elevator statistics and performance (individual or group) including wait times, number of calls etc, for a time range defined by the user.	
Display of the rate of return (downtime fault / uptime) for each elevator.	
Display breakdowns by category for selected elevator. Categories of failure should be defined with Departmental Representative.	
Exporting data and reports to Excel.	
Automatic archiving of breakdown history, operating status, operating statistics and elevator performance every month (+/- 30 days).	
Long-term archiving. Current data will be archived at the end of every month. No information should be erased permanently from the system. All types of reports shall be compatible and work with data on the long-term archiving.	
Provide a list of all alarm codes and operating status	
Printing of report automatically at the frequency set by the user	
Access to setup menus protected by an access code (Security/ Maintenance/ Supervisor)	

Note: Fill the table and check if the result is correct

Identification & signature :

Elevator – Name & Title

Compagny name

1.11 TEST DATA FORM – CONTROL CONSOLE FOR SPECIAL OPERATIONS

PERFORMANCE VERIFICATION (PV)

Console : _____

Date : _____

Test Description	Result
Check the functionality of the following items:	
Visual signal for Phase I Emergency Recall Operation.	
Key-operated switch for Phase I Emergency Recall Operation.	
Visual signal for Emergency Power Operation	
Key-operated switch allowing selecting the elevator powered by emergency power.	
Visual signal indicating that the car is at the designated floor with the doors open.	
Digital position indicator.	

Note: Fill the table and check if the result is correct

Identification & signature :

Elevator – Name & Title

Compagny name

1.12 TEST DATA FORM – INTERCOMMUNICATION SYSTEM

PERFORMANCE VERIFICATION (PV)

System : _____

Elevator no : _____

Date : _____

Test Description	Result
Check the functionality of the following items (master station):	
Selection for calls to each car;	
Selection for calls in the machine rooms;	
Indicate the origin of the calls;	
Indicate lines on hold;	
Indicate the status of the AC power;	
Indicate the status of the battery;	
Indicate the status of the telephone line;	
Make an alarm when the system is operating.	
Check the operation of the master station at CCS (wall)	
Check the operation of the master station at CCS (desk)	
Check the operation of the master station in machine room	
Check the operation in car	

Note: Fill the table and check if the result is correct

Identification & signature :

Elevator – Name & Title

Compagny name

1.13 TEST DATA FORM : FIRE ALARM / EMERGENCY POWER

PERFORMANCE VERIFICATION (PV)

Elevator no : _____

Date : _____

Test Description	Result
Connecting the fire alarm signals	
Connecting the emergency power signals	
Emergency Recall Operation – Phase I	
Recall activated by fire alarm (General alarm)	
Recall activated by fire alarm (Designated floor)	
Recall activated by fire alarm (Each floor)	
Recall activated by fire alarm (Hoistway)	
Recall activated by fire alarm (MR)	
Recall activated by key switch - Hall	
Recall activated by key switch - CCS	
Conformity of car maneuvers	
Conformity of of signage	
Closing doors at reduced speed	
Emergency In-Car Operation – Phase II	
Operation of the key switch	
Operation of the open & close buttons	
Other door reopening devices	
Conformity of car maneuvers	
Conformity of of signage	
Emergency power	
Operation of the telephone in the car	
Operation of the key switch	
Operation of the indicator lights	
Operation of the car	
Conformity of of signage	

Note: Check if the result is correct

Following the elevator modernization work performed in this building, we certify that the fire alarm and emergency power tests were carried out successfully.

Identification & signature :

Elevator – Name & Title

Compagny name

Fire alarm – Name & Title

Compagny name

Emergency power – Name & Title

Compagny name

1.14 COMMISSIONING PLAN (95%)

The commissioning plan outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx. The following elements must be included in the commissioning plan: List of Cx Team / Project schedule implementation Schedule / Commissioning Schedule / all other elements required in Section 01 91 13.13

Note : Shop drawings, product information forms, manufacturer's sheets, and operation sequence must be included in the Operations and Maintenance Manual that is required prior to the start of training.

EXTENT OF COMMISSIONING : EQUIPMENT NAME AND NUMBER	SHOP DRAWING / TECHNICAL FORM	PRODUCT INFORMATION FORM	MANUFACTURER'S INFORMATION SHEET	PERFORMANCE VERIFICATION FORM	TESTING PHASE DATE	START-UP DATE	DEFICIENCY START DATE	DEFICIENCY DATE OF CORRECTION	TRAINING DATE RECEIVED	WARRANTIES (END DATE)	EXTENDED WARRANTIES (END DATE)	MANUEL	REPLACEMENT PART IF REQUIRED DATE RECEIVED	VERIFIED BY ENGINEER	REFER TO ANNEXED COMMENTS
	Elevator 1														
	Elevator 2														
	Elevator 3														
	Elevator 4														
	Elevator 5														
	Elevator 6														
	Elevator 7														
	Elevator 8														
	Elevator 9														
	Elevator 10														
	Elevator 11														
	Elevator 12														
	Computerized central console														
Control Console for Special Operations															
Intercommunication system															
Real-Mode elevator operation testing with fire alarm systems and emergency power															

1.15 LANGUAGE

- .1 To suit the language profile of the awarded contract.

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 Not used
- .2 Acronyms:
 - .1 BMM - Building Management Manual.
 - .2 Cx - Commissioning.
 - .3 HVAC - Heating, Ventilation and Air Conditioning.
 - .4 PI - Product Information.
 - .5 PV - Performance Verification.
 - .6 TAB - Testing, Adjusting and Balancing.
 - .7 WHMIS - Workplace Hazardous Materials Information System.

1.2 GENERAL REQUIREMENTS

- .1 Standard letter size paper 216 mm x 279 mm.
- .2 Methodology used to facilitate updating.
- .3 Drawings, diagrams and schematics to be professionally developed.
- .4 Electronic copy of data to be in a format accepted and approved by Departmental Representative.

1.3 APPROVALS

- .1 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Departmental Representative.

1.4 GENERAL INFORMATION

- .1 Provide Departmental Representative the following for insertion into appropriate Part and Section of BMM:
 - .1 Complete list of names, addresses, telephone and fax numbers of contractor, sub-contractors that participated in delivery of project - as indicated in Section 1.2 of BMM.
 - .2 Summary of architectural, structural, fire protection, mechanical and electrical systems installed and commissioned - as indicated in Section 1.4 of BMM.
 - .1 Including sequence of operation as finalized after commissioning is complete as indicated in Section 2.0 of BMM.
 - .3 Description of building operation under conditions of heightened security and emergencies as indicated in Section 2.0 of BMM.
 - .4 System, equipment and components Maintenance Management System (MMS) identification - Section 2.1 of BMM..
 - .5 Information on operation and maintenance of architectural systems and equipment installed and commissioned - Section 2.0 of BMM.
 - .6 Information on operation and maintenance of fire protection and life safety systems and equipment installed and commissioned - Section 2.0 of BMM.
 - .7 Information on operation and maintenance of mechanical systems and equipment installed and commissioned - Section 2.0 of BMM.
 - .8 Operating and maintenance manual - Section 3.2 of BMM.
 - .9 Final commissioning plan as actually implemented.
 - .10 Completed commissioning checklists.
 - .11 Commissioning test procedures employed.
-

- .12 Completed Product Information (PI) and Performance Verification (PV) report forms, approved and accepted by Departmental Representative.
- .13 Commissioning reports.

1.5 CONTENTS OF OPERATING AND MAINTENANCE MANUAL

- .1 For detailed requirements refer to Section 01 78 00 - Closeout Submittals.
- .2 Departmental Representative to review and approve format and organization within 12 weeks of award of contract.
- .3 Include original manufactures brochures and written information on products and equipment installed on this project.
- .4 Record and organize for easy access and retrieval of information contained in BMM.
- .5 Include completed PI report forms, data and information from other sources as required.
- .6 Inventory directory relating to information on installed systems, equipment and components.
- .7 Approved project shop-drawings, product and maintenance data.
- .8 Manufacturer's data and recommendations relating: manufacturing process, installation, commissioning, start-up, O&M, shutdown and training materials.
- .9 Inventory and location of spare parts, special tools and maintenance materials.
- .10 Warranty information.
- .11 Inspection certificates with expiration dates, which require on-going re-certification inspections.
- .12 Maintenance program supporting information including:
 - .1 Recommended maintenance procedures and schedule.
 - .2 Information to removal and replacement of equipment including, required equipment, points of lift and means of entry and egress.

1.6 LIFE SAFETY COMPLIANCE (LSC) MANUAL

- .1 Samples of LSC Manual will be available from Departmental Representative.
- .2 Content of Manual:
 - .1 All possible Emergency situations modes including: presence of fire and smoke, power failure, lose of water or pressure, chemical spills and refrigerant release.
 - .2 Failure of elevators and escalators.
 - .3 HVAC emergencies and fuel supply failures.
 - .4 Intrusion and security breach.
 - .5 Emergency provisions for natural disasters, bomb threats and other disruptive situations.
 - .6 Dedicated emergency generators for high security projects, medical facilities and computer systems.
 - .7 Emergency control procedures for fire, power and major equipment failure.
 - .8 Emergency contacts and numbers.
 - .9 Manual to be readily available and comprehensible to non- technical readers.

1.7 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES

- .1 Provide Departmental Representative supporting documentation relating to installed equipment and system, including:
-

- .1 General:
 - .1 Finalized commissioning plan.
 - .2 WHMIS information manual.
 - .3 Approved "as-built" drawings and specifications.
 - .4 Procedures used during commissioning.
 - .5 Cross-Reference to specification sections.
- .2 Architectural and structural:
 - .1 Inspection certificates, construction permits.
 - .2 Roof anchor log books.
 - .3 PV reports.
- .3 Fire prevention, suppression and protection:
 - .1 Test reports.
 - .2 Smoke test reports.
 - .3 PV reports.
- .4 Mechanical:
 - .1 Installation permits, inspection certificates.
 - .2 Piping pressure test certificates.
 - .3 Ducting leakage test reports.
 - .4 TAB and PV reports.
 - .5 Charts of valves and steam traps.
 - .6 Copies of posted instructions.
- .5 Electrical:
 - .1 Installation permits, inspection certificates.
 - .2 TAB and PV reports.
 - .3 Electrical work log book.
 - .4 Charts and schedules.
 - .5 Locations of cables and components.
 - .6 Copies of posted instructions.
- .2 Assist Departmental Representative with preparation of BMM.

1.8 LANGUAGE

- .1 English and French Language to be in separate binders.

1.9 IDENTIFICATION OF FACILITY

- .1 When submitting information to Departmental Representative for incorporation into BMM, use following system for identification of documentation:
 - .1 Section 0 - General
 - .1 List of suppliers
 - .2 Description of inspections and maintenance
 - .3 Statement of Work Compliance Document (RBQ) and Test Forms
 - .4 Letters of Guarantee
 - .5 Key Training
 - .2 Section 1 - Controllers
 - .1 Product Description
 - .2 User's Manual
 - .3 Electrical plans
 - .4 Adjustment - drive / control parameters
 - .5 Other
 - .3 Section 2 - Traction Machine
 - .1 Traction machine equipment
 - .2 Measurement of cables
 - .3 Other

- .4 Section 3 - Hydraulic Machine
 - .1 Hydraulic equipment
 - .2 Other
- .5 Section 4 - Door Equipment
 - .1 Door Operator
 - .2 Equipment for landing and car doors
 - .3 Door Reopening Device
 - .4 Other
- .6 Section 5 - Hoistway Equipment
 - .1 Position reader
 - .2 Inspection Device
 - .3 Hoistway Switches
 - .4 Other
- .7 Section 6 - Accessories
 - .1 Car and floors fixtures
 - .2 Voice Announcer
 - .3 Car and CCS Communication System
 - .4 CCS Keyed Console
 - .5 Computer Console
 - .6 Load Measurement Device - Description / Adjustment
 - .7 Parts Catalog
 - .8 Complete list of spare parts.
 - .9 Other
- .8 Section 7 - Plans " As Built "
- .9 Section 8 - Miscellaneous

1.10 USE OF CURRENT TECHNOLOGY

- .1 Use current technology for production of documentation. Emphasis on ease of accessibility at all times, maintain in up-to-date state, compatibility with user's requirements.
- .2 Obtain Departmental Representative's approval before starting Work.

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 – Elevators 1 to 12.
- .2 Section 14 70 10 – Computerized Central Console.
- .3 Section 14 70 20 – Control Console for Special Operation.
- .4 Section 14 70 30 – Intercommunication System.
- .5 Annex A – HSE Danger log for the ICAO Headquarters.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.
- .2 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Assessment Act (CEAA), 2012
 - .2 Canadian Environmental Protection Act (CEPA), 2012
 - .1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
 - .2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations
 - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34
 - .4 Motor Vehicle Safety Act (MVSA), 1995
 - .5 Hazardous Materials Information Review Act, 1985
- .3 National Fire Protection Association (NFPA)
 - .1 NFPA 241 - 96, Standard for Safeguarding Construction, Alteration, and Demolition Operations
- .4 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015 (NBC).
 - .2 National Fire Code of Canada 2015 (NFC).

1.3 DEFINITIONS

- .1 Demolition: rapid destruction of building following removal of hazardous materials.
 - .2 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCB's, CFC's, HCFC's poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly.
 - .3 Waste Management Coordinator (WMC): Contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
 - .4 Construction Waste Management Plan (CWM Plan): Written plan addressing opportunities for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19 - Waste Management and Disposal.
-

- .5 Construction Waste Management Report (CWM Report): Written report identifying actual materials that formed CWM Plan for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19 - Waste Management and Disposal

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures and 01 74 19 - Waste Management Disposal.
- .2 Submit demolition drawings:
 - .1 Submit for review and approval by Departmental Representative shoring and underpinning drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, showing proposed method.
- .3 Before commencing work on site, submit detailed plan for waste reduction in accordance with section 01 74 19 - Waste Management Disposal where the following information is included:
 - .1 Nature and anticipated quantities of material to recuperated, to be reused, to be recycled and to be landfilled, indicated in percentage.
 - .2 Schedule of selective demolition work.
 - .3 Anticipated frequency of waste pick-up.
 - .4 Name and addresses of trucking companies for sorting and waste disposal.

1.5 QUALITY ASSURANCE

- .1 Standards: Comply with ANSI A10.6 and NFPA 241.

1.6 EXISTING CONDITIONS

- .1 Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work. If hazardous material is discovered stop Work immediately and advise the Departmental Representative.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- .1 Not used.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Survey existing conditions and correlate with requirements indicated to determine extent of demolition required.
 - .2 Review Project Record Documents of existing construction provided by the Departmental Representative.
 - .3 The Departmental Representative does not guaranty that existing conditions are the same as those indicated in Project Record Documents.
 - .4 Inventory and record the condition of items being removed and salvaged.
-

- .5 When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element.
- .6 Promptly submit a written report to Consultant.
- .7 Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during demolition operations.
- .8 Verify that hazardous materials have been remediated before proceeding with demolition operations.

3.2 PREPARATION

- .1 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring required.
 - .2 Keep noise, dust, and inconvenience to occupants to minimum, in accordance to the HSE Danger Log for the ICAO Headquarters in Annex A.
 - .3 Protect building systems, services and equipment.
 - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
 - .5 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements and to the HSE Danger Log for the ICAO Headquarters in Annex A.
- .2 Demolition/Removal:
 - .1 Demolish parts of structures as indicated.
 - .2 Remove parts of existing building to permit new construction.
 - .3 Trim edges of partially demolished building elements to tolerances as defined by Departmental Representative to suit future use.

3.3 SITE RESTORATION & REPAIRS

- .1 Provide a smooth transition between adjacent existing grades and new grades.
- .2 General: Promptly repair damage to adjacent construction caused by demolition operations.
- .3 Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- .4 Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
-

- .3 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 REFERENCE STANDARDS

- .1 Canadian Environmental Protection Act, 1999 (CEPA 1999)
 - .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
- .2 Department of Justice Canada (Jus)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDG Act) 1992, (c. 34).
 - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).
- .3 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition], Paints and Coatings.
 - .2 GS-36-00, Commercial Adhesives.
- .4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 National Research Council Canada (NRC)
 - .1 National Fire Code of Canada 2015 (NFC).
- .6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesive and Sealant Applications.

1.3 DEFINITIONS

- .1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
- .2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into environment.
- .3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements to Departmental Representative for each hazardous material required prior to bringing hazardous material on site.
-

- .3 Submit hazardous materials management plan to Departmental Representative that identifies hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.
- .4 Hazardous waste classification: identify waste codes applicable to each hazardous waste material based on applicable federal and provincial acts, regulations, and guidelines. Waste profiles, analyses, and classification submitted to contract offices for review and approval.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
 - .1 When exporting hazardous waste to another country, ensure compliance with Export and Import of Hazardous Waste and Hazardous Recyclable Materials Regulations.
- .4 Storage and Handling Requirements:
 - .1 Co-ordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
 - .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
 - .3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada (NFC) requirements.
 - .4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
 - .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
 - .2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.
 - .5 Transfer of flammable and combustible liquids is prohibited within buildings.
 - .6 Transfer flammable and combustible liquids away from open flames or heat-producing devices.
 - .7 Solvents or cleaning agents: non-flammable or have flash point above 38 degrees C.
 - .8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
 - .9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.
 - .10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.
 - .6 Store hazardous materials and wastes in secure storage area with controlled access.
 - .7 Maintain clear egress from storage area.

- .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
 - .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
 - .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
 - .11 When hazardous waste is generated on site:
 - .1 Co-ordinate transportation and disposal with Departmental Representative.
 - .2 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
 - .3 Use licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.
 - .5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
 - .6 Only trained personnel handle, offer for transport, or transport dangerous goods.
 - .7 Provide photocopy of shipping documents and waste manifests to Departmental Representative.
 - .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide photocopy of completed manifest to Departmental Representative.
 - .9 Report discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.
 - .12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .13 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan and Waste Reduction Workplan in accordance with Section 01 74 19 - Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Description:
 - .1 Bring on site only quantities hazardous material required to perform Work.
 - .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.
 - .3 Sustainability Characteristics:
 - .1 Adhesives and Sealants in accordance with Section 07 92 00 - Joint Sealants
 - .1 Adhesives and Sealants: maximum VOC limit to SCAQMD Rule 1168.
 - .2 Primers and Coatings in accordance with manufacturer's recommendations for surface conditions and Section 09 91 99 – Painting for Minor Works.
 - .1 Primer: maximum VOC limit 250 g/L to SCAQMD Rule 1113.
 - .2 Coatings: maximum VOC limit to SCAQMD Rule 1113.

- .4 Spill Response Materials: provide spill response materials which can be used for absorbing/shoveling and containing hazardous materials.
- .5 Provide personal protective equipment.

PART 3 - EXECUTION

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
 - .2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.
 - .3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
 - .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
 - .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
 - .6 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
 - .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
 - .8 As applicable, identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
 - .1 Hazardous wastes recycled in manner constituting disposal.
 - .2 Hazardous waste burned for energy recovery.
 - .3 Lead-acid battery recycling.
 - .4 Hazardous wastes with economically recoverable precious metals.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 REFERENCE STANDARDS

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015 (NBC).
- .3 Underwriter's Laboratories of Canada (ULC)
 - .1 ULC-S115-1995, Fire Tests of Fire stop Systems.

1.3 DEFINITIONS

- .1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- .2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- .3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- .4 Tightly Fitted; (ref: NBC Part 3.1.9.1(1): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
 - .1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
 - .3 Shop Drawings:
 - .1 Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.
 - .2 Construction details should accurately reflect actual job conditions.
 - .4 Samples:
 - .1 Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.
-

- .5 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
 - .1 Test reports: in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.
 - .1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.5 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer: company specializing in fire stopping installations with 5 years documented experience approved by manufacturer.
- .2 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with Contractor's representative and Departmental Representative:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements.
 - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - .3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, and ULC markings.
- .2 Storage and Protection:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .3 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
 - .1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended and conforming to specified special requirements described in PART 3.
 - .2 Fire stop system rating: as indicated in drawings.
-

- .2 Service penetration assemblies: systems tested to CAN-ULC-S115.
- .3 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.
- .4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC and with drawings of Annex D.
- .5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
- .6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
- .7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
- .10 Sealants for vertical joints: non-sagging.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 PREPARATION

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.
 - .1 Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

- .1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
 - .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
 - .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
 - .4 Tool or trowel exposed surfaces to neat finish.
-

- .5 Remove excess compound promptly as work progresses and upon completion.
- .6 For all visible fire stopping mortar surfaces, repair and finish all visible surfaces (smooth surfaces), such as partitions, ready to receive paint colour.

3.4 SEQUENCES OF OPERATION

- .1 Proceed with installation only when submittals have been reviewed by Departmental Representative.
- .2 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.

3.5 FIELD QUALITY CONTROL

- .1 Inspections: notify Departmental Representative when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

3.6 CLEANING

- .1 Proceed in accordance with Section 01 74 00 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

3.7 SCHEDULE

- .1 Fire stop and smoke seal at:
 - .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls, in accordance with drawings of Annex D.
 - .2 Top of fire-resistance rated masonry and gypsum board partitions, in elevator shafts 1 to 6.
 - .3 Intersection of fire-resistance rated masonry and gypsum board partitions, in elevator shafts.
 - .4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls, in elevator shafts.
 - .5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs, in accordance with drawings of Annex D.
 - .6 Around mechanical and electrical assemblies penetrating fire separations, in accordance with drawings of Annex D.
 - .7 Rigid ducts: greater than 129 cm²: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Not used.

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM C 919-08, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
 - .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
 - .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .3 General Services Administration (GSA) - Federal Specifications (FS)
 - .1 FS-SS-S-200-E (2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Manufacturer's product to describe:
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
 - .3 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Samples:
 - .1 Submit 2 samples of each type of material and colour.
 - .2 Cured samples of exposed sealants for each colour where required to match adjacent material.

- .4 Manufacturer's Instructions:
 - .1 Submit instructions to include installation instructions for each product used.

1.4 CLOSEOUT SUBMITTALS

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

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect joint sealants from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan and Waste Reduction Workplan in accordance with Section 01 74 19 - Waste Management and Disposal.

1.6 SITE CONDITIONS

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

1.7 ENVIRONMENTAL REQUIREMENTS

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

- .2 Departmental Representative will arrange for ventilation system to be operated on maximum outdoor air and exhaust during installation of caulking and sealants. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.
- .3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Primer: in accordance with sealant manufacturer's written recommendations.
- .2 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
- .3 Type n° 1:
 - .1 Multicomponent Chemical-curing Epoxide polyurethane terpolymer sealing compound, color to Architect's choice, to CAN/ONGC-19.24-M90.
- .4 Type n° 2:
 - .1 One-part, high-modulus, silicone sealant, with fungicide for sanitary installations, to CAN/ONGC-19.13-M87.
- .5 Type n° 3:
 - .1 Paintable quick drying, minimum shrinkage Acrylic latex sealant, Color to Architect's choice.
- .6 Type n° 4:
 - .1 Flexible acoustical synthetic rubber based sealant, to ASTM D-217 and to CAN/ONGC-19.21-M87.
- .7 Type n° 5:
 - .1 Fireproof sealant: refer to Section 07 84 00 Fire stopping.
- .8 Preformed compressible and non-compressible back-up materials:
 - .1 Polyethylene, urethane, neoprene or vinyl foam:
 - .1 Extruded closed cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .2 Neoprene or butyl rubber:
 - .1 Round solid rod, Shore A hardness 70.
 - .3 High density foam:
 - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m² density, or neoprene foam backer, size as recommended by manufacturer.

- .4 Bond breaker tape:
 - .1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

- .1 Perimeters of interior frames, as detailed and itemized: sealant type: 3.
- .2 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): sealant type: 1.
- .3 Joints at tops of non-load bearing masonry walls at the underside of poured concrete: sealant type: 1.
- .4 Perimeter of plumbing equipment, and in between the top of counters and different adjacent materials of built-in furniture: sealant type: 2.
- .5 Perimeter of all built-in furniture, sealant type: 2.
- .6 Exposed interior control joints in drywall: sealant type: 3.
- .7 Fireproof joints: refer to section 07 84 00 – Fire stopping, sealant type: 4.
- .8 Joints for all concealed acoustical sealant work: sealant type: 5.

2.4 JOINT CLEANING

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
- .2 Primer: in accordance with sealant manufacturer's written recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
 - .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
-

- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

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

3.5 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

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

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Clean adjacent surfaces immediately.
 - .3 Remove excess and droppings, using recommended cleaners as work progresses.
 - .4 Remove masking tape after initial set of sealant.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
-

- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

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

END OF SECTION

PART 1 – GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 56 00 – Temporary Barriers and Enclosures.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A 653/A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-03, Welded Steel Construction (Metal Arc Welding).
- .4 Canadian Steel Door Manufacturers' Association (CSDMA)
 - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
 - .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.
- .6 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-04, Architectural Coatings.
 - .2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.
- .7 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
 - .2 CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.3 SYSTEM DESCRIPTION

- .1 Design Requirements:
 - .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
 - .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.
 - .3 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 252 for ratings specified or indicated.
 - .4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, ASTM E 152 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, arrangement of hardware and fire rating and finishes.
 - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, fire rating and finishes.
 - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
 - .4 Submit test and engineering data, and installation instructions.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

PART 2 – PRODUCTS

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
 - .1 Walls of interior doors, bare metal thickness: 1.2mm
 - .2 Walls at hinge sides and reinforcement for locks: 10 GA.
 - .3 Walls opposed to hinges, bare metal thickness: 14 GA.
 - .4 Provide for 14 GA. reinforcing at provided or future door closer.
- .2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.
- .3 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.2 DOOR CORE MATERIALS

- .1 Honeycomb construction:
 - .1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m³ minimum sanded to required thickness.
 - .2 Fire rating (thermal protection rating): core composition to limit rise on unexposed side of door to 250 degrees Celcius for the duration indicated in the doors and frames schedule, Section 08 00 00T. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 ADHESIVES

- .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
 - .1 Adhesive: maximum VOC content 50 g/L to SCAQMD Rule 1168.
- .2 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 PRIMER

- .1 Touch-up prime CAN/CGSB-1.181.
 - .1 Maximum VOC limit 50 g/L to GC-03.

2.5 PAINT

- .1 Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.
 - .1 Maximum VOC emission level 50 g/L to GS-11 to SCAQMD Rule 1113.

2.6 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Horizontal closure profile: steel profile.
- .3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- .4 Metallic paste filler: to manufacturer's standard.
- .5 Fire labels: metal riveted.
- .6 Sealant:
 - .1 Maximum VOC limit 250 g/L to SCAQMD Rule 1168. Refer to Section 07 92 00 – Joint sealants.
- .7 Glazing: Not used.

2.7 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDMA specifications.
 - .2 Fabricate frames to profiles and maximum face sizes as indicated.
 - .3 Exterior frames: 1.6 mm welded type construction.
 - .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
 - .5 Protect mortised cutouts with steel guard boxes.
 - .6 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
 - .7 Manufacturer's nameplates on frames and screens are not permitted.
-

- .8 Conceal fastenings except where exposed fastenings are indicated.
- .9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

2.8 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on center maximum.

2.9 FRAMES: WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, center rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 DOOR FABRICATION GENERAL

- .1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
 - .2 Interior doors: honeycomb construction.
 - .3 Fabricate doors with longitudinal edges locked seam welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
 - .4 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E 330.
 - .5 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.
 - .6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
 - .7 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
 - .8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
-

- .9 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 or ASTM E or 152 NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.
- .10 Manufacturer's nameplates on doors are not permitted.

PART 3– EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Unless otherwise noted, install doors and frames to CSDMA Installation Guide.

3.3 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Unless otherwise noted, secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at center of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

3.4 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
 - .1 Hinge side: 1.0 mm.
 - .2 Latchside and head: 1.5 mm.
 - .3 Finished floor and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.

3.5 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 09 21 99 – Painting for Minor Works.

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM C 1396/C 1396M-09a, Standard Specification for Gypsum Wallboard.
 - .2 ASTM C 475/C 475M-02(2007), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .3 ASTM C 514-04(2009) e1, Standard Specification for Nails for the Application of Gypsum Board.
 - .4 ASTM C 645-09a, Standard Specification for Nonstructural Steel Framing Members.
 - .5 ASTM C 754-09a, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - .6 ASTM C 840-08, Standard Specification for Application and Finishing of Gypsum Board.
 - .7 ASTM C 954-10, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.122 in. (2.84 mm) in Thickness.
 - .8 ASTM C 1002-07, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .9 ASTM C 1047-10, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .10 ASTM C 1178/C 1178M-08, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
- .2 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .3 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-07, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum, framing, sealants and include product characteristics, performance criteria, physical size, finish and limitations.
 - .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Submit duplicate 300 x 300 mm size samples of gypsum board and 300 mm long samples of corner and casing beads.
-

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.
 - .3 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.
 - .4 Store and protect partition materials from nicks, scratches, and blemishes.
 - .5 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan and Waste Reduction Workplan in accordance with Section 01 74 19 - Waste Management and Disposal.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Performance / Design Criteria:
 - .1 Partition assembly to be non-combustible construction and fire resistance rated.
- .2 Non-structural Metal Framing:
 - .1 Non-load bearing channel stud framing: to ASTM C 645, 92 mm stud size, roll formed from 20 gauge thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
 - .2 Floor and ceiling tracks: to ASTM C 645, in widths to suit stud sizes, 32 mm flange height.
 - .3 Metal channel stiffener: 19 x 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .3 Gypsum Board:
 - .1 Standard board: to ASTM C 1396/C 1396M and Type X, 16 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges tapered.
 - .2 Metal furring runners, hangers, tie wires, inserts, and anchors: to BNQ 3349-80.
 - .3 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
 - .4 Steel drill tapping screws: to ASTM C 514.
 - .5 Casing beads, corner beads, control joints and edge trim: to ASTM C 1047, in galvanized metal, 0.5 mm base thickness, perforated flanges, one piece length per location.

2.2 ACCESSORIES

- .1 Insulation for partitions with a fire resistance rating: High density rockwool.
-

- .2 Sealants: in accordance with Section 07 92 00 - Joint Sealants to ASTM C 475.
 - .1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.
- .3 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 ERECTION OF FRAMING

- .1 Install steel framing members to receive screw-attached gypsum board in accordance with ASTM C 754 except where specified otherwise.
 - .2 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum. For temporary self-supporting partitions, do not anchor elements on floor or on ceiling.
 - .3 Place studs vertically at 400 mm on centre and maximum of 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
 - .4 Erect metal studding to tolerance of 1:1000.
 - .5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
 - .6 Include two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
 - .7 Install heavy gauge single jamb studs at openings.
 - .8 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
 - .9 Include 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
 - .10 Install steel studs or furring channel between studs for attaching electrical and other boxes.
 - .11 Extend partitions to ceiling height except where indicated.
-

- .12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.
- .13 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .14 Install insulating strip under studs and tracks around perimeter of sound control partitions.

3.3 ERECTION OF GYPSUM BOARD AND ACCESSORIES

- .1 Do application and finishing of gypsum board in accordance with ASTM C 840 except where specified otherwise.
- .2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C 840 except where specified otherwise.
- .3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .4 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, and grilles.
- .5 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .6 Furring for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .7 Furring above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .8 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840, except where specified otherwise.
- .9 Install acoustical insulation and sealant in sound rated partitions to correspond with tested assembly.
- .10 Install gypsum boards in direction that will minimize number of end-butt joints. Stagger end joints 250 mm minimum.
- .11 Shelf: 19mm plywood, laminate colour white matte, with PVC edging, PVC colour to match laminate, (see detail 6 on page A10).

3.4 APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply layer or layers of gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.

3.5 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.
-

- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .6 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .7 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .8 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

3.7 PROTECTION

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

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 09 21 99 – Partitions for Minor Works.

1.2 REFERENCE STANDARDS

- .1 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.
 - .2 Maintenance Repainting Manual - current edition.
- .4 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015 (NBC).
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Submit duplicate 200 x 300 mm sample panels of each paint and clear coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
 - .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
 - .3 Storage and Handling Requirements:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store painting materials and supplies away from heat generating devices.
-

- .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .4 Fire Safety Requirements:
 - .1 Supply 1 9 kg Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada (NFC) requirements.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan and Waste Reduction Workplan in accordance with Section 01 74 19 - Waste Management and Disposal.

1.5 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
 - .2 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
 - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .3 Additional application requirements:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Apply paint in occupied facilities in accordance with Section 01 14 00 – Work Restrictions. Schedule operations to approval of Departmental Representative.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Supply paint materials for paint systems from single manufacturer.
 - .2 Conform to latest MPI requirements for painting work including preparation and priming.
 - .3 Materials in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual "Approved Product" listing.
 - .1 Use MPI listed materials having E3 rating where indoor air quality requirements exist.
 - .2 Primer: VOC limit 100 g/L maximum to GS-11 and SCAQMD Rule 1113.
 - .3 Paint: VOC limit 100 g/L maximum to GS-11 and SCAQMD Rule 1113.
 - .4 Colours:
 - .1 Submit proposed Colour Schedule to Departmental Representative review.
 - .2 Base colour schedule on selection of 2 base colours.
-

- .5 Mixing and tinting:
- .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations. Obtain written approval from Departmental Representative for tinting of painting materials.
 - .2 Use and add thinner in accordance with paint manufacturer's recommendations.
 - .1 Do not use kerosene or similar organic solvents to thin water-based paints.
 - .3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.
 - .4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.
- .6 Gloss/sheen ratings:
- .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

Gloss level-category	Gloss @60 degrees	Sheen @85 degrees
Gloss level 1 – Matte finish	Max. 5	Max. 10
Gloss level 2 – Velvet	Max. 10	10 to 35
Gloss level 3 – Eggshell	10 to 25	10 to 35
Gloss level 4 – Satin	20 to 35	Min. 35
Gloss level 5 – Semi-gloss	35 to 70	
Gloss level 6 – Gloss	70 to 85	
Gloss level 7 – High gloss	More than 85	
 - .2 Gloss level ratings of painted surfaces as indicated and as noted on Finish Schedule.
- .7 Interior painting:
- .1 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).
 - .1 INT 9.2A – Latex, gloss level finish as indicated (over latex sealer). Provide one (1) coat of primer and a minimum of two (2) coats finish, up to full color saturation.
 - .2 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, etc.
 - .1 INT 9.2A – Latex, gloss level finish 3 (over latex sealer). Provide one (1) coat of primer and a minimum of two (2) coats finish, up to full color saturation.
- .8 Interior re-painting:
- .1 Plaster and Gypsum Board: gypsum wallboard, drywall, "sheet rock" type material, etc.
 - .1 RIN 9.2A – Latex, gloss level finish 3 (over latex sealer). Provide one (1) coat of primer and a minimum of two (2) coats finish, up to full color saturation.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
- .2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual and MPI - Maintenance Repainting Manual except where specified otherwise.

3.2 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

3.3 PREPARATION

- .1 Protection of in-place conditions:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
 - .4 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.
 - .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
 - .6 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
 - .3 Tint filler to match stains for stained woodwork.
 - .7 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
 - .8 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.
 - .9 Touch up of shop primers with primer as specified.

3.4 APPLICATION

- .1 Paint only after prepared surfaces have been accepted by Departmental Representative.
 - .2 Use method of application approved by Departmental Representative.
 - .1 Conform to manufacturer's application recommendations.
 - .3 Apply coats of paint in continuous film of uniform thickness.
 - .1 Repaint thin spots or bare areas before next coat of paint is applied.
 - .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
-

- .5 Sand and dust between coats to remove visible defects.
- .6 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .7 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .8 Finish closets and alcoves as specified for adjoining rooms.
- .9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .10 Mechanical/Electrical Equipment:
 - .1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.
 - .2 Do not paint over nameplates.
 - .3 Keep sprinkler heads free of paint.
 - .4 Paint fire protection piping red.
 - .5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
 - .6 Paint natural gas piping yellow.
 - .7 Paint both sides and edges of backboards for telephone and electrical equipment before installation.
 - .1 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .4 Place paint and primer defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Contents of Division 14
 - .1 Section 14 00 00 – Additional General Conditions
 - .2 Section 14 20 06 – Elevators 1 to 12
 - .3 Section 14 70 10 – Computerized central console
 - .4 Section 14 70 20 – Control Console for Special Operations
 - .5 Section 14 70 30 – Intercommunication system
 - .6 Section 14 90 00 – Elevator & freight elevator maintenance
- .2 Related sections
 - .1 Section 01 11 01 – Summary of work
 - .2 Section 01 14 00 - Work restrictions.
 - .3 Section 01 31 19 - Project meetings.
 - .4 Section 01 32 16.19 - Construction Progress Schedules - Bar (GANTT) Charts.
 - .5 Section 01 33 00 - Submittal Procedures.
 - .6 Section 01 35 29.06 - Health and Safety Requirements.
 - .7 Section 01 41 00 – Regulatory requirements
 - .8 Section 01 45 00 - Quality Control.
 - .9 Section 01 51 00 – Temporary utilities.
 - .10 Section 01 52 00 – Construction facilities.
 - .11 Section 01 56 00 – Temporary barriers and enclosures.
 - .12 Section 01 61 00 - Common Product Requirements.
 - .13 Section 01 71 00 - Examination and preparation.
 - .14 Section 01 73 00 – Execution.
 - .15 Section 01 74 00 – Cleaning.
 - .16 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
 - .17 Section 01 77 00 - Closeout procedures.
 - .18 Section 01 78 00 - Closeout Submittals.
 - .19 Section 01 79 00 – Demonstration and training
 - .20 Section 01 79 00.13 – Demonstration and training for building commissioning
 - .21 Section 01 91 13 - General Commissioning requirements.
 - .22 Section 01 91 13.13 – Commissioning Plan
 - .23 Section 01 91 13.16 – Commissioning Forms.
 - .24 Section 01 92 00 – Facility operation

1.2 REFERENCES

- .1 American National Standards Institute (ANSI).
 - .1 ANSI/NEMA MG 1-2003, Motors and Generators.
 - .2 Canadian Standards Association (CSA International).
 - .1 ASTM A17.1-2010/CSA B44-2010, Safety Code for Elevators.
 - .2 CAN/CSA-B651-12, Barrier-Free Design.
 - .3 CAN/CSA-B355-09
 - .4 CAN/CSA C22.10, Quebec Electrical Code
 - .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
 - .4 National Building Code (NBC).
 - .1 National Building Code of Canada 2015.
-

1.3 PERFORMANCE REQUIREMENTS

- .1 The Contractor shall consider that the specifications are performance specifications. It includes among others the performance to be achieved, constraints and criteria to be followed, to observe the spatial requirements and quality standards that must be met.
- .2 The Contractor shall take into account in its tender that the plans and specifications represent performance to be achieved, and if some visible or hidden works not shown on the plans and / or described in the specifications are necessary for the successful completion of the work, he will be required to execute them without additional cost to the Departmental Representative.
- .3 In all cases where the singular is used in the specifications, it is understood that the same applies to the plural reference when necessary to adequately complete the installation
- .4 In all cases where the term <supply> is used, it is understood that this also means the complete installation by the Contractor.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit manufacturer's printed product literature, specifications and data sheet.
 - .1 Submit WHMIS MSDS in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Shop Drawings:
 - .1 Submit shop drawings to indicate project layout, including details and the following information:
 - .1 Size and location of machine and controller.
 - .2 Not used Size and location of car, hoisting beam, guide rails, buffers stands and other components in hoistway.
 - .3 Not used Rail bracket spacing and maximum loads on guide rails.
 - .4 Not used Reactions at points of support.
 - .5 Not used Weights of principal components.
 - .6 Not used Top and bottom clearance and over travel of car.
 - .7 Not used Location of circuit breaker, switchboard panel or disconnect switch, light switch and feeder extension points in machine room.
 - .8 Not used Location in machine room for connection of travelling cables for car light and telephone.
 - .9 Not used Location and size of access doors.
 - .10 Not used Loads on hoisting beams.
 - .11 Not used Expected heat generation of equipment in machine room.
 - .12 Shop drawings submitted stamp by qualified professional engineer registered in Province of Quebec.
 - .13 Include on general arrangement drawings:
 - .1 Complete project references;
 - .2 All Code requirements;
 - .3 Agreement and dimensions of equipments in machine room;
 - .4 Not used Agreement and dimensions of hoistway equipment (plan and elevation view);
 - .5 Not used Type, size, location of hoistway entrances showing details of fastening to hoistway structure.
 - .6 Not used Cab (plan and elevation view). The drawings must include all of the cab finish;
 - .7 Signalling equipment, including cab and floor call buttons, position indicator, direction indicators and any other apparent devices;

- .8 Not used Landing doors equipments including frames, sills, panels and suspension systems;
 - .9 Not used Technical data and models of the main components which among other motor, machine, support beams, electric power, the weight of the car and counterweight, guide rails, roller guides and all loads.
 - .14 Provide wiring diagrams.
- .2 The Contractor shall submit (4) copies of shop drawings (4 paper formats, as well as Autocad drawings file), for examination by Departmental Representative, within a reasonable time and in a logical sequence so as not to delay the works.
- .3 The Contractor shall make the changes to shop drawings required by the Departmental Representative and must resubmit unless noted otherwise. Otherwise, the Contractor shall ensure that its changes are clearly identified on the new documents submitted
- .4 Any changes to a drawing should be clearly identified with a cloud and a revision number.
- .4 Samples:
 - .1 Submit two samples, complete with colour schemes, 150 x 150 mm in size, illustrating: floor material, car interior, car ceiling, car door, hoistway entrance door and frame finishes.
- .5 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
- .6 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .7 Instructions: submit manufacturers installation instructions.
- .8 Manufacturers Field Services: submit copies of manufacturers field reports.
- .9 Closeout Submittals:
 - .1 Submit the following in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Project Record Documents:
 - .1 Record actual locations of equipment, names of equipment manufacturers and suppliers, concealed conduit and boxes, concealed devices, disconnects.
 - .3 Operation and Maintenance Data:
 - .1 Include description of elevator system's method of operation and control including group supervisory control system, motor control system, door operation, signals, firefighter's service, emergency power operation, and special or non-standard features provided.
 - .2 Provide parts catalogues with complete list of equipment replacement parts with equipment description and identifying numbers.
 - .3 Legible schematic wiring diagrams covering electrical equipment installed, including changes made in final work, with symbols listed corresponding to identity or markings on both machine room and hoistway apparatus.
 - .4 Instruct Departmental Representative in maintenance of special finishes.

1.5 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer Qualifications: company or person experienced in performing work of this section specializing in installation of work similar to that required for this project.
- .2 Site meeting: in accordance with Section 01 31 19 - Project meetings.
- .3 Health and Safety
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle components in accordance with Section 01 61 00 - Common Product Requirements and in accordance with manufacturer's written instructions.
- .2 Packing, Shipping, Handling and Unloading:
 - .1 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .3 Storage and Protection:
 - .1 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- .4 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan (WMP).
 - .4 Separate for reuse and recycling and place in designated containers Metal and Plastic waste in accordance with Waste Management Plan (WMP).
 - .5 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
- .5 Refer to the plans for storage areas, outside of the elevator machine room affected by the work.

1.7 WARRANTY

- .1 For the Work of Section 14 00 00 and related, the warranty period of 12 months will begin at the partial substantial work completion of each modernized elevator group.

1.8 EXTENDED WARRANTY

- .1 For the Work of Section 14 00 00 and related, the warranty period of 12 months (of group 1 to 4) is extended until the end of the 12 months warranty period of the last modernized elevator group (group 5) to achieve a common end date of the warranty.
- .2 For the Work of Section 14 00 00 and related, the warranty period of 12 months is extended to 36 months and must cover the elements which have the following defects:
 - .1 Blistering, spalling or peeling of paint due to improper surface preparation or material application.
 - .2 Opening of joints due to improper design or use of ineffective fastening devices.
 - .3 Separation, cracking or splitting of plastic laminate due to improper application to core material, or to method of fabrication which gives rise to areas of high stress concentration or which restricts normal expansion or contraction of plastic laminate.

1.9 MAINTENANCE SERVICE

- .1 Provide full maintenance service of all elevators (1-2-3-4-5-6-7-8-9-10-11-12) as per requirements of Section 14 90 00.
- .2 Full maintenance service includes the following periods:
 - .1 Interim period, before and during the equipment modernization. The interim period will begin one week before the start of the modernization work on the first elevator group (group 1).

- .2 The warranty period. The warranty period will end 12 months after the modernization of the last modernized elevator group.
- .3 The warranty period and extended warranty periods. The extended warranty periods will end 12 months following the modernization of the last modernized elevator group.

1.10 EXECUTION TIMELINE

- .1 Plan and include all costs and work in accordance with the sequences and timeframes as specified in section 01 14 00 - Work restrictions
- .2 During the entire project, always have on site the main material for the following modernization group ie for the next three elevators.

1.11 SPECIFICATIONS OWNERSHIP

- .1 All copies of plans and specifications provided by Departmental Representative are his property. They should not be used for another job and can not be copied or revised in any manner whatsoever without written authorization.

1.12 DIMENSIONS

- .1 Supply and install all the equipments to suit the dimensions specified in the specifications and the various plans.
- .2 The *Contractor* has the responsibility to check the on site dimensions as well as the site conditions.

1.13 DOCUMENT REVIEW

- .1 The Contractor shall review the project tender documents to fully assess the scope of work to be performed and the quality of materials required.
- .2 An on site visit by the contractor is required to asses the existing conditions and work requirements and to obtain all information or clarification for the proper execution of the work.
- .3 If the Contractor detects any errors or omissions in the specifications, the latter shall inform the Departmental Representative. Any additional costs due to a lack that will not be identified will be defrayed by the Contractor.

1.14 ELEMENTS

- .1 Unless amendment is approved, the main elements of vertical transport equipment used in this project must be new current production genuine parts.
 - .2 Control devices must come from a single manufacturer.
 - .3 All control devices installed in this contract shall be of the same generation or 100% compatible with each other.
 - .4 The proposed systems shall have been installed in at least three buildings of similar size and be in operation for at least two years.
 - .5 The Contractor shall confirm the items when submitting shop drawings.
-

1.15 ACCEPTABLE MATERIALS OR PRODUCTS

- .1 Acceptable materials or products: When materials or products are prescribed by their trademark, see the Instructions to Tenderers to know how to proceed for approval of materials or replacement products. Replacement product must be approved by addendum in accordance with the Instructions to Tenderers.

1.16 ACCESS TO INFORMATION STATEMENT

- .1 Before the final acceptance, submit in accordance with Section 01 78 00 Closeout Submittals to the Departmental Representative all the information relating to programming and controller components of the project.
- .2 Provide fully non-proprietary versions of all control equipment including:
 - .1 The Contractor shall submit, 10 after the award of the contract, a letter attesting that the proposed material is fully non-proprietary.
 - .2 All required diagnostics are "on board".
 - .3 All programming and diagrams required for long-term maintenance are provided with the controller.
 - .4 The controller will not shut down or alter its functionality in any way after a pre-determined increment of time or use.
 - .5 Any elevator contractor should be allowed to purchase parts, supplies, diagrams, support, or training directly from the factory at the same cost level as the original installer. A published price list shall be supplied with the controller.
 - .6 Parts including circuit boards should be available for direct purchase from the factory in numbers and not on an one-for-one "exchange only" basis.
- .3 Provide 3 copies of the final version of the controllers program on CD-ROM as well as the access codes associated to it. Also provide all the tools (programming console, access codes, cable, and operation manual etc.) to access the controller's programming internal coded modules. The elevator installer or supplier shall in no case insert locks or password restricting access to the programming or operation of equipment.
- .4 The Contractor agrees to the following: In the event of termination of maintenance service with the installer of the equipment, the Contractor and the supplier shall undertake to provide expertise on demand for equipment repair and adjustment and replacement parts within 48 hours, for a period of 15 years following the installation of equipment, with pay for labor and parts to the market price. This applies to parts having a right of property <patent> and / or not available elsewhere than at the original manufacturer <installer> equipment.
- .5 The Contractor agrees to the following: In the event of termination of business or bankruptcy of the installer of the equipment or its supplier, the latter shall provide, with compensation, all information relating to programming and components of control devices of the project.

1.17 WORK NOTIFICATION

- .1 The Contractor shall after the end of Work, report them to the RBQ (Régie du Bâtiment du Québec) within the time they prescribed. A copy must also be sent to Departmental Representative.

1.18 SUPPLIERS LIST

- .1 The Contractor shall submit with the Bid all the names of suppliers and products and proposed models for the main components, including motors, control equipment, door systems and signalling devices.
-

1.19 TRADEMARKS

- .1 Trademarks are not allowed on equipment apparent to the public.
- .2 Identify clearly within the controller cabinet in the control room, the name of the elevator company that has completed the installation of the equipment.

1.20 PLANS AND SPECIFICATIONS ON SITE

- .1 Throughout the construction period, keep on site, for reference by mechanics, an updated and approved by Departmental Representative copy of the plans and specifications.

1.21 COORDINATION

- .1 Coordinate the work with the Departmental Representative and other trades in accordance with the project schedule.
- .2 Store new materials in areas designated by Departmental Representative.
- .3 Provide all the workspaces protection to ensure the safety of workers, technicians, occupants and the public.
- .4 Coordinate work with other trades to minimize the impact of these activities on the property. The work must minimize disruption of building activities. In some cases, the Departmental Representative may request that certain tasks be done at a specific time and at no additional cost.

1.22 PREVENTIVE MEASURES

- .1 The Contractor shall perform and comply with the procedures described below, for all the work of this project.
 - .1 The Contractor shall perform the work using methods that minimize dust generation during construction / renovation;
 - .2 Contractor, in addition to solid wall, shall seal unused doors with adhesive tape to partition the work area;
 - .3 The Contractor shall seal the exhaust vents and air supply in the areas of construction / renovation;
 - .4 When construction workers must use public areas of the building, they shall clean themselves on the work site, and be sure to remove most of the dirt and dust on their clothes and shoes.
 - .5 When the contractor circulate in the building, he is responsible for cleaning his dirt.

1.23 SAFETY MESURES

- .1 This article states the minimum standard and does not limit in any ways the responsibilities and obligations of the Contractor. In case of conflict between the security measures set out below and the established practices of the Departmental Representative, the established practices of the Departmental Representative have precedence. The Departmental Representative may at its sole discretion, impose additional standards of safety.
 - .1 The Contractor shall not use the materials, tools and equipment belonging to the Departmental Representative without the consent of the latter.
 - .2 Departmental Representative may, at its discretion and according to his instructions, suspend or terminate the work of the Contractor for reasons of security without liability to Departmental Representative or any compensation for the Contractor. The instructions and stop work shall be recorded by the Contractor and the Departmental Representative, they will agree on the date and method of resumption.
-

- .3 The Contractor shall provide and install quality warning signs and temporary solid walls partition at the two (2) lower levels and the upper level delimiting the workspace when the work is done in public areas or hamper public traffic. Temporary partitions must have solid walls and be high enough to cover the space between the floor and ceiling. Access door must be closed with a padlock.
- .4 The Contractor shall provide and install quality warning signs and temporary partitions (barricades) with a minimum height of 42 inches for the protection of public areas for work done at any other floor.
- .5 The Contractor shall submit, for approval by the Departmental Representative, the workspaces perimeter for each elevator. It is understood that these workspaces must be relatively small in public areas or when hindering public traffic areas.
- .6 The Contractor shall provide and install adequate protections to prevent fall of equipment, tools and other over the entire length of the elevator hoistway.
- .7 The Contractor has the responsibility to inform the Departmental Representative of any hazardous or unsafe conditions, and in the shortest possible time.

1.24 SECURITY MESURES - HOT WORK

- .1 The Contractor must follow the procedures outlined in the building orientation guide.

1.25 SECURITY MESURES – CONFINED SPACE

- .1 The Contractor must evaluate each of the existing confined spaces on its work site depending on the nature of its interventions and as a function of his work (welding, gas, paint, etc.). The evaluation forms used must contain at least the information required in the form FEL 104. The contractor shall transmit the risk assessment forms to Departmental Representative at least 5 days before the date set for entry into these confined spaces. He should include all costs for the measures to be taken, monitored and strictly enforced in order to meet safety requirements for confined spaces.

1.26 SITE CLEANLINESS AND SAFETY

- .1 Throughout the duration of the work, protect and keep clean the machine room and equipment therein, the elevator cab and the public areas.
- .2 Prior to Commissioning and in order to obtain acceptance with and / or without reserve, public areas, the elevator hoistway and machine room shall be cleaned and closed at the satisfaction of the Departmental Ministerial.

1.27 OPENING AND ACCESS TO WORK

- .1 The Contractor is responsible for the following:
 - .1 All openings or leveling compounds necessary for the performance of this contract is to be performed by the Contractor.
 - .2 Any opening in wall or ceiling, necessary for the execution of the work is to be performed by the Contractor.
 - .3 The Contractor shall obstruct and return to the original state components wholly or partly demolished.

1.28 CONTRACTOR FAILURE

- .1 In the event of the Contractor inability to do correctly the work described in the specifications, or correct operating problems, the Departmental Representative reserves the right to perform the work by others at the expense of the Contractor.
 - .2 Should any problem causing a serious delay on the original schedule, the Departmental Representative will give a written 10 days notice to the Contractor to avail the clause above.
-

1.29 MANUALS

- .1 Prior to the commissioning of first modernized elevators group, submit in accordance with Section 01 78 00 - Closeout Submittals the operation and maintenance manuals.
- .2 Provide a minimum of three (3) copies of the manuals bound in binders with dividers and tables of contents as well as a Portable Document Format (PDF) version on CD-ROM and USB key.
- .3 Include in these manuals, a technical description of all system components and approved shop drawings.
- .4 Include a complete list of spare parts to drawing and identification number.
- .5 Provide the parts list including their average useful life and addresses of suppliers.
- .6 Include a detailed description of special systems such as fire recall and emergency power.
- .7 The manuals should include a section covering the operation of the above systems:
 - .1 Computerized central console
 - .2 Control Console for Special Operations
 - .3 Intercommunication system
- .8 Include in the maintenance manual a schedule of routine work required as part of preventive maintenance.

1.30 ELECTRIC DIAGRAMS

- .1 Prior to commissioning, submit in accordance with Section 01 78 00 - Closeout Submittals copies of the as-built wiring and schematic diagrams.
- .2 Provide a minimum of three (3) printed copies of the diagrams as well as Portable Document Format (PDF) and CAO (in AutoCAD format) version on CD-ROM.
- .3 Display plasticized copies of the electrical diagrams, approved by an engineer, in the machine room.

1.31 TECHNICAL FORMATION

- .1 Prior to commissioning, in accordance with Section 01 91 41 – Commissioning Training, organize with the Departmental Representative training sessions covering the equipment operation.
- .2 These training sessions should cover the operation of the above systems:
 - .1 Computerized central console
 - .2 Control Console for Special Operations
 - .3 Intercommunication system
 - .4 Emergency Recall
 - .5 Emergency power
 - .6 Various switches and other.

1.32 TEST DATA FORMS

- .1 Prior to commissioning, submit in accordance with Section 01 91 33 – Commissioning Forms, the test data forms.
 - .2 Perform all tests required by Section 8 of the ASTM A17.1-2010/CSA B44-2010 Code and or any other test requested by the competent authorities.
 - .3 Provide the Departmental Representative the test certificates issued by the competent authorities.
-

1.33 ASSISTANCE FOR INSPECTIONS

- .1 During the supervision and coordination of the work by the Departmental Representative throughout the project, provide good collaboration to ensure satisfactory execution.
- .2 An inspection of the elevator will be made by the Departmental Representative to verify compliance with the specifications requirements.
- .3 Provide a team of trained mechanics to help the Departmental Representative in the course of these inspections.
- .4 Arrange to perform the required emergency manoeuvre and emergency power operation tests in the course of these inspections in collaboration with the project electrician.
- .5 Provide the Departmental Representative a complete set of keys for the tests to be done during his inspection.
- .6 In the event that the said works are not corrected by the date agreed in writing by the Contractor, all costs related to a second inspection will be at the Contractor expense.

1.34 ACCEPTANCE PROCESS

- .1 Prior to Commissioning and in order to obtain acceptance with and / or without reserve, public areas, the elevator hoistway and machine room shall be cleaned and closed at the satisfaction of the Departmental Ministerial.
- .2 Inform in writing the Departmental Representative, one (1) week in advance, of the proposed date for the elevator inspection.
- .3 Prior to the inspection of the Departmental Representative, provide the test data forms.
- .4 Plan a second execution of the tests along with the Departmental Representative during the inspection of the elevator.
- .5 The Contractor shall perform, at its expense, all testing and provide the necessary support team for assistance during inspections of the Departmental Representative.
- .6 An inspection of the elevator will be made by the Departmental Representative to verify compliance with the specifications requirements.
- .7 Following the issuance of the list of deficiencies, the Contractor will have a maximum of 30 days to correct the deficiencies.
- .8 The final acceptance will be done after the correction of all deficiencies issued by the Departmental Representative and before the warranty period of the equipment.

1.35 BREAK-IN PERIOD

- .1 Plan a 5 days break-in period before the shutdown for modernizaion of another elevator. This period will be used to identify anomalies and fix problems that may arise. All elevators in the group shall be operationnal during the break-in period.

1.36 BARRIER-FREE

- .1 Provide all requirements for Barrier-Free operation listed in Appendix E of the CAN/CSA-B44-07 Code and CAN/CSA B651-12 standard.
-

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 Related sections
 - .1 Section 14 00 00 – Additional General Conditions
 - .2 Section 14 70 10 – Computerized central console
 - .3 Section 14 70 20 – Control Console for Special Operations
 - .4 Section 14 70 30 – Intercommunication system

1.2 SYSTEM DESCRIPTION

- .1 Modernize the existing elevators as described in the following tables and the requirements of this section:
 - .1 (1) existing elevator (no 1) with overhead geared traction machine.
 - .2 (5) existing elevators (no 2 to 6) with overhead gearless traction machine.
 - .3 (2) existing elevators (no 7 & 8) with geared traction machine on the side at the bottom of the hoistway.
 - .4 (2) existing elevators (no 9 & 10) hydraulic with holeless cylinders.
 - .5 (1) existing elevator (no 11) with geared traction machine on the side at the bottom of the hoistway.
 - .6 (1) existing lifting device for mobility impaired persons (no 12)
 - .2 The following requirements must be met for all elevators described in this section:
 - .1 Barrier-Free in accordance with CAN/CSA B651-12, Barrier-Free Design.
 - .2 Bilingual Markings:
 - .1 Provide identification and instructions on operating panels and on signal equipment in English and French except where design is such that inference is obvious and readily understood.
 - .3 Retain existing car speed and capacity.
 - .4 Provide equipment to suit the existing hoistway and machine room dimensions.
 - .5 Check all dimensions on site.
 - .6 Design and modernize elevator in accordance with ASTM A17.1-2010/CSA B44-2010, local codes and regulations.
-

- .3 Existing system – Elevator 1
System BEFORE modernization:
- | | |
|---------------------------|----------------------------------|
| Unit number : | 1 |
| Designation : | Passengers / Service |
| Installation date : | 1996 |
| Floor served : | 17 stops : A, 1 to 12, 14 to 17 |
| Nominal speed : | 350 fpm |
| Capacity : | 2 041 kg |
| Machine manufacturer : | Hollister Whitney |
| Machine type : | Geared traction machine OH -63OH |
| Motor manufacturer : | Impérial |
| Motor type : | DC, 50 HP, 85 A, 500 V |
| Controller manufacturer : | Swift Futura |
| Controller type : | Microprocessor |
| Controller model : | SCR Drive Magnetek DSD 412 |
| Dispatch type : | Simplex |
| Other devices : | Auxiliary emergency brake |
| Door type : | Center opening |
| Door dimensions : | 48" X 84" |
| Door fire rating : | ULC 1h1/2 |
| Door operator : | GAL MOH |
| Hall door equipment : | GAL |
- .4 Existing system – Elevators #2 to 6
System BEFORE modernization:
- | | |
|---------------------------|------------------------------|
| Unit number : | 2, 3, 4, 5, 6 |
| Designation : | Passengers |
| Installation date : | 1996 |
| Floor served : | 15 stops : 1 to 12, 14 to 16 |
| Nominal speed : | 700 fpm |
| Capacity : | 1 588 kg |
| Machine manufacturer : | Hollister Whitney |
| Machine type : | Gearless machine OH |
| Motor manufacturer : | Impérial |
| Motor type : | DC, 52.4 HP, 88 A, 500 V |
| Controller manufacturer : | Swift Futura |
| Controller type : | Microprocessor |
| Controller model : | SCR Drive Magnetek DSD 412 |
| Dispatch type : | 5-plex |
| Other devices : | Auxiliary emergency brake |
| Door type : | Center opening |
| Door dimensions : | 48" X 84" |
| Door fire rating : | ULC 1h1/2 |
| Door operator : | GAL MOH |
| Hall door equipment : | GAL |

.5 Existing system – Elevators #7, 8

System BEFORE modernization:

Unit number :	7, 8
Designation :	Passengers
Installation date :	1996
Floor served :	5 stops : A, 1, 3, 4, 5 Asc 7 – rear : 1 stop : 1
Nominal speed :	350 fpm
Capacity :	1 361 kg
Machine manufacturer :	Hollister Whitney
Machine type :	Geared traction machine BS -63OD
Motor manufacturer :	Impérial
Motor type :	DC, 40 HP, 67 A, 500 V
Controller manufacturer :	Swift Futura
Controller type :	Microprocessor
Controller model :	SCR Drive Magnetek DSD 412
Dispatch type :	Duplex
Other devices :	Auxiliary emergency brake
Door type :	Center opening
Door dimensions :	42" X 84"
Door fire rating :	ULC 1h1/2
Door operator :	GAL MOH
Hall door equipment :	GAL

.6 Existing system – Elevators #9, 10

System BEFORE modernization:

Unit number :	9, 10
Designation :	Passengers
Installation date :	1996
Floor served :	Avant : 1 stop : 1 Arrière : 1 stop : SS
Nominal speed :	150 fpm
Capacity :	910 kg
Machine manufacturer :	ITI
Machine type :	Hydraulic - submersible, holeless cylinder
Motor manufacturer :	Leroy Sommer
Motor type :	AC, 50 HP, 50 A, 575
Controller manufacturer :	JRT
Controller type :	Microprocessor
Controller model :	Cima-1 / Omron C200H
Dispatch type :	Duplex
Door type :	Center opening
Door dimensions :	36" X 84"
Door fire rating :	ULC 1h1/2
Door operator :	GAL MOH
Hall door equipment :	GAL

- .7 Existing system – Elevator #11
System BEFORE modernization:
- | | |
|---------------------------|----------------------------------|
| Unit number : | 11 |
| Designation : | Passengers / Service |
| Installation date : | 1996 |
| Floor served : | 6 stops : A, 1, 3, 4, 5, 6 |
| Nominal speed : | 200 fpm |
| Capacity : | 1 588 kg |
| Machine manufacturer : | Hollister Whitney |
| Machine type : | Geared traction machine BS -53OD |
| Motor manufacturer : | Impérial |
| Motor type : | DC, 25 HP, 42.5 A, 500 V |
| Controller manufacturer : | Swift Futura |
| Controller type : | Microprocessor |
| Controller model : | SCR Drive Magnetek DSD 412 |
| Dispatch type : | Simplex |
| Other devices : | Auxiliary emergency brake |
| Door type : | Center opening |
| Door dimensions : | 48" X 84" |
| Door fire rating : | ULC 1h1/2 |
| Door operator : | GAL MOH |
| Hall door equipment : | GAL |
- .8 Existing system – Elevator #12
System BEFORE modernization:
- | | |
|------------------------------------|------------------------|
| Unit number : | 12 |
| Designation : | Passengers |
| Installation date : | 1996 |
| Floor served : | 2 stops – front & rear |
| Capacity : | 250 kg |
| Manufacturier l'unité de pompage : | ITI |
| Type de l'unité de pompage : | Hydraulic |
| Controller manufacturer : | Montenay |
| Controller type : | Relays |
| Controller model : | Cima-1 |
| Door type : | swing |
-

1.3 PERFORMANCE REQUIREMENTS

- .1 Codes and Regulations
 - .1 Design, supply and install all equipment in accordance with the latest editions of the ASTM A17.1-2010/CSA B44-2010 Code (update included), CAN/CSA-B651-12 Code and any other federal, provincial and municipal regulations applicable for this type of installation, including the National building Code of Canada and the Quebec Electrical Code.
 - .2 Driving Force
 - .1 Equipment driving force must comply with existing systems. In the case of non-compliance of the driving forces the Contractor shall assume all costs associated with this change (electrical, air conditioning, etc.).
 - .3 Controller
 - .1 Provide Simplex Collective Selective microprocessor controls for elevator No. 1.
 - .2 Provide 5-plex Collective Selective microprocessor controls for elevator No. 2, 3, 4, 5, 6.
 - .3 Provide Duplex Collective Selective microprocessor controls for elevator No. 7 & 8.
 - .4 Provide Duplex Collective Selective microprocessor controls for elevator No. 9 & 10.
 - .5 Provide Simplex Collective Selective microprocessor controls for elevator No. 11.
 - .6 Provide Simplex Collective Selective microprocessor controls for elevator No. 12.
 - .4 Hall Calls
 - .1 Elevators to answer hall calls during working day; within following times:
 - .1 38% of calls within 10 seconds maximum.
 - .2 63% of calls within 20 seconds maximum.
 - .3 80% of calls within 30 seconds maximum.
 - .4 88% of calls within 40 seconds maximum.
 - .5 93% of calls within 50 seconds maximum.
 - .6 95% of calls within 60 seconds maximum.
 - .5 Call Sequence
 - .1 Provide a control system managing car and hall calls in ways to minimize overall average waiting time.
 - .2 Upon arrival at destination floor, the call must be canceled.
 - .3 Do not permit registration of car calls behind the running position of an elevator.
 - .4 Cancel all car calls in situation of excessive car calls according to cab occupation.
 - .6 Direction Sequence
 - .1 The elevator starts when one or more car or hall push buttons are activated, other than the one where the elevator stands. The cab stops at the first call from cab or hall depending on the travelling direction.
 - .2 The elevator should answer all car and hall calls; it should stop at every called floor, in numerical order, depending on the travelling direction. The call should have been made some time before the elevator gets to this floor.
 - .3 If no order from the cab has been made, the cab travelling in up direction to answer calls for down direction should stop at the top floor where a call has been registered, reverse elevator direction, and answer all floors requested, in decreasing numerical order. The opposite should occur when elevator is travelling down to answer up calls.
 - .4 The elevator answering a car call will be designated to answer the hall call at this level in the opposite direction given this elevator has not been assigned more call in its direction of travel.
 - .7 Group Sequence
 - .1 Program the controller to minimize the floor waiting time and car travel time.
 - .2 Group maneuver shall adjust automatically if one of the car is removed from the group.
-

- .3 Control the introduction of a maneuver either by a programmable electronic schedule (hours and days) or by the independent analysis of the group controller of the changes the vertical circulation.
 - .4 Provide the following maneuver during peak traffic:
 - .1 In Up peak, return all cars at the lower level after a change of direction at the top of their travel and will be retained for at least 15 seconds at this level unless the load weight setting is reached;
 - .2 In Down peak, return all cars at the upper level after a change of direction at the bottom of their travel and will be retained for at least 15 seconds at this level;
 - .3 In balanced period (as many up & down calls), distribute car as determined by the independent traffic data analysis of the controller group while maintaining one of them on the main level.
 - .8 Parking
 - .1 Elevators 2 to 6:
 - .1 Arrange that when there is no car and hall calls registered, except for power or emergency recall, one of the elevator returns to main lobby, to mid floor and at upper floor with door closed.
 - .2 Elevators 7 & 8:
 - .1 Arrange that when there is no car and hall calls registered, except for power or emergency recall, one of the elevator returns to main lobby with door closed.
 - .3 Elevators 9 & 10
 - .1 Arrange that when there is no car and hall calls registered, except for power or emergency recall, one of the elevator returns to main lobby with door closed.
 - .9 Fault recovery
 - .1 Recall an elevator to the nearest floor and open door when an operation fault is detected within the system.
 - .10 Pre-opening
 - .1 Provide advance opening operation of the car doors.
 - .2 Ensure that the door will initiate the opening cycle at a maximum of 75mm from the landing floor.
 - .11 Speed Control System
 - .1 Ensure that the average acceleration is not less than 0.60 meter per square seconds and not exceeding 1.1 meter per square second.
 - .2 Ensure that the rate of change in acceleration does not exceed 1.8 meter per cubic second.
 - .3 Ensure that the car stop and start smoothly.
 - .12 Door Operation
 - .1 Provide smooth door open and close cycle.
 - .2 The doors shall open automatically when the car arrive at a landing floor.
 - .3 The doors shall reopen when the door protective devices are activated.
 - .4 Arrange that when the door protective devices are activated for more than 20 seconds continuously, a nudging buzzer signal be activated
 - .5 Arrange that and the door closes at reduced torque and speed when the door protective devices are activated for more than 20 seconds.
 - .6 The door speed must be reduced in half when the doors are closing and the reopening device has been rendered inoperative by the fire recall.
 - .13 Performance levels
 - .1 Design and adjust the equipment to meet the following performance levels:
 - .1 Operating time shall be as follows. Measure from the time doors closing cycle begins until doors are three quarters opened at next floor, assuming a maximum floor height of 4000mm.
-

- .1 Elevator 1:
 - .1 Up: 11.5 seconds
 - .2 Down: 11.5 seconds
 - .2 Elevators 2 to 6:
 - .1 Up: 8.5 seconds
 - .2 Down: 8.5 seconds
 - .3 Elevators 7 & 8:
 - .1 Up: 11.5 seconds
 - .2 Down: 11.5 seconds
 - .4 Elevators 9 & 10:
 - .1 Up: 13.5 seconds
 - .2 Down: 13.5 seconds
 - .5 Elevator 11:
 - .1 Up: 11.5 seconds
 - .2 Down: 11.5 seconds
 - .2 Door open and close time equal to values shown below.
 - .1 Open: 2.5 seconds
 - .2 Close: 3.5 seconds
 - .3 Door dwell time in response to a car or hall calls equal to values shown below.
 - .1 Car call : 2.0 seconds
 - .2 Hall call : 3.0 seconds
 - .4 Speed variation shall not exceed 5% of nominal value.
 - .5 Door noise level shall not exceed +6 dBa higher than ambient noise.
 - .6 Car running noise level shall not exceed +6 dBa higher than ambient noise.
 - .7 Machine room noise level shall not exceed 75 dBa, as measured when one elevator is running.
- .14 Levelling
- .1 Ensure automatic levelling of the car at reduced speed in both up and down directions.
 - .2 The automatic levelling will be made with an accuracy of 6 mm unrelated to the car load.
 - .3 The levelling of the car sill compared to hall sill should not exceed +/- 6mm in either direction as long as the car is in the levelling zone.
- .15 Independent service
- .1 Provide in-car independent service operation.
 - .2 Cancel door protective device operation.
 - .3 Cancel hall button operation.
 - .4 Cancel hall lanterns operation.
 - .5 When the car is parked doors must remain open.
 - .6 Elevator will be control only from inside the car.
 - .7 Elevator may respond to car calls only once the full closing of the door, by maintaining a constant pressure button "CLOSE" or the button corresponding to the desired level.
 - .8 Arrange that the doors will reopen if the door "CLOSE" button is released prior to elevator motion.
- .16 Emergency Operation
- .1 Provide Emergency Recall Operation - Phase I in accordance with ASTM A17.1-2010/CSA B44-2010 Code.
 - .2 Provide Emergency In-car Operation - Phase II in accordance with ASTM A17.1-2010/CSA B44-2010 Code.
- .17 Emergency Power Operation
- .1 Emergency power will be available for all elevators.
 - .2 Provide Emergency Power Operation in accordance with ASTM A17.1-2010/CSA B44-2010 Code and as describe below.
-

-
- .1 Two signals indicating the normal and emergency power connecting dry contact relay will link the transfer switch and the controller. A pre-transfer signal will be given by these signals
 - .2 A normally close circuit will be opened when normal alimentation is lost. When it's open, recall the elevators sequentially (1 elevator per group) to the recall level and open the door.
 - .3 When the elevator is at the designated floor and the doors are open normally send a signal to the Control Console for Special Operations.
 - .4 Once the sequence recall is complete, elevators must run automatically on emergency power as follows:
 - .1 Elevators No 1, 2, 3, 4, 5, 6: One elevator must be available on emergency power. Elevator no 1 will be prioritized for use by users or firefighters.
 - .2 Elevators No 7, 8 & 11: One elevator must be available on emergency power. Elevator no 11 will be prioritized for use by users or firefighters.
 - .3 Elevators No 9 & 10: One elevator will remain available on emergency power for public use.
 - .5 Management of the recall sequence will be provided by the elevator controllers, a dispatch controller (asc 1 à 6 / asc 7-8-11) and the computerized central console.
 - .6 Management of the elevators operation on emergency power will be provided by the elevator controllers, a dispatch controller (asc 1 à 6 / asc 7-8-11) and the computerized central console. The selection of the elevator can also be done using the key switch installed at the main floor.
 - .18 Car intercommunication system
 - .1 Provide a car intercommunication system as required by Article 2.27.1.1 of ASTM A17.1-2010/CSA B44-2010 Code.
 - .2 Provide a video function on the two-way intercommunication system in the car.
 - .3 Provide for two-way cab intercommunication system to be connected to CCS as described in Section 14 70 30.
 - .4 If the intercommunication system is normally connected to the building power supply, it shall automatically transfer to a source of standby or emergency power after the normal power supply fails. The power source shall be capable of providing for illumination of the visual indication within the car, and the intercommunication system for at least 4 h.
 - .19 Access control
 - .1 Provide access control operation as defined in the part 2 of this section.
 - .20 Special Maneuver <EMERGENCY STOP>
 - .1 The maneuver must interact with the following sets of elevators:
 - .1 Elevators 1 to 12.
 - .2 Provide programming of the controller and all interfaces necessary for the maneuver described below:
 - .3 This maneuver is activated from the Control Console for Special Operations installed at CCS. Operation detail and items required for this maneuver:
 - .1 The activation button must be pressed to activate the maneuver.
 - .2 Upon activation of the maneuver, all elevators must stop at the nearest landing and close the doors.
 - .3 No movement is permitted once lifts are stopped.
 - .4 The activation button must be pressed again to terminate the maneuver.
 - .5 The <EMERGENCY STOP> maneuver must have priority over all other services, including the following:
 - Access control
 - Independent service
 - Free Car
 - Blue Code
-

- Emergency Operation (Emergency Recall Operation - Phase I and Emergency In-car Operation - Phase II)
 - .6 The initiation of the fire alarm must not cancel this maneuver.
- .21 Special Maneuver <BLUE CODE>
- .1 The maneuver must interact with the following elevator:
 - .1 Elevator # 1
 - .2 Provide programming of the controller and all interfaces necessary for the maneuver described below:
 - .3 This maneuver places an emergency call, from the CCS, in order to obtain as quickly as possible the elevator which will be returned urgently to the recall level, without stopping at any other level). This elevator will then be dedicated to transport <BLUE CODE> until the request is completed. Detail of the operation and the items required for this maneuver:
 - .1 Supply and install a key switch (with spring return) with blue indicator light mounted on the control stations on all floors. The latter must order one of the lifts of the group urgently at this level. The <BLUE CODE> maneuver must also be initiated and controlled by card readers (floors and in the car).
 - .2 Provide for the uninterrupted movement of the booth of the group closest to the <BLUE CODE> call to the designated landing, and control the opening of the doors. Cancel all registered shipping orders in the car and at the floors.
 - .3 Install a flashing warning light in the cabin marked "emergency - exit as soon as cab stops". Broadcast the audible message of the vocal annunciator corresponding to this maneuver.
 - .4 Supply and install in the cabin a key switch and a blue light identified <BLUE CODE>. In the "on" position, this switch must cause the car to move uninterrupted towards the requested landing from the control panel in the cab. When the switch is returned to the "off" position, the elevator returns to automatic mode.
 - .5 Ensure that <BLUE CODE> has priority over <INDEPENDENT> service.
- .22 Special Maneuver <FREE CAR>
- .1 The maneuver must interact with the following sets of elevators:
 - .1 Elevator # 1
 - .2 Elevators 2, 3, 4, 5, 6
 - .3 Elevators 7, 8
 - .4 Elevator 11
 - .2 Provide programming of the controller and all interfaces necessary for the maneuver described below:
 - .3 This maneuver places a call to obtain a free car for a certain period of time. Detail of the operation and the items required for this maneuver:
 - .1 Prevent car from responding to landing calls.
 - .2 Prevent the recording of new calls in the cabin. The elevator will only need to respond to previously recorded booth calls and then proceed to the designated landing.
 - .3 This operation will be initiated by the action of a key switch provided with a light indicator mounted on the landing button posts on all floors. It should also be possible to initiate the <FREE CAR> service from a card reader installed on the landing stations.
 - .4 Install in cab and position indicators on all floors an indicator light marked <FREE CABIN>. Broadcast the audio message identifying the service by the voice annunciator.
 - .5 When the car arrives at the requested landing, the user can record a call in the cabin for an adjustable time (5 to 30 seconds). The elevator will then exclusively serve that call, after which it will return to automatic mode or will proceed to the next registered service call <FREE CAR>. I, The user can put the elevator in independent mode instead of placing a call in the car.
-

PART 2 PRODUCTS

2.1 MACHINE – TRACTION SYSTEM

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11 :
 - .1 Retain the existing machines.
 - .2 Adjust the brake system to achieve the required performance levels.
 - .1 Adjust the electromechanical brake system to allow the car to stop normally, at full capacity, when power is interrupted.
 - .2 Ensure that the brake system will hold 125% of the rated capacity.
 - .3 Supply and install a electronic feedback speed control system, including the following items:
 - .1 A tachometer linked to the machine shaft to provide reading of elevator speed;
 - .2 This encoder shall have an optimal reading range exceeding 20% of the minimum elevator speed;
 - .3 A microprocessor based speed regulator system reading speed input and generating corrective output signals;
 - .4 Safety circuits to stop the elevator when the acceleration exceeds by 20% the required acceleration and when the speed exceeds by 5% the required speed.
 - .4 Supply and install new wiring between machine and controller.
- .2 Elevators 9, 10, 12:
 - .1 Retain the existing machines.
 - .2 Retain the existing cylinders.
 - .3 Supply and install new wiring between machine and controller.

2.2 AUXILIARY EMERGENCY BRAKE (ROPE BRAKE)

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11 :
 - .1 Retain existing equipment.
 - .2 Supply and install new wiring between auxiliary brake and controller.
 - .3 Perform all tests required by codes and present the result list to the Departmental Representative.
- .2 Elevators 9, 10, 12:
 - .1 Not used

2.3 HOISTROPES

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11 :
 - .1 Retain existing equipment.
- .2 Elevators 9, 10, 12:
 - .1 Not used

2.4 LOAD WEIGHT DEVICE

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 :
 - .1 Supply and install a system capable of measuring load in the car with an accuracy of 25 kg.
 - .2 The system must also prevent the elevator from starting if the load exceeds the capacity of the car and activate a sound and light signal to indicate an excessive load.
- .2 Elevator 12:
 - .1 Not used

2.5 DRIVE SYSTEM – SCR TYPE

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11:
 - .1 Remove existing motor-generator
 - .2 Provide silicon controlled rectifiers (SCR drive) to ensure a smooth and efficient operation.
 - .3 In series with the DC motor, provide electronic current modular rectifiers adequate for this type of installation, with a feedback power control.
 - .4 Provide rectifiers for varying the voltage to optimize system performance.
 - .5 The drive must be of high efficiency capable of providing sufficient voltage to accelerate the elevator up to the rated speed with rated load. The drive system must perform a speed regulation.
 - .6 The drive must be able to provide an adjustable DC voltage to DC motor for a period of time adjustable (0-1 seconds) to provide a braking pulse when the elevator stops.
 - .7 Incorporate in these modular inverters devices to limit the electrical noise to 5% of the nominal value.
 - .8 The drive device must have a digital speed adjustment device.
 - .9 The drive must have a stopping device when the control signal exceeds 5% of the nominal value.
 - .10 The drive must provide bumpless acceleration and deceleration and smooth operation at all speeds.
 - .11 Provide filters to dissipate the produced heat.
 - .12 Provide filters to limit audible noises to 70 decibels
 - .13 Mount the cabinet containing modular inverters on anti-vibration pads.
 - .14 Provide EMIRFI filters limiting harmonic current and voltage at the power line input when the elevator is in motion.
 - .15 Maximum total harmonic voltage distortion when the elevator is in motion shall not exceed 10%, as measured between phases or phase and neutral. The simple maximum harmonic distortion shall not exceed 5%.
 - .16 Maximum total harmonic current distortion when the elevator is in motion shall not exceed 27%, as measured between phases or phase and neutral. The simple maximum harmonic distortion shall not exceed 22%.
 - .17 Fournir un circuit de sécurité qui stopera l'ascenseur lorsque la température du dispositif d'entraînement excédera 20% de la valeur nominale en opération.
 - .18 Provide a safety circuit to stop the elevator when the drive temperature exceeds 20% of the nominal operating value.
 - .19 Circuits must ensure departures at reduced current and limit, in all cases, the starting current to a maximum of 300% of the normal operating current.
 - .20 Circuits must limit the current supplied by drive systems.
 - .21 Provide a protection to prevent contact with the input of the power terminals.
 - .22 Paint all the non-machined metal surfaces.
- .2 Elevators 9, 10, 12:
 - .1 Not used

2.6 CONTROLLER CABINET

- .1 House the controller in a metal cabinet with hinged doors.
- .2 Controller cabinet shall be NEMA Type 1.
- .3 The controller cabinet shall be made with material limiting propagation of sound in the control room.
- .4 Provide in the controller cabinet, two fans to ensure proper ventilation of the cabinet.
- .5 Provide the controller cabinet, lighting compact fluorescent type and an electrical outlet service unit.

- .6 Coordinate cabinet size according to available space.
- .7 Provide dimensions and layout of control devices at the beginning of the project for approval.

2.7 CONTROLLER

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11 :
 - .1 Supply and install generic non-proprietary controller compatible with SCR drive system.
 - .2 Elevators 9, 10, 12:
 - .1 Supply and install generic non-proprietary controller compatible with hydraulic system.
 - .2 Motor start-up shall be made by an electronic soft-start.
 - .3 Install a low-level oil control to recall the elevator to lowest level when car is travelling up and is running short of oil. Design control so that the oil tank is filled before the car can be returned to service.
 - .4 Design the controller to recall the elevator to lowest level when car is travelling up and there is a failure due to relay, a valve, or to a lack of oil.
 - .3 The control device must be of the generic type.
 - .4 Ensure redundancy of safety systems and power circuits as required by ASTM A17.1-2010/CSA B44-2010 code.
 - .5 Upon detection of a system failure or malfunction, the elevator will be stopped at the nearest floor and open its doors until a reset is done by a technician.
 - .6 Provide a system that can normally operate in an ambient temperature range of 3°C to 40°C.
 - .7 Insulate external signals, such as the hall and car calls, using optical devices. Do not use electro-mechanical relay for these circuits.
 - .8 Provide a digital position indicator in the controller.
 - .9 Provide a protection device against phase reversal and phase loss.
 - .10 Provide a separate power supply for each printed circuit board.
 - .11 Provide a ground connected in parallel to the building ground for each printed circuit board.
 - .12 Do not install electronic boards near heat dissipating resistance.
 - .13 Electro-mechanical relays used shall have a minimal lifespan of 25 years.
 - .14 Make all connections to properly permanently identified terminals.
 - .15 Properly identify relays, contactors, fuses and other components.
 - .16 Provide an errors recording device with a capacity of 30 days reading.
 - .17 Provide a digital clock with multiple programmable alarms.
 - .18 Provide, permanently in the controller, all necessary tools (communication port for access) to view programming, fault identification and history.
 - .19 Provide with the maintenance manuals, the controller programming and all related software.
 - .20 Identify the applicable elevator code inside the cabinet.
-

- .21 Identify the controller using a number.

2.8 CONTROLLER – GROUP DISPATCH

- .1 Temporary dispatch operation mode (elevators no 2 to 6).
 - .1 Supply and install a temporary interface <hall call cross assignment> type to coordinated group dispatching between existing and modernized elevators.
 - .2 The new controller will analyze and assign hall calls to the elevator in the best position to answer the call.
 - .3 Remove the interface once all the individual controllers are installed.
 - .4 Supply and install all required wiring to connect these devices.
 - .5 The existing system will control the fire recall and emergency power operation.
- .2 Group dispatch
 - .1 Provide for group supervisory systems, microprocessor-based dispatching controls.
 - .2 Provide binary communications between individual controllers and the group controller.

2.9 CONTROLLER – INSPECTION AND TEST PANEL

- .1 Supply and install an inspection and test panel as required by ASTM A17.1-2010/CSA B44-2010 Code (art 2.7.6.5) including among others the following items:
 - .1 Stop switch.
 - .2 Visualisation panel as required in article 2.7.6.4.1 of the ASTM A17.1-2010/CSA B44-2010 code providing the following information: position, direction of travel, operating status (stop/run), door status (opened/closed), door unlocking zone, speed and operating mode (automatic / independent / recall).
 - .3 Auxiliary power source (4 hours autonomy) for the visualisation panel.
 - .4 «CAR DOOR BYPASS» and «HOISTWAY DOOR BYPASS» switches.
 - .5 Devices for the manual reset of the detection means for ascending car overspeed protection and protection against unintended car movement
- .2 House the device in the controller cabinet

2.10 CONTROLLER – COMMUNICATION MODULE

- .1 Supply and install outputs connecting a communication module (Ethernet modem) for bidirectional communication on the Ethernet network between the controller and a computerized central console.

2.11 CONTROLLER – ACCESS CONTROL

- .1 Access control by card reader in the car
 - .1 Design the controller to connect with a card reader access control system in the car for all elevators.
 - .2 Provide terminals and connections in the controller to connect with existing access control system.
 - .3 Provide a location and connection interfaces in the car operating panel for a card reader access control system.
 - .4 Provide connection of access control system between interfaces provided by others and elevator controller.
 - .5 Provide access control maneuver in the elevator controller.
 - .1 The access control system will restrict car calls.
- .2 Access control by key in the car
 - .1 Provide car key access control for the following levels:
 - .1 Elevator 1: Level 17
 - .2 Elevator 11: levels A & 6

- .2 Provide access control maneuver in elevator controller.
- .3 The access control system will allow placing a car call to a specific floor from the key switch on the control panel in the car.
- .4 Provide operation of two-position key switches (for each controlled level) as described below:
 - .1 Position 1: neutral
 - .2 Position 2: place call
 - .3 The key can be removed at position 1 only
- .5 The key switch must be placed next to the call button of the controlled level.

2.12 CONTROLLER - EMERGENCY POWER MANAGEMENT

- .1 Elevators 1, 2, 3, 4, 5, 6:
 - .1 Provide and install a device (dispatch controller) to manage the operation of the elevators on emergency power.
- .2 Elevators 7, 8, 11:
 - .1 Provide and install a device (dispatch controller) to manage the operation of the elevators on emergency power.
- .3 Elevators 9, 10:
 - .1 Elevator operation on emergency power must be done by the group controller.
- .4 Elevator 12:
 - .1 Not used

2.13 CONTROLLER - SPECIAL MANEUVER

- .1 Provide controller programming for special maneuvers as described in performance requirement section.
- .2 Provide the following special maneuvers:
 - .1 Blue Code (elevator 1)
 - .2 Free car (elevators 1 to 8 and 11)
 - .3 Emergency stop (elevators 1 to 12)

2.14 PROTECTION AGAINST ELECTROMAGNETIC FIELDS

- .1 Provide adequate immunity of electronic components against interference and influences due to the surrounding electromagnetic fields to eliminate any source of interference. The equipment shall comply with the standard EN12016 Part 2.

2.15 NOISE CONTROL

- .1 Provide two flexible type connections to prevent contact between sections of metal pipes.

2.16 POSITION TRANSDUCER

- .1 Remove existing equipment.
 - .2 Supply and install an electronic device to transmit position of the elevator cab to the controller.
 - .3 Supply and install on the car top a reader to count the number of holes in the tape or the location of the magnets.
 - .4 Supply and install non-metallic trim guide slides on car top to hold tape facing reader.
 - .5 Ensure automatic levelling of the car at reduced speed in both up and down directions.
 - .6 A levelling device with automatic correction in both directions must allow the car to remain level with the floor as long as the car is in the levelling zone.
 - .7 Ensure a minimum accuracy of at least 5 mm at any position in the hoistway.
-

- .8 Ensure at least a reference reading at all levels.
- .9 Strobe devices are acceptable to the extent that the position of the car is controlled at all 5 mm.
- .10 Do not use electro-mechanical switches.

2.17 ELECTRIC WIRING - GENERAL

- .1 Remove existing equipment
- .2 Supply and install all the wiring to interconnect the elevator components.
- .3 Supply insulated multi-stranded ETT-type wiring having a 60°C flame-retardant and moisture-resisting outer cover.
- .4 Supply and install metal conduits (EMT) ducts or flexible conduits as needed to install all the wiring inside the machine rooms, hoistway or other spaces reserved for the installation of elevator equipment.
- .5 Supply and install wire protection when wiring comes into contact with a sharp surface that can damage the wire protective envelop.
- .6 Provide (10%) additional spare conductors, as a minimum in each cable.
- .7 Provide colour or number-coded conductors in multi-conductor cables.
- .8 Terminate cables on terminal blocks having identifying numbers.
- .9 Make no splices.
- .10 Spare wiring shall be properly identify, insulated and terminated on terminal blocks
- .11 All wiring must be CSA rated.
- .12 Ensure adequate protection of the traveling cable to avoid any contact against hoistway walls and structure.
- .13 Ensure that all circuits are properly grounded.
- .14 Install anti-shorts at wiring entry points within main control and junction box.
- .15 Supply, install and identify junction box for the communication systems, cameras, card readers and others.

2.18 ELECTRIC WIRING – TRAVELING CABLE

- .1 Remove existing equipment
 - .2 Supply and install traveling cable between the car and controller.
 - .3 Supply and install traveling cable between the car and controller with the required wires needed by the elevator plus the following connectors: 6 shielded pairs 18 AWG, 3 twisted & shielded pairs for communication, 18 shielded pairs 22 AWG for the card reader, 1 coax cable (with RGU6 connector) at the center of the traveling cable for a camera, 2 sheild pairs 20 AWG for camera and 15% spares of each cable type.
-

2.19 HOISTWAY SWITCHES

- .1 Remove existing equipment.
- .2 Supply and install hoistway switches for a reliable and smooth operation without significant noise.
- .3 Properly doll the switches following the adjustments..
- .4 Supply and install stop switches (mushroom type) in the pit connected in series. Install a first stop switch near the ladder at 460mm above the floor level and a second stop switch near the ladder at 1200mm above the pit floor if the pit is deeper than 1700mm.

2.20 BUFFERS

- .1 Retain existing equipment.
- .2 Clean, brush and paint with a black epoxy paint all the non-machined metal surfaces.
- .3 Apply a layer of Prussian blue on the buffer piston.
- .4 Perform all tests required by codes and present the result list to the Departmental Representative.

2.21 PIT

- .1 In any area in the pit, outside the refuge space, where the vertical clearance is less than 600 mm shall be clearly marked on the pit floor as specified by section 2.4.1.6 of ASTM A17.1-2010/CSA B44-2010 code.

2.22 GUIDE RAILS

- .1 Retain existing equipment.
- .2 Check and correct the tightness of all rail anchors and bolts of all rail joints.
- .3 Clean and brush the machined guide rail surfaces to ensure adequate rolling surface without irregularity and paint in black all non machined surfaces.
- .4 Clean rails along the entire height of the hoistway to eliminate any presence of oil.

2.23 RIDE QUALITY

- .1 The variation between the car guide rails should not exceed ± 1 mm on a vertical distance of 30 m.
- .2 Clean and brush the machined surfaces of the rails to ensure a smooth ride.
- .3 Check the rail joints and polish all horizontal deflections.

2.24 GUIDES: CAR & COUNTERWEIGHTS

- .1 Retain existing equipment.

2.25 FASCIAS PLATES

- .1 Retain existing equipment.
 - .2 Properly identify with large 100mm markings each floor on fascia plates.
-

2.26 COUNTERWEIGHTS

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11 :
 - .1 Retain existing equipment.
 - .2 Check and calibrate the counterweight at the car dead weight plus 40 to 42% of capacity.
 - .3 Add any additional mass necessary.
 - .4 Ensure the counterweight is balanced at the static position.
- .2 Elevators 9, 10, 12:
 - .1 Not used

2.27 CAR PLATFORM AND FRAME

- .1 Retain existing equipment.

2.28 PLATFORM GUARDS - TOE GUARD

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11:
 - .1 Supply and install a platform guard (toe guard) with a straight vertical face extending below the floor surface of the platform for a minimum of 48" as required by section 2.15.9 of ASTM A17.1-2010/CSA B44-2010 code.
 - .2 Paint the plate in yellow.
- .2 Elevators 9, 10:
 - .1 Supply and install a platform guard (toe guard) with a straight vertical face extending below the floor surface of the platform for a minimum of 21" as required by section 2.15.9 of ASTM A17.1-2010/CSA B44-2010 code.
 - .2 Paint the plate in yellow.
- .3 Elevator 12:
 - .1 Not used

2.29 SAFETIES: CAR & COUNTERWEIGHTS

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11:
 - .1 Retain existing equipment.
 - .2 Ensure that all safeties components are rust free and well lubricated.
 - .3 Perform all tests required by codes and present the result list to the Departmental Representative.
- .2 Elevators 9, 10, 12:
 - .1 Not Used.

2.30 GOVERNORS : CAR & COUNTERWEIGHTS

- .1 Elevators 1, 2, 3, 4, 5, 6, 7, 8, 11:
 - .1 Retain existing equipment.
 - .2 Ensure that all components of the overspeed devices are rust free and well lubricated.
 - .3 Perform all tests required by codes and present the result list to the Departmental Representative.
 - .2 Elevators 9, 10, 12:
 - .1 Not Used.
-

2.31 INSPECTION UNIT

- .1 Supply and install an inspection unit on the car top for the operation in inspection speed with constant pressure control.
- .2 The device shall include a Stop Switch, a Transfer Switch, Up and Down push buttons and Fire Signal light.
- .3 Supply and install a 100 W protected light.
- .4 The device shall be permanently located on top of the car and readily accessible to maintenance technician.

2.32 CAB

- .1 Retain existing cab.

2.33 CAR DOOR EQUIPMENT

- .1 Remove existing equipment.
- .2 Supply and install heavy duty type closed-loop variable speed and torque control door operator rated at speed of 910 mm per second.
- .3 Supply and install a car door clutch.
- .4 Supply and install car interlock (positive lock).
- .5 Supply and install a door lock to restrict the opening of the car door from the inside when it is outside the unlocking zone as required by article 2.12.5 of CAN/CSA-B44-10.
- .6 Supply and install all equipment doors needed for a durable and efficient system operation.

2.34 HALL DOOR EQUIPMENT

- .1 Retain existing equipment.
- .2 Clean the existing sills.

2.35 HOISTWAY DOOR UNLOCKING DEVICES

- .1 Supply and install a hoistway door unlocking devices at all floors as required by section 2.12.6 of ASTM A17.1-2010/CSA B44-2010 code.
- .2 Supply and install aluminum rings at all levels.

2.36 HOISTWAY ACCESS SWITCHES

- .1 Supply and install a hoistway access switches at the bottom & top floor as required by section 2.12.7 of ASTM A17.1-2010/CSA B44-2010 code.
- .2 Install the switch in the hall station.

2.37 HALL CALL STATIONS

- .1 Remove existing equipment.
-

- .2 Call stations quantity:
 - .1 Elevator 1: Supply and install (1) call station at each floor.
 - .2 Elevators 2 to 6: Supply and install (2) call stations at each floor.
 - .3 Elevators 7 & 8: Supply and install (1) call station at each floor.
 - .4 Elevators 9 & 10: Supply and install (1) call station at each floor.
 - .5 Elevator 11: Supply and install (1) call station at each floor.
 - .6 Elevator 12: Supply and install (1) call station at each floor.
- .3 Supply and install Tactile Compact 2 Dupar US91BB (steel/steel) red LED illuminated call stations (or replacement product approved by addendum in accordance with the Instructions to Tenderers) at each floor
 - .1 Each button will become a high intensity when the button is pressed (one intensity model).
 - .2 Supply and install surface mount (low profile box, max 25mm, edges at 45°) if necessary.
- .4 Provide in each of the floor call stations the following items:
 - .1 Call buttons required for operation.
 - .2 Elevators 1 to 8 & 11 :
 - .1 A key switch (two-position), spring return type, to activate the <FREE CAR> operation marked <FREE CAR> in red engraved letters measuring at least 5 mm in height. The key can be removed at one (1) position only. Use an "ABLOY" type key switch.
 - .2 An amber LED light indicating the activation of the <FREE CAR> operation located at the key switch side.
- .5 Provide in the main floor call station the following items:
 - .1 Visual signal, LED type, for Phase I Emergency Recall Operation;
 - .2 A three-position key-operated switch (group 3) labeled "FIRE RECALL" and its positions marked "RESET – OFF – ON" (in that order). The letters shall be a minimum of 5mm high in red.
 - .3 Visual signal for Emergency Power Operation labeled "EMERGENCY POWER". The letters shall be a minimum of 5mm high in red.
- .6 Elevator 2 :
 - .1 Replace the plate and call button in the frame of the landing entrance with a No. 4 stainless steel plate at levels 1 and 5.
- .7 Provide a hoistway access switch as required by code. Insert the switch in the hall station.
- .8 The LED lights used in call stations shall have a useful life of at least 100 000 hours.
- .9 Provide all plates in stainless steel no4 finish.
- .10 Engrave all required markings, in French & English language, directly on the plates, as per ASTM A17.1-2010/CSA B44-2010 code.

2.38 HALL POSITION INDICATOR

- .1 Elevator 1
 - .1 Supply and install a digital position indicator at floors A & 1. Characters shall be 50mm high.
 - .2 Incorporate the position indicators on the same plate with the hall direction lantern.
- .2 Elevators 2 to 6
 - .1 For each elevators :
 - .2 Supply and install a digital position indicator at main floor. Characters shall be 50mm high.
 - .3 Incorporate the position indicator on the same plate with the hall direction lantern.

- .3 Elevators 7 & 8
 - .1 For each elevators :
 - .2 Supply and install a digital position indicator at main floor. Characters shall be 50mm high.
 - .3 Incorporate the position indicator on the same plate with the hall direction lantern.
- .4 Elevators 9, 10, 11 & 12
 - .1 Not used

2.39 HALL DIRECTION LANTERN

- .1 Elevators 1 to 10
 - .1 Supply and install a direction lantern, raised arrow type, with electronic gong at each floor for each elevator.
 - .2 Model and position must be coordinated and approved.
- .2 Elevators 11
 - .1 Supply and install a direction lantern, raised arrow type, with electronic gong at the car doorframe.
- .3 When the car is within a certain distance of a floor where it should stop, the direction lantern must illuminates with tone sounds to indicate the direction of the car.
- .4 The lantern must remain illuminated until the car leaves the floor.
- .5 In Up direction, the tone must ring once, and in the Down direction, the tone must ring twice.
- .6 Include an adjustable gong tone device.
- .7 Provide No. 4 finished stainless steel plates of sufficient size to cover existing openings.
 - .1 Supply and install surface mount (low profile box, max 25mm) when hall lantern is combined with a position indicator.

2.40 CAR OPERATING PANEL - MAIN

- .1 Supply and install one (1) car operating panel, mounted on invisible hinge, in stainless steel finish No. 4 integrated in the car front return as per requirements of ASTM A17.1-2010/CSA B44-2010 code and the following requirements:
 - .1 Dupar US91BB (steel/steel) Tactile Compact 2, red LED illuminated push button (or replacement product approved by addendum in accordance with the Instructions to Tenderers) with integrated Braille tag corresponding to floors served.
 - .2 Each button will become a high intensity when the button is pressed (one intensity model).
 - .3 Door open button labeled "OPEN" and door closer button labeled "CLOSE".
 - .4 Alarm button, with a raised ring, as required by section 2.26.2.21 of ASTM A17.1-2010/CSA B44-2010 code.
 - .5 Emergency button, with a raised ring, with a phone symbol labeled "PUSH TO CALL" above and "HELP" below button. The button light will remain permanently on a low intensity (white) and become a high intensity (red) when the button is pressed (model with two colors (white / red) and two intensities).
 - .6 Visual indication, located in the upper part of the car operation panel to acknowledge that two-way communications link has been established labelled "COMMUNICATION ESTABLISHED".
 - .7 Visual signal for Phase I Emergency Recall Operation;
 - .8 Visual signal for Emergency Power Operation;

- .9 Elevator 1:
 - .1 A key switch (two-position), spring return type, to activate the <BLUE CODE> operation marked < BLUE CODE > in red engraved letters measuring at least 5 mm in height. The key can be removed at one (1) position only. Use an "ABLOY" type key switch.
 - .2 A blue LED light <hidden legend> indicating the activation of the < BLUE CODE > operation located at the key switch side.
 - .3 An amber engraved US85 LED light with the marking <Emergency - Exit as soon as the car stops> with black lens indicating activation of the Blue Code Bleu operation.
 - .10 Elevators 1 à 8 & 11 :
 - .1 An amber LED light <hidden legend> indicating the activation of the <FREE CAR> marked <FREE CAR>.
 - .11 Elevators 1 & 11 :
 - .1 A key switch for independent service operation. Use an "ABLOY" type key switch.
 - .2 A red LED light <hidden legend> indicating the activation of the independent service operation marked independent service.
 - .2 Supply and install a firefighters' operation cabinet (as per section 2.27.3.3.7 of ASTM A17.1-2010/CSA B44-2010 code), at the top of the car operating panel, with the following items:
 - .1 A three-position key-operated switch (group 3) labeled "FIRE OPERATION" and its positions marked "OFF – HOLD – ON" (in that order). The letters shall be a minimum of 5mm high in red. It shall become effective only when Phase I Emergency Recall Operation is in effect and the car has been returned to the recall level.
 - .2 A button labeled "CALL CANCEL" which shall be effective during Phase II Emergency In-Car Operation. When activated, all registered calls shall be canceled and a traveling car shall stop at or before the next available landing.
 - .3 Door open and close buttons;
 - .4 A "RUN" / "STOP" switch
 - .5 Visual signal for Phase I Emergency Recall Operation;
 - .6 A descriptive plate with marking shown in figure 2.27.7.2 of ASTM A17.1-2010/CSA B44-2010 code.
 - .7 The cabinet door access key must be the same as phase II switch.
 - .8 The cabinet door must lock automatically when the door is closed.
 - .3 Supply and install a service cabinet at the bottom of the car operating panel, locked by a key switch with the following items:
 - .1 Stop key switch with marking <STOP / RUN>
 - .2 Independent service key switch;
 - .3 Light switch;
 - .4 Emergency light test switch;
 - .5 Fan key switch;
 - .6 Hoistway access key switch.
 - .7 A key switch on door panel
 - .4 The LED lights used in car operation panel shall have a useful life of at least 100 000 hours.
 - .5 Engrave all required markings directly on the plates.
 - .6 Provide all plates in stainless steel no4 finish.
 - .7 Supply and install a digital position indicator on the car operating panel. Characters shall be 50mm high. The unit must have direction arrow.
 - .8 Access Control - Key
 - .1 Elevators 1 & 11 :
 - .1 Elevator 1: Provide car key access control for level 17
-

- .2 Elevator 11: Provide car key access control for levels A & 6
- .3 Provide a key switch (two-position), spring return type, to place a car call marked < PLACE CALL > in red engraved letters measuring at least 5 mm in height. The key can be removed at one (1) position only
- .4 Use an "ABLOY" type key switch.
- .5 See <Controller - Access Control> for the operation of the switches.
- .2 Elevators 2 to 10 & 12:
 - .1 Not used
- .9 Access Control – Card reader
 - .1 Elevators 1 to 11:
 - .1 Provide a location and connection interfaces in the car operating panel for a card reader access control system.
 - .2 The card reader shall be integrated in the car operation panel behind a lexan window.
 - .3 Provide the necessary wiring to connect the controller to the car operating panel.
 - .2 Elevator 12:
 - .1 Not used

2.41 CAR OPERATING PANEL - AUXILIARY

- .1 Elevators 2, 3, 4, 5, 6, 7, 8, 9, 10
 - .1 Supply and install one (1) car operating panel, mounted on invisible hinge, in stainless steel finish No. 4 integrated in the car front return as per requirements of ASTM A17.1-2010/CSA B44-2010 code and the following requirements:
 - .1 Dupar US91BB (steel/steel) Tactile Compact 2, red LED illuminated push button (or replacement product approved by addendum in accordance with the Instructions to Tenderers) with integrated Braille tag corresponding to floors served.
 - .2 Each button will become a high intensity when the button is pressed (one intensity model).
 - .3 Door open button labeled "OPEN" and door closer button labeled "CLOSE".
 - .4 Alarm button, with a raised ring, as required by section 2.26.2.21 of ASTM A17.1-2010/CSA B44-2010 code.
 - .5 Emergency button, with a raised ring, with a phone symbol labeled "PUSH TO CALL" above and "HELP" below button. The button light will remain permanently on a low intensity (white) and become a high intensity (red) when the button is pressed (model with two colors (white / red) and two intensities).
 - .6 Visual indication, located in the upper part of the car operation panel to acknowledge that two-way communications link has been established labelled "COMMUNICATION ESTABLISHED".
 - .7 Visual signal for Phase I Emergency Recall Operation;
 - .8 Visual signal for Emergency Power Operation;
 - .2 The LED lights used in car operation panel shall have a useful life of at least 100 000 hours.
 - .3 Engrave all required markings directly on the plates.
 - .4 Provide all plates in stainless steel no4 finish.
 - .5 Supply and install a digital position indicator on the car operating panel. Characters shall be 50mm high. The unit must have direction arrow.
 - .6 Access Control
 - .1 Provide a location and connection interfaces in the car operating panel for a card reader access control system.
 - .2 The card reader shall be integrated in the car operation panel behind a lexan window.
 - .3 Provide the necessary wiring to connect the controller to the car operating panel.
- .2 Elevators 1, 11, 12
 - .1 Not Used.

2.42 VOICE SYNTHESIZER

- .1 Supply and install a voice synthesizer in each car.
- .2 The system will announce the floor of arrival before opening the doors.
- .3 The system must be able to store 40 customized messages (8 seconds each) for a total of 5 minutes of capacity.
- .4 The speaker system shall be at least 0.5 Watts and 8 Ohm type.
- .5 The microphone for recording messages must be 1 K Ohm type with minimum sensitivity of 64 dB.
- .6 The device must be easily programmable. The memory access must be code protected.
- .7 Install the system so that the message is clear and noise free anywhere in the cab.

2.43 CAR EMERGENCY LIGHT

- .1 Supply and install an emergency lighting unit, in the car operating panel, with autonomy of 4 hours, designed for this application.
- .2 The unit will produce an instant lighting when normal power is lost.
- .3 The emergency lighting unit must provide a general brightness of 22 lux in the cab at a distance of 1200 mm.
- .4 Supply and install a sealed rechargeable battery and powered by the normal current.

2.44 DOOR PROTECTION DEVICE

- .1 Supply and install multibeam infrared door protection device.
- .2 The detection field shall start at a maximum of 150 mm from the floor and extend up to a maximum of 300 mm from the top of the entrance.
- .3 The system must remain operational until a failure of 10% of the infrared rays. A light shall indicate the device failure. In case of failure, deactivate the nudging except for emergency recall.
- .4 The door shall reopen completely when the door protection devices are activated.
- .5 Arrange that when the door protective devices are activated for more than 20 seconds continuously, a nudging buzzer signal be activated

2.45 ENGRAVING

- .1 Identify the elevator at main floor with a number 75mm in height. This number should be engraved on a stainless steel plate.
 - .2 Identify the elevator with engraving on the car operating station.
 - .3 Identify all equipment parts located in machine room.
 - .4 Identify the refuge areas on the car top.
 - .5 Supply and install Arabic numerals and Braille markings designating levels on the two doorframes hall entrance. The bottom of the numbers shall be at 1525 mm from floor. At the main floor, a star shall be supply in addition to the identification requested.
-

- .6 Provide all other inscriptions required by authorities.
- .7 All engraving shall be in French & English language.
- .8 All inscriptions should be engraved to a minimum depth of 0.25 mm on the metal surfaces of the fixtures.

2.46 KEYS

- .1 Provide a minimum of 6 sets of keys clearly identified for the operation of the emergency recall and special emergency service key switches.
- .2 The various switches and keys shall meet the requirements of the Elevator Code.
- .3 Any item referring to locks / keys " FIRE OPERATION " for "fire recall" phase I and II: These locks / keys group 3 must be provided by the contractor and will be of the universal model recognized as the "FEO-K1" .
- .4 The "ABLOY" type switch and keys will be provided by the Departmental Representative.

2.47 COMPUTERIZED CENTRAL CONSOLE

- .1 Connect the elevators to the Computerized Central Console in accordance with Section 14 70 10.

2.48 CONTROL CONSOLE FOR SPECIAL OPERATIONS

- .1 Connect the elevators to the Control Console for Special Operations in accordance with Section 14 70 20.

2.49 CAR INTERCOMMUNICATION SYSTEM

- .1 Supply and install a hands free phone in each car in accordance with Section 14 70 30.
- .2 Provide the location and openings in the car operating panel in the cab.
- .3 The system must include a video function.

2.50 BUILDING INTERCOMMUNICATION SYSTEM

- .1 Connect the car to the two-way communication station in accordance with Section 14 70 30.
- .2 The communication system must allow two-way communication between the car and a location staffed by authorized personnel in accordance Section 14 70 30.
- .3 The system at the CCS must include a video function and be freehand.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and data sheet.
-

3.2 INSTALLATION

- .1 Install hoistway, machine room, and other elevator materials and components in accordance with ASTM A17.1-2010/CSA B44-2010, local codes, regulations and manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

- .1 Verification requirements in accordance with Section 01 47 17 - Sustainable Requirements: Contractor's Verification, include:
 - .1 Materials and resources.
 - .2 Storage and collection of recyclables.
 - .3 Construction waste management.
 - .4 Resource reuse.
 - .5 Recycled content.
 - .6 Local/regional materials.
 - .7 Certified wood.
 - .8 Low-emitting materials.

3.4 SITE TESTS

- .1 Perform and meet tests required by ASTM A17.1-2010/CSA B44-2010.
 - .1 Submit test data forms in accordance with Section 01 91 33 - Commissioning Forms before requesting an inspection by the Departmental Representative.
 - .2 Perform real time testing of Emergency Operation (Emergency Recall Operation - Phase I & Emergency In-car Operation - Phase II) and emergency power operation with Departmental Representative.
- .2 Supply instruments and execute specific tests.
- .3 Furnish test and approval certificates issued by jurisdictional authorities.
- .4 At agreed time during twelve month warranty period, and with building normally occupied using normal building traffic, conduct tests to verify performance. Furnish event recording of hall call registrations, time initiated, and response time throughout entire normal working day.

3.5 CLEANING

- .1 Remove protective coverings from finished surfaces and components.
- .2 Clean surfaces and components ready for inspection.

3.6 ADJUSTMENTS

- .1 Adjust door opening and closing times to suit handicapped users in accordance with Departmental Representative instructions.
- .2 Adjust control system to cause elevators to answer hall calls during working day within performance criteria specified.
- .3 Adjust for smooth acceleration and deceleration of car as so not to cause passenger discomfort.
- .4 Adjust automatic floor levelling feature at each floor.

3.7 SCHEDULE OF WORK

- .1 The work shall be coordinated with Departmental Representative.
-

3.8 SEQUENCE OF WORK

- .1 Schedule the modernization sequence in accordance with Section 01 14 00 - Work restrictions.
- .2 The sequence was determined taking into account that there are only the two hall call stations by floor. Elevator modernization in Towers must start by the elevator with a hall call station and end with the second having a hall call station.
- .3 Schedule a maximum of 6 weeks per elevator for modernization works.
- .4 The final sequence of work must be submitted before the start of work for approval by Departmental Representative.

3.9 DISMANTLEMENT

- .1 Coordinate equipment dismantlement with Departmental Representative.
- .2 Following dismantlement, dispose of equipment in accordance with Section 01 74 21.

3.10 INSERTING AND REMOVING EQUIPMENT

- .1 The Contractor is responsible for the insertion and removal of the equipment described in this section.
- .2 The contractor is responsible for providing all equipment necessary for insertion, handling and installation of the equipment in the machine room or in the hoistway.
- .3 Access to the machine room is from the corridors and stairways of the building.
- .4 The Contractor is responsible to verify the paths and provide equipment to meet the dimensions of access constraints.
- .5 No new opening will be made in the machine room.

3.11 WELDING WORK

- .1 If welding works are required on the site, obtain all necessary approvals by Departmental Representative before performing the works.
- .2 All site welds must be made by a qualified welder and identified with his identification mark.

3.12 TOUCH UP WORK

- .1 Ensure that all exposed metal surfaces are painted.
 - .2 At the end of the work, retouch and repair all finished surfaces assembled at the factory, where the finish is altered or damaged.
 - .3 Repair or replace any damaged item, without charge, before the substantial completion of work.
-

3.13 CAR TRAVEL DURING THE MODERNIZATION

- .1 Elevators 1 & 11 :
 - .1 For each elevator, during the modernization period, foresee at customer demand, (1 car travel) of 30 minutes per week in inspection speed once the new controller is installed and running in inspection mode.
- .2 Elevators 2 to 10 & 12 :
 - .1 Not Used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Related sections
 - .1 Section 14 00 00 – Additional General Conditions
 - .2 Section 14 20 06 – Elevators 1 to 12

1.2 SYSTEM DESCRIPTION

- .1 One (1) Computerized Central Console installed in CCS.
- .2 One (1) Computerized Central Console installed in elevators 1 to 6 machine room.
- .3 A new Ethernet network dedicated to elevators.
- .4 Design the equipment in accordance with ASTM A17.1-2010/CSA B44-2010, local codes and regulations.

1.3 PERFORMANCE REQUIREMENTS

- .1 Codes and Regulations
 - .1 Design, supply and install all equipment in accordance with the latest editions of the ASTM A17.1-2010/CSA B44-2010 Code (update included), CAN/CSA-B651-12 Code and any other federal, provincial and municipal regulations applicable for this type of installation, including the National building Code of Canada and the Quebec Electrical Code.

PART 2 PRODUCTS

2.1 COMPUTERIZED CENTRAL CONSOLE

- .1 Supply and install (2) complete computerized central console that will be installed in the elevators 1 to 6 machine room, and CCS.
 - .2 Computerized console will run on the new dedicated elevators Ethernet network.
 - .3 Provide the program, programming, technical and training assistance.
 - .4 The computerized central console must interact with the following elevators:
 - .1 Elevators 1 to 12.
 - .5 The system shall include the following features:
 - .1 A menu for the selection of displays and functions;
 - .2 Display elevators per group, including the floors served by each group of elevators, on separate display;
 - .3 Indicate car position and moving direction;
 - .4 Indicate hall calls recorded;
 - .5 Indicate hall calls assignment to elevators;
 - .6 Indicate car calls for each elevator;
 - .7 Indicate elevator status (on or fault);
 - .8 Indicate door status;
 - .9 Indicate out of service mode;
 - .10 Indicate independent service;
-

- .11 Indicate emergency recall operation;
 - .12 Indicate emergency power operation;
 - .13 Indicate time and date, from the group controller in real time;
 - .6 The system shall allow the programming of the following operations (in a timely manner or time slot):
 - .1 Block hall and car calls by floor;
 - .2 Limit, using access code, car calls by floor;
 - .3 Show elevators per group;
 - .4 Place car calls;
 - .5 Parking at programmable floor;
 - .6 Put out of service one or more car;
 - .7 The system shall include a historical and statistical module.
 - .1 The system shall allow history viewing.
 - .2 The system shall allow printing of an event report, as well as graphics for one or more days, for one or more elevator.
 - .3 The system shall allow the analysis and printing of the breakdown history and operation status, for a time range defined by the user.
 - .4 The system shall allow the analysis and printing of elevator statistics and performance (individual or group) including wait times, number of calls etc, for a time range defined by the user.
 - .5 The system shall allow display of the rate of return (downtime fault / uptime) for each elevator.
 - .6 The system shall allow display breakdowns by category for selected elevator. Categories of failure should be defined with Departmental Representative.
 - .7 The system shall allow exporting data and reports to Excel.
 - .8 The system shall allow automatic archiving of breakdown history, operating status, operating statistics and elevator performance every month (+/- 30 days).
 - .9 Provide function for long-term archiving. Current data will be archived at the end of every month. No information should be erased permanently from the system. All types of reports shall be compatible and work with data on the long-term archiving.
 - .10 Provide a list of all alarm codes and operating status.
 - .8 The system must allow the printing of report automatically at the frequency set by the user.
 - .9 Access to setup menus will be protected by an access code. Define the (3) following access levels: Security, Maintenance and Supervisor.
 - .1 Security: Access to basic functions of the system and access to historical and statistical module
 - .2 Maintenance: No access to security settings.
 - .3 Supervisor: Full control of all parameters
 - .10 Supply and install a computer for the computerized central console, with the following characteristics: Intel core i3 or AMD A8 CPU, with a minimum of 3 TB hard drive, 8GB of RAM, a standard graphics card, a DVD-RW, modem, ethernet card and a 24-inch flat-LCD screen.
 - .11 Provide all software and programs and operating system licenses installed on the computer.
 - .12 Provide a battery backup (UPS) and connect the computer console on it.
 - .13 Special Function - Occupancy Status
 - .1 The computer console shall indicate occupancy status in the car using the new load weight device.
 - .2 If the car is empty the display indicates 0
 - .3 If the car is occupied, the display shows the weight in the car.
 - .14 Special Function - Activation Status
-

- .1 The computer console must indicate the following activation status:
 - .1 Emergency button in car (alarm button in car or telephone button)
 - .2 Free Car
 - .3 Blue Code activated from CCS
 - .4 Emergency stop activated from CCS
- .15 Special Feature - EXPRESS ZONE
 - .1 The function must interact with the following of elevators:
 - .1 Elevator 2, 3, 4, 5, 6
 - .2 The function must allow the creation of (2) separate EXPRESS ZONE maximum.
 - .1 The elevators selected in the first express zone must not be available for the second zone.
 - .2 There shall be at all times (1) elevator assigned in normal service.
 - .3 The function shall assign a user-determined number of elevators to a certain number of exclusive levels.
 - .1 Allow the selection of an elevator number (between 1 and 4)
 - .2 Allow to assign certain exclusive levels to this elevator selection.
 - .4 The display must clearly identify elevators and express zone. A new window should display this maneuver.
 - .5 The console must have a button, by express zone, to terminate the function.

2.2 ELECTRIC WIRING

- .1 Supply and install all the wiring to interconnect the equipments of this section.
- .2 Provide (20%) additional spare conductors.
- .3 Supply insulated multi-stranded ETT-type wiring having a 60°C flame-retardant and moisture-resisting outer cover.
- .4 Provide colour or number-coded conductors in multi-conductor cables.
- .5 Terminate cables on terminal blocks having identifying numbers.
- .6 Ensure that all circuits are properly grounded.

2.3 ELECTRICAL WIRING - ETHERNET NETWORK

- .1 Supply and install an Ethernet network dedicated to elevator system (elevators # 1 to 12).
 - .1 Supply and install wiring (UTP Ethernet cat6) between each elevator controller and the CCS.
 - .2 Supply and install the necessary conduit to connect the controllers to the new dedicated Ethernet network of elevators.
 - .3 Supply and install the necessary router / switch systems to connect the controllers to the new dedicated Ethernet network of the elevators.
 - .4 Supply and install an access point in each machine room near each controller for the connection of all controllers and the computerized central console on the Ethernet network.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and data sheet.
-

3.2 INSTALLATION

- .1 Install hoistway, machine room, and other elevator materials and components in accordance with ASTM A17.1-2010/CSA B44-2010, local codes, regulations and manufacturer's written instructions.

3.3 SITE TESTS

- .1 Perform and meet tests required by ASTM A17.1-2010/CSA B44-2010.
 - .1 Submit test data forms in accordance with Section 01 91 33 - Commissioning Forms before requesting an inspection by the Departmental Representative.
 - .2 Perform real time testing of Emergency Operation (Emergency Recall Operation - Phase I & Emergency In-car Operation - Phase II) and emergency power operation with Departmental Representative.
- .2 Supply instruments and execute specific tests.
- .3 Furnish test and approval certificates issued by jurisdictional authorities.

3.4 CLEANING

- .1 Remove protective coverings from finished surfaces and components.
- .2 Clean surfaces and components ready for inspection.

3.5 ADJUSTMENTS

- .1 Not Used.

3.6 NEW COMPUTERIZED CONSOLE

- .1 Install the new console with the last modernized elevator group.

3.7 EXISTING COMPUTERIZED CONSOLE

- .1 At the end of the modernization work of all elevators, do the following work:
- .2 Remove existing wiring between the machine rooms and the CCS.
- .3 Remove existing computer console in the equipment room in the CCS.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Related sections
 - .1 Section 14 00 00 – Additional General Conditions
 - .2 Section 14 20 06 – Elevators 1 to 12

1.2 SYSTEM DESCRIPTION

- .1 One (1) Control Console for Special Operations installed in CCS.
- .2 Design the equipment in accordance with ASTM A17.1-2010/CSA B44-2010, local codes and regulations.

1.3 PERFORMANCE REQUIREMENTS

- .1 Codes and Regulations
 - .1 Design, supply and install all equipment in accordance with the latest editions of the CAN/ASTM A17.1-2010/CSA B44-2010-10 Code (update included), CAN/CSA-B651-12 Code and any other federal, provincial and municipal regulations applicable for this type of installation, including the National building Code of Canada and the Quebec Electrical Code.
- .2 Emergency Operation
 - .1 Provide Emergency Recall Operation - Phase I in accordance with ASTM A17.1-2010/CSA B44-2010 Code.
 - .2 Provide Emergency In-car Operation - Phase II in accordance with ASTM A17.1-2010/CSA B44-2010 Code.
- .3 Emergency Power Operation
 - .1 Provide Emergency Power Operation in accordance with ASTM A17.1-2010/CSA B44-2010 Code.

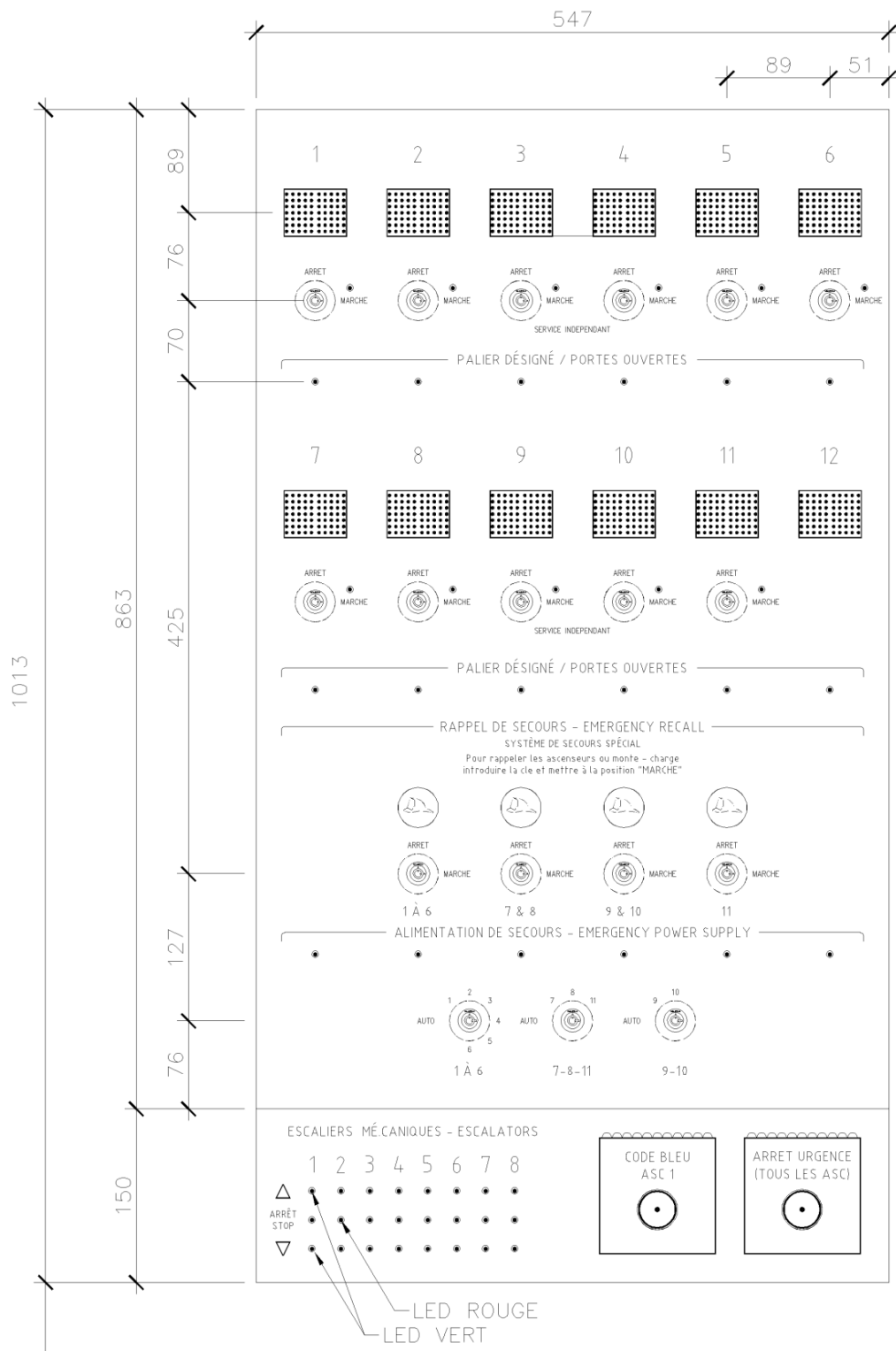
PART 2 PRODUCTS

2.1 CONTROL CONSOLE FOR SPECIAL OPERATION

- .1 Supply and install (1) Control Console for Special Operations located at CCS with the following items:
 - .1 For each elevators in the building:
 - .2 Identify the elevator number below each indicator.
 - .3 Visual signal, LED type, for Phase I Emergency Recall Operation.
 - .4 A two-position key-operated switch (group 3) labeled "FIRE RECALL" and its positions marked "OFF – ON" (in that order). The letters shall be a minimum of 5mm high in red.
 - .5 Visual signal for Emergency Power Operation
 - .6 A key-operated switch allowing selecting the elevator powered by emergency power.
 - .7 For each elevator: Visual LED signal indicating that the car is at the designated floor with the doors open, labelled "DESIGNATED FLOOR / DOOR OPEN". The letters shall be a minimum of 5mm high in red
 - .8 Supply and install a C.E. EV210-XX digital position indicator (or replacement product approved by addendum in accordance with the Instructions to Tenderers) on the control console. The characters must have a height of 30 mm.
-

- .2 Clearly identify the elevators.
 - .3 Provide the display of the operating status of escalators 1 to 5. Also provide the display for (3) additional escalators.
 - .1 For each escalator:
 - .2 A LED light (green) indicating operating direction (up / down)
 - .3 A LED light (red) indicating that the escalator is stopped
 - .4 Provide appropriate marking.
 - .4 Provide the following special maneuvers:
 - .1 EMERGENCY STOP
 - .1 The maneuver must interact with elevators 1 to 12.
 - .2 Supply and install an activation button type Dupar US 91BB (ss/ss).
 - .3 Place the activation button under a transparent plate with a spring that holds the plate in the closed position.
 - .4 Provide marking "EMERGENCY STOP - All elevators" on the plate.
 - .5 The activation button must be pressed to activate the maneuver.
 - .6 Upon activation of the maneuver, all elevators must stop at the nearest landing and close the doors.
 - .7 No movement is permitted once elevators are stopped.
 - .8 The activation button must be pressed again to terminate the maneuver.
 - .9 Upon activation of the maneuver, elevators shall perform the maneuver described in Section 14 20 06, Article 1.3.20 - Special Operation <EMERGENCY STOP>.
 - .2 BLUE CODE
 - .1 The maneuver must interact with elevator # 1.
 - .2 Supply and install an activation button type Dupar US 91BB (ss/ss).
 - .3 Place the activation button under a transparent plate with a spring that holds the plate in the closed position.
 - .4 Provide marking " CODE BLUE - Elevator 1 " on the plate.
 - .5 The activation button must be pressed to activate the maneuver.
 - .6 At the activation of the maneuver, elevator no1 shall perform the maneuver described in section 14 20 06, article 1.3.21 - Special operation <BLUE CODE>.
 - .5 Provide for the control console one (1) control panel mounted on invisible hinge, stainless steel finish No. 4, mounted on a stainless steel cabinet that will be surface mounted to the wall.
 - .6 See the sketch below for elevators disposition on the console.
 - .7 Submit drawings for approval.
 - .8 Design the console according to available space.
 - .9 Provide programming of each position indicator.
 - .10 Engrave all required markings directly on the plates.
 - .11 All items and their dispositions must be coordinated and approved by Departmental Representative.
-

2.2 SKETCH : CONTROL CONSOLE FOR SPECIAL OPERATION



2.3 ELECTRIC WIRING

- .1 Supply and install all the wiring to interconnect the equipments of this section.
- .2 Supply and install metal conduits (EMT) ducts or flexible conduits as needed to install all the wiring inside the CCS.
- .3 Supply and install wire protection when wiring comes into contact with a sharp surface that can damage the wire protective envelop.
- .4 Install anti-shorts at wiring entry points within conduits, consoles and junction box.
- .5 Supply and install junction boxes to connect with existing conduits.
- .6 Provide (20%) additional spare conductors.
- .7 Supply insulated multi-stranded ETT-type wiring having a 60°C flame-retardant and moisture-resisting outer cover.
- .8 Provide colour or number-coded conductors in multi-conductor cables.
- .9 Terminate cables on terminal blocks having identifying numbers.
- .10 Ensure that all circuits are properly grounded.

2.4 ENGRAVING

- .1 Provide all inscriptions required by authorities.
- .2 All engraving shall be in French & English language.
- .3 All inscriptions should be engraved to a minimum depth of 0.25 mm on the metal surfaces of the fixtures.

2.5 KEYS

- .1 Provide a minimum of 6 sets of keys clearly identified for the operation of the emergency recall and special emergency service key switches.
- .2 The various switches and keys shall meet the requirements of the Elevator Code.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and data sheet.

3.2 INSTALLATION

- .1 Install hoistway, machine room, and other elevator materials and components in accordance with ASTM A17.1-2010/CSA B44-2010, local codes, regulations and manufacturer's written instructions.

3.3 SITE TESTS

- .1 Perform and meet tests required by ASTM A17.1-2010/CSA B44-2010.
-

- .1 Submit test data forms in accordance with Section 01 91 33 - Commissioning Forms before requesting an inspection by the Departmental Representative.
- .2 Perform real time testing of Emergency Operation (Emergency Recall Operation - Phase I & Emergency In-car Operation - Phase II) and emergency power operation with Departmental Representative.
- .2 Supply instruments and execute specific tests.
- .3 Furnish test and approval certificates issued by jurisdictional authorities.

3.4 CLEANING

- .1 Remove protective coverings from finished surfaces and components.
- .2 Clean surfaces and components ready for inspection.

3.5 ADJUSTMENTS

- .1 Not Used.

3.6 TEMPORARY AUXILIARY CONSOLE

- .1 At the start of the elevators modernization work, do the following work:
 - .1 The existing console must remain functional until completion of modernization work.
 - .2 Retain the existing Control Console for Special Operations in CCS.
 - .3 Move the existing console to the side of the wall for the duration of the modernization work.

3.7 PERMANENT CONSOLE

- .1 Install the new Control Console for Special Operations in the CCS with the first modernized elevator group (phase 1).
- .2 Integrate each modernized elevator after commissioning on the new Control Console for Special Operations in the CCS.

3.8 EXISTING AND TEMPORARY ELECTRIC WIRING AND TERMINAL

- .1 At the end of the modernization work of all elevators, do the following work:
 - .1 Remove existing wiring between the cars and CCS.
 - .2 Remove existing Control Console for Special Operations in the CCS.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Related sections
 - .1 Section 14 00 00 – Additional General Conditions
 - .2 Section 14 20 06 – Elevators 1 to 12

1.2 SYSTEM DESCRIPTION

- .1 One (1) complete Intercommunication System between CCS and each car & each machine rooms.
- .2 Design the equipment in accordance with ASTM A17.1-2010/CSA B44-2010, local codes and regulations.

1.3 PERFORMANCE REQUIREMENTS

- .1 Codes and Regulations
 - .1 Design, supply and install all equipment in accordance with the latest editions of the ASTM A17.1-2010/CSA B44-2010 Code (update included), CAN/CSA-B651-12 Code and any other federal, provincial and municipal regulations applicable for this type of installation, including the National building Code of Canada and the Quebec Electrical Code.
- .2 Two-way communications system:
 - .1 The two-way communications between the car and a location in the building, shall be readily accessible to authorized and emergency personnel.
 - .2 When the two-way communications location in the building is not staffed 24 h a day, by authorized personnel who can take appropriate action, the means of two-way communications shall automatically be directed within 30 s to an additional on- or off-site location, staffed by authorized personnel, where an appropriate response can be taken.
 - .3 If the two-way communications located the room staffed 24 h a day, by authorized personnel who can take appropriate action and but be answered, the means of two-way communications shall automatically be directed within 30 s to an additional off-site location, staffed by authorized personnel, where an appropriate response can be taken.
 - .4 The communication system must have a video function that allows authorized CCS personnel to see the person in the car.
 - .5 Include in the car operation panel the following items:
 - .1 An emergency push button labeled "HELP".
 - .2 A visual indication on the same panel as the "HELP" push button to acknowledge that two-way communications link has been established.
 - .3 Location for the communication system camera.
 - .6 When the push button "HELP" is actuated, the emergency two-way communication means shall initiate a call for help and establish two-way communications.
 - .7 A visual indication on the same panel as the "HELP" push button shall be provided to acknowledge that two-way communications link has been established. The visual indication shall be extinguished when the two-way communication link is terminated.
 - .8 The two-way communication means shall provide on demand to authorized personnel, information that identifies the building location and elevator number and that assistance is required.
 - .9 After the call acknowledgement signals are sent, the two-way voice communications shall be available between the car and authorized personnel.
 - .10 Once established, the video function must be activated allowing the CCS hands free master station to see the person in the car.

- .11 Two-way voice communications, once established, shall be disconnected only when emergency personnel outside the car terminates the call.
- .12 The two-way communication means shall not use a handset in the car.
- .13 The two-way communications shall not be transmitted to an automated answering system. The call for help shall be answered by authorized personnel.
- .14 Operating instructions shall be incorporated with or adjacent to the "HELP" button.
- .15 If the emergency communication means is normally connected to the building power supply, it shall automatically transfer to a source of standby or emergency power. The power source shall be capable of providing for illumination of the visual indication within the car, and the means of emergency communications for at least 4 h.

PART 2 PRODUCTS

2.1 BUILDING INTERCOMMUNICATION SYSTEM

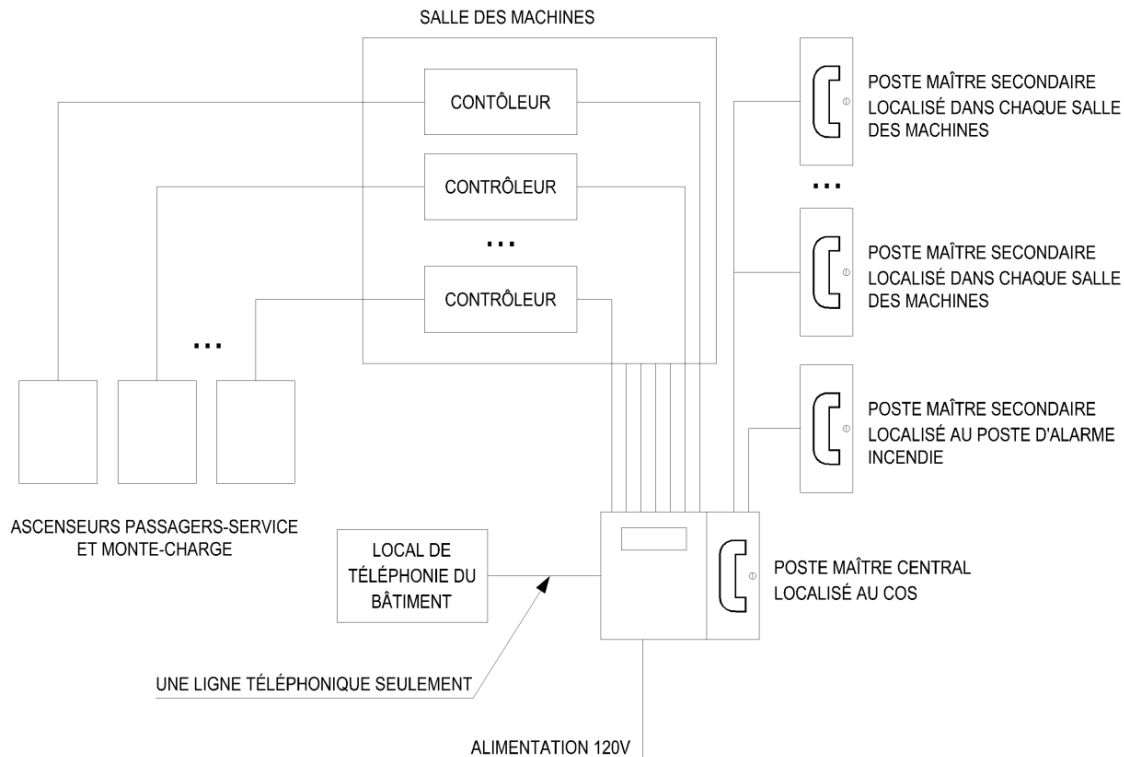
- .1 Supply and install a central master intercommunication system station, located at CCS, surface mounted connected to each car with panel indicator indicating the origin of calls and a keypad for the following functions:
 - .1 Provide a system for the connection of all elevators.
 - .2 A selection for calls to each car;
 - .3 A selection for calls in the machine rooms;
 - .4 Indicate the origin of the calls;
 - .5 Indicate lines on hold;
 - .6 Indicate the status of the AC power;
 - .7 Indicate the status of the battery;
 - .8 Indicate the status of the telephone line;
 - .9 Make an alarm when the system is operating.
- .2 Supply and install a secondary desk-type intercommunication master station located on a desk in the CCS connected to each car and to the CCS allowing the following functions:
 - .1 Provide a hands-free system
 - .2 Provide a video function to see the person in the car.
- .3 Supply and install a secondary master intercommunication system, wall mounted, in each machine room connected to each car and CCS.
- .4 Connect the alarm button in the car with the central station so that a visible and audible signal is activated when a person presses the buttons and that these signals remain active until call is answered.
- .5 The communication system shall allow a two-way voice communication within the building to each car and comply with the following requirements:
 - .1 The system shall enable emergency personnel within the building to establish two-way voice communications to each car individually. Two-way voice communication shall be established without any intentional delay and shall not require intervention by a person within the car. The system shall override communications to outside of the building.
 - .2 Two-way voice communications, once established, shall be disconnected only when emergency personnel outside the car terminates the call.
 - .3 Once the two-way voice communication has been established, the visual indication within the car shall illuminate. The visual indication shall be extinguished when the two-way communication is terminated.
 - .4 Operating instructions shall be incorporated with or adjacent to the two-way voice communication outside the car. Instructions shall conform to 2.27.7.3 of ASTM A17.1-2010/CSA B44-2010 code.

- .6 Supply and install quality equipment with background noise less than 10% of the noise during a call.
- .7 Supply and install a 100% shielded wiring between stations.
- .8 Ensure to proper grounding of all circuits.
- .9 The system should be equipped with a system for detecting a short circuit in the circuit continuity.
- .10 Supply and install a sealed rechargeable type battery (4 hours minimum hours of autonomy) and powered by the normal current.
- .11 Supply and install wiring to connect the car intercommunication system to building intercommunication system.
- .12 The system must be installed in a locked stainless steel cabinet on a wall.

2.2 CAR INTERCOMMUNICATION SYSTEM

- .1 Supply and install a hands free phone in each elevator to establish two-way communication between the car and a location in the building and in accordance with section 2.27.1.1 of ASTM A17.1-2010/CSA B44-2010 code. This place shall be readily accessible to authorized and emergency personnel. The phone must include the following items:
 - .1 An emergency push button labeled "HELP".
 - .2 A visual indication on the same panel as the "HELP" push button to acknowledge that two-way communications link has been established.
 - .3 A camera for the video function.
 - .4 Location for the communication system camera.
 - .2 Supply and install wiring to connect the car phone system to controller in the machine room.
 - .3 The devices shall be easily remote programmable. Access to the program shall be protected by a code.
 - .4 The phone will automatically dial the programmed number when the "HELP" pushbutton is pressed. If that number is busy, a second number can be programmed.
 - .5 The communication should be clear and without parasite anywhere in the cab and can also be initiated from a external telephone.
 - .6 Ensure that all circuits are properly grounded.
 - .7 Provide the location and holes in the car operating panel.
-

2.3 CONNECTION DIAGRAM



2.4 INTERCOMMUNICATION SYSTEM – EMERGENCY POWER

- .1 If the emergency communication means is normally connected to the building power supply, it shall automatically transfer to a source of standby or emergency power. The power source shall be capable of providing for illumination of the visual indication within the car, and the means of emergency communications for at least 4 h.

2.5 ELECTRIC WIRING

- .1 Supply and install all the wiring to interconnect the equipments of this section.
- .2 Supply and install metal conduits (EMT) ducts or flexible conduits as needed to install all the wiring inside the CCS.
- .3 Supply and install wire protection when wiring comes into contact with a sharp surface that can damage the wire protective envelop.
- .4 Install anti-shorts at wiring entry points within conduits, consoles and junction box.
- .5 Supply and install junction boxes to connect with existing conduits.
- .6 Provide (20%) additional spare conductors.

- .7 Supply insulated multi-stranded ETT-type wiring having a 60°C flame-retardant and moisture-resisting outer cover.
- .8 Provide colour or number-coded conductors in multi-conductor cables.
- .9 Terminate cables on terminal blocks having identifying numbers.
- .10 Ensure that all circuits are properly grounded.

2.6 ENGRAVING

- .1 Provide all inscriptions required by authorities.
- .2 All engraving shall be in French & English language.
- .3 All inscriptions should be engraved to a minimum depth of 0.25 mm on the metal surfaces of the fixtures and control.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and data sheet.

3.2 INSTALLATION

- .1 Install hoistway, machine room, and other elevator materials and components in accordance with ASTM A17.1-2010/CSA B44-2010, local codes, regulations and manufacturer's written instructions.

3.3 SITE TESTS

- .1 Perform and meet tests required by ASTM A17.1-2010/CSA B44-2010.
 - .1 Submit test data forms in accordance with Section 01 91 33 - Commissioning Forms before requesting an inspection by the Departmental Representative.
 - .2 Perform real time testing of emergency maneuver (fire alarm) and emergency power operation with Departmental Representative.
- .2 Supply instruments and execute specific tests.
- .3 Furnish test and approval certificates issued by jurisdictional authorities.

3.4 CLEANING

- .1 Remove protective coverings from finished surfaces and components.
- .2 Clean surfaces and components ready for inspection.

3.5 ADJUSTMENTS

- .1 Not Used.

3.6 TEMPORARY COMMUNICATION SYSTEM

- .1 The existing CCS communication system must remain functional until the completion of modernization work to allow communication with non-modernized elevators.

3.7 PERMANENT COMMUNICATION SYSTEM

- .1 Install the new communication system in the CCS with the first modernized elevator group (phase 1).
- .2 Integrate each modernized elevator after commissioning on the new communication system in the CCS.

3.8 EXISTING AND TEMPORARY ELECTRIC WIRING AND TERMINAL

- .1 At the end of the modernization work of all elevators, do the following work:
 - .1 Remove existing communication system in the CCS.

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Related sections
 - .1 Section 14 00 00 – Additional General Conditions
 - .2 Section 14 20 06 – Elevators 1 to 12
 - .3 Section 14 70 10 – Computerized central console
 - .4 Section 14 70 20 – Control Console for Special Operations
 - .5 Section 14 70 30 – Intercommunication system

1.2 DESCRIPTION

- .1 The Contractor agrees to provide skilled labor, adequate equipment supervision, tools, instruments, materials and parts required for a complete elevator maintenance service according to the specifications and the terms and conditions set out in this document.
- .2 The full maintenance service includes periodic preventive inspections, callback and repair service in case of breakdowns including parts and labor for repairs or preventive replacements.
- .3 All work causing a shutdown of a complete elevator group shall be performed outside regular hours with the approval of Departmental Representative and without additional fees.
- .4 The requirements of the specifications herein and the specifications from the manufacturer shall be considered only as a minimum to be achieved and shall not limit the responsibility and warranty of the *Contractor*.
- .5 Execute all the works in conformity with the rules of the art and to the safety requirements generally recognized for this type of installation.
- .6 In every case where the singular is used in the specifications, it is implied that the plural applies when necessities to complete adequately the installation.

1.3 DEFINITIONS

- .1 The term *Verify / Examine* implies to clean, lubricate, calibrate, adjust, repair or replace parts as needed.
- .2 The term *Clean* implies to remove any dust, carbon dust, rust, oil, grease, etc located on any equipment, part of equipment or working zone.
- .3 The term 'regular hours' means the time frame from Monday to Friday between 8 am and 17 pm except industry holidays.

1.4 CODES AND REGULATIONS

- .1 Execute all required work in accordance with the latest editions of the ASTM A17.1-2010/CSA B44-2010 Code (update included), CAN/CSA-B651-12 Code and any other federal, provincial and municipal regulations applicable for this type of installation, including the National building Code of Canada and the Quebec Electrical Code.
 - .2 Execute all work in compliance with the labor standards applicable for this type of installation.
 - .3 Inform Departmental Representative of any changes to these requirements occurring during the term of the contract and work to be done to meet them included or not in this contract.
-

1.5 SPECIFICATIONS INTENTIONS

- .1 The purpose of the specifications is to describe the procedures and requirements of maintenance to ensure proper operation of elevators. The Contractor agrees to comply with the specifications.
- .2 Preventive maintenance described in the specifications must be executed to ensure equipment higher life expectancy, in addition to minimize the unplanned operating stops.

1.6 WORK NOT INCLUDED

- .1 For all work not included herein, the Contractor shall obtain the written approval of Departmental Representative before performing the work.
- .2 Work not included under this contract are defined as follows:
 - .1 Work to be performed outside the hours prescribed and approved in writing by Departmental Representative.
 - .2 Work made necessary due to vandalism and approved in writing by Departmental Representative.
- .3 Departmental Representative reserves the right in the case of emergency repairs, to do the emergency repair work in overtime.
 - .1 Emergency repair:
 - .1 The Contractor shall, in all cases of emergency repair, notify the Departmental Representative and evaluate opportunities with him to complete the repairs in overtime. The evaluation of the work period required in overtime time will be indicated to Departmental Representative.
 - .2 The Contractor shall complete the repairs in overtime after obtaining written approval of Departmental Representative.
 - .3 Emergency repairs carried out in extra time at the request of Departmental Representative, shall be paid as follows: The Contractor will absorb the number of hours worked at the regular rate and Departmental Representative will only pay an additional amount for premium hours.

1.7 SITE VISIT

- .1 The *Contractor* acknowledges having examined the site before submitting its bid and, therefore, may not claim any errors or omissions on the nature and extent of its commitments and obligations

1.8 OWNERSHIP OF EQUIPMENT

- .1 The *Contractor* shall be responsible for any good belonging to Departmental Representative, when these possessions are under the care or control of the *Contractor*. The *Contractor* shall be responsible for any loss or damage resulting from his negligence or that of his employees.
- .2 All existing equipment, including any replacement parts installed under the contract or any other components that extra payment was made for, are the exclusive property of Departmental Representative.

1.9 CONTRACTOR'S PERSONNEL

- .1 The Contractor shall provide skilled workers with valid elevator mechanic skills cards and confined space skills cards and a minimum of five years experience, able to work with promptness and efficiency in a manner that conforms to rules Art and the Departmental Representative satisfactory.
-

- .2 Departmental Representative may require from the Contractor to replace any employee he considers incompetent, negligent or otherwise undesirable. A verbal notice is sufficient for the exercise of this right.
- .3 Unless otherwise noted, if the staff of the Departmental Representative staff or the building occupant goes on strike, the *Contractor's* employees must continue the work. If the *Contractor's* employees were unable to perform the work, the owner, in its sole discretion, will decide what measures to take.
- .4 The contractor has the responsibility to train its employees, at its expenses, even when training is necessary to meet the specific needs of this contract.
- .5 The *Contractor's* employees assigned to this contract shall wear a uniform with the company's name on it.
- .6 The *Contractor's* employees assigned to this contract shall be able to speak French and English.

1.10 RESPECT OF THE EMPLOYMENT LAWS

- .1 The *Contractor*, as an employer must pay any all subscription according to the Canada Pension Plan, the Industrial Accidents Act, laws concerning taxation, the Unemployment Insurance Act and other mandatory contributions under federal, provincial or municipal law.
- .2 Departmental Representative has the right to terminate this contract at any time if the contractor or its subcontractors are not complying with the work health and safety commission.
- .3 Departmental Representative may deduct any amount due to the contractor until it or its subcontractors pay fully all contributions above.

1.11 SAFETY MEASURES

- .1 This article states the minimum standard and does not limit in any ways the responsibilities and obligations of the Contractor. In case of conflict between the security measures set out below and the established practices of the Departmental Representative, the established practices of the Departmental Representative have precedence. The Departmental Representative may at its sole discretion, impose additional standards of safety.
- .2 The particular instructions and the orders given by Departmental Representative on the workplace also have precedence on any safety measures expressed in the present.
 - .1 Smoking is prohibited in the building.
 - .2 The Contractor shall not use the materials, tools and equipment belonging to the Departmental Representative without the consent of the latter.
 - .3 Departmental Representative may, at its discretion and according to his instructions, suspend or terminate the work of the Contractor for reasons of security without liability to Departmental Representative or any compensation for the Contractor. The instructions and stop work shall be recorded by the Contractor and the Departmental Representative, they will agree on the date and method of resumption.
 - .4 The Contractor shall provide and install quality warning signs and temporary partitions (barricades) with a minimum height of 42 inches for the protection of public areas for work when hindering public traffic areas.
 - .5 The Contractor shall ensure that its employees are aware of the building fire fighting equipment and safety measures.
 - .6 The Contractor shall ensure that its employees have at their disposal the equipment and safety clothing required for the execution of their functions.
 - .7 The Contractor has the responsibility to inform the Departmental Representative of any hazardous or unsafe conditions, and in the shortest possible time.

.3 The Contractor is, at all times, responsible for ensuring the safety of its employees and any person and all movable and immovable property near the work and shall at all times comply with all standards, code and law on health and safety.

.4 The Contractor must follow the procedures outlined in the building orientation guide.

1.12 SECURITY MESURES - HOT WORK

.1 The Contractor must follow the procedures outlined in the building orientation guide.

1.13 SECURITY MESURES – CONFINED SPACE

.1 The Contractor must evaluate each of the existing confined spaces on its work site depending on the nature of its interventions and as a function of his work (welding, gas, paint, etc.). The evaluation forms used must contain at least the information required in the form FEL 104. The contractor shall transmit the risk assessment forms to Departmental Representative at least 5 days before the date set for entry into these confined spaces. He should include all costs for the measures to be taken, monitored and strictly enforced in order to meet safety requirements for confined spaces.

1.14 RESPONSIBILITY

.1 The Contractor assumes all the risks and responsibilities which relates to the execution of the present contract including its appendices and has to take all the necessary measures to avoid any damages to Departmental Representative or third party goods. For that purpose, the Contractor makes a commitment to guarantee and to indemnify Departmental Representative against any damages, losses, complaints or expenses resulting from the present contract, including the expenses and judicial and extrajudicial fees engaged by Departmental Representative and to take sides for him.

1.15 CESSION

.1 The present contract is non-transferable by the Contractor and cannot be given in subcontracting, in all or in part, without the preliminary written assent of the other sides. The fact for the Contractor to give up the present contract or to give it in subcontracting does not relieve him of its obligations at the end of the present contract.

.2 The Contractor declares that he did not sell or given up the universality, a part or a particular category of his current or future debts and he makes a commitment to inform Departmental Representative of any sale or possible transfer of his debts within ten (10) days of the aforementioned sale or transfer.

.3 If the Contractor does not inform Departmental Representative according to the disposition which precede and in which Departmental Representative becomes responsible for the payment to the transferee of sums of money already paid to the Contractor, the Contractor and the signatory of the present contract shall be jointly responsible for the repayment to Departmental Representative of any sum paid to the Contractor.

1.16 QUALITY INSURANCE

.1 Departmental Representative reserves the right at the end of the present contract to verify or mandate someone to verify the work made during the course of the contract.

.2 In every case, the Contractor recognizes that at the end of the present contract he is responsible for the quality of the works made during the course of the contract.

.3 The Contractor shall maintain and supply on reasonable request the appropriate documentation which demonstrates the respect for the present contract.

- .4 Departmental Representative can, at any time during the term of this contract, inspect or make inspect the works by his consultants, verify the operations of the Contractor and have access to areas and necessary documentation for the verification of any subject relative to this contract. The Contractor has to foresee the availability of his staff assigned to the contract.
- .5 If Departmental Representative deposits a notice in regards to the quality of the works or the executed services, the Contractor has to, within a few hours, supply to Departmental Representative a written report describing the badly executed works and the measures taken to avoid a recurrence.
- .6 The Contractor agrees that the requirements of quality insurance of this contract also apply to his subcontractors.
- .7 The Contractor has to demonstrate, on request, and to the satisfaction of Departmental Representative the following:
 - .1 The existence and the respect of a work quality control program.
 - .2 The applicable manufacturing standards at the equipment installation time;
 - .3 The Contractor shall perform periodic verifications of the services supplied to Departmental Representative, according to the calendar foreseen by the quality control program aiming at verifying the efficiency of the works. The frequency of the verifications can be straightened according to the results of the previous verifications or be negotiated between sides at needs.
- .8 The Contractor shall assist to monthly meetings with Departmental Representative to evaluate the maintenance quality as well as to verify with him the breakdowns listing and maintenance registers.

1.17 REPLACEMENT PARTS

- .1 Except approved modification, the replacement parts used on the vertical transport system within the course of this contract shall be authentic parts of current production.
- .2 If the *Contractor* judges that he would have a better replacement part, he shall submit it to Departmental Representative for approval. This new piece will be the responsibility (parts and labor) of the Contractor.

1.18 PROCEDURES

- .1 The *Contractor* shall submit to Departmental Representative a list of the mechanics and their supervisor that are qualified to perform the maintenance preventive on the equipments. This list shall include their experience, as well as any other relevant information in regard to their work.
 - .2 The maintenance preventive shall be performed during regular hours. At his arrival on site, the mechanic shall register with the person in charge of the building.
 - .3 Any work causing a shutdown of a complete elevator group shall be performed outside regular hours with the approval of Departmental Representative and without additional fees.
 - .4 At any given time, Departmental Representative shall be informed, at least 5 days in advance, of any major works which would require the shutdown of a unit.
 - .5 At any given time, Departmental Representative shall be informed, at least 24 hours in advance, of any deliveries which must be made at loading dock.
 - .6 No work generating noise of more than 70 dBA or generating strong smells will be tolerated during regular hours. Those works shall be done outside regular hours without any fees to Departmental Representative. Only Departmental Representative shall be the judge of the tolerated works.
-

- .7 No demand for overtime work will be accepted without prior written authorization of Departmental Representative.

1.19 CLEANLINESS AND DAMAGES

- .1 At any given time, the machine room, hoistway, car top or any other areas directly related to the operation of the elevator shall be clean and free of any obstacle.
- .2 Oil leaks and the abnormal accumulations of dust shall be quickly cleaned and their causes determined for immediate necessary corrections.
- .3 When work must be executed on landing floors, the mechanic shall make sure to protect the floor or any other surfaces not to soil the area. The mechanic shall make sure to leave the area in the same state of cleanliness at the time of his arrival.
- .4 Departmental Representative reserves the right to demand to the *Contractor* the costs required to correct the damages or the stains caused by the *Contractor*.

1.20 MAINTENANCE LOGBOOK

- .1 Keep in the machine room a clean and up to date maintenance logbook. This register shall include, for each of the visits, the date and arrival time, the purpose and brief description of work done, the detail of the testing and checking. Always keep the activities of the last five years in the register.
- .2 Include in the maintenance logbook a schedule of the routine works required within the course of the preventive maintenance.
- .3 Submit to Departmental Representative a detailed monthly report on the service calls and other work on the equipments. Participate in a meeting, as needed, with Departmental Representative to discuss the report and the activities which relates to the maintenance. The monthly report shall include at least the following information:
- Date;
 - Building / Location;
 - Elevator Number;
 - Time of the call;
 - Time of arrival;
 - Time spent on the call;
 - Description of the problem by the client;
 - Problem Description and Action taken to resolve it by the mechanic;
 - Name of the mechanic.

1.21 ANNUAL TESTS

- .1 Perform all the tests prescribed in Section 8.11.2 and 8.11.3 of ASTM A17.1-2010/CSA B44-2010 code. The annual tests shall be conducted 30 days before the contract expires.
- .2 Provide Departmental Representative a copy of the certificates of annuals tests.

PART 2 PREVENTIVE & CORRECTIVE MAINTENANCE

2.1 MAINTENANCE SERVICES

- .1 Contractor Responsibility
- .1 Responsibility of the Contractor, without limitation, applies to the following components:
-

- .1 Controller including all the relays, semiconductors, resistances, condensers, transformers, contacts, conductors, control potentiometers, computer components and traveling cable.
- .2 Selector and dispatch equipment including selector steel tape and the mechanical and electric driving equipment.
- .3 Hoistway equipments including platform and counterweights, buffers, guide rails, superior and inferior terminal stopping devices.
- .4 Hall and car fixtures including pushbutton, key-operated switches and direction & position lantern indicator.
- .5 Hall door equipments including interlocks, door suspension, door guides and door closing devices as well as all the safety open door devices.
- .6 Car door equipments including door operator, door suspension, door guides, keys, motors, coupling arms, cams and contacts.
- .7 Platform equipments including the frame, weight detector, safeties, shoe or roller guides.
- .8 Speed governor and ropes including sheave, shaft, bearings, contacts and jaws
- .9 Return sheaves, secondary sheave, governor tension pulley, compensation sheave and related bearings.
- .10 Machines and ropes including traction sheave, worms, gears, reducer, bearings, driving shaft and enclosure.
- .11 Brake system including brake pads and drum, brake coils and brake contacts.
- .12 Pumps and hydraulic motor, hydraulic cylinder and plunger if out of ground installation, hydraulic liquids, valves unit, filters, mufflers, cathodic protection system, vitaulic joint and gasketsm, oil cooler and oil heater.
- .13 Motor and motor generator including motor winding, rotating parts, commutator, brushes, brush holders and bearings.
- .14 Auxiliary brake system.
- .15 Cab fan and emergency lighting system.
- .16 Communication system between cab, machine room and security desk.
- .17 Central command console.
- .18 Computerized central consoleand Control Console for Special Operations.
- .2 The *Contractor* is not responsible for following components:
 - .1 Hoistway enclosure including doors and hall barriers, door frame and hall door sill;
 - .2 Any damages due to vandalism acknowledged by Departmental Representative.
- .2 Vandalism
 - .1 Work related to damage caused by acts of vandalism must be recognized by Departmental Representative.
 - .2 Charge in addition to the contract, only the vandalized parts and limited profit margin and administration 15% of the cost of parts.
 - .3 Working time for this work is included in the contract.

2.2 CALLBACK AND REPAIR SERVICE

- .1 The Contractor shall maintain and provide a callback and repair services in case of breakdown as prescribes in this section.
- .2 Callback services
 - .1 Provide a telephone service line monitoring for incoming calls at all times.
 - .2 Include callback services during regular working hours.
 - .3 The technicians responsible of the building shall permanently be equipped with a telecommunication device so that the *Contractor* can contact and assign him to the service call.
 - .4 Any emergency work started at regular time shall be completely completed free of charge if Departmental Representative requires it.

- .5 The *Contractor* shall maintain a record of all calls, including the date, time, nature of call, work performed and additional work required.
- .6 Major repair that would normally take more than 8 hours/team (eg. A motor rewinding, replacement of hoistropes) may be made during regular business hours.
- .3 Emergency callback services
 - .1 Include all fees for emergency callback services in the cases described below.
 - .2 Provide 24 hours emergency callback services in case of, but not limited to, a person trapped in an elevator, simplex elevator is out of service or more than one car in a group is out of service.
- .4 .4 Response Time
 - .1 Ensure a maximum response time, for the arrival of a technician on site, after a service call of Departmental Representative, as described in the table below:

Type of call	Maximum response time
<u>Callback services:</u>	
During regular hours	45 minutes
Outside regular hours	90 minutes
<u>Emergency callback services:</u>	
During regular hours - Emergency	30 minutes
Outside regular hours - Emergency	45 minutes

2.3 TOOLS AND MATERIAL

- .1 Parts on site
 - .1 Maintain, inside a metal cabinet located in the machine room, an inventory of minor replacement parts such as:
 - .1 Light bulbs for the car and hall pushbuttons;
 - .2 A complete car and hall pushbuttons unit;
 - .3 Fuses and relays of each type used in the controller;
 - .4 Commutator brushes for DC motor;
 - .5 Roller guides for hall and car door;
 - .6 Four (4) liters of geared machine oil;
 - .7 Five (5) gallon of hydraulic oil;
 - .8 One (1) gallon of multi-purpose lubricant;
 - .9 Products and cleaning cloths;
 - .10 100 watts light bulbs for the replacement of the top of car and pit lighting.
 - .11 Sealed rechargeable battery for the communication system.
- .2 Parts locally
 - .1 Maintain locally an inventory of major replacement parts available within 48 hours such as:
 - .1 A complete set of car roller or shoe guide;
 - .2 A complete set of hall and car door suspension;
 - .3 A complete door operator unit;
 - .4 Microprocessor boards or PLC;
 - .5 Ventilators;
 - .6 Transformers;
 - .7 Brake pads;
 - .8 Door detector unit;
 - .9 Relays and controller parts;
 - .10 Valves.

- .3 Available Tools
 - .1 Maintain locally a set of tools and of instruments such as multimeter, tachometer, chain block, oscilloscope, testing weights, pressure manometers, welding equipments and cleaning kit.
 - .2 Maintain locally any electronic tools necessary for the programming of the controllers.

2.4 PREVENTIVE MAINTENANCE

- .1 Object
 - .1 The preventive maintenance program consists of a series of activities based on a mixed program of frequency of use and period. If the use of the vertical transport systems is higher than at the time of the contract signature; the periodic maintenance interventions shall be increased.
- .2 Maintenance activities
 - .1 The Contractor shall rapidly correct all excessive wear, breakdown or lack of adjustment of any elevator components detected during a maintenance activity.
- .3 Inspection frequency
 - .1 The Contractor shall perform preventive maintenance activities identified in the specifications while respecting the frequency and schedule shown in table below (the number of minutes allocated in the table for the activities is considered a minimum per unit and does not include repairs and service calls).

Period	Maintenance Activity	Traction elevators	Hydraulic Elevators
Free	Monthly	1 hr per period	0.75 hr per period
Free	Quarterly	1 hr per period	0.75 hr per period
Free	Biannual	1.5 hr per period	1.25 hr per period
September	Annual	4 hr per period	3 hr per period
TOTAL (per unit):		23 hr	17.5 hr

- .2 Maintenance activities shall always be coordinated with Departmental Representative.
- .4 Monthly activities
 - .1 Perform the following tasks on each elevator once a month:
 - .2 Ride each car on its entire travel in both up and down directions and check and correct the following:
 - .1 Ride comfort and vibrations;
 - .2 Unusual noise;
 - .3 Door operation and pre-opening;
 - .4 Pushbutton and indicators operation;
 - .5 Car safety features, including alarm button, and stop switch;
 - .6 Door protective devices operation;
 - .7 Fan and door noise levels.
 - .8 Leveling of the car (acceptable maximum: 6 mm).
 - .3 Hall and car doors; Check and correct the following:
 - .1 The positive locks, the mechanical locks and the door contacts;
 - .2 Door reopening device;
 - .3 Hoistway access switch;

- .4 The eccentrics and door retaining devices;
 - .5 The lower door guides;
 - .6 The roller guides;
 - .7 Clutch, cams and assembly;
 - .8 The suspensions;
 - .9 The door panels attachments;
 - .10 The door closer;
 - .11 Guard parts.
 - .4 In the hoistway; Check and correct the following:
 - .1 Unusual noise;
 - .2 Cleanliness;
 - .3 Abnormal vibrations;
 - .4 Clean the pit floor;
 - .5 Pit light;
 - .6 Clean and lubricate the pit equipments (pulley, buffers and others).
 - .5 In the cab and car top; Check and correct the following:
 - .1 Clean door mechanisms;
 - .2 Check the door operator;
 - .3 Check the emergency lighting system;
 - .4 Check the door closing force (maximum acceptable: 30 lbs);
 - .5 Check and replace as necessary the light on the inspection unit;
 - .6 Check car and counterweights guides.
 - .7 Make sure the fan is running 24/24 hours and cleaned monthly.
 - .6 In the machine room; Check and correct the following:
 - .1 Unusual noise;
 - .2 Cleanliness;
 - .3 Abnormal vibrations;
 - .4 Oil leak.
 - .7 In the machine room / Machine, motor, generator; Check and correct the following:
 - .1 Oil leakage on the machine and the oil levels;
 - .2 Machine brakes and operation;
 - .3 Bearings and operation;
 - .4 Commutator;
 - .5 Worm gear;
 - .6 Motor Brushes, change them if worn out more than 60%;
 - .7 Clean the carbon on the motor Brushes;
 - .8 Operating temperature;
 - .9 Wiring connection.
 - .8 In the machine room / Power unit; Check and correct the following:
 - .1 Oil leakage on the power unit;
 - .2 Oil levels in the tank with car at lowest and highest travel point;
 - .3 Oil temperature & color to detect impurity;
 - .4 Condition and tension of drive belts;
 - .5 Power unit operation;
 - .6 Bearings and operation, pump bearing noise;
 - .7 Valves;
 - .8 Wiring connection.
 - .9 In the machine room / Controller; Check and correct the following:
 - .1 Over heated or failed parts in the controller;
 - .2 Wiring connection and insulation;
 - .3 Relay, drive and other components.
 - .10 In the machine room / Overspeed governor: Check and manually activate the speed governor (blocking device and switches).
- .5 Quarterly activities
- .1 Perform the following tasks on each elevator every three months:
-

- .2 In the hoistway; Check and correct the following:
 - .1 Compensation pulley switch;
 - .2 Compensation pulley bearing;
 - .3 Clean the compensation ropes;
 - .4 Check the buffers.
 - .3 Hall and car doors and car top; Check and correct the following:
 - .1 Clean and lubricate, if required, the hoistropes and speed governor ropes;
 - .2 Check the hoistropes tension (maximum acceptable variation: 10 %).
 - .3 Check, clean and lubricate if required, the door tracks, suspension, guides and eccentric of the car doors;
 - .4 Verify and repair if required, the door eccentrics and door retaining devices as well as the clutch, and mobile cams of the hall doors;
 - .5 Check and clean the hall doors;
 - .6 Check, clean and lubricate if required the doors operation mechanisms;
 - .7 Check the car and counterweight roller guides tension.
 - .6 Biannual activities
 - .1 Perform the following tasks on each elevator every six months:
 - .1 Check, clean and lubricate if required, the door tracks, suspension, guides, locks, closing device and eccentric of the hall doors;
 - .2 Clean the machine room floor;
 - .3 Clean the dust the controller and change the dust filters;
 - .4 Clean the carbon dust on the machine room equipment;
 - .5 Clean the car top;
 - .6 Check and test the superior and inferior terminal stopping devices including the slowdown switches;
 - .7 Check and repair the hoist rope fasteners, check the hoistropes and speed governor rope diameter and presence of rust to ensure safety.
 - .8 Check, clean and lubricate the car and counterweight safety devices.
 - .9 Check packing of the cylinder head to detect leaks;
 - .10 Test the communication system and submit a report to Departmental Representative.
 - .7 Annual activities
 - .1 Perform the following tasks on each elevator every year:
 - .1 Perform all the performance level testing as describe in the specifications;
 - .2 Perform all the testing prescribe at Section 8 of the ASTM A17.1-2010/CSA B44-2010 code such as the car safety, governor tripping speed and others;
 - .3 Check the connection in the controller;
 - .4 Check the overload relay in the controller;
 - .5 Check travelling cables condition;
 - .6 Disassemble and clean all the components of the machine brake and performed the testing prescribe at Section 8 of the ASTM A17.1-2010/CSA B44-2010 code.
 - .7 Check and clean all the components of the auxiliary brake (rope brake) and performed the testing prescribe at Section 8 of the ASTM A17.1-2010/CSA B44-2010 code.
 - .8 Check the relief valve setting as required by article 8.11.3.2.1 of ASTM A17.1-2010/CSA B44-2010 code.
 - .9 Check the cylinders as required by article 8.11.3.2.2 of ASTM A17.1-2010/CSA B44-2010 code.
 - .10 Provide assistance to Departmental Representative for testing of the emergency power system and repair if necessary.
 - .11 Perform real time testing of Emergency Operation (Emergency Recall Operation - Phase I & Emergency In-car Operation - Phase II) and emergency power operation with Departmental Representative.
-

- .12 Include all fees for assistance to Departmental Representative for testing of the emergency power system and fire alarm system including verification of smoke detector in the hoistway.

2.5 MANEUVERS

- .1 The Contractor shall maintain operation and performance levels as described in the related sections.

2.6 CRITERIAS AND METHODOLOGY

.1 Hoistropes

- .1 A yearly detailed report shall be submitted to Departmental Representative on the condition of the hoistropes.
- .2 Replace the entire set of ropes if one of the following conditions appears:
- .1 The rope diameter is lower than what is allowed for the corresponding nominal diameter as per the following table:

Nominal	3/8"	7/16"	1/2"	9/16"	5/8"	11/16"	3/4"
Minimum	11/32"	13/32"	15/32"	17/32"	37/64"	41/64"	45/64"

- .2 In absence of corrosion, if the number of broken wires per rope lay exceed the following values:

Rope construction	Uniformly distributed broken wires	Broken wires predominate in one or two strands
6 x 19 6 x 21 6 x 25	24	8
8 x 19 8 x 21 8 x 25	32	10

- .3 In presence of corrosion, if the number of broken wires per rope lay exceed 50% of the value shown in article 2.6.1.2.2 or if a 50% reduction of the diameter gap of the article 2.6.1.2.1.
- .3 The length of a rope lay is determined as follow:

Nominal	3/8"	7/16"	1/2"	9/16"	5/8"	11/16"	3/4"
Length	2-1/2"	2-7/8"	3-1/4"	3-5/8"	4-1/16"	4-1/2"	4-7/8"

.2 Governor ropes

- .1 A yearly detailed report shall be submitted to Departmental Representative on the condition of the governor ropes.
- .2 Replace the ropes if one of the following conditions appears:
- .1 The rope diameter is lower than what is allowed in article 2.6.1.2.1.
- .2 In absence of corrosion, if the number of broken wires per rope lay exceed 75% of the maximum allowed in article 2.6.1.2.2.
- .3 In presence of corrosion, if the number of broken wires per rope lay exceed the maximum allowed in article 2.6.1.2.3.

.3 Rotating elements balancing

- .1 Foresee that the machine and the motor are perfectly balanced and aligned in order to limit to 1/1000" the vibrations at the end of the motor.
- .2 Limit the horizontal play and the gear play to a maximum of 5/1000" at balance load.

.4 Commutator segments depth

- .1 Maintain a depth of 1/32" to 3/64" for the commutator segments.

- .5 Commutator brushes
 - .1 Replace the entire set of commutator brushes if worn out more than 60% of the original length.
 - .2 Adjust the commutator brush holder in order to maintain a pressure force of four (4) pound per square inch.
- .6 Methodology
 - .1 **Car speed (seconds):** Measured in feet/minute and at constant speed. A variation of 5% is acceptable.
 - .2 **Operating times (seconds):** Measured from the time doors closing cycle begins until doors are three quarters opened at next floor, assuming a maximum floor height of 13 feet. A variation of 5% is acceptable.
 - .3 **Door opening / closing times (seconds):** Measured from the time doors start to open / close until the doors are fully opened / close.
 - .4 **Doors dwell times (seconds):** Measured from the time doors are fully opened until the door closing cycle starts. A variation of 10% is acceptable.
 - .5 **Doors nudging times (seconds):** Measured from the time doors are fully opened until the reopening device has been rendered inoperative and sound signal activated. A variation of 10% is acceptable.
 - .6 **Noise level ambient:** Measure in dBa within the cab when parked at typical landing with fan on at low speed, using scale A of an ANSI type 2 sound level meters.
 - .7 **Noise level door motion:** Measure within the cab during a complete door cycle, using scale A of an ANSI type 2 sound level meter. A variation of 10% is acceptable.
 - .8 **Noise level running:** Measure within the cab from bottom to top of hoistway, using scale A of an ANSI type 2 sound level meter. A variation of 10% is acceptable.
 - .9 **Leveling distance:** Measured in mm, this is the distance between car sill and landing sill at the moment the doors are fully opened.
 - .10 **Pre-opening distance:** Measured in mm, this is the distance between car sill and landing sill at the moment the doors start to open.
 - .11 **Door force:** Door closing force is measured in pounds.
 - .12 **Starts / Stops:** Acceleration / deceleration are rated (N) normal, (L) light, (M) medium or (H) high
 - .13 **Ride comfort:** Lateral acceleration are rated (N) normal, (L) light, (M) medium or (H) high

PART 3 EXECUTION

3.1 NOT USED

- .1 Not Used.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 CSA Group
 - .1 CSA C22.10, Québec Construction Code, Chapter V – Electricity 2010.
- .2 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
 - .1 IEEE SP1122, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.2 DEFINITIONS

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

1.3 DETAILED WORK DESCRIPTION

- .1 Generalities
 - .1 The following list is neither exhaustive nor limitative and does not release the Contractor to execute all required work implicit to the realisation of the current project.
 - .2 All general work described in the general sections shall be realised by the Contractor at his expense, even if they are not specifically indicated on the drawings.
 - .3 The Contractor shall do a complete commissioning for all installed and/or modified equipment during this project, as indicated by the commissioning sections.
 - .4 The Contractor shall submit a design report signed and sealed by a professional engineer member of the OIQ for each equipment of each discipline.
 - .1 The contractor shall provide and install all seismic supports as required by the design report of article above.
 - .2 The contractor shall provide a verification report signed by a professional engineer after work indicating that all equipment installed comply with the design report of article above.
- .2 Electricity (Division 26)
 - .1 Demolition work on existing conduits, cabling and other equipment required for this project and as indicated on the drawings.
 - .2 Provide, install and connect new secondary distribution equipment, including disconnects, fuses, starters, outlets, conduits, cabling, wiring, etc. as indicated on drawings;
 - .3 Provide, install and connect conduits and wiring between fire alarm relay and elevators controllers.
 - .4 Disconnect existing pre-transfer wiring from the existing automatic transfer switch to the existing elevators' controllers.
 - .5 Connect existing pre-transfer wiring from the existing automatic transfer switch to the new elevators' controllers.
 - .1 Including the dismantling of existing conduits if necessary and provide and install all required conduits for work above.
 - .6 Connect all accessories and equipment needing electrical power for all elevator systems (Division 14);
 - .7 Provide and install a network of empty conduits & cable trays for elevator systems. (Division 14);
 - .8 Identification of panel and circuit numbers on each new or modified power fixtures (outlets) and distribution equipment;
 - .9 Update the digitized index on each new or modified panel (provide and install the new index and indicate the update date and keep the old version in place);

- .10 The electrical contractor shall be present during commissioning of the elevators. Provide a written report of all results.

- .3 Security (Division 28)

- .1 Fire Alarm

- .1 The fire alarm contractor shall be present during commissioning of the elevators for testing every relay connected to the elevators. Provide a written report of all results.

1.4 INCLUDED WORK

- .1 Provide all workforce, surveillance, tools, equipment, machinery, scaffolding, supports, materials, transport and other accessories necessary to the completion of all work described in this specification and including the reception, unloading, handling and storage of all provided materials by the Owner, for the following specialties:

- .1 Electricity (Division 26)
 - .2 Security (Division 28)

1.5 EXCLUDED WORK

- .1 None

1.6 WORK BY OTHERS

- .1 Architecture
- .2 Elevators (Division 14)

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
 - .3 Shop drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Québec Province, Canada.
 - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.
 - .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .4 Indicate on drawings clearances for operation, maintenance, and replacement of operating equipment devices.
 - .4 Certificates:
 - .1 Provide CSA certified equipment.
 - .2 Submit test results of installed electrical systems and instrumentation.
 - .3 Submit, upon completion of Work, load balance report as described in PART 3 - LOAD BALANCE.
 - .5 Manufacturer's Field Reports: submit to Departmental Representative manufacturer's written report, within 3 days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.
-

1.8 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.
 - .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
 - .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
 - .3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.
 - .4 Post instructions where directed.
 - .5 For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
 - .6 Ensure operating instructions will not fade when exposed to sunlight and are secured to prevent easy removal or peeling.

PART 2 PRODUCTS

2.1 DESIGN REQUIREMENTS

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

2.2 MATERIALS AND EQUIPMENT

- .1 Equipment to be CSA certified.
- .2 Factory assemble control panels and component assemblies.

2.3 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

- .1 Verify installation and coordination responsibilities related to motors, equipment and controls, as indicated.

2.4 WARNING SIGNS

- .1 Warning Signs: in accordance with requirements of authority having jurisdiction.
 - .2 Porcelain enamel signs, minimum size 175 x 250 mm.
-

2.5 WIRING TERMINATIONS

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

2.6 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates as follows:
 - .1 Nameplates: lamicoid 3 mm thick plastic engraving sheet, black face, white core, lettering accurately aligned and engraved into core.
 - .2 Sizes as follows:

NAMEPLATE SIZES			
Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

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

2.7 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.10.
- .4 Use colour coded wires in communication cables, matched throughout system.

2.8 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.
 - .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
-

- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

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

2.9 FINISHES

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

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

- .1 Do complete installation in accordance with CSA C22.10 except where specified otherwise.
- .2 Do overhead and underground systems in accordance with CAN/CSA-C22.3 No.1 except where specified otherwise.

3.3 NAMEPLATES AND LABELS

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

3.4 CONDUIT AND CABLE INSTALLATION

- .1 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .2 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

3.5 LOCATION OF OUTLETS

- .1 Locate outlets in accordance with Section 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.
- .2 Do not install outlets back-to-back in wall; allow minimum 150 mm horizontal clearance between boxes.
-

- .3 Change location of outlets at no extra cost or credit, providing distance does not exceed 3000 mm, and information is given before installation.
- .4 Locate light switches on latch side of doors.
 - .1 Locate disconnect devices in mechanical and elevator machine rooms on latch side of floor.

3.6 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.
- .3 According to "Mounting height schedule" on drawings.

3.7 COORDINATION OF PROTECTIVE DEVICES

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

3.8 FIELD QUALITY CONTROL

- .1 Load Balance:
 - .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
 - .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
 - .3 Provide upon completion of work, load balance report as directed in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS, phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.
- .2 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .3 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.9 SYSTEM STARTUP

- .1 Instruct PSPC personnel in operation, care and maintenance of systems, system equipment and components.
 - .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
-

- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 CSA International
 - .1 CAN/CSA-C22.2 No.18, Outlet Boxes, Conduit Boxes and Fittings.
 - .2 CAN/CSA-C22.2 No.65, Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).
- .2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)
 - .1 EEMAC 1Y-2, Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).
- .3 National Electrical Manufacturers Association (NEMA)

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for wire and box connectors and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for wire and box connectors for incorporation into manual.

PART 2 PRODUCTS

2.1 MATERIALS

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

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wire and box connectors installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Remove insulation carefully from ends of conductors and cables and:
 - .1 Apply coat of zinc joint compound on aluminum conductors prior to installation of connectors.
 - .2 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CAN/CSA-C22.2 No.65.
 - .3 Install fixture type connectors and tighten to CAN/CSA-C22.2 No.65. Replace insulating cap.
 - .4 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

PART 1 GENERAL

1.1 PRODUCT DATA

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

PART 2 PRODUCTS

2.1 BUILDING WIRES

- .1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.
- .2 Copper conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE, Non Jacketed.

PART 3 EXECUTION

3.1 GENERAL CABLE INSTALLATION

- .1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).
- .2 Cable Colour Coding: to Section 26 05 00 - Common Work Results for Electrical.
- .3 Conductor length for parallel feeders to be identical.
- .4 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .5 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.
- .6 Branch circuit wiring for surge suppression receptacles and permanently wired computer and electronic equipment to be 2-wire circuits only, i.e. common neutrals not permitted.
- .7 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.

3.2 INSTALLATION OF BUILDING WIRES

- .1 Install wiring as follows:
 - .1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 CSA Group
 - .1 CSA C22.10, Québec Construction Code, Chapter V – Electricity 2010.
 - .2 CSA C22.2 No.41, Grounding and Bonding Equipment (Tri-National Standard, with NMX-J-590ANCE and UL 467).
 - .3 CSA C22.2 No.65, Wire connectors (Tri-National Standard, with UL 486A-486B NMX-J-543-ANCE).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for connectors and terminations and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for connectors and terminations for incorporation into manual.

PART 2 PRODUCTS

2.1 CONNECTORS AND TERMINATIONS

- .1 Copper compression connectors to CSA C22.2 No.65 as required sized for conductors.
- .2 Contact aid for aluminum cables where applicable.
- .3 4 way joint boxes dry location type in accordance with Section 26 05 33 - Raceway and Boxes for Electrical Systems.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 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 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for grounding equipment and include product characteristics, performance criteria, physical size, finish and limitations.

1.2 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for grounding equipment for incorporation into manual.

PART 2 PRODUCTS

2.1 EQUIPMENT

- .1 Insulated grounding conductors: green, copper conductors.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for grounding equipment installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION GENERAL

- .1 Install complete permanent, continuous grounding system including, electrodes, conductors, connectors, accessories. Where EMT is used, run ground wire in conduit.
 - .2 Install connectors in accordance with manufacturer's instructions.
 - .3 Protect exposed grounding conductors from mechanical injury.
 - .4 Use mechanical connectors for grounding connections to equipment provided with lugs.
 - .5 Soldered joints not permitted.
 - .6 Install bonding wire for flexible conduit, connected at one end to grounding bushing, solderless lug, clamp or cup washer and screw. Neatly cleat bonding wire to exterior of flexible conduit.
-

- .7 Install flexible ground straps for bus duct enclosure joints, where such bonding is not inherently provided with equipment.

3.3 EQUIPMENT GROUNDING

- .1 Install grounding connections to typical equipment included in, but not necessarily limited to following list. Service equipment, transformers, switchgear, duct systems, frames of motors, motor control centres, starters, control panels, building steel work, generators, elevators and escalators, distribution panels, outdoor lighting, cable trays.

END OF SECTION

PART 1 GENERAL

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for hangers and supports and include product characteristics, performance criteria, physical size, finish and limitations.

PART 2 PRODUCTS

2.1 SUPPORT CHANNELS

- .1 U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

- .1 Secure equipment to poured concrete with expandable inserts.
- .2 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.
- .3 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.
- .4 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
- .5 Do not use wire lashing or perforated strap to support or secure raceways or cables.
- .6 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Departmental Representative.
- .7 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.10, Québec Construction Code, Chapter V – Electricity 2010.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Québec Province, Canada.

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: connection blocks to match required size and number of incoming and outgoing conductors as indicated.
- .3 Spare Terminals: minimum three spare terminals on each connection or lug block sized less than 400 A.

2.2 JUNCTION AND PULL BOXES

- .1 Construction: welded steel enclosure.
- .2 Covers Flush Mounted: 25 mm minimum extension all around.
- .3 Covers Surface Mounted: screw-on flat 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 Mount cabinets with top not higher than 2 m above finished floor except where indicated otherwise.
- .3 Install [terminal block] as indicated in Type T cabinets.
- .4 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 - Common Work Results for Electrical.
- .2 Identification Labels: size 2 indicating voltage and phase, system name or as indicated.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.10, Québec Construction Code, Chapter V – Electricity 2010.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

PART 2 PRODUCTS

2.1 OUTLET AND CONDUIT BOXES GENERAL

- .1 Size boxes in accordance with CSA C22.1.
- .2 Gang boxes where wiring devices are grouped.
- .3 Blank cover plates for boxes without wiring devices.
- .4 347 V outlet boxes for 347 V switching devices.
- .5 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 GALVANIZED STEEL OUTLET BOXES

- .1 One-piece electro-galvanized construction.
- .2 Single and multi gang flush device boxes for flush installation, minimum size 76 x 50 x 38 mm or as indicated. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.
- .3 102 mm square or octagonal outlet boxes for lighting fixture outlets.
- .4 Extension and plaster rings for flush mounting devices in finished tile walls.

2.3 FITTINGS - GENERAL

- .1 Bushing and connectors with nylon insulated throats.
- .2 Knock-out fillers to prevent entry of debris.
- .3 Conduit outlet bodies for conduit up to 35 mm and pull boxes for larger conduits.
- .4 Double locknuts and insulated bushings on sheet metal boxes.

PART 3 EXECUTION

3.1 INSTALLATION

- .1 Support boxes independently of connecting conduits.
-

- .2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.
- .3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.
- .4 Provide correct size of openings in boxes for conduit, mineral insulated and armoured cable connections. Do not install reducing washers.
- .5 Vacuum clean interior of outlet boxes before installation of wiring devices.
- .6 Identify systems for outlet boxes as required.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA C22.2 No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
 - .2 CSA C22.2 No. 45, Rigid Metal Conduit.
 - .3 CSA C22.2 No. 56, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .4 CSA C22.2 No. 83, Electrical Metallic Tubing.
 - .5 CSA C22.2 No. 211.2, Rigid PVC (Unplasticized) Conduit.
 - .6 CAN/CSA C22.2 No. 227.3, Nonmetallic Mechanical Protection Tubing (NMPT), A National Standard of Canada (February 2006).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data: submit manufacturer's printed product literature, specifications and datasheets.
 - .1 Submit cable manufacturing data.
- .3 Quality assurance submittals:
 - .1 Test reports: submit certified test reports.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Instructions: submit manufacturer's installation instructions.

PART 2 PRODUCTS

2.1 CABLES AND REELS

- .1 Provide cables on reels or coils.
 - .1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.
- .2 Each coil or reel of cable to contain only one continuous cable without splices.
- .3 Identify cables for exclusively dc applications.

2.2 CONDUITS

- .1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.

2.3 CONDUIT FASTENINGS

- .1 One hole steel straps to secure surface conduits 50 mm and smaller.
 - .1 Two hole steel straps for conduits larger than 50 mm.
 - .2 Beam clamps to secure conduits to exposed steel work.
 - .3 Channel type supports for two or more conduits.
 - .4 Threaded rods to support suspended channels.
-

2.4 CONDUIT FITTINGS

- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.
- .2 Ensure factory "ells" where 90 degrees bends for 25 mm and larger conduits.
- .3 Watertight connectors and couplings for EMT.
 - .1 Set-screws are not acceptable.

2.5 FISH CORD

- .1 Polypropylene.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .2 Conceal conduits except in mechanical and electrical service rooms.
- .3 Surface mount conduits.
- .4 Use electrical metallic tubing (EMT) except in cast concrete.
- .5 Minimum conduit size for lighting and power circuits: 19 mm.
- .6 Bend conduit cold:
 - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .7 Mechanically bend steel conduit over 19 mm diameter.
- .8 Install fish cord in empty conduits.
- .9 Run 2-25 mm spare conduits up to ceiling space and 2-25 mm spare conduits down to ceiling space from each flush panel.
 - .1 Terminate these conduits in 152 x 152 x 102 mm junction boxes in ceiling space or in case of an exposed concrete slab, terminate each conduit in surface type box.
- .10 Remove and replace blocked conduit sections.
 - .1 Do not use liquids to clean out conduits.
- .11 Dry conduits out before installing wire.

3.3 SURFACE CONDUITS

- .1 Run parallel or perpendicular to building lines.
 - .2 Group conduits wherever possible on surface channels.
-

- .3 Do not pass conduits through structural members except as indicated.

3.4 CONCEALED CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Do not install horizontal runs in masonry walls.
- .3 Do not install conduits in terrazzo or concrete toppings.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for [wiring devices] and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Québec Province, Canada.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for wiring devices for incorporation into manual.

PART 2 PRODUCTS

2.1 RECEPTACLES

- .1 Duplex receptacles, of type and voltage as indicated on drawings.
- .2 With following features:
 - .1 Ivory urea moulded housing.
 - .2 Suitable for No. 10 AWG for back and side wiring.
 - .3 Break-off links for use as split receptacles.
 - .4 Eight back wired entrances, four side wiring screws.
 - .5 Triple wipe contacts and rivetted grounding contacts.
- .3 Receptacles of one manufacturer throughout project.

2.2 COVER PLATES

- .1 Cover plates for wiring devices to: CSA C22.2 No.42.1.
 - .2 Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.
-

- .3 Stainless steel, vertically brushed, 1 mm thick cover plates cover plates, for wiring devices mounted in flush-mounted outlet box.

2.3 SOURCE QUALITY CONTROL

- .1 Cover plates from one manufacturer throughout project.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wiring devices installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Receptacles:
 - .1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.
 - .2 Mount receptacles at height in accordance with Section 26 05 00 - Common Work Results for Electrical.
 - .3 Where split receptacle has one portion switched, mount vertically and switch upper portion.
 - .4 Install GFI type receptacles as indicated.
- .2 Cover plates:
 - .1 Install suitable common cover plates where wiring devices are grouped.
 - .2 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 CSA Group
 - .1 CAN/CSA-C22.2 No.4, Enclosed and Dead-Front Switches (Tri-National Standard, with ANCE NMX-J-162-2004 and UL 98).
 - .2 CSA C22.2 No.39, Fuseholder Assemblies.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for disconnect switches - fused and non-fused and include product characteristics, performance criteria, physical size, finish and limitations.

PART 2 PRODUCTS

2.1 DISCONNECT SWITCHES

- .1 Non-fusible, disconnect switch in NEMA 1 enclosure, to CAN/CSA-C22.2 No.4.
- .2 Provision for padlocking in off switch position by 3 locks.
- .3 Mechanically interlocked door to prevent opening when handle in ON position.
- .4 Quick-make, quick-break action.
- .5 ON-OFF switch position indication on switch enclosure cover.

2.2 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Indicate name of load controlled on size 4 nameplate.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for disconnect switches - fused and non-fused installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departemental Representative.
 - .2 Inform Departemental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

END OF SECTION

APPENDIX A

HSE danger log for the ICAO headquarters

HSE Danger Log for the ICAO Headquarters

	Type of Danger		Danger-Related Explanation (If required)	Current Measures
		Current Danger		
1	Asbestos	✓	Presence of non-friable asbestos, good condition at the roof drain along its length.	Annual inspection Up to date zone inventory Compliance to the work procedure related to asbestos
2	Access to installations	✓	Presence of water in the entries after bad weather	Signage - wet floor Restricted access
3	Loading Dock Sector	✓	Limited height of 3.8 m, vehicular traffic Carbon monoxide	Designated alleys Turn engine off while loading and/or offloading vehicles
4	Hallways	✓	Slipping hazard	Signage - wet floor
5	Vehicular traffic in underground parking	✓	Danger to employees performing work and pedestrians	Wear reflective vest during work or inspections Security perimeter with cones Carbon monoxide detector
6	Emergency exits clear and unobstructed	✓		Maintain a minimum clearance in hallways Signage indicating "Exit"
7	Lighting	✓		Emergency exit lights powered by generator
8	Heating	✓	Hot surfaces in mechanical rooms, steam-distribution lines for building heat	Restricted access Signed emergency exits Wearing of personal protective equipment
9	Fire alarm system	✓		Stay in contact with surveillance personnel inside the building Sign in contractors at the security office

	Type of Danger	Current Danger	Danger-Related Explanation (If required)	Current Measures
10	Supervised fire alarm board	✓		Supervision in place: if the work requires a system shutdown, the work must be performed after normal operating hours with the surveillance personnel present.
11	Smoke alarms	✓	No flame, spark or steam causing work permitted to be performed	By-pass the system Obtain a hot work permit
12	Heat detectors	✓	Activities creating heat and defective equipment	Bypass the system Inspect the equipment Obtain a hot work permit
13	Storage zones	✓	Danger due to piled material falling	Proper shelving for the piled material Preventative maintenance Ladder/Stepladder
14	Certified roof anchorage Roofing		There is no guard rail, but anchorages are present Risk of falling	Wearing a harness during work performed within 3 m of the edge Anchorage inspected and certified annually Inspection certificate posted at each entry to the roof Fall arrest equipment required if work is performed within 3 m of the roof's edge
15	Access ladder	✓	Present	Inspection
16	Controlled products	✓	Various	Up to date signage on site Training Personal protective equipment
17	Mould	✓		If observed, notify the Property Manager
18	Buried installations	✓	Buried steam-distribution line, water-line and sewer line and	Zones to be marked by the contractor during excavation work or perforation of concrete slabs

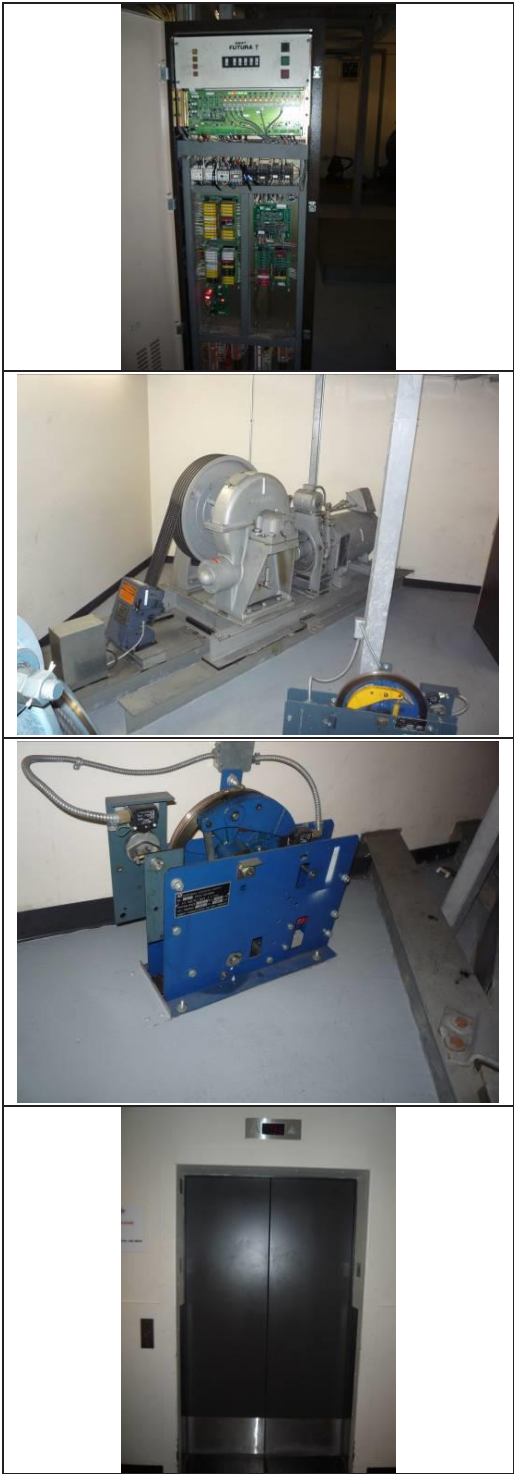
	Type of Danger	Current Danger	Danger-Related Explanation (If required)	Current Measures
	Requires pinpointing		electrical conduit or the indoor or outdoor cement structure	Identification Signage See plans and shop drawings
19	Unequal surfaces	✓	Possible presence outside the building	Vigilance
20	Slippery surfaces	✓	Roof in winter Building entries/access	Caution signs Rope (hands free) Surface maintenance
21	Noise	✓	Some work may expose you to a high noise level Deafness, buzzing	Noise creating work must be performed after normal hours Personal protective equipment Ear plugs are available in mechanical rooms
22	Enclosed space	✓	Sump pump, ditches, boilers, storage tanks, heating system	Rescue plan Identified enclosed spaces Lockout/tagout procedure BGIS Policy on enclosed spaces Qualified persons Personal protective equipment
23	Deficiencies, oxygen enrichment	✓	Possible in a sump pump, elevator pit	Air quality surveillance required
24	HVAC	✓	Dust, smoke in case of displacement Falling risk in the units Burns	Shutdown of HVAC unit during work inside or nearby, or if there's a risk of dust, smoke or asbestos It may be necessary to prepare fall arrest equipment in HVAC units Lockout/tagout procedure Comply with BGIS policy

	Type of Danger	Current Danger	Danger-Related Explanation (If required)	Current Measures
25	Hot work in building	✓	Risk of fire, burns Warm sector Loss of consciousness Injuries	Personal protection equipment Surveillance Machine shutdown Obtain a hot work permit
26	Mechanical	✓	Mobile pieces, automatic start up of machines	Protectors in place Lockout/tagout procedure Restricted zone Qualified, competent person Personal protection equipment
27	Electrical vault	✓	Electric arc	Lockout/tagout procedure Restricted zone Qualified personnel only
28	Elevator machine room	✓	Moving, rotating pieces	Controlled access Personal protective equipment Machine and equipment safeguard
29	Glycol system	✓	Environment	Signage Response kit (spill kit)
30	Work performed by one person during normal hours	✓	Illness, injury	Always advise supervisor before entering a system Follow BGIS directives Have a method of communication
31	Electrical Room	✓	Exposure to 25,000 volts	Limited access Locked room Lockout/tagout procedure

APPENDIX B

Pictures existing elevators

PICTURES – ELVEVATOR 1





Cab interior

Control panel



Cab interior

Control panel

PICTURES – ELVEVATORS 2, 3, 4, 5, 6

	Controller
	Machine
	Hall entrance
	Car top

	Controller
	Machine room
	Pit equipment
	Door equipments



Cab interior

Control panel



Cab interior

Control panel

PICTURES – ELVEVATORS 7, 8





Hall entrance



Cab interior



Control panel



Control panel

PICTURES – ELVEVATORS 9, 10



Controller

Machine

Machine

Pit



Controller

Valve

Car bottom

Door equipments



PICTURES – ELVEVATOR 11

	Controller
	Machine
	Car top
	Door equipments

	Controller
	Machine
	Car top
	Hoistway top



Cab interior







Control panel



Cab interior

Control panel

PICTURES – ELVEVATOR 12

	Controller		Machine
	Hoistway		Top floor
	Bottom floor		Cab interior

PICTURES – CCS



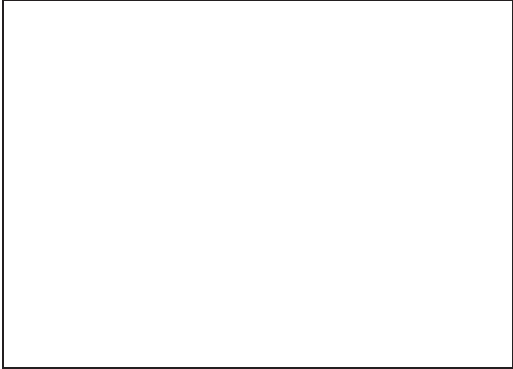
Key console



Computerized console



telephone



APPENDIX C

Sketch – New car operating panel

CAPACITÉ LBS

INDICATEUR DE POSITION
POSITION INDICATOR

ECLAIRAGE D'URGENCE
EMERGENCY LIGHT

SISTÈME DE SECOURS SPÉCIAL
FIREFIGHTERS OPERATION

VOYANT (LED-ROUGE) :
CHAPEAU POMPIER

VOYANT (LED-ROUGE) :
SERVICE INDEPENDANT

VOYANT (LED-AMBLE) :
CABINE LIBRE

INTERRUPTEUR À CLÉ :
SERVICE INDEPENDANT

VOYANT (LED-BLEU) :
CODE BLEU

INTERRUPTEUR À CLÉ :
CODE BLEU

VOYANT (LED-ROUGE) :
ALIMENTATION DE SECOURS

VOYANT (LED) :
TEXTE - AMBRE
LENTILLE - NOIR

UNIFORME SORTIE DES QUELQ'S CABINES
DIAMÈTRE

COMMUNICATION ÉTABLIE

PLACER APPEL

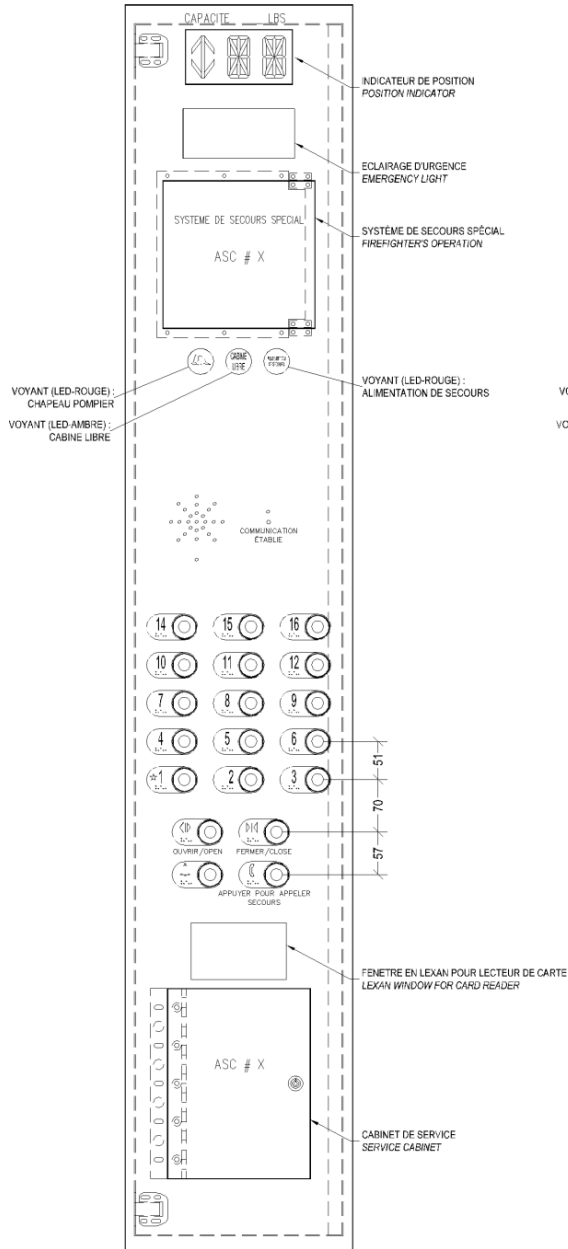
NOTE:
MARQUAGE BILINGUE
BILINGUAL MARKING

FENÊTRE EN LEXAN POUR LECTEUR DE CARTE
LEXAN WINDOW FOR CARD READER

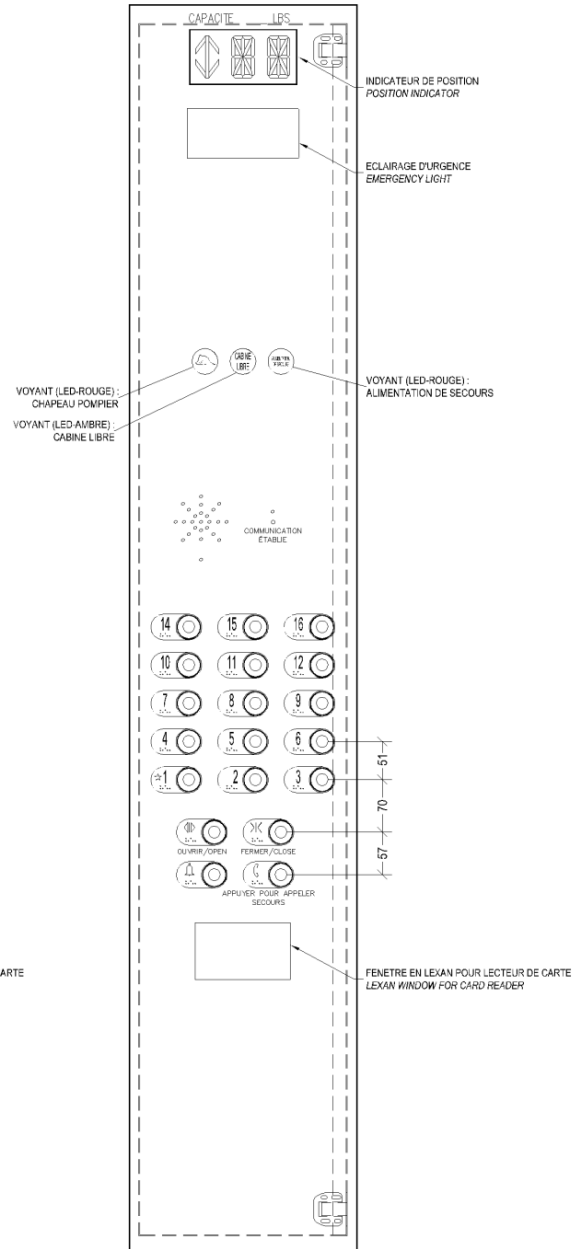
CABINET DE SERVICE
SERVICE CABINET

SKETCH - ELEV 2-3-4-5-6

PANNEAUX DE COMMANDE PRINCIPAL
MAIN CAR OPERATION PANEL



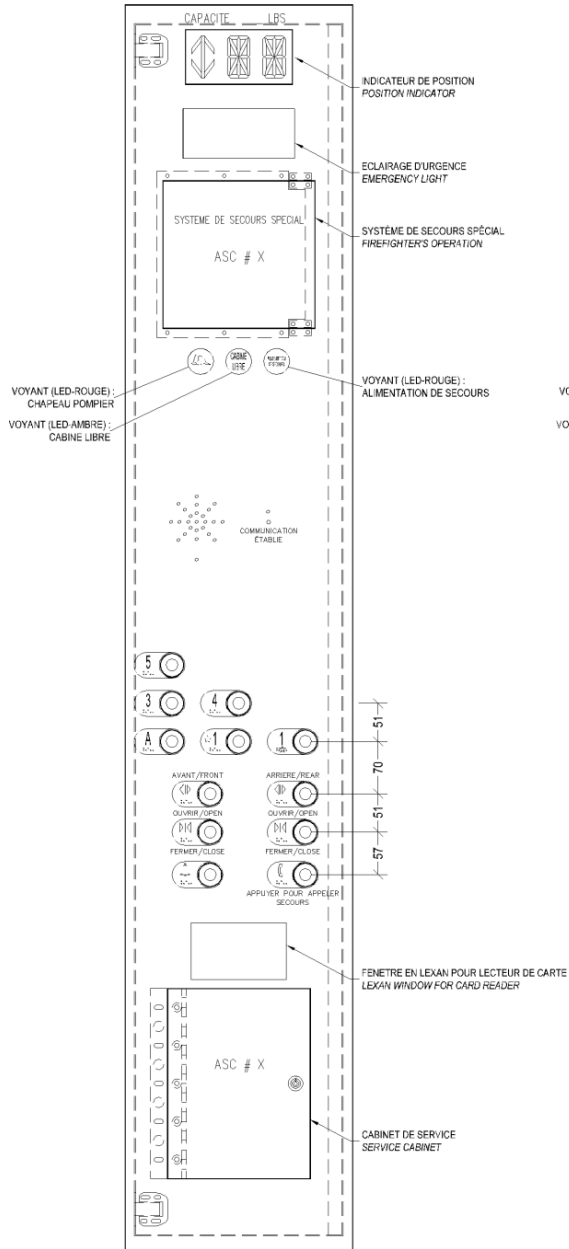
PANNEAUX DE COMMANDE AUXILIAIRE
AUXILIARY CAR OPERATION PANEL



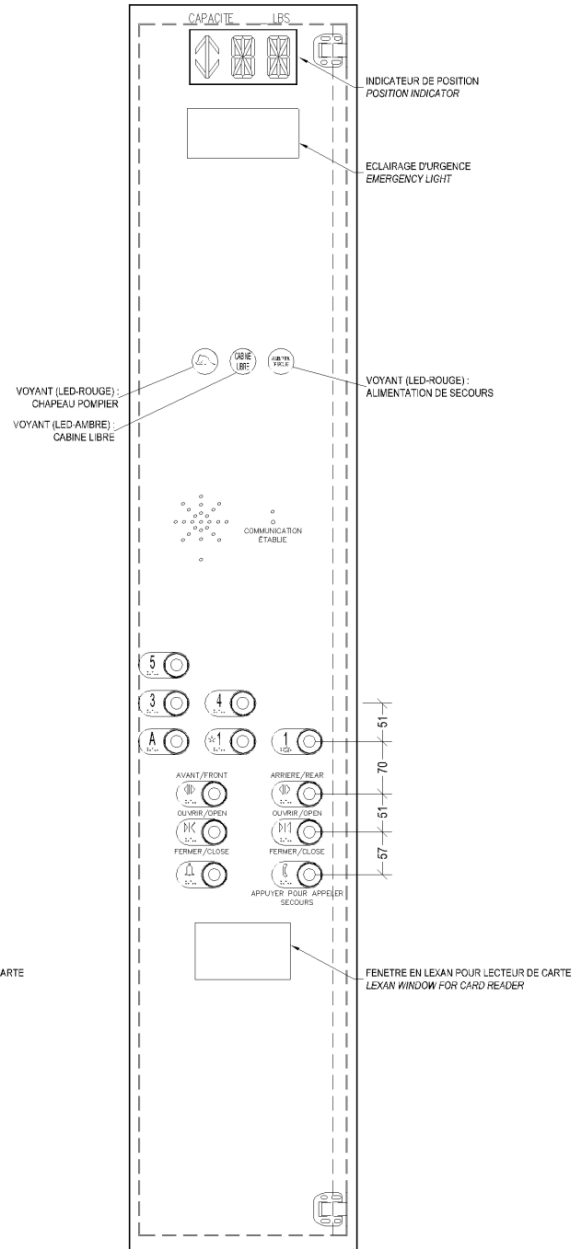
NOTE:
MARQUAGE BILINGUE - FRANCAIS MONTRÉ
BILINGUAL MARKING - FRENCH SHOWN

SKETCH - ELEV 7 & 8

PANNEAUX DE COMMANDE PRINCIPAL
MAIN CAR OPERATION PANEL



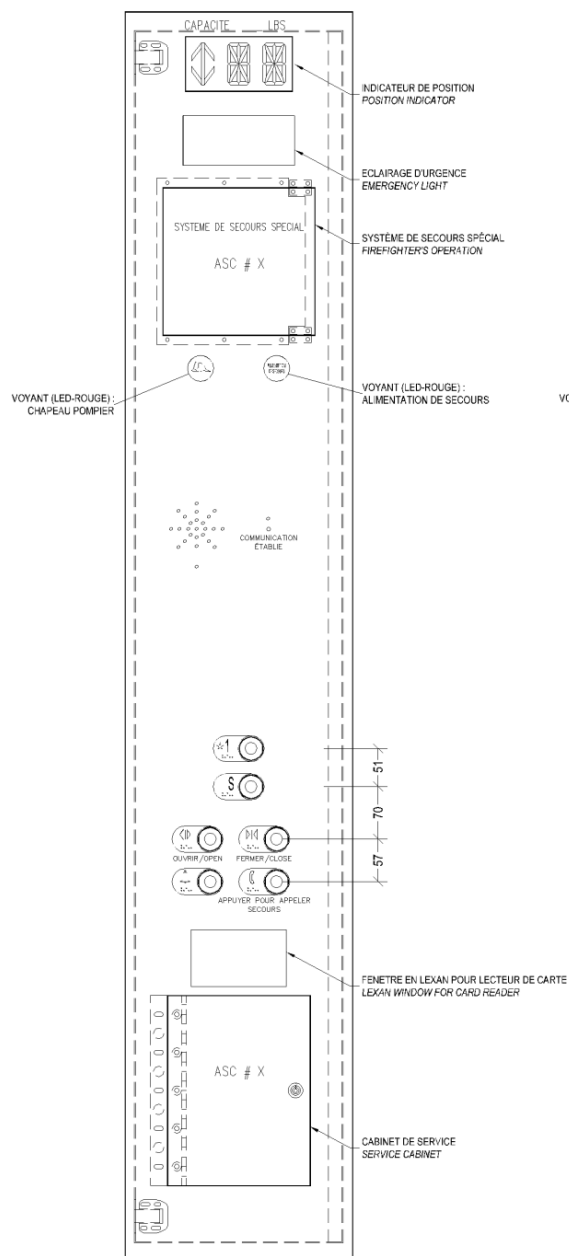
PANNEAUX DE COMMANDE AUXILIAIRE
AUXILIARY CAR OPERATION PANEL



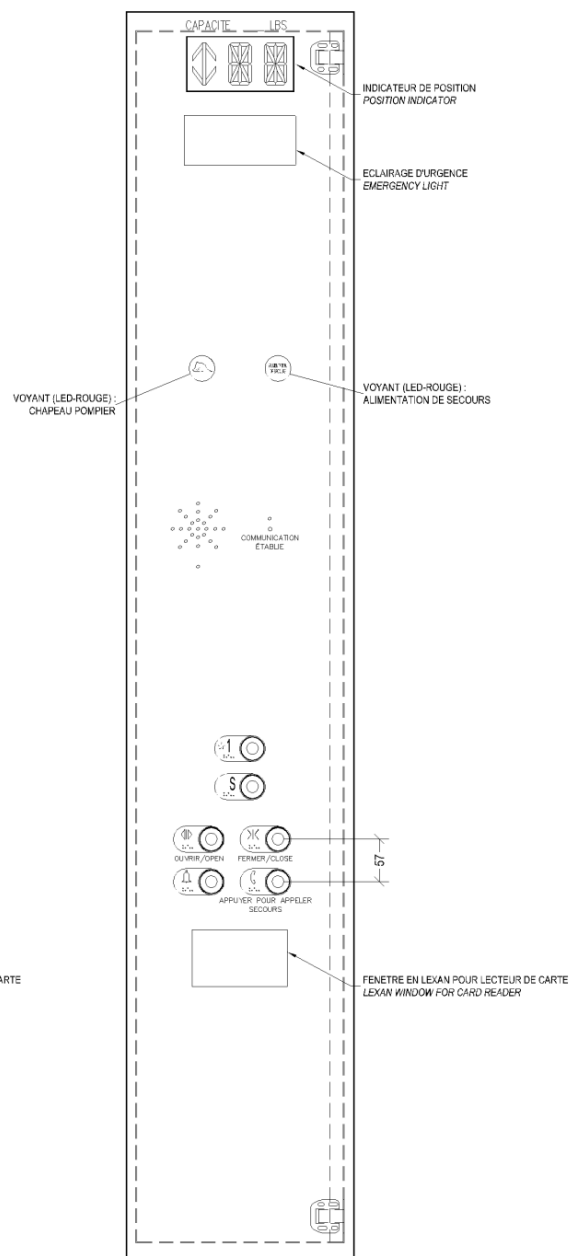
NOTE:
MARQUAGE BILINGUE - FRANCAIS MONTRÉ
BILINGUAL MARKING - FRENCH SHOWN

SKETCH - ELEV 9 & 10

PANNEAUX DE COMMANDE PRINCIPAL
MAIN CAR OPERATION PANEL



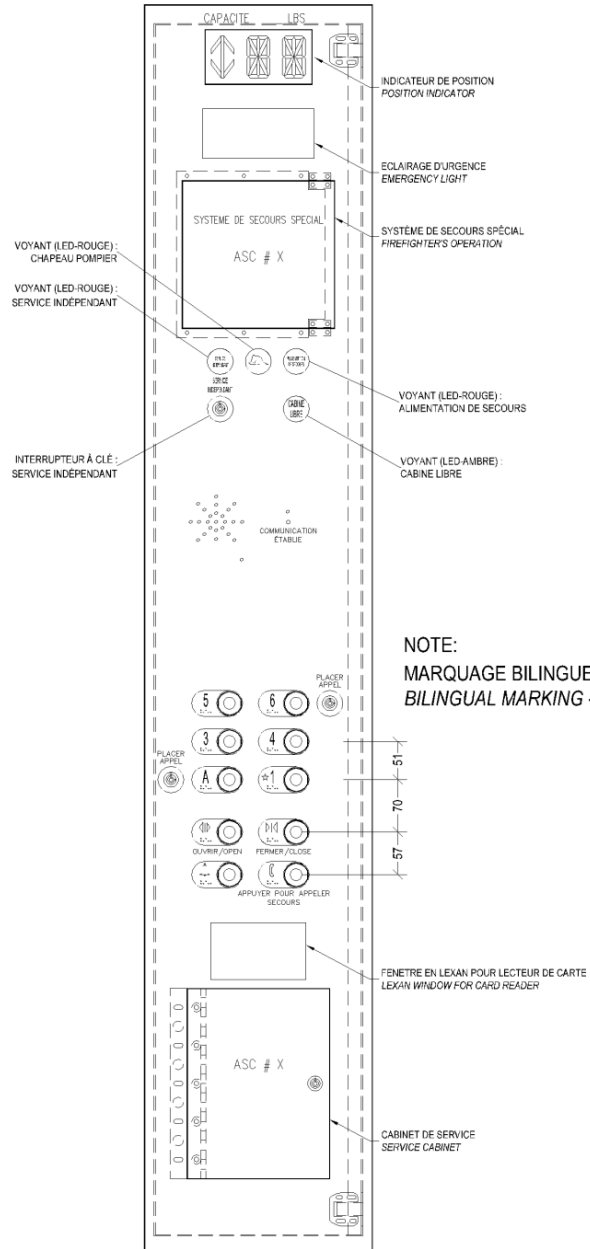
PANNEAUX DE COMMANDE AUXILIAIRE
AUXILIARY CAR OPERATION PANEL



NOTE:
MARQUAGE BILINGUE - FRANCAIS MONTRÉ
BILINGUAL MARKING - FRENCH SHOWN

SKETCH - ELEV 11

PANNEAUX DE COMMANDE PRINCIPAL
MAIN CAR OPERATION PANEL



APPENDIX D
Architectural drawings

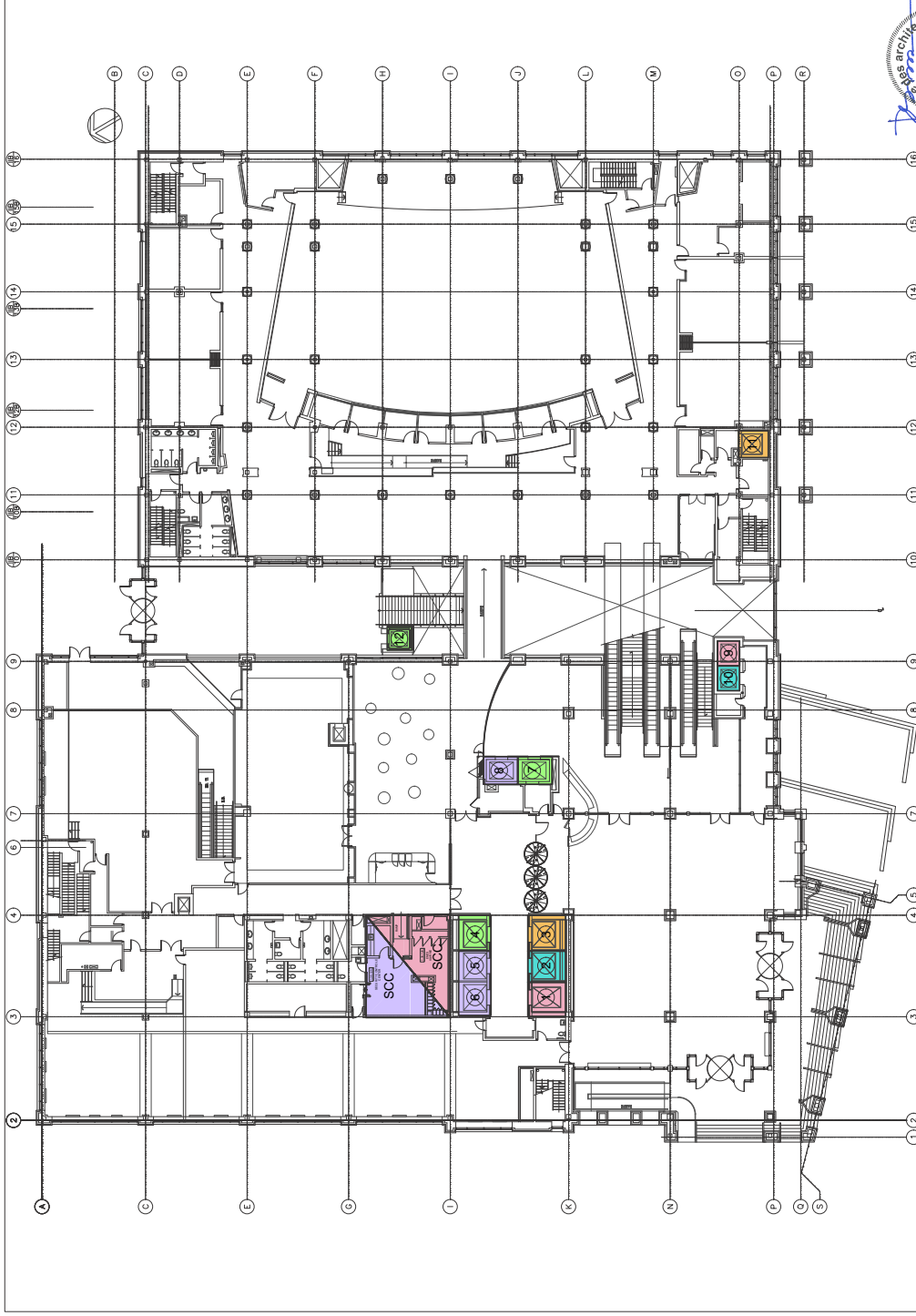
THE PRESENT ILLUSTRATION IS
POINT-FORM AND ITS OBJECTIVE IS TO
SITUATE THE ELEVATORS AND THE
PHASES OF THE WORK EXECUTION
WITHOUT TAKING INTO CONSIDERATION
THE LEVELS. THE PHASING APPLIES TO
ALL SERVING LEVELS.

THE DEPARTMENTAL REPRESENTATIVE
RESERVES THE RIGHT TO MODIFY
GROUPING AND/OR SEQUENCE OF WORK.


TO BE NOTED: THE COLORS CODING ON
THE PHASING PLAN ARE DIFFERENT THEN
THE COLORS ON THE DRAWINGS PAGES
A02 TO A10.

PHASE LEGEND


- GROUP 1**
- ELEVATORS 1-9 AND MECHANICAL ROOM
 - ELECTRICAL WORKS
 - WORKS IN THE SCC
- GROUP 2**
- ELEVATORS 2-10 AND MECHANICAL ROOM
- GROUP 3**
- ELEVATORS 3-11 AND MECHANICAL ROOM
- GROUP 4**
- ELEVATORS 4-7-12 AND MECHANICAL ROOM
- GROUP 5**
- ELEVATORS 5-6-8 AND MECHANICAL ROOM
 - FINAL RESURFACING WORKS IN THE SCC.
 - FINAL COMMISSIONING



A	révisions/ revisions	ISSUED FOR BIDS	18.04.23	date/ date
---	-------------------------	-----------------	----------	---------------

**Travaux publics et
Services gouvernementaux**
Canada
Direction générale des
bâtiments fédéraux
Région du Québec

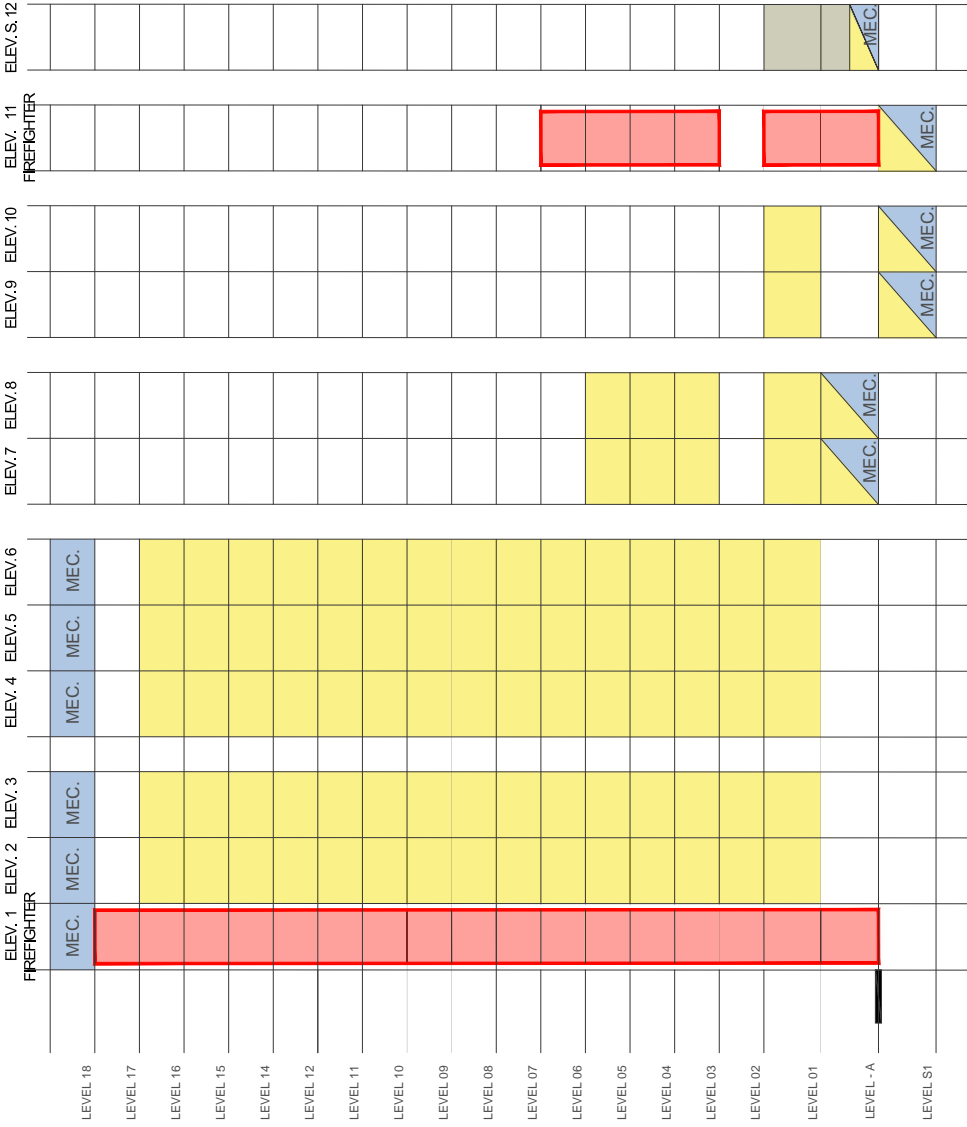
**Public Works and
Government Services**
Canada
Real Property branch
Quebec region



**Project/
Projet** **ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS**

**titre du dessin/
Drawing title** **PHASING PLAN**



conçu par/ designed by	D. BISSON	date	2018-02-28	dessiné par/ draw by	E. ZAPHRATOS	date	2018-02-28
approuvé par/ approved by	D. BISSON	date	2018-03-06	échelle/ scale	NONE	date	2018-02-28
gestionnaire de projet/ project manager	E. GUY	date	2018-03-09	no de projet/project no	R.090928.001	No feuille/ Sheet no	A01/10
nom du fichier/file name				R.090928-001_A01-A10_PLN.dwg			



NOTE: LEVEL 13 DOESNT EXIST

LEGEND	
<div></div>	SCC (SECURITY CONTROL CENTER)
<div></div>	FIREFIGHTER ELEVATOR / FREIGHT ELEVATO
<div></div>	PASSENGER ELEVATOR
<div></div>	ELEVATOR SYSTEM
<div></div>	ELEVATOR'S MECHANICAL ROOM
<div></div>	ELEV.
<div></div>	MEC. ELEVATOR'S MECHANICAL ROOM
<div></div>	ELEV.S. ELEVATOR SYSTEM



ISSUED FOR BIDS		18.04.23	
A	révisions/ revisions		date/ date
 Travaux publics et Services gouvernementaux Canada Direction générale des bâtiments publics Région du Québec		Public Works and Government Services Canada Real Property Branch Quebec region 	
Project/ Projet		ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS	
Title du dessin/ Drawing title		SCHEMATIC SECTION	
conçu par/ designed by		E. WARDINI	date 2018-02-28
approuvé par/ approved by		D. BISSON	échelle/ scale NONE
gestionnaire de projet/ project manager		E. GUY	no de projet/project no 2018-03-09
nom du fichier/file name		R.090928-001_A01-A10_PLN.dwg	No feuille/ Sheet no A02/10

GENERAL NOTES:
1- WORK SHALL BE IN ACCORD WITH THE ENGINEERING SCOPE, REFER TO THE ENGINEER'S DRAWINGS AND SPECIFICATIONS FOR THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES ADJACENT TO THE WORK.
2- TAKE ALL THE NECESSARY PRECAUTIONS FOR THE NECESSARY RESURFACING OF THE FLOOR, CEILING AND WALL SURFACES AFTER THE ELECTROMECHANICAL WORKS (REFER TO THE ENGINEER'S DOCUMENTS)
3- AFTER THE RESURFACING WORKS, PAINT ALL THE AFFECTED AREAS UP TO THE FINISH LINE OF THE WORK.
4- NEW PARTITIONS, CEILINGS AND ACCESS DOORS AFFECTED BY THE WORK ARE TO BE PAINTED.
5- ALL DIMENSIONS ARE TO BE VALIDATED ON SITE.
6- PLAN FOR ALL THE NECESSARY NAELERS WHERE IT IS REQUIRED. (REFER TO THE ENGINEER'S DOCUMENTS)
7- ALL THE FLOORS AND PARTITIONS OF THE MECHANICAL ROOMS AND ELEVATOR SHAFTS HAVE A 2-HOUR FIRE RESISTANCE. ALL THE NEW PARTITIONS AND CROSSINGS MUST BE SEALED WITH A 2-HOUR FIRE RATED SYSTEM.

LEGÈNDE :
⊗ ELEVATOR NUMBER
--- TO BE DEMOLISHED
--- NEW ELECTRICAL CONDUITS (REFER TO THE ENGINEER'S DOCUMENTS)
--- SEAL ALL THE OPENINGS AND CROSSINGS IN THE SLAB AND PARTITIONS WITH A 2-HOUR FIRE RATED SYSTEM.

LEGEND
SCC (SECURITY CONTROL CENTER)
FIREFIGHTER ELEVATOR / FREIGHT ELEVATOR
PASSENGER ELEVATOR
ELEVATOR SYSTEM
ELEVATOR'S MECHANICAL ROOM
ELEV.
MEC. ELEVATOR'S MECHANICAL ROOM
ELEV.S. ELEVATOR SYSTEM



A	ISSUED FOR BIDS	18.04.23
		date / date

Travaux publics et Services gouvernementaux Canada
Direction générale des Infrastructures Régions
Région du Québec

Public Works and Government Services Canada
Real Property Branch
Quebec region



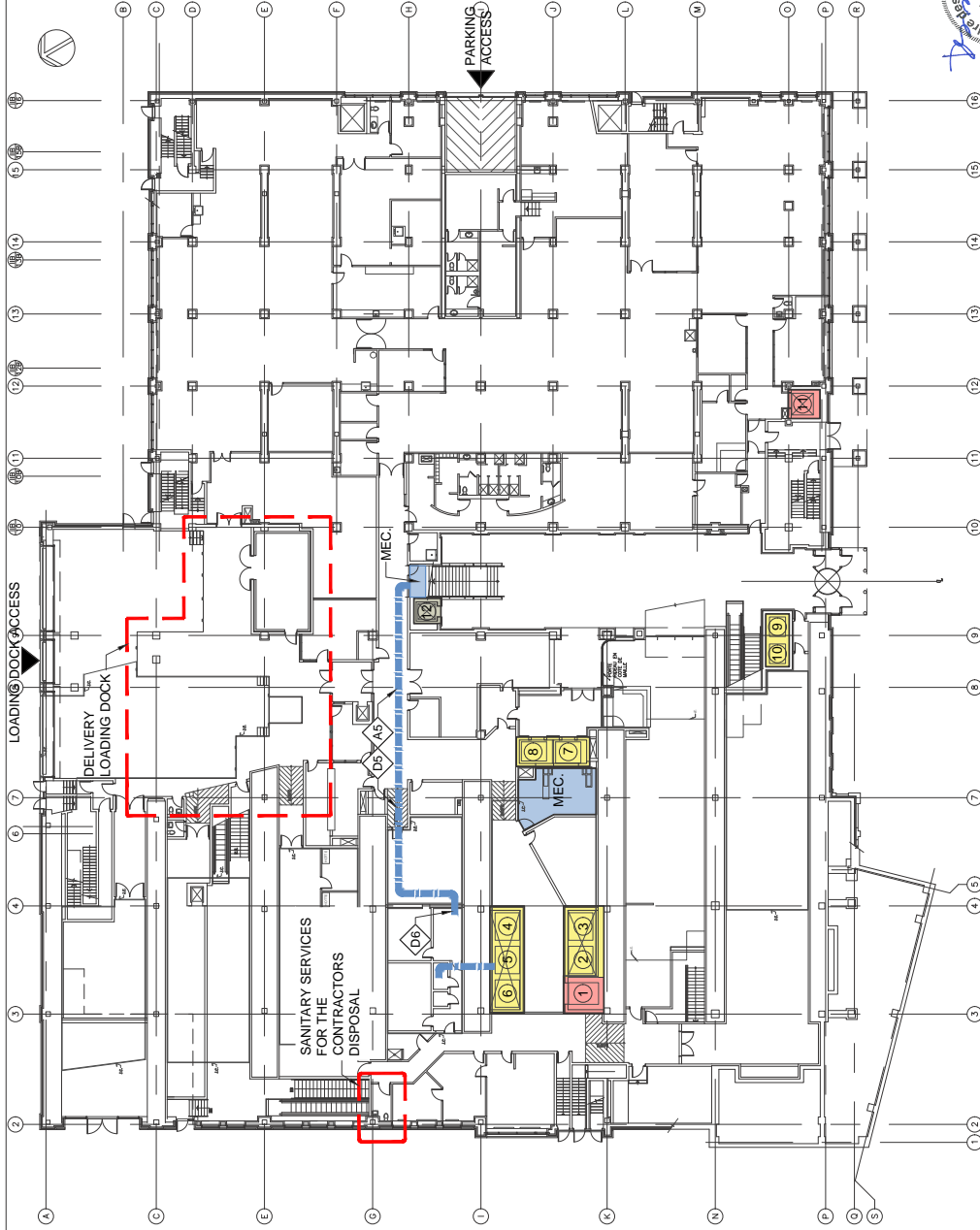
Project / Projet
ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS
Title du dessin / Drawing title
BASEMENT LEVEL 1 (S1)
conçu par / designed by
E. WARDINI
approuvé par / approved by
D. BISSON
gestionnaire de projet / project manager
E. GUY
nom du fichier / file name
R.090928-001_A01-A10_PLN.dwg

conçu par / designed by	E. WARDINI	date	2018-02-28	dessiné par / draw by	E. WARDINI	date	2018-02-28
approuvé par / approved by	D. BISSON	date	2018-03-06	échelle / scale	NONE	date	2018-02-28
gestionnaire de projet / project manager	E. GUY	date	2018-03-09	no de projet / project no	R.090928-001	No feuille / Sheet no	A03/10

GENERAL NOTES:
1- FOR THE ENTIRE PROJECT, REFER TO THE ENGINEERING SCOPE, REFER TO THE ENGINEER'S DRAWINGS AND DOCUMENTS FOR THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES ADJACENT TO THE WORK.
2- TAKE ALL THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES ADJACENT TO THE WORK.
3- AFTER THE RESURFACING WORKS, PAINT ALL THE AFFECTED AREAS UP TO THE FINISH LINE OF THE WORK.
4- NEW PARTITIONS, CEILINGS AND ACCESS DOORS AFFECTED BY THE WORK ARE TO BE PAINTED.
5- ALL DIMENSIONS ARE TO BE VALIDATED ON SITE.
6- PLAN FOR ALL THE NECESSARY MATERIALS WHERE IT IS REQUIRED. (REFER TO THE ENGINEER'S DRAWINGS AND DOCUMENTS FOR THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES ADJACENT TO THE WORK.)
7- ALL THE FLOORS AND PARTITIONS OF THE MECHANICAL ROOMS AND ELEVATOR SHAFTS HAVE A 2-HOUR FIRE RESISTANCE. ALL THE NEW PARTITIONS AND CROSSINGS MUST BE SEALED WITH A 2-HOUR FIRE RATED SYSTEM.

LEGEND:
X ELEVATOR NUMBER
--- TO BE DEMOLISHED
--- NEW ELECTRICAL CONDUITS (DOCUMENTS)
--- SEAL ALL THE OPENINGS AND CROSSINGS IN THE SLAB AND PARTITIONS WITH A 2-HOUR FIRE RATED SYSTEM.

LEGEND
SCC (SECURITY CONTROL CENTER)
FIREFIGHTER ELEVATOR / FREIGHT ELEVATOR
PASSENGER ELEVATOR
ELEVATOR SYSTEM
ELEVATOR
ELEVATOR'S MECHANICAL ROOM
MEC. ELEVATOR'S MECHANICAL ROOM
ELEV.S. ELEVATOR SYSTEM

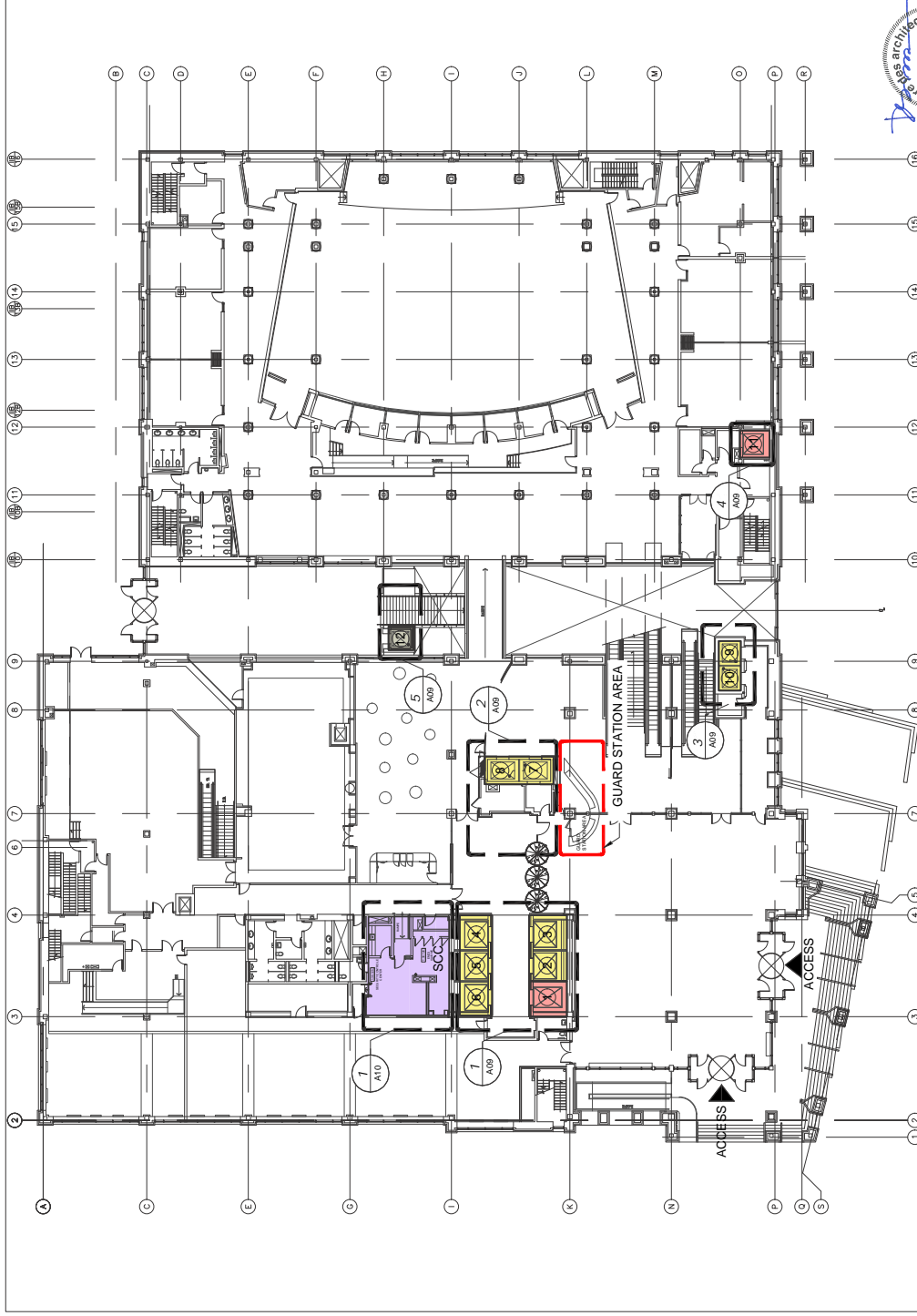


 Travaux publics et Services gouvernementaux Canada Direction générale des biens immobiliers Région du Québec	Public Works and Government Services Canada Real Property branch Quebec region 	Project/ Projet ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS									
		LEVEL-A PLAN									
		Titre du dessin/ Drawing title		conçu par/ designed by		date		dessiné par/ drawn by		date	
				E. WARDINI		2018-02-28		E. WARDINI		2018-02-28	
				approved by/ approved by		2018-03-06		échelle/ scale		2018-02-28	
		gestionnaire de projet/ project manager		E. GUY		2018-03-09		no de projet/project no		No feuille/ Sheet no	
		nom du fichier/file name		R.090928-001_A01-A10_PLN.dwg		R.090928.001		A04/10			



GENERAL NOTES:
1- THE ENGINEER'S SCOPE, REFER TO THE ENGINEER'S DRAWINGS AND DOCUMENTS.
2- TAKE ALL THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES OF THE EXISTING WORK.
3- FOR ALL THE SPACES PLAN FOR THE NECESSARY RESURFACING OF THE FLOOR, CEILING AND WALL SURFACES AFTER THE ELECTROMECHANICAL WORK.
4- NEW PARTITIONS, CEILINGS AND ACCESS DOORS AFFECTED BY THE WORK ARE TO BE PAINTED.
5- ALL DIMENSIONS ARE TO BE VALIDATED ON SITE.
6- PLAN FOR ALL THE NECESSARY NAELERS WHERE IT IS REQUIRED. (REFER TO THE ENGINEER'S DOCUMENTS)
7- ALL THE FLOORS AND PARTITIONS OF THE MECHANICAL ROOMS AND ELEVATOR SHAFTS HAVE A 2-HOUR FIRE RESISTANCE. ALL THE NEW PARTITIONS AND CROSSINGS MUST BE BUILT WITH A 2-HOUR FIRE RATED SYSTEM.

LEGEND:
ELEVATOR NUMBER
X TO BE DEMOLISHED
--- NEW ELECTRICAL CONDUITS
--- NEW ELECTRICAL CONDUITS
--- SEAL ALL THE OPENINGS AND CROSSINGS IN THE SLAB AND PARTITIONS WITH A 2-HOUR FIRE RATED SYSTEM.

LEGEND
SCC (SECURITY CONTROL CENTER)
FIREFIGHTER ELEVATOR / FREIGHT ELEVATOR
PASSENGER ELEVATOR
ELEVATOR SYSTEM
ELEVATOR'S MECHANICAL ROOM
ELEV.
MEC. ELEVATOR'S MECHANICAL ROOM
ELEV.S. ELEVATOR SYSTEM



A	révisions/ revisions	ISSUED FOR BIDS		18.04.23
		date/ date		

	Travaux publics et Services gouvernementaux Canada Direction générale des bâtiments et des infrastructures Région du Québec	Public Works and Government Services Canada Real Property branch Quebec region	
			

Project/ Projet		ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS	
titre du dessin/ Drawing title		LEVEL-1 PLAN	

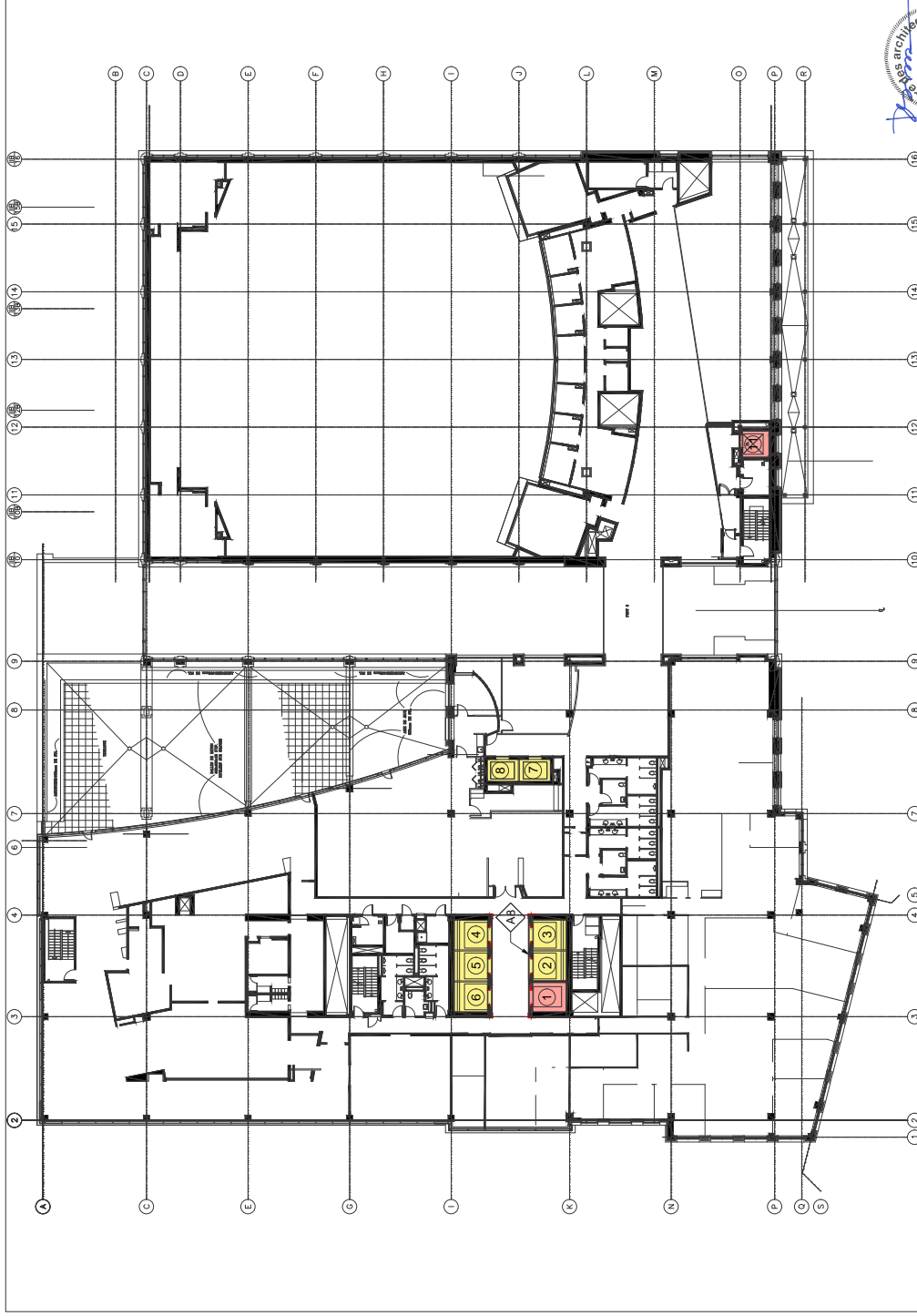
conçu par/ designed by	E. WARDINI	date	2018-02-28	dessiné par/ draw by	E. WARDINI	date	2018-02-28
approuvé par/ approved by	D. BISSON	date	2018-03-06	échelle/ scale	NONE	date	2018-02-28
gestionnaire de projet/ project manager	E. GUY	date	2018-03-09	no de projet/project no	R.090928.001	No feuille/ Sheet no	A05/10
nom du fichier/file name		R.090928-001_A01-A10_PLN.dwg					

GENERAL NOTES:
1- REFER TO THE ENGINEERING SCOPE, REFER TO THE ENGINEER'S DRAWINGS AND DOCUMENTS.
2- TAKE ALL THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES OF THE EXISTING WORK.
3- FOR ALL THE SPACES PLAN FOR THE NECESSARY RESURFACING OF THE FLOOR, CEILING AND WALL SURFACES AFTER THE ELECTROMECHANICAL WORK.
(REFER TO THE ENGINEER'S DOCUMENTS)
4- NEW PARTITIONS, CEILINGS AND ACCESS DOORS AFFECTED BY THE WORK ARE TO BE PAINTED.
5- ALL DIMENSIONS ARE TO BE VALIDATED ON SITE.
6- PLAN FOR ALL THE NECESSARY NAULERS WHERE IT IS REQUIRED. (REFER TO THE ENGINEER'S DOCUMENTS)
7- ALL THE FLOORS AND PARTITIONS OF THE MECHANICAL ROOMS AND ELEVATOR SHAFTS HAVE A 2-HOUR FIRE RESISTANCE. ALL THE NEW PARTITIONS AND CROSSINGS MUST BE SEaled WITH A 2-HOUR FIRE RATED SYSTEM.

LEGEND:
(X) ELEVATOR NUMBER
--- TO BE DEMOLISHED
--- NEW ELECTRICAL CONDUITS (REFER TO THE ENGINEER'S DOCUMENTS)
--- SEAL ALL THE OPENINGS AND CROSSINGS IN THE SLAB AND PARTITIONS WITH A 2-HOUR FIRE RATED SYSTEM.

LEGEND:
◇ SPECIFIC NOTE ON PAGE A09

LEGEND
SCC (SECURITY CONTROL CENTER)
FIREFIGHTER ELEVATOR / FREIGHT ELEVATOR
PASSENGER ELEVATOR
ELEVATOR SYSTEM
ELEVATOR'S MECHANICAL ROOM
ELEV.
MEC. ELEVATOR'S MECHANICAL ROOM
ELEV.S. ELEVATOR SYSTEM



A	révisions/ revisions	ISSUED FOR BIDS	18.04.23
			date/ date

	Travaux publics et Services gouvernementaux Canada Direction générale des bâtiments et des infrastructures Région du Québec	Public Works and Government Services Canada Real Property Branch Quebec region 	Project/ Project	ICAQ-MODERNIZATION OF ELEVATOR CONTROLLERS	conçu par/ designed by	E. WARDINI	date 2018-02-28	dessiné par/ drawn by	E. WARDINI	date 2018-02-28

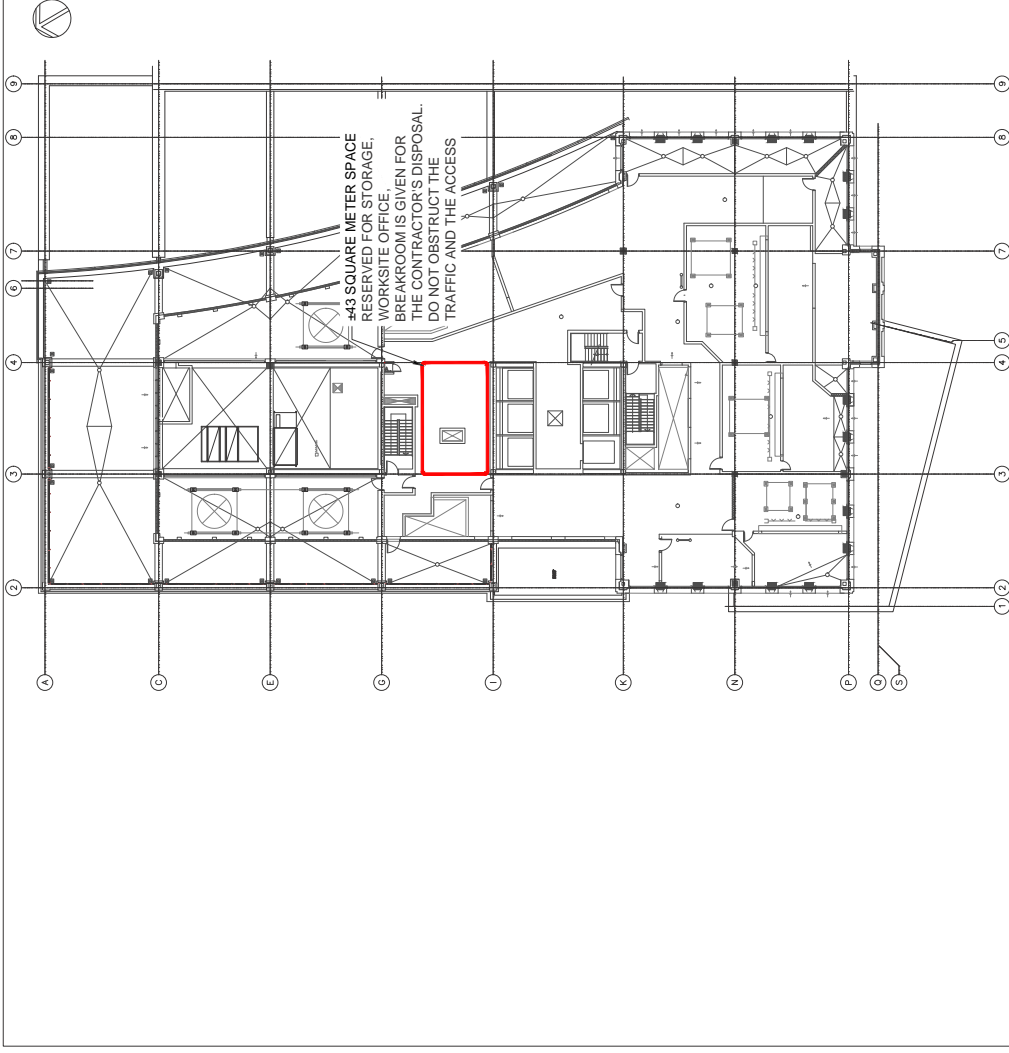
titre du dessin/ Drawing title	LEVEL - 5 PLAN (AND SIMILAR LEVELS)	approuvé par/ approved by	D. BISSON	date 2018-03-06	échelle/ scale	NONE	date 2018-02-28	no de projet/project no	R.090928.001	No feuille/ Sheet no	A06/10


nom du fichier/file name	R.090928-001_A01-A10_PLN.dwg	gestionnaire de projet/ project manager	E. GUY	date 2018-03-09	no de projet/project no	R.090928.001	No feuille/ Sheet no	A06/10

- GENERAL NOTES:
- 1- FOR THE ENTIRE PROJECT, REFER TO THE ENGINEER'S DRAWINGS AND DOCUMENTS.
 - 2- TAKE ALL THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES AND MATERIALS OF THE EXISTING BUILDING.
 - 3- FOR ALL THE SPACES PLAN FOR THE NECESSARY RESURFACING OF THE WORK FLOOR, CEILING AND WALL SURFACES AFTER THE ELECTROMECHANICAL WORK (REFER TO THE ENGINEER'S DOCUMENTS).
 - 4- NEW PARTITIONS, CEILING AND ACCESS DOORS AFFECTED BY THE WORK ARE TO BE PAINTED.
 - 5- ALL DIMENSIONS ARE TO BE VALIDATED ON SITE.
 - 6- PLAN FOR ALL THE NECESSARY MATERIALS WHERE IT IS REQUIRED. (REFER TO THE ENGINEER'S DOCUMENTS).
 - 7- ALL THE FLOORS AND PARTITIONS OF THE MECHANICAL ROOMS AND ELEVATOR SHAFTS HAVE A 2-HOUR FIRE RESISTANCE. ALL THE NEW PARTITIONS AND CROSSINGS MUST BE BUILT WITH A 2-HOUR FIRE RATED SYSTEM.

- LEGENDE:
- (X) ELEVATOR NUMBER
 - TO BE DEMOLISHED
 - NEW ELECTRICAL CONDUITS
 - SEAL ALL THE OPENINGS AND CROSSINGS IN THE SLAB AND PARTITIONS WITH A 2-HOUR FIRE RATED SYSTEM.

- LEGEND
- SCC (SECURITY CONTROL CENTER)
 - FIREFIGHTER ELEVATOR / FREIGHT ELEVATOR
 - PASSENGER ELEVATOR
 - ELEVATOR SYSTEM
 - ELEVATOR'S MECHANICAL ROOM
 - ELEV.
 - MEC. ELEVATOR'S MECHANICAL ROOM
 - ELEV.S. ELEVATOR SYSTEM

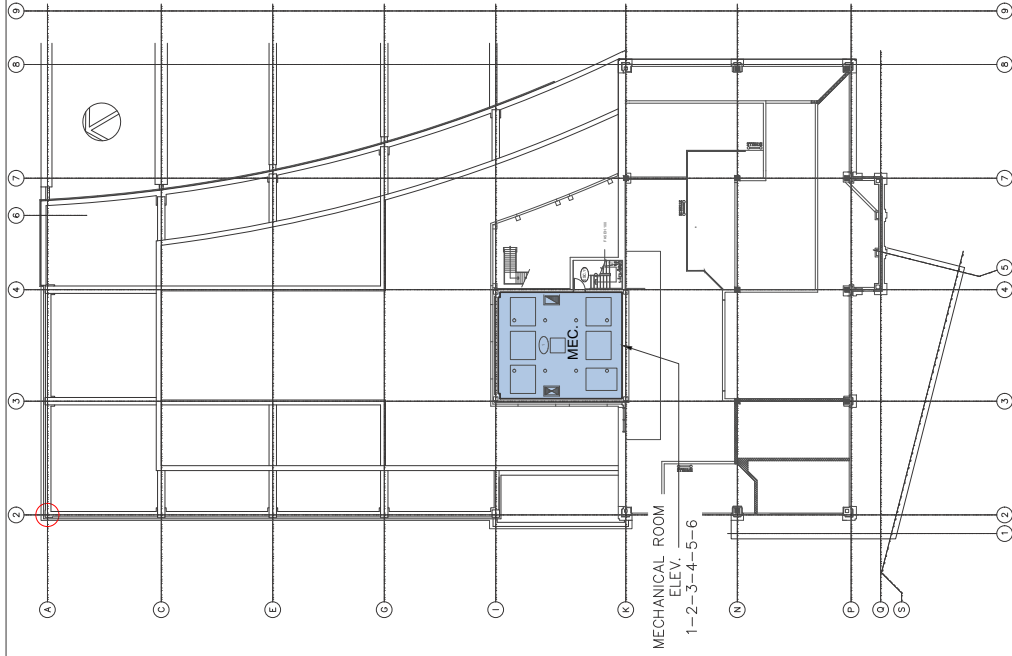





A		ISSUED FOR BIDS		18.04.23			
révisions/ revisions				date/ date			
		Travaux publics et Services gouvernementaux Canada		Public Works and Government Services Canada			
		Direction générale des biens immobiliers Région du Québec		Real Property branch Quebec region			
							
Project/ Project				ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS			
titre du dessin/ Drawing title				LEVEL - 17 PLAN			
conçu par/ designed by				E. WARDINI			
approuvé par/ approved by				D. BISSON			
gestionnaire de projet/ project manager				E. GUY			
nom du fichier/file name				R.090928-001_A01-A10_PLN.dwg			
date				2018-02-28		date	
échelle/ scale				NONE		2018-02-28	
no de projet/project no				R.090928.001		No feuille/ Sheet no	
						A07/10	

- GENERAL NOTES:
- 1- THE ENGINEER HAS REVIEWED THE ENGINEERING SCOPE, REFER TO THE ENGINEER'S DRAWINGS AND DOCUMENTS.
 - 2- TAKE ALL THE NECESSARY PRECAUTIONS AS TO NOT DAMAGE THE SURFACES AND MATERIALS OF THE EXISTING WORK.
 - 3- FOR ALL THE SPACES PLAN FOR THE NECESSARY RESURFACING OF THE WORK FLOOR, CEILING AND WALL SURFACES AFTER THE ELECTROMECHANICAL WORK (REFER TO THE ENGINEER'S DOCUMENTS).
 - 4- NEW PARTITIONS, CEILINGS AND ACCESS DOORS AFFECTED BY THE WORK ARE TO BE PAINTED.
 - 5- ALL DIMENSIONS ARE TO BE VALIDATED ON SITE.
 - 6- PLAN FOR ALL THE NECESSARY NAULERS WHERE IT IS REQUIRED. (REFER TO THE ENGINEER'S DOCUMENTS).
 - 7- ALL THE FLOORS AND PARTITIONS OF THE MECHANICAL ROOMS AND ELEVATOR SHAFTS HAVE A 2-HOUR FIRE RESISTANCE, ALL THE NEW PARTITIONS AND CROSSINGS MUST BE SOLID WITH A 2-HOUR FIRE RATED SYSTEM.

- LEGEND:
- (X) ELEVATOR NUMBER
 - TO BE DEMOLISHED
 - NEW ELECTROMECHANICAL WORK (REFER TO THE ENGINEER'S DOCUMENTS)
 - SEAL ALL THE OPENINGS AND CROSSINGS IN THE SLAB AND PARTITIONS WITH A 2-HOUR FIRE RATED SYSTEM

- LEGEND
- SCC (SECURITY CONTROL CENTER)
 - FIREFIGHTER ELEVATOR / FREIGHT ELEVATOR
 - PASSENGER ELEVATOR
 - ELEVATOR SYSTEM
 - ELEVATOR'S MECHANICAL ROOM
 - ELEVATOR
 - MEC. ELEVATOR'S MECHANICAL ROOM
 - ELEV.S. ELEVATOR SYSTEM



A	révisions/ revisions	ISSUED FOR BIDS	18.04.23 date/ date	 Travaux publics et Services gouvernementaux Canada Direction générale des bâtiments fédéraux Région du Québec	 Public Works and Government Services Canada Real Property branch Quebec region	

Project/
Projet

LEVEL - 18 PLAN

ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS

conçu par/
designed by

approuvé par/
approved by

gestionnaire de projet/
project manager

nom du fichier/file name

dessiné par/
draw by

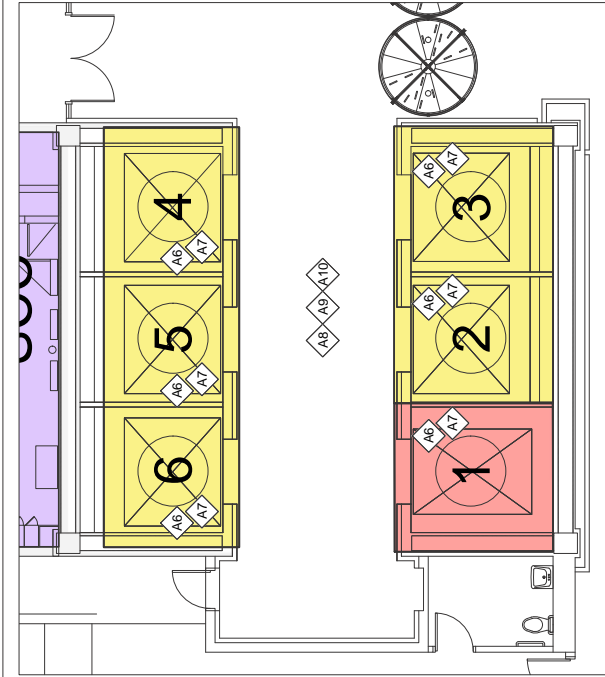
date

échelle/
scale

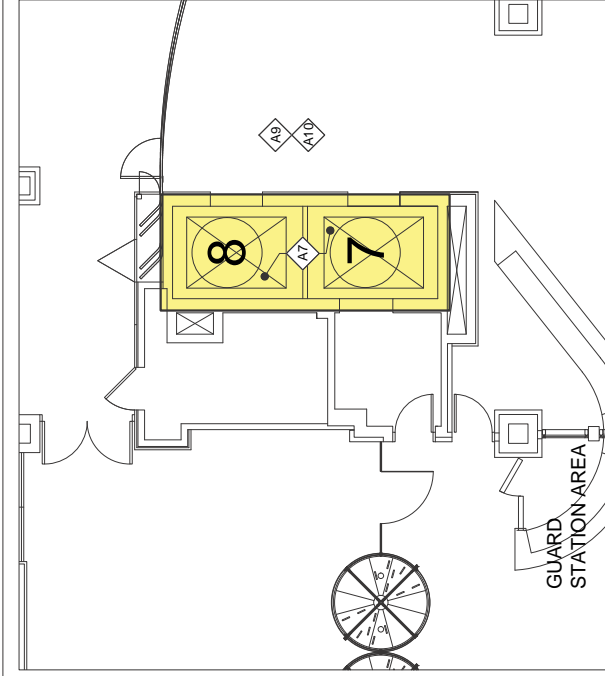
no de projet/project no

No feuille/
Sheet no

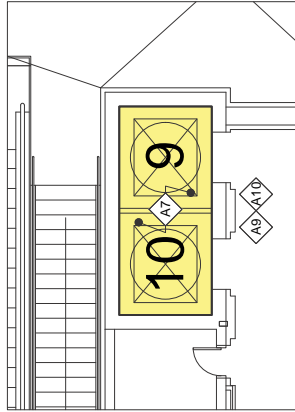
A08/10



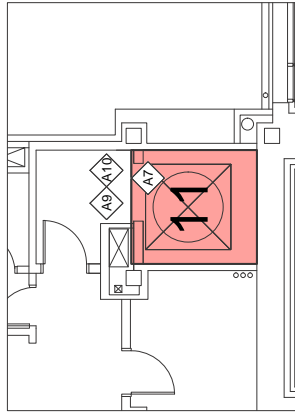
1 LEVEL 1 ENLARGED PLAN - ELEV. 1 TO 6
A05 ECHELLE 1=100



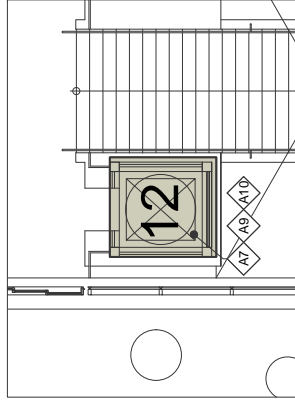
2 LEVEL 1 ENLARGED PLAN - ELEV. 7 AND 8
A05 ECHELLE 1=100



3 LEVEL 1 ENLARGED PLAN - ELEV. 9 AND 10
A05 ECHELLE 1=100



4 LEVEL 1 ENLARGED PLAN - ELEV. 11
A05 ECHELLE 1=100



5 LEVEL 1 ENLARGED PLAN - ELEV. 12
A05 ECHELLE 1=100





THE PRESENT ILLUSTRATION IS POINT-FORM AND ITS OBJECTIVE IS TO SUMMARIZE THE ELEVATOR LAYOUTS. THE INDICATED NOTES APPLIES TO ALL SERVING LEVELS.

- GENERAL NOTES:**
- 1- FOR THE EXTENT OF THE ENGINEERING SCOPE, REFER TO THE ENGINEER'S DRAWINGS AND DOCUMENTS.
 - 2- ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL BUILDING CODE OF CANADA (NBC) AND THE CITY OF MONTREAL.
 - 3- FOR ALL THE SPACES, PLAN FOR THE NECESSARY RESURFACING OF THE FLOORS, CEILING, CEILING AND WALL SURFACES AFTER THE ELECTROMECHANICAL WORKS.
 - 4- NEW PARTITIONS, CEILING AND ACCESS DOORS AFFECTED BY THE WORK ARE TO BE FINISHED TO MATCH THE EXISTING FINISHES.
 - 5- ALL PARTITIONS ARE TO BE VAULTED ON SITE.
 - 6- PLAN FOR ALL THE NECESSARY NALES WHERE IT IS REQUIRED. (REFER TO THE ENGINEER'S DOCUMENTS).
 - 7- ALL THE FLOORS AND PARTITIONS OF THE MECHANICAL ROOMS AND ELEVATOR SHAFTS ARE TO BE FINISHED TO MATCH THE EXISTING FINISHES. OPENINGS AND CROSSINGS MUST BE SEALED WITH A 2-HOUR FIRE RATED SYSTEM.


- LEGENDE :**
- (X) ELEVATOR NUMBER
 - TO BE DISMISSED
 - NEW ELECTRICAL CONDUITS (REFER TO THE ENGINEER'S DOCUMENTS)
 - PARTITIONS WITH A 2-HOUR FIRE RATED SYSTEM

- NOTES DE DEMOLITION:**
- (1) PARTIALLY DEMOLISH THE GYPSUM PARTITION AS TO INSTALL THE NEW CONSOLE.
 - (2) DEMOLISH THE EXISTING ACCESS DOOR
 - (3) DEMOLISH THE EXISTING ACCESS DOOR
 - (4) REMOVE THE EXISTING PORTABLE FIRE EXTINGUISHER, KEEP FOR REINSTALLATION.
 - (5) REMOVE THE EXISTING PANELS OVER A LENGTH OF 45 METERS AS TO PROVIDE THE APPROPRIATE ACCESS DOOR.
 - (6) REMOVE THE EXISTING PARTITIONS (REFER TO THE ENGINEER'S DOCUMENTS)
 - (7) PLAN FOR ALL THE REQUIRED OPENINGS IN THE CONCRETE, NO OPENINGS ARE FORWARDED BEFORE EXISTING A CONCRETE SLAB SEEN.
 - (8) REMOVE THE EXISTING CONSOLE, REFER TO DIVISION 14

- CONSTRUCTION NOTES:**
- (1) RESURFACING AND PAINTING OF THE GYPSUM PARTITION
 - (2) NEW SHEET, 500mm x 550mm
 - (3) NEW ACCESS DOOR, 1-HOUR FIRE-RATED
 - (4) RELOCATE THE EXISTING PORTABLE FIRE EXTINGUISHER (LOCATION TO BE COORDINATED ON SITE)
 - (5) REINSTALL THE ACOUTICAL PANELS AFTER THE ELECTROMECHANICAL WORKS.
 - (6) PROVIDE THE EXISTING TYPE SEALING SYSTEM BETWEEN THE SHUNT WALL AND THE EXISTING STEEL DECK. PLAN FOR THE RESURFACING OF THE
 - (7) FIRE-RATING SEALANTS IN THE GYPSUM PARTITIONS OF THE FOLLOWING ELEVATOR SHAFTS:
 - ELEVATOR SHAFT 12: PROVIDE FOR 100 LINEAR METERS
 - ELEVATOR SHAFT 11: PROVIDE FOR 100 LINEAR METERS
 - ELEVATOR SHAFT 10: PROVIDE FOR 25 LINEAR METERS
 - ELEVATOR SHAFT 9: PROVIDE FOR 25 LINEAR METERS
 - ELEVATOR SHAFT 8: PROVIDE FOR 25 LINEAR METERS
 - ELEVATOR SHAFT 7: PROVIDE FOR 25 LINEAR METERS
 - (8) NEW STAINLESS STEEL PLATE REFER TO DIVISION 14
 - (9) THE DETAILS FOR THE RELOCATION OF THE TEMPORARY PARTITIONS FOR THE DURATION OF THE WORK IS INDICATED IN THE SPECIFICATION, THE EXISTING MATERIALS ARE TO BE REUSED.
 - (10) FOR THE 1-HOUR FIRE-RATED TEMPORARY PARTITIONS, PROVIDE A 1-HOUR GYPSUM CEILING AS TO ENSURE THE CONTINUITY OF THE FIRE RESISTANCE.
 - (11) NEW CONSOLE, REFER TO DIVISION 14

 Travaux publics et Services gouvernementaux Canada Direction générale des biens immobiliers Région du Québec	Public Works and Government Services Real Property branch Quebec region 	Project/ Project	ICAO-MODERNIZATION OF ELEVATOR CONTROLLERS				
		Title du dessin/ Drawing title	ENLARGE ELEVATOR PLANS				
		conçu par/ designed by		E. EWARDINI		date	2018-02-28
		dessiné par/ draw by		E. EWARDINI		date	2018-02-28
		approved by/ approved by		D.BISSON		date	2018-03-06
		gestionnaire de projet/ Project manager		E. GUY		date	2018-03-09
		nom du fichier/file name		R.090928-001_A01-A10_PLN.dwg		No feuille/ Sheet no	A09/10

APPENDIX E
Electrical drawings

 **Travaux publics et
Services gouvernementaux**
Canada
Direction générale des
biens immobiliers
Région du Québec

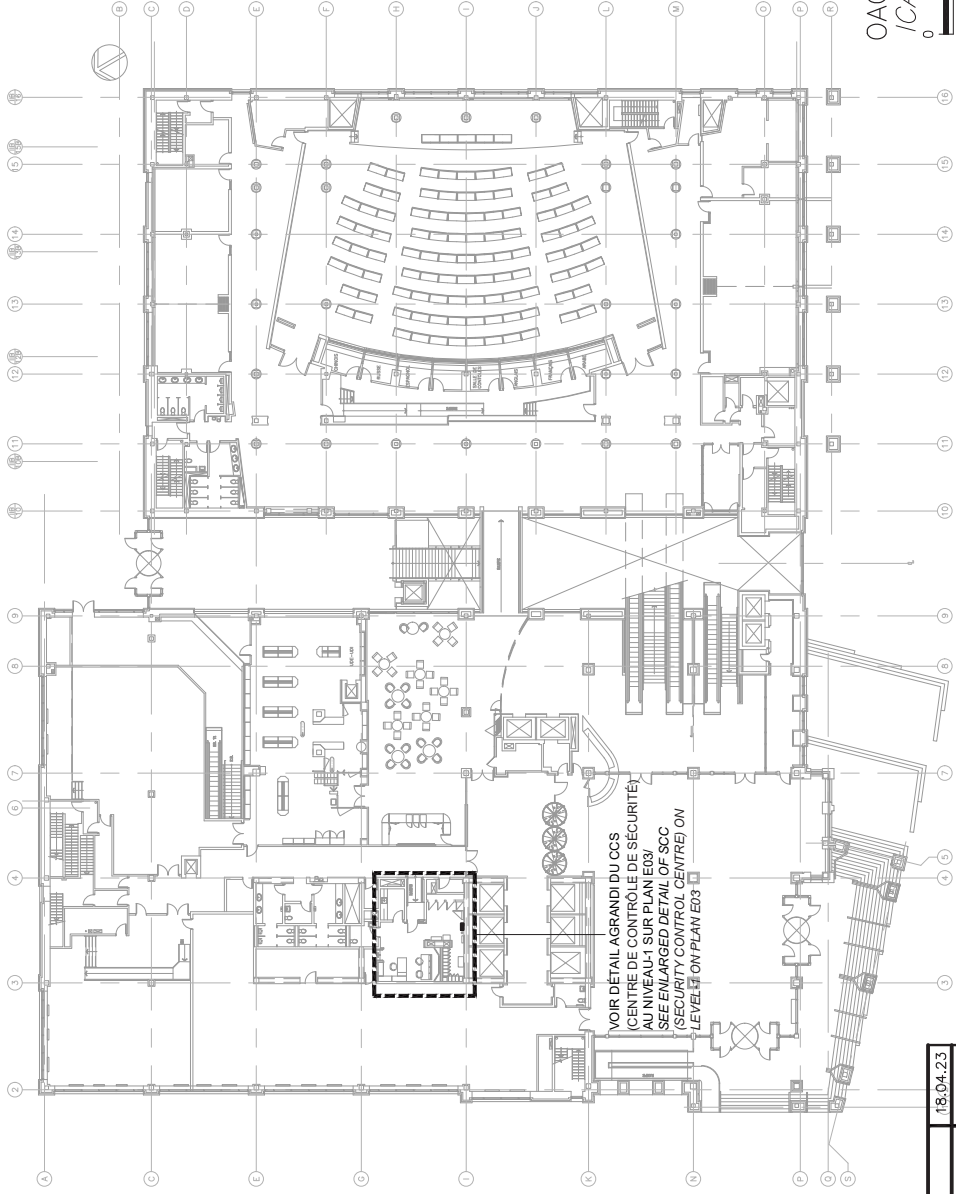
**Public Works and
Government Services
Canada**
Real Property branch
Quebec region




conçu par / designed by	STÉPHANE PERRON	date 2018-04-09	dessiné par / draw by	LOYD TURRIFF	date 2018-04-09
approuvé par / approved by	STÉPHANE PERRON	date 2018-04-09	schéma / INDIQUEE		date 2018-04-09
gestionnaire de projet / Project manager	ERIC GUY	date 2018-04-09	no de projet / project no		No feuille / Sheet No
nom du fichier / file name	R.090928.001 R_090928_001.E01-SH.COD				
					E01/E04



Level	OACI - NIVEAU A	ICAO - LEVEL A
Level A	19	19
Level B	1	1



0	ÉMIS POUR SOUMISSION	18.04.23	date
A	PLANS POUR COMMENTAIRES 99%	18.04.06	date
révisions	revisions		



Travaux publics et Services gouvernementaux
Canada
Direction générale des biens immobiliers
Region du Québec

Public Works and Government Services
Canada
Real Property branch
Quebec region




Projet/
Project
OACI Modernisation des Contrôleurs d'Ascenseurs/
ICAO Modernization of Elevator Controllers


titre du dessin/
Drawing title
PLAN CLE - OACI - NIVEAU 1
KEY PLAN - ICAO - LEVEL 1

conçu par/ designed by STÉPHANE PERRON	date 2018-04-09	dessiné par/ drawn by LLOYD TURRIF	date 2018-04-09
approuvé par/ approved by STÉPHANE PERRON	date 2018-04-09	échelle/ scale INDIQUÉE	date 2018-04-09
gestionnaire de projet/ Project manager ÉRIC GUY	date 2018-04-09	no de projet/project no R.090928.001	No feuille/ Sheet no E02/E04
nom du fichier/file name R_090928_001-E02-SI-COD			


0	ÉMIS POUR SOUMISSION	18.04.23
A	PLANS POUR COMMENTAIRES 99%	18.04.06
révisions revisions		date



Travaux publics et
Services gouvernementaux
Canada
Direction générale des
biens immobiliers
Région du Québec



Public Works and
Government Services
Canada
Real Property branch
Quebec region



Project/
Projet

OACI Modernisation des Contrôleurs d'Ascenseurs/
ICAO Modernization of Elevator Controllers

titre du dessin/
Drawing title

DÉTAILS NIVEAU-1 & NIVEAU-18/
DETAILS LEVEL-1 & LEVEL-18

conçu par/
designed by

STÉPHANE PERRON

date

2018-04-09

dessiné par/
drawn by

LLOYD TURRIFF

date

2018-04-09

échelle/
scale

INDIQUÉE

date

2018-04-09

gestionnaire de projet/
Project manager

ÉRIC GUY

date

2018-04-09

nom du fichier/fle name

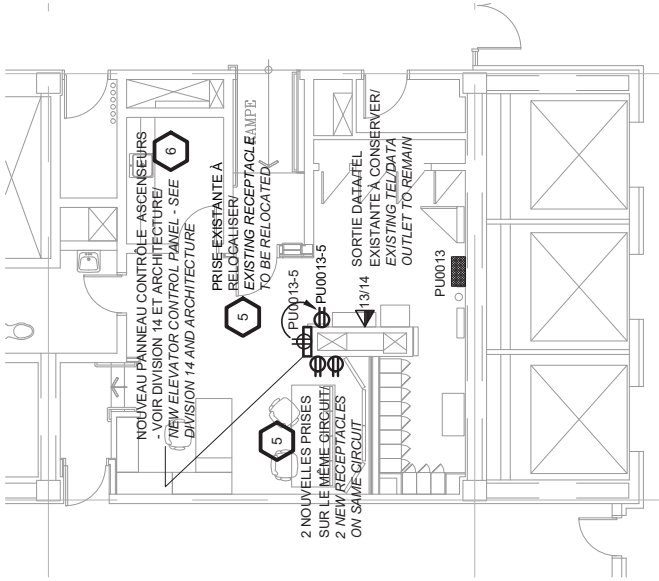
R_090928_001-E03-SI-COD

no de projet/project no

R.090928.001

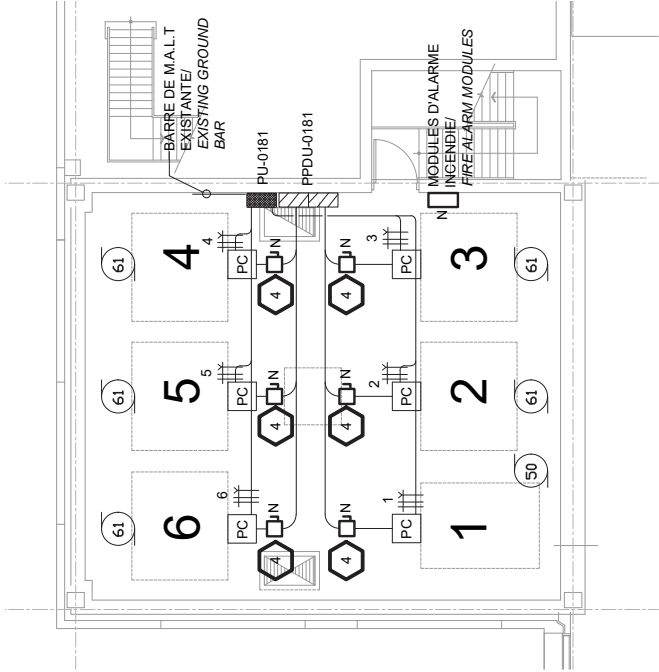
No feuille/
Sheet no

E03/E04



DÉTAIL DU CCS – NIVEAU-1
DETAIL OF THE SCC – LEVEL-1

0 5 1: 100



SALLE MÉC. ASC. 1 À 6 – NIVEAU-18
ELEV. MACH. RM. 1 TO 6 – LEVEL-18

0 5 1: 100

GRAND FORMAT



NOTES GÉNÉRALES/
GENERAL NOTES:

- A

LES CONDUITS DEVONT ÊTRE DISSIMULÉS SAUF DANS LES LOCAUX TECHNIQUES/
CONDUITS SHALL BE CONCEALED EXCEPT IN TECHNICAL ROOMS
- B

INSPECTER LA DALLE AUX ULTRASONS POUR LOCALISATION DES BARRES D'ARMATURE ET AUTRES SERVICES AVANT D'EFFECTUER LES PERÇEMENTS/
INSPECT THE SLAB WITH ULTRASOUND SCANS TO LOCATE REBARS AND OTHER SERVICES BEFORE DRILLING HOLES
- C

L'ENTREPRENEUR DEVRA PORTER UNE ATTENTION SPÉCIALE À L'ÉTENDUE COMPLÈTE DES TRAVAUX EN ÉLECTRICITÉ (SECTION 26) ET EN SÉCURITÉ (SECTION 28) SE RETROUVANT DANS LA SECTION "26 05 00 ÉLECTRICITÉ - EXIGENCES GÉNÉRALES CONCERNANT LES RÉSULTATS DES TRAVAUX" DU DEVIS/
THE COMPLETE SCOPE OF WORK IN ELECTRICITY (SECTION 26) AND IN SECURITY (SECTION 28) TO BE FOUND IN SECTION "26 05 00 COMMON WORK RESULTS FOR ELECTRICAL OF THE SPECIFICATION

NOTES D'INTERVENTION/
INTERVENTION NOTES:

- 1

L'ENTREPRENEUR DEVRA FOURNIR & INSTALLER LES CONDUITS VIDES AVEC CORDE DE TIRAGE DANS L'ENTREPLAFOND TEL QU'INDIQUÉ AU PLAN E01/
THE ELECTRICIAN SHALL SUPPLY & INSTALL EMPTY CONDUITS WITH PULL CORDS IN CEILING SPACE AS SHOWN ON PLAN E01
- 2

L'ENTREPRENEUR DEVRA SCELLER LES PERÇEMENTS POUR LES NOUVEAUX CONDUITS À L'AIDE D'UN SCELLANT COUPE FEU 2 HEURES (VOIR ARCHITECTURE)/
THE ELECTRICIAN SHALL SEAL THE OPENINGS FOR THE NEW CONDUITS WITH 2 HOUR FIRE RATED SEALANT (SEE ARCHITECTURE)
- 3

L'ENTREPRENEUR DEVRA FAIRE LES TRAVAUX SUIVANTS DANS CHACUNE DES SALLES MÉCANIQUES D'ASCENSEURS :
- DEBRANCHER LES CONTRÔLEURS D'ASCENSEUR EXISTANTS ET REBRANCHER LES NOUVEAUX CONTRÔLEURS
- FOURNIR & INSTALLER DES CONDUITS & CÂBLES ET BRANCHER LES 5 MODULES D'ALARME INCENDIE (FOURNIS & INSTALLÉS DANS LE CADRE D'UN AUTRE PROJET) AUX NOUVEAUX CONTRÔLEURS
- LE DEBRANCHEMENT DES 2 CONTACTS DE L'INTERRUPTEUR DE TRANSFERT ET LEUR REBRANCHEMENT AUX NOUVEAUX CONTRÔLEURS SERONT FAITS DANS LE CADRE D'UN AUTRE PROJET/
THE ELECTRICIAN SHALL DO THE FOLLOWING WORK IN EACH OF THE ELEVATOR MACHINE ROOMS :
- DISCONNECT THE EXISTING ELEVATOR CONTROLLERS AND RECONNECT THE NEW CONTROLLERS
- SUPPLY & INSTALL CONDUITS & WIRING AND CONNECT THE 5 FIRE ALARM MODULES (SUPPLIED & INSTALLED IN THE SCOPE OF ANOTHER PROJECT) TO THE NEW CONTROLLERS
- DISCONNECTION OF THE 2 TRANSFER SWITCH CONTACTS AND RECONNECTION TO THE NEW CONTROLLERS TO BE DONE IN THE SCOPE OF ANOTHER PROJECT
- 4

L'ENTREPRENEUR DEVRA FOURNIR & INSTALLER UN SECTIONNEUR 100A SANS FUSIBLES EMAC1 (PRÉVOIR MODIFIER LES CONDUITS EXISTANTS) ET FAIRE LE RACCORDEMENT 600V DE CHAQUE CONTRÔLEUR D'ASCENSEUR/
THE ELECTRICIAN SHALL SUPPLY & INSTALL A 100A UNFUSED EMAC1 DISCONNECT SWITCH (ALLOW FOR MODIFICATION OF EXISTING CONDUITS) AND MAKE THE 600V CONNECTION TO EACH ELEVATOR CONTROLLER

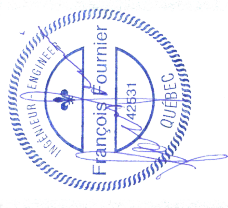
- 5

L'ENTREPRENEUR DEVRA RELOCALISER LA PRISE EXISTANTE SUR LE CIRCUIT PU0013-5 TEL QU'INDIQUÉ ET RACCORDER LES 2 NOUVELLES PRISES 5-15R SUR UN CIRCUIT 15A 1P LIBRE DANS LE MÊME PANNEAU (CIRCUIT À CONFIRMER)/
THE ELECTRICIAN SHALL RELOCATE THE EXISTING RECEPTACLE ON CIRCUIT PU0013-5 AS SHOWN AND CONNECT THE 2 NEW 5-15R RECEPTACLES TO A SPARE 15A 1P CIRCUIT IN THE SAME PANEL (CIRCUIT TO BE CONFIRMED)
- 6


TERMINER LES 3 CONDUITS QUI MONTENT DANS LE Puits DANS LE NOUVEAU PANNEAU CONTRÔLE ASCENSEURS DANS LE CCS AU NIVEAU-1/
TERMINATE THE 3 CONDUITS RISING IN THE SHAFT IN THE NEW ELEVATOR CONTROL PANEL IN THE SCC ON LEVEL-1
- 7

TERMINER LE OU LES CONDUITS DANS LE Puits D'ASCENSEUR 5 OU DANS LA SALLE MÉCANIQUE DE L'ASCENSEUR 12, 100mm APRÈS LE SCÈLEMENT DANS LE MUR, LE CÂBLAGE ET CONDUITS À L'INTÉRIEUR DE CEUX-CI SERA COMPLÈTE PAR DIVISION 14 ET ARCHITECTURE/
TERMINATE THE NEW CONDUITS IN ELEVATOR SHAFT 5 OR IN ELEVATOR 12 MACHINE ROOM, 100mm AFTER THE SEALANT IN THE WALL, WIRING AND CONDUITS WITHIN THESE AREAS WILL BE COMPLETED BY DIVISION 14 AND ARCHITECTURE

GRAND FORMAT



0	ÉMIS POUR SOUMISSION	18.04.23	date
A	PLANS POUR COMMENTAIRES	99%	
révisions revisions			

 Travaux publics et Services gouvernementaux Canada Direction générale des biens immobiliers Région du Québec	Public Works and Government Services Canada Real Property branch Quebec region
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Projet/ Project	OACI Modernisation des Contrôleurs d'Ascenseurs/ ICAO Modernization of Elevator Controllers
titre du dessin/ Drawing title	NOTES/ NOTES

conçu par/ designed by	STÉPHANE PERRON	date drawn by	2018-04-09	date drawn by	2018-04-09
approuvé par/ approved by	STÉPHANE PERRON	échelle/ scale	AUCUNE	date scale	2018-04-09
gestionnaire de projet/ Project manager	ÉRIC GUY	no de projet/project no		No feuille/ Sheet no	
nom du fichier/file name	R_090928_001-E03-SI-COD				E04/E04

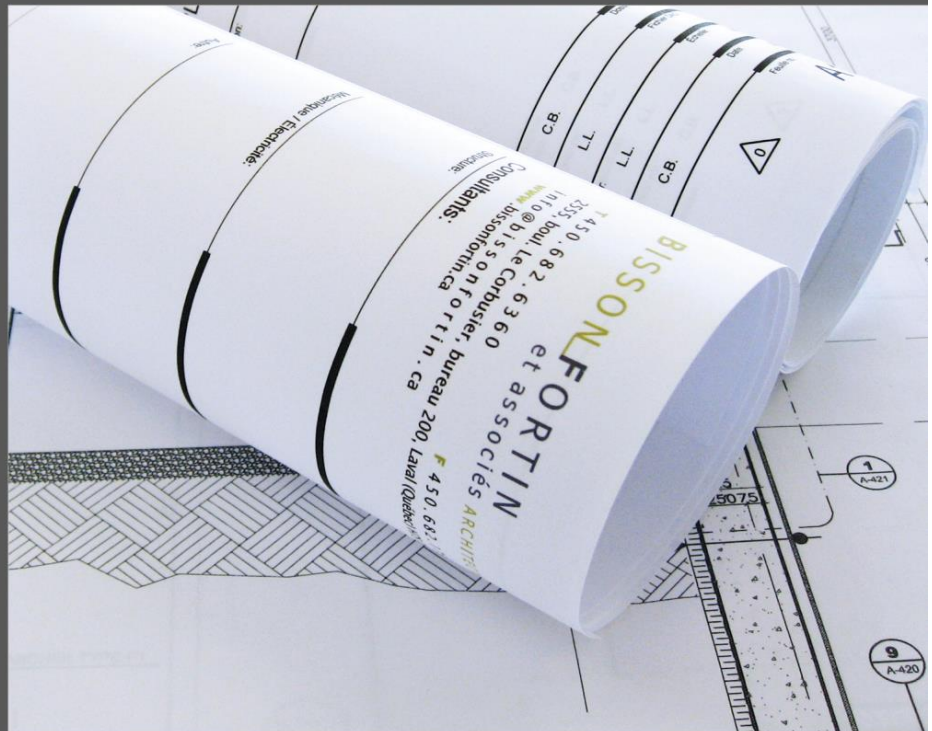
APPENDIX F
Forms



CONFINED SPACE HAZARD ASSESSMENT
ÉVALUATION DES RISQUES DES ESPACES CLOS

DESCRIPTION	POTENTIAL HAZARDS RISQUES POTENTIELS	SUGGESTED CONTROL MEASURE MESURES DE CONTRÔLE PROPOSÉES
BUILDING ÉDIFICE	OXYGEN HAZARD OXYGÈNE	
LOCATION: LIEU : _____ Confined Space No.: d'espace clos : _____	FLAMMABLES MATIÈRES INFLAMMABLES	
ATMOSPHERIC SAMPLING RESULTS RÉSULTATS ANALYSE DE L'AIR H ₂ S: _____ O ₂ : _____ CO: _____ LEL/ LIE: _____	TOXIC CHEMICALS PRODUITS CHIMIQUES TOXIQUES	
OTHER TOXIC PRODUCTS AUTRES PRODUITS TOXIQUES	BIOLOGICAL HAZARDS RISQUES BIOLOGIQUES	
VOLUME Length/Longueur : _____ Width/Largeur : _____ Height/Hauteur : _____	MECHANICAL HAZARDS RISQUES MÉCANIQUES	
CONSTRUCTION MATERIAL MATÉRIEL DE CONSTRUCTION	ELECTRICAL HAZARDS RISQUES ÉLECTRIQUES	

DESCRIPTION	POTENTIAL HAZARDS RISQUES POTENTIELS	SUGGESTED CONTROL MEASURE MESURES DE CONTRÔLE PROPOSÉES
ACCESS / EGRESS 1: ENTRÉE / SORTIE 1 : Length/Longueur : _____ Width/Largeur : _____ Method of Entry: Missing French text : _____	PHYSICAL HAZARD RISQUES PHYSIQUES	
ACCESS / EGRESS 2: ENTRÉE / SORTIE 2 : Length/Longueur : _____ Width/Largeur : _____ Method of Entry: Missing French text : _____	SAFETY HAZARD RISQUES À LA SÉCURITÉ	
LOCK OUT PROCEDURE REQUIRED? PROCÉDURE DE CADENASSAGE REQUISE? Yes/Oui : _____ No/Non : _____	OTHER DIVERS	
ACTIVITIES CONDUCTED ACTIVITÉS EXERCÉES		
REMARKS - OBSERVATIONS		
PHOTOS (optional/facultatif)	CONDUCTED BY: RÉALISÉ PAR :	SIGNATURE:
		DATE (Y-A - MM - D-J)



BISSENFORTIN

ARCHITECTURE + DESIGN

2555, boul. Le Corbusier, bureau 200 | Laval | Québec | H7S 1Z4

T 450.682.6360

F 450.682.1751

www.bissonfortin.ca

