

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
Bid Receiving Public Works & Government  
Services Canada/Réception des soumissions  
Travaux publics et Services gouvernementaux  
Canada  
1713 Bedford Row  
Halifax, N.S./Halifax, (N.E.)  
B3J 1T3  
Halifax  
Bid Fax: (902) 496-5016

**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**

Real Property Contracting  
1713 Bedford Row  
P.O. Box 2247/C.P.2247  
Halifax, N.S./Halifax, (N.E.)  
B3J 3C9  
Halifax

<b>Title - Sujet</b> INSTALL SUSPENDED CEILINGS	
<b>Solicitation No. - N° de l'invitation</b> E0225-142501/A	<b>Date</b> 2014-02-27
<b>Client Reference No. - N° de référence du client</b> 20142501	<b>GETS Ref. No. - N° de réf. de SEAG</b> PW-\$PWA-110-5066
<b>File No. - N° de dossier</b> PWA-3-70129 (110)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2014-03-17</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Atlantic Daylight Saving Time ADT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Collier (PWA), Susan	<b>Buyer Id - Id de l'acheteur</b> pwa110
<b>Telephone No. - N° de téléphone</b> (902) 496-5350 ( )	<b>FAX No. - N° de FAX</b> (902) 496-5016
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF PUBLIC WORKS AND GOVERNMENT SERVICES CANADA INSTALL SUSPENDED CEILINGS Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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

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## **IMPORTANT NOTICE TO BIDDERS**

### **THIS DOCUMENT CONTAINS A SECURITY REQUIREMENT**

For further instructions please consult "Special Instruction to Bidders", SI10, "Security related requirements" and "Supplementary Conditions" SC01 "Security related requirements, document safeguarding location".

### **LIMITATION OF LIABILITY**

PWGSC is limiting the Contractor's first party liability for work in Low Rise, High Rise and Heritage Buildings. See changes to GC1.6 "Indemnification by the Contractor" of R2810D in the Supplementary Conditions.

### **INSURANCE TERMS**

The Insurance Terms have been amended. Refer to the Supplementary Conditions.

### **R2940D CLAUSE IS CANCELLED AND SECTION 3.8 OF R2830D IS MODIFIED**

Following the repeal of the *Fair Wages and Hours of Labour Act*, R2940D clause will be non applicable for contracts awarded after January 1<sup>st</sup> 2014. For contracts awarded prior to that date the clause remains applicable.

As a result section 3.8 of R2830D has been modified as indicated in Supplementary Conditions SC05

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### R2710T GENERAL INSTRUCTIONS TO BIDDERS (GI) (2013-06-27)

The following GI's are included by reference and are available at the following Web Site

GI01	Code of Conduct and Certification - 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
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SC01	Security related requirements
SC02	Limitation of Liability
SC03	Insurance Terms
SC04	Labour

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**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 - COMPLETE LIST OF EACH INDIVIDUAL WHO ARE CURRENTLY DIRECTORS OF THE BIDDER**

**ANNEX A - CERTIFICATE OF INSURANCE FORM**

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## **SPECIAL INSTRUCTIONS TO BIDDERS (SI)**

### **SI01 CODE OF CONDUCT AND CERTIFICATIONS - RELATED DOCUMENTATION**

By submitting a bid, the Bidder certifies that the Bidder and its affiliates are in compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Bid of Standard Instructions to Bidders R2710T (2013-06-27). The related documentation therein required will assist Canada in confirming that the certifications are true.

### **SI02 BID DOCUMENTS**

1. The following are the bid documents:
  - a. Invitation to Tender - Page 1;
  - b. Special Instructions to Bidders;
  - c. General Instructions to Bidders, R2710T (2013-06-27)
  - 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 to Bidders 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>

### **SI03 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 G15 of R2710T, enquiries should be received no later than five (5) 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.

**SI04 SITE VISIT**

There will be no opportunity to visit the site prior to bidding or awarding. It is recommended that bidders review the drawings carefully in order to verify the form, nature and extent of the work, materials needed, the means of access and temporarily facilities required to perform the work.

**SI05 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 (902) 496-5016.

**SI06 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 No. (902) 496-5001.

**SI07 INSUFFICIENT FUNDING**

In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may

- a. cancel the solicitation; or
- b. obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid; and/or
- c. negotiate a reduction in the bid price and/or scope of work of not more than 15% with the Bidder submitting the lowest compliant bid. Should an agreement satisfactory to Canada not be reached, Canada shall exercise option (a) or (b).

**SI08 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 SI08 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 SI08 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.

**SI09 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. Obtaining more copies shall be the responsibility of the Contractor including costs.

**SI10 SECURITY RELATED REQUIREMENTS**

All companies and contractors must be cleared through RCMP Departmental Security for access to RCMP facilities. This includes any subcontractors.

When an RCMP Facility Access is issued, there is no handling of Protected or Classified information by the contractor(s). All drawings, blueprints, etc., are to be generic and not contain any Protected or Classified Information.

An escort is required through operational areas for Facility Access Level 2.

An escort is defined as an RCMP employee or Commissionaire who maintains a minimum RCMP Reliability Status.

If it is determined that a higher clearance other than RCMP Facility Access is required, it will be reassessed.

**SI11 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&section=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 PWGWSC-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>

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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/index-eng.html>

PWGSC Consent to a Criminal Record Verification (PWGSC-TPSGC 229)

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/229.pdf>

Construction and Consultant Services Contract Administration Forms Real Property Contracting

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>

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## **SUPPLEMENTARY CONDITIONS (SC)**

### **SC01 SECURITY REQUIREMENTS, DOCUMENT SAFEGUARDING LOCATION**

All companies and contractors must be cleared through RCMP Departmental Security for access to RCMP facilities. This includes any subcontractors.

When an RCMP Facility Access is issued, there is no handling of Protected or Classified information by the contractor(s). All drawings, blueprints, etc., are to be generic and not contain any Protected or Classified Information.

An escort is required through operational areas for Facility Access Level 2.

An escort is defined as an RCMP employee or Commissionaire who maintains a minimum RCMP Reliability Status.

If it is determined that a higher clearance other than RCMP Facility Access is required, it will be reassessed.

### **SC02 LIMITATION OF LIABILITY**

GC1.6 of R2810D is deleted and replaced with the following:

GC1.6 Indemnification by the Contractor

1. The Contractor shall indemnify and save Canada harmless from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by Canada or in respect of claims by any third party, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by, or attributable to the activities of the Contractor in performing the Work, provided such claims are caused by the negligent or deliberate acts or omissions of the Contractor, or those for whom it is responsible at law.

2. The Contractor's obligation to indemnify Canada for losses related to first party liability shall be limited to:

a. In respect to each loss for which insurance is to be provided pursuant to the insurance requirements of the Contract, the Commercial General Liability insurance limit for one occurrence as referred to in the insurance requirements of the Contract

b. In respect to losses for which insurance is not required to be provided in accordance with the insurance requirements of the Contract, the greater of the Contract Amount or \$5,000,000, but in no event shall the sum be greater than \$20,000,000.

The limitation of this obligation shall be exclusive of interest and all legal costs and shall not apply to any infringement of intellectual property rights or any breach of warranty obligations.

3. The Contractor's obligation to indemnify Canada for losses related to third party liability shall have no limitation and shall include the complete costs of defending any legal action by a third party. If requested by Canada, the Contractor shall defend Canada against any third party claims.

4. The Contractor shall pay all royalties and patent fees required for the performance of the Contract and, at the Contractor's expense, shall defend all claims, actions or proceedings against

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Canada charging or claiming that the Work or any part thereof provided or furnished by the Contractor to Canada infringes any patent, industrial design, copyright trademark, trade secret or other proprietary right enforceable in Canada.

5. Notice in writing of a claim shall be given within a reasonable time after the facts, upon which such claim is based, became known.

### **SC03 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 acceptance of its bid, 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.

## **SC04 LABOUR**

### **Clause R2830D subsection GC3.8 has been modified as follows;**

1. Title has been changed from "Labour and Fair Wages" to "Labour".
2. Delete subsection 1.
3. Following subsections must be renumbered accordingly.

## 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	R2810D	(2013-04-25);
GC2 Administration of the Contract	R2820D	(2012-07-16);
GC3 Execution and Control of the Work	R2830D	(2010-01-11);
GC4 Protective Measures	R2840D	(2008-05-12);
GC5 Terms of Payment	R2850D	(2010-01-11);
GC6 Delays and Changes in the Work	R2860D	(2013-04-25);
GC7 Default, Suspension or Termination of Contract	R2870D	(2008-05-12);
GC8 Dispute Resolution	R2880D	(2012-07-16);
GC9 Contract Security	R2890D	(2012-07-16);
GC10 Insurance	R2900D	(2008-05-12);
Supplementary Conditions		
Allowable Costs for Contract Changes Under GC6.4.1	R2950D	(2007-05-25);
- 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.

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**BID AND ACCEPTANCE FORM (BA)  
BA01 IDENTIFICATION**

**E0225-142501 - Install Suspended Ceilings Project# R.000143.012**

Work of this contract consist of the supply and installation of suspended acoustic ceilings to two spaces, and alterations to existing mechanical and electrical services in those spaces. The works include the installation of supplementary heating to these spaces.

**BA02 BUSINESS NAME AND ADDRESS OF BIDDER**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ PBN: \_\_\_\_\_

**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 tax(es). (amount in numbers)

**BA04 BID VALIDITY PERIOD**

The bid shall not be withdrawn for a period of (thirty) [\_30\_] 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 shall perform and complete the Work within 12 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 to Bidders.

**BA08 SIGNATURE**

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

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

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## **ANNEX A**

### **CERTIFICATE OF INSURANCE FORM (attached)**

Description and Location of Work \_\_\_\_\_ Contract No. \_\_\_\_\_  
 \_\_\_\_\_ Project No. \_\_\_\_\_

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  
 Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services**

Type of Insurance (Required when Checked)	Insurer Name and Policy Number	Inception Date D / M / Y	Expiry Date D / M / Y	Limits of Liability		
				Per Occurrence	Annual General Aggregate	Completed Operations Aggregate
<input checked="" type="checkbox"/> Commercial General Liability Umbrella/Excess Liability				\$	\$	\$
<input checked="" type="checkbox"/> Builder's Risk / Installation Floater				\$	\$	\$
<input type="checkbox"/> Pollution Liability				\$	<input type="checkbox"/> Per Incident <input type="checkbox"/> Per Occurrence	Aggregate \$
<input type="checkbox"/> Marine Liability				\$		
<input type="checkbox"/> Aviation Liability				\$	<input type="checkbox"/> Per Incident <input type="checkbox"/> Per Occurrence	Aggregate \$
<input type="checkbox"/>				\$		

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 coverages 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 \_\_\_\_\_



<p><b>General</b></p> <p>The insurance policies required on page 1 of the Certificate of Insurance must be in force and must include the insurance coverages listed under the corresponding type of insurance on this page.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p><b>Commercial General Liability</b></p> <p>The insurance coverage provided must not be substantially less than that provided by the latest edition of IBC Form 2100.</p> <p>The policy must either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:</p> <ul style="list-style-type: none"> <li>(a) Blasting.</li> <li>(b) Pile driving and caisson work.</li> <li>(c) Underpinning.</li> <li>(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.</li> </ul> <p>The policy must have the following minimum limits:</p> <ul style="list-style-type: none"> <li>(a) <b>\$5,000,000</b> Each Occurrence Limit;</li> <li>(b) <b>\$10,000,000</b> General Aggregate Limit per policy year if the policy contains a General Aggregate; and</li> <li>(c) <b>\$5,000,000</b> Products/Completed Operations Aggregate Limit.</li> </ul> <p>Umbrella or excess liability insurance may be used to achieve the required limits.</p>	<p><b>Builder's Risk / Installation Floater</b></p> <p>The insurance coverage provided must not be less than that provided by the latest edition of IBC Forms 4042 and 4047.</p> <p>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.</p> <p>The policy may exclude or be endorsed to exclude coverage for loss or damage caused by asbestos, fungi or spores, cyber and terrorism.</p> <p>The policy must have a limit that is <b>not less than the sum of the contract value</b> 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.</p> <p>The policy must provide that the proceeds thereof are payable to Canada or as Canada may direct in accordance with GC10.2, "Insurance Proceeds" (<a href="https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2900D/2">https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2900D/2</a>).</p>
<p><b>Contractors Pollution Liability</b></p> <p>The policy must have a limit usual for a contract of this nature, but not less than <b>\$1,000,000</b> per incident or occurrence and in the aggregate.</p>	<p><b>Marine Liability</b></p> <p>The insurance coverage must be provided by a Protection &amp; Indemnity (P&amp;I) insurance policy and must include excess collision liability and pollution liability.</p> <p>The insurance must be placed with a member of the International Group of Protection &amp; Indemnity Associations or with a fixed market in an amount of not less than the limits determined by the <i>Marine Liability Act</i>, S.C. 2001, c. 6. Coverage must include crew liability, if it is not covered by the statutory requirements of the Territory or Province having jurisdiction over such employees.</p> <p>The policy must waive all rights of subrogation against Canada as represented by Public Works and Government Services Canada for any and all loss of or damage to the watercraft however caused.</p>	<p><b>Aviation Liability</b></p> <p>The insurance coverage shall include Bodily Injury (including passenger Bodily Injury) and Property Damage, in an amount of not less than <b>\$5,000,000</b> per incident or occurrence and in the aggregate.</p>

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# Canada

**PWGSC**

**INSTALLATION OF SUSPENDED CEILINGS IN TWO SPACES  
AND ASSOCIATED WORKS.  
GOVT. OF CANADA BUILDING,  
80 GARLAND AVANUE, BURNSIDE, HRM, NOVA SCOTIA**

**TENDER CONTRACT DOCUMENTS**

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**SPECIFICATIONS: ALL DIVISIONS**

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| JAN 24, 2014  
TENDER

**LYDON LYNCH ARCHITECTS LIMITED**

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PWGSC  
RCMP H DIVISION HQ, Burnside, HRM, NS  
Project number 309206-CA26-TENDER  
Installation of suspended ceilings to two spaces and assoc. works.

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January 24, 2014

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PWGSC  
RCMP H DIVISION HQ, Burnside, HRM, NS  
Project Number 309206-CA26 - TENDER  
Installation of suspended ceilings in two spaces and assoc. works

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Architectural

ASK 506	Post occupancy works: New ceilings and associated works for spaces 1N105 and 1L108.	11x8.5	20140128
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Mechanical

MSK-SP-16	Sprinkler Level 1 part C Room 1N105.	11x8.5	20140127
MSK-SP-17	Sprinkler Level 1 part C Room 1L108.	11x8.5	20140127
MSK-MV-129	HVAC Level 1 Part C Room 1N105.	11x8.5	20140127
MSK-MV-130	HVAC Level 1 Part C Room 1L108.	11x8.5	20140127

Electrical

ESK-190	Partial Level 1 Part C Lighting - Revisions.	11x8.5	20140127
ESK-191	Partial Level 1 Part C Access Control - Revisions.	11x8.5	20140127
ESK-192	Partial Level 1 Part C Power - Revisions.	11x8.5	20140127

*End of document.*

1.1 DESCRIPTION OF WORK

- .1 Work of this contract consists of the supply and installation of suspended acoustic ceilings to two spaces, and alterations to existing mechanical and electrical services in those spaces. The works include the installation of supplementary heating to these spaces.
- .2 The site of work is the RCMP H Division Headquarters, 80 Garland Avenue, Burnside Business Park, Halifax Regional Municipality, Nova Scotia.
- .3 Access to the site is restricted by Security Protocols defined in accompanying Section 01 35 54 of this Specification.

1.2 SITE FAMILIARIZATION

- .1 There will be no opportunity to visit the site prior to bidding or award. It is recommended that bidders review the drawings carefully in order to verify the form, nature and extent of the work, materials needed, the means of access and temporary facilities required to perform the work.
- .2 Clarifications to questions raised by bidders will be made available through the bidding process in the form of addenda as necessary. All questions asked will be responded to on an open basis, and to all bidders.

1.3 WORK SCHEDULE

- .1 Submit within 7 calendar days after contract award, a construction schedule showing commencement and completion (including commissioning and balancing) of all work within the time stated in the accepted bid.
- .2 Provide sufficient details in Schedule to clearly illustrate the entire implementation plan to achieve completion of the work on time and to monitor efficient use of resources and the progress of work in relation to established milestones.
- .3 Work Schedule shall include:
  - .1 Bar (Gantt) Chart indicating all work activities, their anticipated duration and planned dates for achieving major milestones and;
  - .2 Written narrative for key elements of work providing sufficient information to demonstrate a reasonable implementation plan.
  - .3 Identify and show Critical Path on Bar Chart and identify in narrative.
- .4 Schedule work in cooperation with and to the approval of the

Departmental Representative.

- .5 Submit updates within 3 business days when requested by Departmental Representative.

1.4 HOURS OF WORK

- .1 Due to Facility's operational requirements, Work can only be carried out between the hours of 7:00AM and 4:00PM Monday to Friday. Weekend work will not be allowed. Additional hours will be permitted subject to RCMP operational requirements and availability of RCMP approved monitoring staff. Contractor shall pay for RCMP Security Services over and above the hours of work noted above.

1.5 CODES AND STANDARDS

- .1 Perform work in accordance with the National Building Code of Canada (of latest edition as adopted by the province and municipality of the work location) and any other code of provincial or local application, including all amendments up to the bid closing date, provided that in any case of conflict or discrepancy the more stringent requirement shall apply.
- .2 Perform electrical work in accordance with CSA C22.1 (2012). Use only licensed electricians to carry out such work.
- .3 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

1.6 INTERPRETATION OF DOCUMENTS

- .1 Supplementary to the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

1.7 TERM ENGINEER

- .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative as defined in the General Conditions of the Contract.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each of the following:
  - .1 Contract Drawings and Specifications.
  - .2 Current Work Schedule.
  - .3 Health and Safety Plan and other safety documents related to the Work.
  - .4 Shop Drawings.
  - .5 Change Orders.
  - .6 Field test reports.
  - .7 Reports received from various inspection authorities.

1.9 PERMITS

- .1 Obtain and pay for building permit, compliance certificates, licenses

and other applicable permits as required by municipal, provincial and federal authorities to perform the Work.

- .2 Provide timely and appropriate notifications of project to provincial, utilities and other authorities having jurisdiction so as not to cause delay to the schedule.
- .3 Upon request, submit copy of applications made and permits received to Departmental Representative.

#### 1.10 PROJECT MEETINGS

- .1 Project meeting will be held once every week during the course of the work.
- .2 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.
- .3 Ensure attendance of Superintendent and of subcontractor's whose presence may be requested by the Departmental Representative.

#### 1.11 SETTING OUT WORK

- .1 Assume full responsibility for and execute complete layout of work.

#### 1.12 ALTERATIONS TO EXISTING BUILDING

- .1 Execute work with minimum possible interference or disturbance to Facility operations and occupants.
- .2 Provide around the works, safety measures required by current standards including barricades, barriers and warning signs around work areas and adjacent to areas in use by Facility occupants.
  - .1 Signage to be professionally made with bilingual message or use internationally recognized graphic symbols.
  - .2 Any safety sign, barrier or other such measure shall be at all times lit so as to make it clearly visible to building occupants.
- .3 Separate work areas from other adjacent interior areas of the building with dust barriers as specified below.
- .4 Do not block fire exits and emergency escape routes. Ensure free egress from buildings at all times during the work.
- .5 Follow Departmental Representative's directives in meeting above or additional reasonable safety requirements.

#### 1.13 SITE ACCESS

- .1 Use only designated roads, walkways, entrance doors and corridors as designated by Departmental Representative to gain access to work

areas.

- .2 Restrict movement of workers to immediate work areas. Plan work to minimize need for workers to circulate inside the building.
- .3 Provide plan illustrating how access to works shall be managed to Departmental Representative prior to commencement of operations. This shall include all measures above, and include parking, staging, storage areas and other temporary facilities as required.

1.14 TEMPORARY FACILITIES

- .1 Existing water and power supply may be used for construction at no cost. Departmental Representative will advise of the supply location.
  - .1 Contractor to be responsible for transporting such services to work areas.
  - .2 Store materials on site only in location as directed by Departmental Representative.
  - .3 Dust Barriers:
    - .1 Erect full height dust tight partitions to separate works areas from others areas of the building.
    - .2 Provide additional dust covers as required for major dust generating work to stop propagation of dust beyond work areas.
    - .3 Obtain Departmental Representative's approval beforehand on the proposed dust barrier assembly and location.
  - .4 Provide sanitary facilities for work force in accordance with governing regulations and ordinances. Keep in sanitary conditions at all times.
    - .1 Assume that existing facilities at site cannot be used by workers.

1.15 HEATING AND VENTILATION

- .1 Maintain existing heating, ventilation and air conditioning system operational within Occupied Areas during the entire course of work.
- .2 Existing heating system may be used during construction.
- .3 Shut-down air distribution system of work areas from remainder of building. Seal ductwork, exhaust diffusers and grilles in work areas to stop spread of dust and fumes to Occupied areas of Facility.
- .4 Ventilate work areas and enclosed spaces as required to:
  - .1 Facilitate progress of work.

- .2 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Prevent accumulations of dust, fumes, mists, vapours or gases within building.
- .4 Prevent harmful accumulation of hazardous substances into atmosphere.
- .5 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .5 Construction Exhaust:
  - .1 Provide temporary fans and HEPA vacuum with worktool connections for work which creates dust, fumes and strong odours intrusive to Facility operations and tenants.
  - .2 At a minimum the exhaust system will be required for all grinding/sanding operations, sand blasting of any surface, cutting of concrete and masonry, painting and for the application of the epoxy finish coating.
  - .3 Also provide adequate dust/air seals at doors and at other critical locations in building to create a negative air pressure within the work area.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .7 Maintain strict supervision of operation of temporary ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
- 1.16 CUTTING, FITTING AND PATCHING
  - .1 Execute cutting fitting and patching required to make work fit properly.
  - .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
  - .3 Do not cut, bore, or sleeve load-bearing members.
  - .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
  - .5 Fit work airtight to pipes, sleeves, ducts, conduits and other services penetrating new or existing condition.
  - .6 Openings made in existing fire rated walls, floors and ceilings shall be filled with purpose made, ULC approved, fire stopping material

and smoke seal.

1.17 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, Advance notice of any shut-downs to services that may be necessary to facilitate the works should be sought in writing at least two business days in advance of time of shut down from Departmental Representative.
- .2 Before commencing work, establish location and extent of concealed or buried service lines within work area. Notify Departmental Representative of findings.

1.18 MATERIALS

- .1 Use new material and equipment unless otherwise specified.
- .2 Select and use products, adhesives and sealants which have:
  - .1 No or very low off-gassing levels.
  - .2 No or minimum VOC content.
  - .3 Are least noxious and emit smallest amount of fumes, gases and strong odours during their cure period.
  - .4 Minimal chemical, physical or biological elements or agents in their composition which adversely affect human health and welfare or which degrades the environment.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.
- .5 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
  - .1 Name and Address of manufacturer.
  - .2 Trade Name, model and catalogue number.
  - .3 Performance, descriptive and test data indicating compliance with specified requirements.
  - .4 Manufacturer's installation or application instructions.
  - .5 Evidence of arrangements to procure.
  - .6 Evidence of manufacturer delivery problems or unforeseen delays.
- .6 Obtain manufacturer's printed installation instructions and comply by such directives for installation of materials.

- .7 Notify Departmental Representative in writing of any conflict between Specifications and manufacturers instructions, so that Departmental Representative will designate which document is to be followed.
- .8 Deliver, store and protect materials on site against theft, vandalism, soiling and climatic damage. Provide additional suitable cover beyond manufacturer's packaging where required.
- .9 Touch-up factory finishes damaged by the Work. Use touch-up materials to match original. Do not paint over name plates.

#### 1.19 FASTENERS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur unless indicated otherwise. Prevent electrolytic action between dissimilar metals.
- .2 Use non-corrosive heavy duty fasteners, anchors and spacers for all fastening conditions. Space fasteners within limits of load bearing or shear capacity. Ensure positive permanent anchorage.

#### 1.20 HAZARDOUS MATERIALS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling and storage, and disposal of hazardous materials.
- .2 Do not leave and store flammable and hazardous materials on site. Remove of site at end of each workshift.
- .3 Keep MSDS data sheets for all products brought on site. Provide copy to Departmental Representative.

#### 1.21 ENVIRONMENTAL PROTECTION

- .1 Have appropriate emergency spill response equipment and rapid clean-up kit on site. Provide personal protective equipment required for clean-up.
- .2 Report all spills of petroleum, hazardous materials and accidents having potential of polluting the environment to Federal and Provincial Department of the Environment and to the Departmental Representative.
- .3 Do not dump hazardous materials and polluted water containing suspended hazardous products into sewers and drainage systems. Dispose in accordance with federal and provincial environmental regulations and recommended procedures.

1.22 INSPECTION  
AND TESTING

- .1 Give timely notice requesting inspection of work designated for inspections, special tests or approvals by Departmental Representative or by inspection authorities having jurisdiction.
- .2 In accordance with the General Conditions, Departmental Representative may order any part of work to be examined if work is suspected to be not in accordance with Contract Documents.
- .3 Rejected Work: removal and replace defective work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.
- .4 Tests on materials and equipment, is the responsibility of the Contractor except where specified otherwise.
  - .1 Provide all necessary instruments, equipment and qualified personnel to perform tests.
  - .2 At completion of tests, turn over two sets of fully documented tests reports to the Departmental Representative.
- .5 Unspecified tests may also be made by Departmental Representative. The costs of these tests will be paid for by the Departmental Representative.
- .6 Where tests or inspection reveal work not in accordance with the Contract, the Contractor shall bear the cost of additional tests and inspections incurred by Departmental Representative as required to verify the acceptability of corrected work.
- .7 If Contractor covers or permits to be covered work designated for special tests, inspections or approvals before such is made, uncover work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed. Pay costs to uncover and make good such work.

1.23 CLEANING

- .1 As work progresses, maintain work areas and site in a tidy, clean and dust free condition at all times.
- .2 Provide on-site containers for placement of waste and debris. Loose and scattered waste, debris and materials will not be allowed on site.
- .3 Remove and dispose of waste and debris off site at end of each workday.

- .4 Clean interior of building used by workers and dirtied by work.
  - .1 Wash walls, floors and other surfaces as needed.
  - .2 Vacuum carpets.
  - .3 Dust all furnishings.
- .5 At project completion, conduct final cleaning of areas affected by work.
  - .1 Remove dust and dirt from all surfaces with recommended cleaning agents specified by manufacturer.
  - .2 Wash and polish finish surfaces.
  - .3 Wash clean pavements and rake clean grassed areas used.
- .6 Use competent persons experienced in commercial cleaning operations.
- .7 Meager attempt at controlling dust and ineffective cleaning will not be tolerated.
  - .1 Failure to provide effective dust control and/or perform proper cleaning by the Contractor will result in the Departmental Representative to proceed and obtain an independent commercial cleaning agency to perform all required cleaning to the satisfaction of the Departmental Representative for which the costs will be charged to the Contractor in the form of a financial assessment against the Contract in accordance with the General Instructions.

1.24 WASTE  
MANAGEMENT

- .1 Dispose of waste, debris and product packaging in accordance with municipal and provincial laws and regulations.
- .2 Plan work to minimize waste, maximize reuse and recycling of materials and to divert the greatest amount of waste from being disposed into landfill sites.
- .3 Separate waste, debris, leftover material, redundant equipment and product packaging at source, place into pre-planned waste categories during the course of the work and send to recycling facilities to maximum extent possible.
- .4 Store, handle and dispose of hazardous waste in accordance with applicable federal, provincial and municipal laws, regulations, codes and guidelines.
- .5 Upon request, submit written list of items salvaged and sent to recycling facility

- 1.25 COST BREAKDOWN .1 Before submitting first progress claim, submit a breakdown of the contract price in format and detail as directed by Departmental Representative.
  
- 1.26 ACCEPTANCE .1 Notify Departmental Representative in writing when work is complete and ready for final inspection.
  - .1 Make a check of all work and correct all discrepancies, defects and outstanding work before sending notification.
  - .2 Accompany Departmental Representative during final inspection.
  - .3 Rectify all defects, faults and outstanding items identified by Departmental Representative during inspection.

*End of document.*

1.1 SUBMITTAL  
GENERAL REQUIREMENTS

- .1 Submit shop drawings, product data, samples and other items specified for review by Departmental Representative.
- .2 Submit by e-mail as pdf format file, and if requested by the DR, sufficient copies for own use plus 3 paper copies for use by Departmental Representative.
  - .1 Include additional copies for insertion into the O & M manuals specified in section 01 78 00.
  - .2 Maximum e-mail attachment size to be 5Mb.
- .3 Accompany data with transmittal letter identifying project name, project number, Contractor's name and address, supplier name, description of items and quantity of drawings/data being submitted.
- .4 Allow 14 calendar days for review of shop drawings by Departmental Representative. Where a shop drawing is rejected or requires resubmission or additional information for review, allow a further 14 days beyond date of supplementary submission or resubmission.
- .5 Do not proceed with work applicable to shop drawing item until relevant submission has been reviewed by Departmental Representative.
- .6 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
- .7 Ensure all data, dimensions and engineering values are presented in SI Metric units and at a minimum be in English. That not conforming will be returned rejected.
- .8 Review submittals prior to submission. Ensure that all requirements have been addressed, field dimensions and data have been taken and submittal has been checked and coordinated with work of contract documents.
- .9 Stamp and sign each item of submittal certifying contractor's review and verification of submitted data.
- .10 Submittals not stamped and signed will be returned unexamined by Departmental Representative and considered rejected.

1.2 SHOP DRAWINGS

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, technical product data, brochures and other data which are to be provided by Contractor to illustrate details of a portion of work.
- .2 Shop Drawings Content:
  - .1 Indicate materials, methods of construction, attachment, connections, explanatory notes and other information necessary for completion of work. Where items attach or connect to other items, confirm that all interrelated work has been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.
  - .2 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
- .3 Shop Drawings Format:
  - .1 Pdf copy by email of Opaque white prints of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
  - .2 Pdf copy by email of Product data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
  - .3 Non-legible or inadequately legible drawings or documents will not be accepted and returned rejected.
- .4 Delete information not applicable to this project on all submittals.
- .5 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change contract price. If adjustments affect value of work, advise Departmental Representative in writing prior to proceeding with work.
- .6 After Departmental Representative's review, distribute copies to all effected parties.
- .7 The review of shop drawings by Departmental Representative or by the Consultant or designated person so authorized by the Departmental Representative, is for sole purpose of ascertaining conformance with general design intent. This review shall not mean that Canada approves the detail design inherent in the 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 all requirements of the construction and Contract Documents. 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 all sub-trades.

1.3 SAMPLES

- .1 Submit samples for items specified in trade sections. Label with origin and intended use.
- .2 Deliver samples to Departmental Representative's office. Do not drop off samples at construction site except for special circumstances pre-approved by Departmental Representative.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

*End of document.*

1.1 ELECTRICAL  
SAFETY

- .1 Ensure that equipment and electrical facilities are disconnected and fully de-energized against all potential sources of energy before proceeding with work on such items.
- .2 Locate power source, isolate and lockout service feed and provide a guarantee of isolation to worker(s) before commencing any electrical work.
  - .1 Conduct hazard assessment as part of process.
- .3 Develop and implement lockout procedures, complete with the use of lockout tags, to be followed on site to ensure that electrical power and other sources of energy are effectively disconnected and locked out in accordance with Canadian Electrical Code and Provincial and Federal health and safety regulations.
  - .1 Contractor's Superintendent shall issue and control the distribution of lockout tags to workers for each lockout event.
- .4 Submit Contractor's written lockout procedures and sample of lockout tag to be used on project to Departmental Representative.
- .5 Provide minimum two working days notice to Departmental Representative and ensure written approval is received from DR before disconnecting existing services feeding operational areas to ensure minimum disruption to Facility operations.

1.2 FIRE SAFETY

- .1 Abide by National Fire Code of Canada and fire protections standards FCC 301 and FCC 302 published by Fire Protection Services, Labour Program Division of Service Canada.
- .2 FCC standards may be viewed at the following web site:
  - .1 <http://www.hrsdc.gc.ca>
- .3 Obtain written approval from Departmental Representative before conducting Hot Work inside or adjacent to building.
- .4 Hot Work defined as:
  - .1 Welding
  - .2 Use of torch or other open flamed device
  - .3 Grinding with equipment which produces sparks
- .5 Approval will be given upon receipt and confirmation that the following procedures shall be carried out by the Contractor:
  - .1 Hazard assessment for each hot work event and location.
  - .2 Fire safety procedures and work practices will be implemented and stringently followed for each event.
  - .3 Use of a hot work permit system; permit being issued by Contractor's Superintendent to worker before each hot work event.

.4 Fire watch by a designated person for a minimum of 1 hour immediately following completion of the hot work.

.6 Submit Contractor's written fire safety procedures and practises to be used on project to Departmental Representative.

1.3 FIRE PROTECTION  
AND ALARM SYSTEMS

- .1 Fire protection and alarm systems shall not be:
- .1 Obstructed.
  - .2 Shut-off, unless approved by Departmental Representative.
  - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than fire fighting.
- .3 Any costs incurred from the fire department and charged to the Facility owner resulting from negligently setting off false alarms will be transferred to the Contractor in the form of financial holdback assessment against the Contract.

1.4 DOCUMENTS  
ON SITE

- .1 Keep copy of lockout tags, hot work permits and hazard assessment documentation on site for duration of Work.
- .2 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

*End of document.*

1.1 SUBMITTALS

- .1 Prior to commencement of any works on site, submit to Departmental Representative copies of all the following documents, including all updates:
  - .1 Site and project Specific Health and Safety Plan.
  - .2 Building Permit, compliance certificates and other permits obtained.
  - .3 Letter of good standing from Provincial Workers Compensation Organization.
  - .4 Name of person designated by Contractor to perform health and safety supervision on site.And subsequently to commencement of works:-
  - .4 Reports and directives issued by Federal and Provincial safety officer or other authority having jurisdiction.
  - .5 Accident and Incident Reports.
  - .6 MSDS data sheets for all material used.
- .2 Medical Surveillance: Obtain and maintain worker medical surveillance documentation for work posing a potential health hazard to workers as stipulated in Federal or Provincial Occupational Safety and Health Regulations. Upon request, submit copy of documentation to Departmental Representative.
- .3 Upon request by Departmental Representative, submit other documents and reports as stipulated to be produced and maintained by Federal and Provincial Occupational Health and Safety Regulations and as specified herein.
- .4 Submit above documents in accordance with Section 01 33 00.

1.2 COMPLIANCE REQUIREMENTS

- .1 Comply with the Occupational Health and Safety Act for the Province of Nova Scotia, and the Current General Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code Part II, and the Canada Occupational Safety and Health Regulations made under Part II of the Canada Labour Code.
- .3 Observe and enforce construction safety measures required by:
  - .1 National Building Code of Canada;
  - .2 Provincial Worker's Compensation Board;
  - .3 HRM Municipal statutes and ordinances.
- .4 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

- .5 A copy of the Canada Labour Code Part II may be obtained by contacting: Canadian Government Publishing Public Works and Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: 1-800-635-7943 Publication No. L31-83/2000.4 E or F
- .6 Maintain Workers Compensation Coverage for duration of Contract.

### 1.3 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, of property and for protection of persons and building occupants who may be adjacent to work operations to extent that they may be affected by conduct of the Work.
- .2 Enforce compliance by all workers, sub-contractors and other persons granted access to work site with safety requirements of Contract Documents, applicable Federal, Provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

### 1.4 SITE CONTROL AND ACCESS

- .1 Control work site and entry points to construction areas.
  - .1 Clearly delineate and isolate construction areas from other areas of Facility by use of appropriate means.
  - .2 Post notices and signage at entry points and at other strategic locations identifying entrance onto site to be restricted to authorized persons only.
  - .3 Signage must be professionally made, bilingual in both official languages or display internationally understood graphic symbols.
- .2 Approve and grant access to site only to workers and authorized persons.
  - .1 Immediately stop non-authorized persons from circulating in construction areas and remove from site.
  - .2 Provide site safety orientation to all persons before granting access. Advise of site conditions, hazards and mandatory safety rules to be observed on site.
- .3 Secure site at night time to extent required to protect against unauthorized entry.
- .4 Ensure persons granted access to site are wearing appropriate personal protective equipment (PPE) suitable to work and site conditions.
  - .1 Provide such PPE to authorized persons who require access to perform inspections or other approved purposes as required.

### 1.5 PROTECTION

- .1 Carry out work placing emphasis on health and safety of building

occupants, visitors and construction workers and protection of the environment.

- .2 Erect safety barricades, lights and signage on site to effectively delineate work areas, protect pedestrian and vehicular traffic around and adjacent to work and to create a safe working environment.
- .3 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

#### 1.6 PERMITS

- .1 Post on site permits, licenses, compliance certificates specified in section 01 10 10.
- .2 Where particular permit or compliance certificate cannot be obtained at the required stage of work, notify Departmental Representative in writing and obtain his/her approval to proceed before carrying out that portion of work.

#### 1.7 HAZARD ASSESSMENTS

- .1 Conduct site specific health and safety hazard assessment before commencing project and during course of the work. Identify risks and hazards resulting from site conditions, weather conditions and work operations.
  - .1 Perform on-going assessments addressing new risks and hazards as work progresses including when new sub-trade or subcontractor arrives on site.
  - .2 Also, conduct assessment when the scope of work has been changed by Change Order and when potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety Representative.
- .2 Record results in writing and address in Health and Safety Plan.
- .3 Keep copy of all assessments on site.

#### 1.8 PROJECT/SITE CONDITIONS

- .1 Obtain from Departmental Representative, copy of MSDS Data sheets for existing hazardous products stored on site or used by Facility personnel.

#### 1.9 HEALTH AND SAFETY MEETINGS

- .1 Attend pre-construction health and safety meeting conducted by Departmental Representative. Have following persons in attendance:
  - .1 Site Superintendent.
  - .2 Person designated to perform on-site health and safety site Supervision.

- .3 Departmental Representative will advise of date, time and location..
- .2 Conduct health and safety meetings and tool box briefings on site. Hold on a regular and pre-scheduled basis during entire work in accordance with requirements and frequency as stipulated in provincial occupational health and safety regulations.
  - .1 Keep workers informed of potential hazards and provide safe work practices and procedures to be followed.
  - .2 Take written minutes and post on site.

1.10 HEALTH AND SAFETY PLAN

- .1 Develop written site-specific Project Health and Safety Plan, based on hazard assessments, prior to commencement of work.
  - .1 Submit copy to Departmental Representative within 14 calendar days of acceptance of bid.
  - .2 Submit updates as work progresses.
- .2 Health and Safety Plan shall contain three (3) parts with following information:
  - .1 Part 1 - Hazards: List of individual health risks and safety hazards identified by hazard assessment process.
  - .2 Part 2 - Safety Measures: engineering controls, personal protective equipment and safe work practises used to mitigate hazards and risks listed in Part 1 of Plan.
  - .3 Part 3a: Emergency Response: standard operating procedures, evacuation measures and emergency response in the occurrence of an accident, incident or emergency.
    - .1 Include response to all hazards listed in Part 1 of Plan.
    - .2 Evacuation measures to complement the Facility's existing Emergency Response and Evacuation Plan. Obtain pertinent information from Departmental Representative.
    - .3 List names and telephone numbers of officials to contact including:
      - .1 General Contractor and all Subcontractors.
      - .2 Federal and Provincial Departments as stipulated by laws and regulations and local emergency resource organizations, as needed based on nature of emergency or accident.
      - .3 Officials from PWGSC and site Facility management. Departmental Representative will provide list.
- .4 Part 3b - Site Communications:
  - .1 Procedures used on site to share work related safety issues between workers, subcontractors, and General Contractor.
  - .2 List of critical tasks and work activities, to be

communicated with the Facility Manager, which has risk of affecting tenant operations, or endangering health and safety of Facility personnel and the general public. Develop list in consultation with the Departmental Representative.

- .3 Prepare Health and Safety Plan in a three column format, addressing the three parts specified above.
- .4 Develop Plan in collaboration with subcontractors. Address work activities of all trades. Revise and update Plan as Sub-contractors arrive on site.
- .5 Implement and enforce compliance with requirements of Plan for full duration of work to final completion and demobilization from site.
- .6 As work progresses, review and update Plan. Address additional health risks and safety hazards identified by on-going hazard assessments.
- .7 Post copy of Plan, and updates, on site.
- .8 Submission of the Health and Safety Plan, and updates, to the Departmental Representative is for review and information purposes only. Departmental Representative's receipt, review and any comments made of the Plan shall not be construed to imply approval in part or in whole of such Plan by Departmental Representative and shall not be interpreted as a warranty of being complete and accurate or as a confirmation that all health and safety requirements of the Work have been addressed and that it is legislative compliant. Furthermore, Departmental Representative's review of the Plan shall not relieve the Contractor of any of his legal obligations for Occupational Health and Safety provisions specified as part of the Work and those required by provincial legislation.

1.11 SAFETY  
SUPERVISION AND  
INSPECTIONS

- .1 Designate one person to be present on site at all times, responsible for supervising health and safety of the Work.
  - .1 Person to be competent in Occupational Health and Construction Safety as defined in the Provincial Occupational Health and Safety Act.
- .2 Assign responsibility, obligation and authority to such designated person to stop work as deemed necessary for reasons of health and safety.
- .3 Conduct regularly scheduled informal safety inspections of work site on a minimum bi-weekly basis.
  - .1 Note deficiencies and remedial action taken in a log book or diary.

- .4 Keep inspection reports on site.

#### 1.12 TRAINING

- .1 Ensure that all workers and other persons granted access to site are competently trained and knowledgeable on:
  - .1 Safe use of tools and equipment.
  - .2 How to wear and use personal protective equipment (PPE).
  - .3 Safe work practices and procedures to be followed in carrying out work.
  - .4 Site conditions and minimum safety rules to be observed on site, as given at site orientation session.

#### 1.13 MINIMUM SITE SAFETY RULES

- .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, the following safety rules shall be considered minimum requirements to be obeyed by all persons granted site access:
  - .1 Wear personnel protective equipment (PPE) appropriate to function and task on site; the minimum requirements being hard hat, safety footwear and eye protection.
  - .2 Immediately report unsafe activity or condition at site, near-miss accident, injury and damage.
  - .3 Maintain site in tidy condition.
  - .4 Obey warning signs and safety tags.
- .2 Brief workers on site safety rules and on disciplinary measures to be taken by Departmental Representative for violation or non compliance of such rules. Post rules on site.
- .3 The following actions or conduct by Contractor, workers and subcontractors will be considered as non conformance with the health and safety requirements of the contract for which a Non-Compliance Notification will be issued to the General Contractor by the Departmental Representative:
  - .1 Failure to follow the minimum site safety rules specified above.
  - .2 Negligence resulting in serious injury or major property damage.
  - .3 Deliberate non-compliance with Federal and Provincial Acts and Regulations.
  - .4 Falsification of information in Workers Compensation Reports, safety reports and other health and safety related documents submitted to Departmental Representative or to Authority having jurisdiction.
  - .5 Possession of firearms on site.
  - .6 Possession of non-prescriptive illegal drugs or alcohol.
  - .7 Action, or lack thereof, resulting in the issuance of Warnings, Fines or Stop Work Orders from a Provincial Authority having

jurisdiction.

.8 Violation of other specified health and safety rules and requirements as determined by Departmental Representative.

.4 See elsewhere in this section for details on Non-Compliance Notifications and resulting disciplinary measures.

#### 1.14 ACCIDENT REPORTING

- .1 Investigate and report the following incidents and accidents:
- .1 Those as required by Provincial Occupational Safety and Health Act and Regulations.
  - .2 Injury requiring medical aid as defined in the Canadian Dictionary of Safety Terms-1987, published by the Canadian Society of Safety Engineers (C.S.S.E) as follows:
    - .1 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
    - .3 Property damage in excess of \$5000.00,
    - .4 Interruption to Facility operations with potential loss to a Federal Dept. in excess of \$5000.00,
    - .5 Those which require notification to Workers Compensation Board or other regulatory agencies as stipulated by applicable law or regulations.
- .2 Send written report to Departmental Representative for all above cases.

#### 1.15 TOOLS AND EQUIPMENT SAFETY

- .1 Routinely check and maintain tools, equipment and machinery for safe operation.
- .2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.
- .3 Tag and immediately remove from site items found faulty or defective.

#### 1.16 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site. Post on site. Submit copy to Departmental Representative upon receipt.
- .3 On building renovation projects where work is within or immediately adjacent to occupied areas, also post copy of data sheets in a public location accessible to Facility personnel.

- 1.17 POWDER ACTUATED DEVICES .1 Use powder actuated fastening devices only after receipt of written permission from Departmental Representative.
- 1.18 POSTING OF DOCUMENTS .1 Post on site safety documentation as stipulated by Authorities having jurisdiction and as specified herein. Place in a common visible location.
- 1.19 SITE RECORDS .1 Maintain on site a copy of all health and safety documentation and reports specified to be produced as part of the work and received from authorities having jurisdiction.
- .2 Upon request, make available to Departmental Representative and to other authorized safety representative for review. Provide copy when directed by Departmental Representative.
- 1.20 NON COMPLIANCE AND DISCIPLINARY MEASURES .1 Immediately address and correct health and safety violations and non-compliance issues.
- .2 Negligence or failure to follow occupational health and safety provisions specified in the Contract Documents and of those of applicable federal and provincial laws and regulations could result in disciplinary measures taken by the Departmental Representative against the General Contractor.
- .3 PWGSC uses a system of Non-Compliance Notifications and Disciplinary Measures on projects as follows:
- .1 A non-compliance notification will be issued to the General Contractor, by the Departmental Representative, whenever there is a violation or failure to follow any of the project's occupational health and safety requirements by a worker, subcontractor or any other person to whom the Contractor has granted access to the work site.
- .2 Non-Compliance notifications are progressive in nature resulting in increased disciplinary measures imposed depending on the frequency, nature and severity of the infraction.
- .3 Disciplinary measures could include:
- .1 Removal of the offending person or party from site;
- .2 Financial penalties in the form of progress payment reduction or holdback assessments made against the Contract and;
- .3 Taking the Work Out of Contractor's Hands in accordance with the General Conditions.

- .4 Departmental Representative will make final decision as to what constitutes a violation and when to issue a Non-Compliance Notification.
- .5 Non-compliance Notifications issued by Departmental Representative shall not be construed as to overrule or disregard warnings, orders and fines levied against Contractor by a regulatory agency having jurisdiction.
- .6 Details of the Non-Compliance Notification and Disciplinary Measures system will be provided by Departmental Representative upon acceptance of bid and prior to commencement of work.
- .7 Be responsible to fully brief workers and subcontractors on the operation and importance of this system.

*End of document.*

1.1 GENERAL

- .1 Due to nature of this Facility and client operations therein, security regulations pertaining to site entry and movement inside the building will be in place during the work resulting in need for:
  - .1 Workers to be security cleared before being allowed on site as per clause 1.2.1 below;
  - .2 Escort of workers by Facility security personnel for access into certain specific areas of the building as designated by the Facility management;
  - .3 Specific rules and regulations as specified in this section and as directed by Departmental Representative to be stringently followed.
- .2 It is the Contractor's responsibility to:
  - .1 Submit necessary documentation required and obtain security clearances for all workers;
    - .1 Fingerprinting of any and all personnel will be required.
  - .2 Become familiar with and abide by all security rules and procedures in force at the site;
  - .3 Brief all workers and subcontractors on all rules and procedures and ensure strict compliance by everyone.
- .3 The Departmental Representative will coordinate pre-construction meeting between Contractor, Facility Management and Security Personnel who will provide details and directives on control and movement on site.
- .4 Any infraction of site security regulations on the part of the Contractor, members of work force or any Subcontractor in his employ, could result in:
  - .1 Financial penalties in the form of progress payment reduction or holdback assessments being levied against the Contractor in accordance with the General Conditions and;
  - .2 Demand immediate removal of the offending party from the site.

1.2 SECURITY  
CLEARANCE REQ'TS

- .1 All persons employed by Contractor or by subcontractors who will be working on site must be security cleared beforehand by undergoing the following check:

- .1 Apply for and obtain RCMP authorized site access. Fingerprinting may not be required.
- .2 No individual will be allowed access on site until all security clearances specified in clause 1.2.1 above have been obtained and permission to enter site has been given.
  - .1 The Departmental Representative will advise when this has been received.
- .3 Site means inside the building, exterior roof areas and all exterior ground areas of the Facility.

1.3 SECURITY  
CLEARANCE APPLICATION

- .1 Within two (2) weeks following notification of acceptance of bid, submit application forms for all workers who require the security clearance.
  - .1 Make application for all workers as one submission to facilitate processing and minimize delays.
  - .2 To obtain the RCMP authorized site access, the following information is required for each applicant:
    - .1 "Personnel Screening, Consent and Authorization Form" (Form No. TBS/SCT #330-23E (Rev. 2006/02)) completed by each worker.
    - .2 Proof of applicant's identity consisting of a picture ID such as a Canadian Motor Vehicle Driver's License or other similar official ID card.
    - .3 Include form along with a clear legible photocopy of the identity documents submitted as one complete package for each applicant.
  - .3 A sample of the above mentioned form is included in the Specification manual for reference purposes; marked "Appendix A".
    - .1 Information on filling out form TBS/SCT # 330-23E are as follows:
      - .1 Part A: by PWGSC Project Manager;
      - .2 Part B: by applicant. Provide full name, including middle name (not simply and initial). Ensure addresses listed represent last five (5) years of residence and each address is fully completed including postal code. Print data in clear,

legible manner.

.3 Part C: only boxes 1,2 & 5 need to be completed, requiring applicant's initials. Applicant to write "Law Enforcement Records Check" in own hand in box 5. Name of official requested here can be PWGSC Project Manager or PWGSC Regional Security Agent provided that Contractor submits the PWGSC Security Form "A" identified in clause 1.3.2.2 above.

.4 Processing Time:

.1 The PWGSC departmental processing time to obtain all security clearances may be long and could take up to 45 days from date of receipt of required documentation.

.2 To avoid delays, prepare worker documentation as soon as possible, however include all documentation for each applicant into package and submit information for entire workforce as one submission. Ensure forms are fully completed, signed and that all information and photo identification is clear and legible.

.3 Be aware that processing time for applicants with criminal convictions may take longer and could extend to 6 months duration.

.1 An interview with such applicant may also be required as part of the security clearance process.

.5 Facilitate process of having workers security cleared, including:

.1 Determine and prepare comprehensive list of workers who will require security clearance throughout project, including those of sub-contractors.

.2 Provide copy of list to Departmental Representative.

.3 Coordinate and expedite submission of various subcontractors.

.4 Brief and assist applicants in preparing and submitting documentation.

.5 Review documentation of each applicant for completeness before submission.

.6 Have each worker keep a copy of their completed application form in case the initial submission gets lost.

.7 Submit documentation in an organized manner with transmittal letter clearly identifying project for which worker

clearance is required.

- .6 Send submission(s) directly to Departmental Representative or to the approved mailing address as directed by Departmental Representative.
- .7 Persons who have not been successful in obtaining required security clearance, upon documentation review, will not be allowed on site and cannot work on this project.

#### 1.4 SECURITY ESCORT

- .1 Security cleared workers will be authorized to circulate freely without need for a security escort within pre-designated work areas as well as use those doors and corridors as stipulated to gain access to such work areas. However, there are secure areas inside the building where escort and supervision by a security escort or Facility security personnel is required to gain entry.

- .1 Departmental Representative will advise where the areas requiring an escort are located.

- .2 Workers must be in constant supervision by security escort while inside the designated secure areas. Security escorts are to be employed by the Canadian Corps of Commissionaires and must have a current Enhanced Security Clearance status. The contractor to pay for the services of the security escort and/or the Facility security personnel.

- .2 Supply approved safety hard hat, safety footwear and other personnel protective equipment (PPE) appropriate to work conditions to be donned by the security escort or the Facility security personnel providing the escort and supervision function while inside construction areas.

- .3 Short term visitors must report to Facility security personnel upon arrival at the site and must be escorted while inside Facility. Such visitors must be under continuous escort and surveillance by a Facility security personnel while on site.

- .1 Be aware that Facility Security may deny access inside the building to a visitor subject to their own decision and discretion.

#### 1.5 SECURITY PASSES

- .1 Visitor ID Tag may be provided by Facility Security to Contractor for distribution to security cleared workers.
- .2 All persons while on site, must wear the ID Tag issued to him regardless of daytime or night time work.

- .3 Be responsible to obtain ID Tags before work commences, including those required by subcontractors, and continually control their distribution and use by workers. Submit request for tags as early as possible prior to commencement of work.
- .4 For the duration of this contract, anyone not in possession of the ID tag will not be allowed access on site.
- .5 At end of project, return to Departmental Representative all tags issued to workers and to subcontractors.
  - .1 The Departmental Representative will levy a financial penalty in the form of a holdback assessment against the Contract for each pass not returned regardless of the reason the pass is not returned.
- .6 Immediately report any lost, stolen or destroyed passes to the Departmental Representative.

1.6 SECURITY  
CONTROL LIST

- .1 Provide a list of employee names from workforce and from subcontractors who will be present at site during the course of work.
- .2 List to include each person's name, address and telephone number.
- .3 Submit copy of list to Departmental Representative and to Facility Security.
- .4 Update list as work progresses.
- .5 Ensure that each worker can provide proof of identity upon demand, when requested by Facility's Security Personnel.

1.7 BUILDING ACCESS

- .1 Keys and door security access cards necessary for access to restricted areas may be issued at the discretion of the Facility Security unit and the Departmental Representative. Follow all instructions in regards to use, care and disposition of all keys and access cards so issued.
- .2 Keys and security access cards issued to Contractor's Superintendent, or other supervisory staff, are for their sole possession and shall not be given under any circumstances to another worker or subcontractor.
- .3 No worker shall make a copy any keys issued.
- .4 At end of project, return to Departmental Representative all keys and access cards issued.

- .5 Immediately report to Departmental Representative any lost, stolen or destroyed keys and door security access cards.

1.8 SITE SECURITY

- .1 Where work of this contract requires use of a permanently locked door or gate, it is Contractor's responsibility to ensure that door or gate is unlocked and locked after each use or provide a competent security guard, posted at door, when entryway must remain open for an elongated period of time during a particular workshift.
  - .1 Notify Facility security personnel when security doors will be used and stringently follow all directives to ensure building security is effectively maintained at all times.
- .2 Where work of this contract results in removal of doors or walls (providing security to the exterior or between spaces and suites), erect temporary security hoarding over openings constructed and fastened in such a way to provide the same degree of security as doors/walls removed.
- .3 When work must be carried out beyond the work hours previously agreed upon at start of work, Notify Departmental Representative and Building Security a minimum of 48 hours in advance and follow all directives regarding access and circulation of workers.

*End of document.*

# RCMP Facility Access 3

## **NO Escort** Required Inside RCMP Facilities – Operational Zones Personnel Security Screening Requirements

SRCL NARMS #: \_\_\_\_\_ Project Authority/  
Hiring Manager \_\_\_\_\_

HRMIS #: \_\_\_\_\_ Company Name: \_\_\_\_\_

Name: \_\_\_\_\_ Location of Work: \_\_\_\_\_

Employee Type: \_\_\_\_\_ Dates of Contract: \_\_\_\_\_

### **STEP ONE - HIRING MANAGER / PROJECT AUTHORITY**

Action	Document	Description	Status
SRCL	<a href="#">TBS 350-103</a>	To start the process, the Security Requirement Checklist (SRCL) document is required. <a href="http://www.tbs-sct.gc.ca/tbsf-fsct/350-103_e.asp">http://www.tbs-sct.gc.ca/tbsf-fsct/350-103_e.asp</a>	
HRMIS Number	<a href="#">Form 4023</a>	Hiring Manager completes and sends it to: <a href="mailto:AR_Security_Screening_Mailbox.Hdiv_ARA@rcmp-grc.gc.ca">AR_Security_Screening_Mailbox.Hdiv_ARA@rcmp-grc.gc.ca</a>	
Consent	<a href="#">TBS 330-23</a>	Personnel Screening, Consent and Authorization Form. Hiring Manager completes Part A. Use the attached form or if you use the link, select the <b>PDF Fillable</b> form. <b>Please add Law Enforcement Records Check on No 5 on page 2.</b>	

### **STEP TWO - APPLICANT**

<b>Documents</b>	Photo ID (Driver's License or other Signature Bearing photo ID)	Drivers License Photocopy ( <b>front and back</b> ) must be verified and signed by the Hiring Manager or Project Authority	
	<a href="#">TBS 330-23</a>	Applicant completes <b>Parts B and C. In Part C applicants initials one, two &amp; five and the applicants signs/dates at the bottom of Part C.</b> Use the attached form or if you use the link, select the <b>PDF Fillable</b> form. <b>Please add Law Enforcement Records Check on No 5 on page 2.</b> <a href="http://www.tbs-sct.gc.ca/tbsf-fsct/330-23_e.asp">http://www.tbs-sct.gc.ca/tbsf-fsct/330-23_e.asp</a>	
	C-216 <a href="#">Fingerprints</a>	Send applicant to local RCMP Detachment for 2 sets of fingerprints. Either INK and ROLL (paper) fingerprints OR electronic fingerprints. IT IS REQUIRED THAT THE APPLICANT BE GIVEN TWO SETS OF FINGERPRINTS (ELECTRONIC OR INK AND ROLL). If the fingerprints must be submitted electronically, the attached form is to be used to ensure that the results are sent from IDENT directly to Departmental Security. Either way, this form will identify the applicant as an RCMP applicant; thus, the form should be completed and given to the detachment.	
	1020-1 & 1020	Security Interview completed for cause. Cause to be determine by DSS	<b>Required only if requested</b>

### **STEP THREE – HIRING MANAGER / PROJECT AUTHORITY**

Mail this document (with the requested information at the top of the page filled in) and original documents to:  
Atlantic Region DSS, Personnel Security, Mail Stop # H-057, 80 Garland Ave, Dartmouth, NS B3B 0J8

Submitted by (Name): \_\_\_\_\_ Phone #: \_\_\_\_\_

**Letter of Instruction****Instructions for the processing of an electronic fingerprint submission for RCMP Personnel Security Unit/Departmental Security Branch**

This form is to be completed by the Originating Personnel Security Unit/Departmental Security Branch in support of a criminal record check for RCMP Employment/Facility Access. The form may be provided by the Originating Personnel Security Unit/Departmental Security Branch to a Police Service to assist with the electronic submission of fingerprints in support of a criminal record check for RCMP Employment/Facility Access.

**Identification of Originating Personnel Security Unit/Departmental Security Branch**

Date:

Name and **mailing address** of requesting PerSec Unit/DSB (for response address):

Atlantic Region DSS  
 Personnel Security  
 Mail Stop # H-057  
 80 Garland Ave  
 Dartmouth, NS  
 B3B 0J8

File# (if required):

**Identification of Applicant**

Name of Applicant:

Date of Birth of Applicant:

**Application Type:** \*\*\*\*Check which subtype applies\*\*\*\*

- Employment (*Police*): 1. \_\_\_\_\_ RCMP Member (RM Applicant or Auxiliary Constable)  
 2. \_\_\_\_\_ RCMP Civilian Member (All other positions including but not limited to Civilian Member, TCE, contractor, PSE, Volunteer, Student)

**\*\*Please note (Police Service providing electronic submission service):**

- There is no fee required by the RCMP
- Please use the correct application subtype (Identified above) for the position
- Provide a hard copy print out of the fingerprints to the client/applicant for administrative purposes, requested by Per Sec Unit/DSB
- Attach the confirmation of transaction sent (DCN, TCN or ACKT printout) to the fingerprints
- Results to be sent to "Response Address" identified above \*\*this will invoke the Third Party Waiver\*\*

**- IT IS PREFERRED THAT THE APPLICANT BE GIVEN TWO SETS OF FINGERPRINTS, WHETHER THEY BE INK AND ROLL OR ELECTRONIC. THIS WILL SPEED UP THE PROCESSING TIME WHEREBY ARDSS WILL NOT HAVE TO WAIT FOR RESULTS.**

1.1 GENERAL

- .1 Submit closeout documents specified in this section prior to application for Certificate of Substantial Performance of the Work.
- .2 Submit data in sufficient lead time to allow adequate review by Departmental Representative.
- .3 Make revisions to data as directed by Departmental Representative based on review.

1.2 PROJECT RECORD DOCUMENTS

- .1 Departmental Representative will provide 2 white print copies of contract drawings specifically to record "as-built" conditions.
- .2 Maintain 1 set at site and record actual built conditions.
- .3 Mark each drawing with up-to-date, real time as-built conditions as work progresses.
- .4 Maintain drawings in good condition and make available for inspection by the Departmental Representative whenever requested.
- .5 Record changes in red ink on the prints. Mark only on 1 set of drawings and transfer data to other set at completion of project.
  - .1 Neatly transfer notations to second set also by use of red ink.
  - .2 Stamp all drawings of both sets with the notation "As-Built Drawings". Also sign and date drawings.
  - .3 Indicate all modifications, substitutions and deviations from that shown or specified in the Contract Documents.
- .6 Record following information:
  - .1 Field changes to dimensions and details;
  - .2 Location of buried, concealed services;
  - .3 Location of capped or terminated services;
  - .4 Any additional details produced by the Departmental Representative to supplement or to change existing design drawings;
  - .5 All Change Orders issued, documenting accurately and consistently the changed condition as it applies to all affected drawing details.
- .7 Maintain As-built documents current as the contract progresses.
- .8 Submit both sets of as-builts drawings.

1.3 OPERATIONS &  
MAINTENANCE DATA

- .1 Submit 2 copies of Operations and Maintenance (O&M) manual(s).
- .2 O&M manuals to be hard cover three ring binder for 215 x 280 mm size paper. Each copy shall contain:
  - .1 Technical data for installation, operations and maintenance of products and systems supplied in project.
  - .2 Nameplate information for mechanical and electrical equipment.
  - .3 List of spare parts and tools.
  - .4 Original or certified copy of warranties and manufacturer's product guarantees.
  - .5 Reports of any field test.
  - .6 Complete set of reviewed shop drawings.
- .3 Provide cover sheet in each manual with:
  - .1 Project name and number
  - .2 Name and address of Contractor and subcontractors
  - .3 Date of submission
  - .4 Table of contents
- .4 Manuals to be in English language.

1.4 TOOLS AND  
PARTS

- .1 Supply special tools, wrenches and keys, such as those supplied by manufacturer of security specialty product (example: to install tamperproof security screws), to disassemble, remove and reinstall components of security hardware and detention equipment as needed for maintenance purposes.
- .2 Tag all items with associated equipment and function.
- .3 Turn over tools, wrenches and keys to Departmental Representative immediately upon installation of pertinent item.
- .4 Where required, provide manufacturer's written instructions on intent and method of use.
- .5 Provide name, address and telephone number of nearest supplier.
- .6 Prepare and include complete inventory list of items supplied into the maintenance manuals.

*End of document.*

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 09 21 16 - Gypsum Board Assemblies: Suspension systems for gypsum board ceilings.
- .2        Section 09 51 13 - Acoustical Ceilings: Acoustical units.
- .3        Division 23: Trim for recessed mechanical fixtures.
- .4        Division 26: Trim for recessed light fixtures.

**1.2                REFERENCES**

- .1        American Society for Testing and Materials (ASTM)
  - .1        ASTM C635-04, Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
  - .2        ASTM C636-04, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

**1.3                NOT INCLUDED**

**1.4                DESIGN REQUIREMENTS**

- .1        Maximum deflection: 1/360th of span to ASTM C635 deflection test.

**1.5                SAMPLES**

- .1        Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Submit one representative model of each type ceiling suspension system.
- .3        Ceiling system to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustical unit installation.

**1.6                REGULATORY REQUIREMENTS**

- .1        Fire-resistance rated suspension system: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

**1.7                WASTE MANAGEMENT AND DISPOSAL**

- .1        In accordance with Section 00 10 10 clause 1.24.

## Part 2 Products

### 2.1 METAL SUSPENSION SYSTEM

- .1 Metal Suspension System – Acoustical Panel Ceilings: Manufacturer's standard direct hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C635 requirements and as supplied by same materials supplier as acoustic panels for intermediate duty, exposed tee bar and as follows:
  - .1 Tee bar grid face width: as appropriate for materials specified. Refer to Section 09 51 13.
  - .2 Module: Sized as appropriate to acoustic panel size.
  - .3 Rated for high humidity locations and clean room applications in locations noted on Drawings.
  - .4 Hangers, Braces and Ties: minimum 2.78 mm (0.109" (12 ga.)) Ø steel wire, galvanized.
  - .5 Exposed Finish: Manufacturer's standard satin, white finish.
  - .6 Corrosion Resistance: Hot-dip galvanized or stainless steel components.
  - .7 Acceptable materials: materials to match products specified, use only materials from same manufacturers of panel products.
- .2 Metal Suspension System – Suspended Gypsum Board Ceilings: Manufacturers standard gypsum board suspension grid system in accordance with ASTM C645, hot dipped galvanized G40 in accordance with ASTM A635, and as follows:
  - .1 Module Size:
    - .1 Main Beams: 1220 mm (48") o/c.
    - .2 Cross Tees: 1220 mm (48") o/c.
  - .2 Tee Bar Grid Size: Double web construction, minimum 0.45 mm (0.018") thickness x 38 mm (1½") face width x 43 mm high, and 24 mm (15/16") face width x 38 mm (1½") high as appropriate to manufacturer's standard details, having a knurled flange and pre-cut facets at 203 mm (8") o/c for radiused installations.
  - .3 Hat Furring Channel: 1220 mm (48") long z 35 mm (1 3/8") 22 mm (7/8") high.
  - .4 Wall Mouldings:
    - .1 Hemmed Angle Moulding: 32 mm (1¼") high with 32 mm (1¼") flange.
    - .2 Unhemmed Channel Moulding: 19 mm (¾") x 40 mm (1 9/16") x 32 mm (1¼") flange.
    - .3 Clips: Include adaptor clips, gypsum board attachment clips, angle clips, cross tee clips and other mouldings and trims necessary for a complete installation.

Installation of suspended ceilings to two spaces and assoc. works.

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- .5 Screws and Fasteners: Bugle head screws in accordance with thickness of material used and the provisions of Section 09 21 16.
- .6 Hangers, Braces and Ties: steel wire, galvanized minimum 2.78 mm (0.109" (12 ga.)) Ø or greater as required for support of ceiling components.
- .7 Acceptable materials: materials to match products specified, use only materials from same manufacturers of panel products, to match manufacturer's standard and compatible with other system components.
- .8 Structural Classification: rated for rated as heavy duty load carrying performance in accordance with ASTM C635 and as follows:
  - .1 Classification requires wires to be closer together for additional loading when used to support double layer gypsum, verticals, slopes, domes, soffit, canopies, and step conditions that call for loading or unusual designs and shapes in gypsum board construction.
  - .2 Deflection of fastening suspension system supporting light fixtures, ceiling grilles, access doors, verticals and horizontal loads shall have a maximum deflection of 1/360 of the span.
- .3 Attachment Devices: Size for five (5) times design load indicated in ASTM C635, Table 1, Direct Hung, having corrosion protection for moderate service conditions, and as follows:
  - .1 Concrete Anchors: Anchors of type to option of Contractor, with holes or loops for attaching hangers having capacity to sustain ceiling loads as indicated in .3 above, selected from one of the following types:
    - .1 Cast-in-place anchors.
    - .2 Post Installed expansion anchors.
    - .3 Chemical anchors.
    - .4 Powder actuated fasteners, except that they shall be sized for ten (10) times the design load indicated in .3 above.
  - .2 Rod and Flat Hangers: Mild steel, zinc coated.
  - .3 Angle Hangers: Minimum 22 mm (7/8") x 22 mm (7/8") x 1 mm (1/24") thick angles, Z275 (G90) galvanized steel sheet in accordance with ASTM A653/A653M; bolted connections using 8 mm (5/16") Ø bolts.

## 2.2 EDGE MOULDINGS AND TRIM

- .1 Sheet Metal Edge Mouldings and Trim: Manufacturer's standard mouldings for edges and penetrations that fit specified acoustic panel edge and suspension system. Type and profile as detailed on Drawings; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners, and as follows:
  - .1 Provide stepped edge moulding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member for lay in panels with tegular edged materials.
  - .2 Provide edge mouldings fabricated to diameter required to fit circular penetrations exactly.
  - .3 Provide edge mouldings and trims that match width and configuration of exposed runners, including but not limited to, the following configurations:

- .1 Sheet metal fillers: Light zinc coated sheet steel finished to match the T-bar.
- .2 Shadow mould: Rolled sheet metal, one piece, having 19 mm ( $\frac{3}{4}$ " ) x 13 mm ( $\frac{1}{2}$ " ) flange and reveal.
- .3 Wall moulding: Channel or angle shape with a 25 mm (1" ) or 22 mm ( $\frac{7}{8}$ " ) exposed face.
- .4 Radiant panel shadow mould: Rolled sheet metal, one piece with pre-punched and slotted mounting holes, and expansion joints to coincide with radiant panel joints, having 22 mm ( $\frac{7}{8}$ " ) x 19 mm ( $\frac{3}{4}$ " ) flange and reveal, to fit manufacturer's suspension grid.
- .5 Radiant panel wall mould: Angle shape 0.759 mm (0.030" ) 22 gauge)) metal core thickness, 38 mm (1  $\frac{1}{2}$ " ) vertical leg and 25 mm (1" ) exposed face with pre-punched and slotted mounting holes, and 1.5 mm ( $\frac{1}{16}$ " ) expansion joints to coincide with radiant panel joints, to fit manufacturer's suspension grid.
- .6 Wall moulding: Channel or angle shape having 22 mm ( $\frac{7}{8}$ " ) exposed face.

### **Part 3 Execution**

#### **3.1 INSTALLATION**

- .1 Installation: in accordance with ASTM C636 except where specified otherwise.
- .2 Install suspension system to manufacturer's instructions and Certification Organizations tested design requirements.
- .3 Do not erect ceiling suspension system until work above ceiling has been inspected by Departmental Representative.
- .4 Secure hangers to overhead structure using attachment methods acceptable to Departmental Representative.
- .5 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
- .6 Lay out centre line of ceiling both ways, to provide balanced borders at room perimeter with border units not less than 50% of standard unit width, confirm system layout according to reflected ceiling plan.
- .7 Ensure suspension system is co-ordinated with location of related components.
- .8 Install wall moulding to provide correct ceiling height.
- .9 Completed suspension system to support super-imposed loads, such as lighting fixtures, diffusers, grilles, and speakers.
- .10 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

- .11 Attach cross member to main runner to provide rigid assembly.
- .12 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- .13 Install access splines to provide minimum 10 percent ceiling access.
- .14 Finished ceiling system to be square with adjoining walls and level within 1:1000.
- .15 Expansion joints.
  - .1 Erect two main runners parallel, 50 mm apart, on building expansion joint line. Lay in strip of acoustic tile/board, [painted black], 25% narrower than space between 2 'T' bars.
  - .2 Supply and install "Z" shaped metal trim pieces at each side of expansion joint. Design to accommodate plus or minus 25 mm movement and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

### **3.2 CLEANING**

- .1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS:**

- .1    Section 09 22 27 - Acoustical Suspension

**1.2                REFERENCES**

- .1    Acoustic Materials Association (AMA):
  - .1    AMA-1-11, Ceiling Sound Transmission Test by the Two-Room Method.
- .2    American Society for Testing and Materials (ASTM):
  - .2    ASTM A635/A635M-06, Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for
  - .3    ASTM A641/A641M-03, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
  - .4    ASTM C423-02ae1, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .5    ASTM C635-04, Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustic Tile and Lay-in Panel Ceilings
  - .6    ASTM C636-04, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustic Tile and Lay-In Panels
  - .7    ASTM C645-06, Standard Specification for Nonstructural Steel Framing Members
  - .8    ASTM E1111-05, Standard Test Method for Measuring the Interzone Attenuation of Ceiling Systems
  - .9    ASTM E1414-00a Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
  - .10    ASTM E1264-98 (2005), Standard Classification for Acoustic Ceiling Products
- .3    Underwriters Laboratories of Canada (ULC):
  - .11    CAN/ULC S102-03, Surface Burning Characteristics of Building Materials and Assemblies
- .4    Underwriters' Laboratories (UL), Standards for Safety acceptable to the Standards Council of Canada (SCC).

**1.3                NOT USED**

**1.4 SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate samples of each type of acoustical units.

**1.5 QUALITY ASSURANCE**

- .1 Regulatory Requirements:
  - .1 Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Not used.

- .3 Health and Safety:
  - .1 Do construction in accordance with occupational health and safety requirements.

**1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Protect on site stored or installed absorptive material from moisture damage.
- .2 Store extra materials required for maintenance, where directed by Departmental Representative.
- .3 Waste Management and Disposal:  
In accordance with Section 00 10 10 clause 1.24.

**1.7 ENVIRONMENTAL REQUIREMENTS**

- .1 Permit wet work to dry before beginning to install.
- .2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20- 40% before and during installation.

Installation of suspended ceilings to two spaces and assoc. works.

- .3 Store materials in work area 48 hours prior to installation.

## **1.8 EXTRA MATERIALS**

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type required for project.
- .3 Ensure extra materials are from same production run as installed materials.
- .4 Clearly identify each type of acoustic unit, including colour and texture.
- .5 Deliver to Departmental Representative, upon completion of the work of this section.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 AT3. Acoustic units for suspended ceiling system: to CAN/CGSB-92.1 and ASTM E1264.
  - .1 Type XII
  - .2 Class A flame spread / smoke developed
  - .3 Cellulose fibre with 40-44% recycled content.
  - .4 Pattern: Non-directional (factory applied acrylic latex paint).
  - .5 Noise Reduction Coefficient (NRC) designation: 0.95
  - .6 Articulation Class (AC) rating: 190
  - .7 Light Reflectance (LR) range: 0.90
  - .8 Edge type: angled tegular.
  - .9 Size 610 x 610 x 25 mm thick.
  - .10 Shape: flat
  - .11 Suspension System: 24 mm.
  - .12 Acceptable material:
    - .1 Armstrong, Optima Open Plan, 3250
    - .2 CGC, Halcyon ClimaPlus, 98223
    - .3 Certainteed, Symphony F, 1342-OVT-1
- .2 Not used.
- . .
- .3 Not used.
- . .
- .4 Not used.
  
- .5 Staples, nails and screws: to CSA B111 non-corrosive finish as recommended by acoustic unit manufacturer.
- .6 Polyethylene: to CAN/CGSB-51.34, 0.15 mm thick.
- .7 Hold down clips: purpose made clips to secure tile to suspension system, approved for use in fire-rated systems.

## 2.2 EDGE MOULDINGS AND TRIM

- .1 Sheet Metal Edge Mouldings and Trim: Manufacturer's standard mouldings for edges and penetrations that fit specified acoustic panel edge and suspension system, and as follows:
  - .1 Provide stepped edge moulding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member for lay in panels with tegular edged materials.
  - .2 Provide edge mouldings fabricated to diameter required to fit circular penetrations exactly.
  - .3 Provide edge mouldings and trims that match width and configuration of exposed runners, including but not limited to, the following configurations:
    - .1 Sheet metal fillers: Light zinc coated sheet steel finished to match the T-bar.
    - .2 Wall moulding: Channel or angle shape with a 25 mm or 22 mm exposed face.
    - .3 Radiant panel wall mould: Angle shape 0.759 mm metal core thickness, 38 mm vertical leg and 25 mm exposed face with pre-punched and slotted mounting holes, and 1.5 mm expansion joints to coincide with radiant panel joints, to fit manufacturer's suspension grid.
    - .4 Acceptable material:
    - .5 CGC Donn PFRH 151 Angle
    - .6 Wall moulding: Channel or angle shape having 22 mm exposed face.
- .2 Profiled Edge Mouldings and Trim: Manufacturer's standard extruded aluminum or cold rolled steel edge mouldings and trims, including splice plates, corner pieces, gypsum board trim, attachments and other clips, and as follows:
  - .1 Ceiling Trim 1:
    - .1 Size: nominal 50 mm high
    - .2 Profile: Flat
    - .3 Exposed Finish: Manufacturer's standard satin, white finish
    - .4 Acceptable materials:
      - .1 Armstrong Axiom
      - .2 CGC Compäso
      - .3 Chicago Metallic Infinity
  - .2 Not used.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Departmental Representative.

**3.2 INSTALLATION**

- .1 Install acoustical panels and tiles in ceiling suspension system.
- .2 Install fibrous acoustical media and spacers over entire area above suspended metal panels.

**3.3 APPLICATION**

- .1 Install acoustic units to clean, dry and firm substrate.
- .2 Install acoustical units parallel to building lines with edge unit not less than 50% of unit width. Refer to reflected ceiling plan.
- .3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

**3.4 INTERFACE WITH OTHER WORK**

- .1 Co-ordinate with Section 09 22 27 - Acoustical Suspension.
- .2 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

**3.5 VERIFICATION**

- .1 Verification requirements include:
  - .1 Materials and resources.
  - .2 Storage and collection of recyclables.
  - .3 Construction waste management.
  - .4 Recycled content.
  - .5 Local/regional materials.
  - .6 Low-emitting materials.

**END OF SECTION**

**Part 1            General**

**1.1            RELATED SECTIONS**

- .1        Section 01 33 00 - Submittal Procedures.
- .2        Section 01 78 00 - Closeout Submittals.

**1.2            PROTECTION OF OPENINGS**

- .1        Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

**1.3            SPARE PARTS**

- .1        Furnish spare parts in accordance with Section 01 78 00 - Closeout Submittals as follows:
  - .1        One set spare belts for each belt drive.

**1.4            SPECIAL TOOLS**

- .1        Provide one set of special tools required to service equipment as recommended by manufacturers and in accordance with Section 01 78 00 - Closeout Submittals.
- .2        Furnish one commercial quality grease gun, grease and adapters to suit different types of grease and grease fittings.

**1.5            DEMONSTRATION AND OPERATING AND MAINTENANCE INSTRUCTIONS**

- .1        Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .2        Where specified elsewhere in Mechanical Sections, manufacturers to provide demonstrations and instructions.
- .3        Use operation and maintenance manual, as-built drawings, audio visual aids, etc. as part of instruction materials.
- .4        Instruction duration time requirements as specified in appropriate sections.

**1.6            CLOSEOUT SUBMITTALS**

- .1        Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2        Operation and maintenance manual to be approved by, and final copies deposited with, the Engineer before final inspection.
- .3        Operation data to include:
  - .1        Control schematics for each system including environmental controls.
  - .2        Description of each system and its controls.

- .3 Description of operation of each system at various loads together with reset schedules and seasonal variances.
- .4 Operation instruction for each system and each component.
- .5 Description of actions to be taken in event of equipment failure.
- .6 Valves schedule and flow diagram.
- .7 Colour coding chart.
- .4 Maintenance data shall include:
  - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
  - .2 Data to include schedules of tasks, frequency, tools required and task time.
- .5 Performance data to include:
  - .1 Equipment manufacturer's performance data sheets with point of operation as left after commissioning is complete.
  - .2 Equipment performance verification test results.
  - .3 Special performance data as specified elsewhere.
- .6 Approvals:
  - .1 Submit 2 copies of draft Operation and Maintenance Manual for approval. Submission of individual data will not be accepted.
  - .2 Make changes as required and re-submit.
- .7 Additional data:
  - .1 Prepare and insert into operation and maintenance manual when need for same becomes apparent during demonstrations and instructions specified above.

## 1.7 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop drawings and product data shall show:
  - .1 Mounting arrangements.
  - .2 Operating and maintenance clearances. eg. access door swing spaces.
- .3 Shop drawings and product data shall be accompanied by:
  - .1 Detailed drawings of bases, supports, and anchor bolts.
  - .2 Acoustical sound power data, where applicable.
  - .3 Points of operation on performance curves.
  - .4 Manufacturer to certify as to current model production.
  - .5 Certification of compliance to applicable codes.
- .4 In addition to transmittal letter referred to in Section 01 33 00 - Submittal Procedures: use MCAC "Shop Drawing Submittal Title Sheet". Identify section and paragraph number.

**1.8 CLEANING**

- .1 Clean interior and exterior of all systems including strainers. Vacuum interior of ductwork and air handling units.

**1.9 AS-BUILT DRAWINGS**

- .1 Site records:
  - .1 On a weekly basis, transfer information to reproducible, revising reproducible to show all work as actually installed.
  - .2 Use different colour waterproof ink for each service.
  - .3 Make available for reference purposes and inspection at all times.
- .2 As-built drawings:
  - .1 Prior to start of Testing, Adjusting and Balancing (TAB), finalize production of as-built drawings.
  - .2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (date).
  - .3 Submit for approval and make corrections as directed.
  - .4 TAB to be performed using as-built drawings.
  - .5 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.
- .3 Submit copies of as-built drawings for inclusion in final TAB report.

**1.10 AS INDICATED**

- .1 Means that the item or items specified are shown on the drawings.
- .2 The word "provide" shall mean "Supply and Install".

**1.11 STANDARD OF ACCEPTANCE**

- .1 Means that item named and specified by manufacturer and/or catalogue number, forms part of specifications and sets standard regarding performance, quality of material and workmanship and when used in conjunction with a referenced standard, shall be deemed to supplement the standard.
- .2 Provide materials, equipment, and plant of specified design quality and of current models with published ratings for which replacement parts are readily available.
- .3 The codes and standards referred to in the specifications establish the minimum requirements only. The most stringent requirements of the specifications, drawings, codes and standards shall govern. Refer to the latest editions of all applicable codes and standards.

**1.12 EQUIPMENT REQUIREMENTS AND INSTALLATION**

- .1 Provide unions and flanges to permit equipment maintenance and disassembly and to minimize disturbance to connecting piping and duct systems and without interference from building structure or other equipment.
- .2 Provide accessible means for lubricating equipment including permanent lubricated bearings.
- .3 Pipe all drain lines to floor drains.

**1.13 ANCHOR BOLTS AND TEMPLATES**

- .1 Supply anchor bolts.
- .2 Installed anchors shall perform to criteria required.

**1.14 PROTECTION OF OPENINGS**

- .1 Protect equipment and systems' openings from dirt, dust and other foreign materials during trial usage. Provide plastic shut wrap over open ducts at end of each day.
- .2 Clean and refurbish all equipment and leave in first class operating condition.

**1.15 ELECTRICAL**

- .1 All control wiring shall be by Division 23 sections unless noted otherwise. The Div 26 contractor will leave spare 120 volt circuits in each electrical panel for the Div 23 trades to use for power source for control wiring to sensors, and actuators. The Div 23 trades shall install controls wiring to the standards set out in Div 26 wiring specs.
- .2 Coordinate with Division 26 to ensure that all controlled equipment is correctly connected for operation in accordance with plans and specifications, including supplying all necessary electrical interconnection information and location to Division 26.

**1.16 TESTS**

- .1 Provide the following supplementary requirements to tests specified in mechanical work sections:
  - .1 Give written two-day notice of date when tests will be made.
  - .2 Do not insulate or conceal work until tested and approved. Follow construction schedule and arrange for tests.
  - .3 Conduct tests in presence of Engineer. Re-test if test fails.
  - .4 Bear all costs including re-testing and making good.
  - .5 Pipe Pressure:
    - .1 Hydraulically test water supply systems at 1-1/2 times system operating pressure or minimum 125 psi, whichever is greater.
    - .2 Test sprinkler piping to NFPA-13.
    - .3 Maintain test pressures without loss for four (4) hours, unless otherwise specified.

- .4 Test all drainage, waste and vent piping to National Plumbing Code and authorities having jurisdiction.
- .5 Test all underground drainage pipe to 3m head of water for 2 hours.
- .6 Conduct all other tests as specified in other Sections of Division 23.
- .7 Replace defective material or equipment and repair joints using new material.
- .8 Prior to tests, isolate all equipment or other parts which are not designed to withstand test pressures or test medium.
- .9 Compile all completed test reports upon completion of all tests in a 3-ring binder and submit.

#### **1.17 DRAIN VALVES**

- .1 Locate at all low points and section isolating valves unless otherwise specified.
- .2 Minimum 75mm unless otherwise specified: Straight pattern bronze with hose end male thread and complete with cap and chain.
- .3 Acceptable Manufacturer: Dahl Fig. 50.430 ball valve with chain and cap.

#### **1.18 INSTRUCTION OF OPERATING STAFF**

- .1 Provide certified personnel to instruct operating staff on maintenance. Provide maintenance specialist personnel to instruct operations staff on maintenance and adjustment of mechanical equipment and any changes or modification in equipment made under terms of guarantee.
- .2 Provide instruction during regular work hours prior to acceptance.
- .3 Use operation and maintenance data manuals for instruction purposes
- .4 Instructions in maintenance and operation of the following equipment shall be given by factory trained personnel and for a period of one (1) working days for each of the following systems:
  - .1 Ventilation Systems.

The time specified above does not include the time for start-up of systems and equipment. Operating instructions for systems not listed above shall be for a period of one day. All operating instructions shall take place prior to acceptance and turnover. Where more detailed instructions for some equipment or systems are called for in other sections of the specifications, those sections of specifications shall take precedence over this section.

#### **1.19 CLEANING AND FINAL ADJUSTMENT**

- .1 Keep all mechanical systems and equipment clean.
- .2 Clean interior and exterior of all systems including strainers, and vacuuming of interior of ductwork and air handling units.
- .3 Clean and refurbish all equipment and leave in first class operating condition including replacement of all filters in all air and piping systems.

- .4 Balance and adjust all systems and each piece of equipment to operate efficiently.

**1.20 DRAWINGS**

- .1 Mechanical drawings are not intended to show structural details or architectural features.
- .2 **The Mechanical drawings are not to be scaled.**
- .3 Except where dimensioned, mechanical drawings indicate general Mechanical layouts only. Because of the small scale of Mechanical drawings, it is not possible to show all offsets, fittings and accessories which may be required. Investigate structural and finish conditions affecting this work and arrange work accordingly, providing such fittings, valves and accessories which are required to meet the conditions.

**1.21 EXISTING SITE CONDITIONS**

- .1 The Trade-Contractor shall visit the site of the building in order to examine first hand the existing conditions which may affect his contract. No compensation shall be considered for additional expenditures incurred later through failure to do so.

**1.22 INSTALLATION OF CONTROL INSTRUMENTS AND DEVICES**

- .1 All control valves and dampers supplied by Division 23 shall be installed by the respective Sections of Division 23.
- .2 Division 23 shall provide access doors in ductwork for all control instrumentation and devices installed in ductwork.

**END OF SECTION 21 05 01**

**Part 1            General**

**1.1                SUMMARY**

- .1 Section Includes:
  - .1 Materials and installation for wet pipe fire protection and sprinkler systems for heated areas.

**1.2                REFERENCES**

- .1 American National Standards Institute/National Fire Prevention Association (ANSI/NFPA)
  - .1 ANSI/NFPA 13-2007, Installation of Sprinkler Systems.
  - .2 ANSI/NFPA 24-2007, Installation of Private Fire Service Mains and Their Appurtenances.
  - .3 ANSI/NFPA 25-2008, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 Underwriter's Laboratories of Canada (ULC)
  - .1 CAN4 S543-M984, Standard for Internal Lug Quick Connect Couplings for Fire Hose.

**1.3                SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures.
    - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
    - .1 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in the Province of Nova Scotia, Canada.
- .3 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Test reports:
    - .1 Submit certified test reports for wet pipe fire protection sprinkler systems from approved independent testing laboratories, indicating compliance 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 Instructions: submit manufacturer's installation instructions.
- .4 Closeout Submittals:
  - .1 Submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals in accordance with ANSI/NFPA 20.
  - .2 Manufacturer's Catalog Data, including specific model, type, and size for:
    - .1 Sprinkler heads.
  - .3 Field Test Reports:
    - .1 Preliminary tests on piping system.
  - .4 Records:
    - .1 As-built drawings of each system.
      - .1 After completion, but before final acceptance, submit complete set of as-built drawings of each system for record purposes.
      - .2 Submit 760 mm by 1050 mm drawings on reproducible Mylar film with title block similar to full size contract drawings.

#### **1.4 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Installer: company or person specializing in wet sprinkler systems with documented experience approved by manufacturer.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

#### **1.5 MAINTENANCE**

- .1 Extra Materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Provide spare sprinklers and tools as required by ANSI/NFPA 13.

### **Part 2 Products**

#### **2.1 ABOVE GROUND PIPING SYSTEMS**

- .1 Provide fittings for changes in direction of piping and for connections.
  - .1 Make changes in piping sizes through tapered reducing pipe fittings, bushings will not be permitted.
- .2 Perform welding in shop; field welding will not be permitted.

- .3 Conceal piping in areas with suspended ceiling.

## **2.2 PIPE, FITTINGS AND VALVES**

- .1 Pipe:
  - .1 Ferrous: to ANSI/NFPA 13.
  - .2 Copper tube: to ANSI/NFPA 13.
- .2 Fittings and joints to ANSI/NFPA 13:
  - .1 Ferrous: screwed, welded, flanged or roll grooved.
  - .2 Copper tube: screwed, soldered, brazed.
  - .3 Provide welded, threaded, grooved-end type fittings into which sprinkler heads, sprinkler head riser nipples, or drop nipples are threaded.
  - .4 Plain-end fittings with mechanical couplings and fittings which use steel gripping devices to bite into pipe when pressure is applied will not be permitted.
  - .5 Fittings: ULC approved for use in wet pipe sprinkler systems.
  - .6 Ensure fittings, mechanical couplings, and rubber gaskets are supplied by same manufacturer.
  - .7 Side outlet tees using rubber gasketed fittings are not permitted.
  - .8 Sprinkler pipe and fittings: metal.
- .3 Pipe hangers:
  - .1 ULC listed for fire protection services in accordance with NFPA.

## **2.3 SPRINKLER HEADS**

- .1 General: to ANSI/NFPA 13 and ULC listed for fire services.
- .2 Sprinkler Head Type: See Drawings. Sprinklers shall be frangible bulb standard spray quick response type except where noted otherwise.
- .3 Provide nominal 1.2 cm orifice sprinkler heads.
  - .1 Release element of each head to be of intermediate temperature rating or higher as suitable for specific application.
  - .2 Provide polished stainless steel ceiling plates or chromium-plated finish on copper alloy ceiling plates, and chromium-plated pendent sprinklers below suspended ceilings.
  - .3 Provide corrosion-resistant sprinkler heads and sprinkler head guards in accordance with NFPA 13.
  - .4 Provide sprinkler heads as indicated.
  - .5 Deflector: not more than 75 mm below suspended ceilings.
  - .6 Ceiling plates: not more than 25 mm deep.
  - .7 Ceiling cups: 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 datasheet.

**3.2 INSTALLATION**

- .1 Install, inspect and test to acceptance in accordance with ANSI/NFPA 13 and ANSI/NFPA 25.

**3.3 PIPE INSTALLATION**

- .1 Install piping straight and true to bear evenly on hangers and supports. Do not hang piping from plaster ceilings.
- .2 Keep interior and ends of new piping and existing piping thoroughly cleaned of water and foreign matter.
- .3 Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of piping to prevent entry of water and foreign matter.
- .4 Inspect piping before placing into position.

**3.4 DISINFECTION**

- .1 Disinfect new piping and existing piping.
- .2 Fill piping systems with solution containing minimum of 50 parts per million of chlorine and allow solution to stand for minimum of 24 hours.
- .3 Flush solution from systems with clean water until maximum residual chlorine content is not greater than 0.2 part per million or residual chlorine content of domestic water supply.
- .4 Obtain at least two consecutive satisfactory bacteriological samples from piping, analyzed by certified laboratory, and submit results prior to piping being placed into service.

**3.5 FIELD QUALITY CONTROL**

- .1 Site Test, Inspection:
  - .1 Perform test to determine compliance with specified requirements in presence of Departmental Representative.
  - .2 Test, inspect, and approve piping before covering or concealing.
  - .3 Preliminary Tests:
    - .1 Hydrostatically test each system at 1379 kPa for a 2 hour period with no leakage or reduction in pressure.

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- .2 Flush piping with potable water in accordance with NFPA 13.
- .3 Piping above suspended ceilings: tested, inspected, and approved before installation of ceilings.

**END OF SECTION 21 13 13**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 33 00 - Submittal Procedures.

**1.2                REFERENCES**

- .1        American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
  - .1        ANSI/ASHRAE/IESNA 90.1-01, SI; Energy Standard for Buildings Except Low-Rise Residential Buildings.
- .2        American Society for Testing and Materials International, (ASTM)
  - .1        ASTM B209M-02, Specification for Aluminum and Aluminum Alloy Sheet and Plate (Metric).
  - .2        ASTM C335-95, Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.
  - .3        ASTM C449/C449M-00, Standard Specification for Mineral Fiber-Hydraulic-Setting Thermal Insulating and Finishing Cement.
  - .4        ASTM C547-00, Specification for Mineral Fiber Pipe Insulation.
  - .5        ASTM C553-00, Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
  - .6        ASTM C612-00a, Specification for Mineral Fiber Block and Board Thermal Insulation.
- .3        Canadian General Standards Board (CGSB)
  - .1        CGSB 51-GP-52Ma-89, Vapour Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
- .4        Thermal Insulation Association of Canada (TIAC): National Insulation Standards (R1999).
- .5        Underwriters Laboratories of Canada (ULC)
  - .1        CAN/ULC-S102-M88(R2000), Surface Burning Characteristics of Building Materials and Assemblies.
  - .2        CAN/ULC-S701-01, Thermal Insulation Polyotrene, Boards and Pipe Covering.

**1.3                DEFINITIONS**

- .1        For purposes of this section:
  - .1        "CONCEALED" - insulated mechanical services and equipment in suspended ceilings and non-accessible chases and furred-in spaces.
  - .2        "EXPOSED" - will mean "not concealed" as defined herein.
  - .3        Insulation systems - insulation material, fasteners, jackets, and other accessories.

- .2 TIAC Codes:
  - .1 CRD: Code Round Ductwork.
  - .2 CRF: Code Rectangular Finish.

#### **1.4 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit for approval manufacturer's catalogue literature related to installation, fabrication for duct jointing recommendations.

#### **1.5 SAMPLES**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit for approval: complete assembly of each type of insulation system, insulation, coating, and adhesive proposed. Mount sample on 12 mm plywood board. Affix typewritten label beneath sample indicating service.

#### **1.6 MANUFACTURERS' INSTRUCTIONS**

- .1 Submit manufacturer's installation instructions in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Installation instructions to include procedures used, and installation standards achieved.

#### **1.7 QUALIFICATIONS**

- .1 Installer: specialist in performing work of this section, and have at least 3 years successful experience in this size and type of project.

#### **1.8 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .2 Protect from weather and construction traffic.
- .3 Protect against damage from any source.
- .4 Store at temperatures and conditions recommended by manufacturer.

### **Part 2 Products**

#### **2.1 FIRE AND SMOKE RATING**

- .1 In accordance with CAN/ULC-S102:
  - .1 Maximum flame spread rating: 25.

- .2 Maximum smoke developed rating: 50.

## **2.2 INSULATION**

- .1 Mineral fibre: as specified includes glass fibre, rock wool, slag wool.
- .2 Thermal conductivity ("k" factor) not to exceed specified values at 24°C mean temperature when tested in accordance with ASTM C335.
- .3 TIAC Code C-1: Rigid mineral fibre board to ASTM C612, with factory applied vapour retarder jacket to CGSB 51-GP-52Ma (as scheduled in PART 3 of this Section).
- .4 TIAC Code C-2: Mineral fibre blanket to ASTM C553 faced with factory applied vapour retarder jacket to CGSB 51-GP-52Ma (as scheduled in PART 3 of this section).
  - .1 Mineral fibre: to ASTM C553.
  - .2 Jacket: to CGSB 51-GP-52Ma.
  - .3 Maximum "k" factor: to ASTM C553.

## **2.3 JACKETS**

- .1 Canvas:
  - .1 220 gm/m<sup>2</sup> cotton, plain weave, treated with dilute fire retardant lagging adhesive to ASTM C921.
- .2 Lagging adhesive: Compatible with insulation.

## **2.4 ACCESSORIES**

- .1 Vapour retarder lap adhesive:
  - .1 Water based, fire retardant type, compatible with insulation.
- .2 Indoor Vapour Retarder Finish:
  - .1 Vinyl emulsion type acrylic, compatible with insulation.
- .3 Insulating Cement: hydraulic setting on mineral wool, to ASTM C449.
- .4 ULC Listed Canvas Jacket:
  - .1 220 gm/m<sup>2</sup> cotton, plain weave, treated with dilute fire retardant lagging adhesive to ASTM C921.
- .5 Tape: self-adhesive, aluminum, reinforced, 50 mm wide minimum.
- .6 Contact adhesive: quick-setting
- .7 Canvas adhesive: washable.
- .8 Tie wire: 1.5 mm stainless steel.
- .9 Banding: 19 mm wide, 0.5 mm thick stainless steel.

- .10 Facing: 25 mm stainless galvanized steel hexagonal wire mesh stitched on one face both faces of insulation one face of insulation with expanded metal lath on other face.
- .11 Fasteners: 2 4 mm diameter pins with 35 mm diameter square clips, length to suit thickness of insulation.

**Part 3 Execution**

**3.1 PRE-INSTALLATION REQUIREMENTS**

- .1 Pressure testing of ductwork systems complete, witnessed and certified.
- .2 Surfaces clean, dry, free from foreign material.

**3.2 INSTALLATION**

- .1 Install in accordance with TIAC National Standards.
- .2 Apply materials in accordance with manufacturer's instructions and as indicated.
- .3 Maintain uninterrupted continuity and integrity of vapour retarder jacket and finishes.
  - .1 Hangers, supports to be outside vapour retarder jacket.
- .4 Fasteners: At 300 mm o.c. in horizontal and vertical directions, minimum two rows each side.

**3.3 DUCTWORK INSULATION SCHEDULE**

- .1 Insulation types and thicknesses: Conform to following table:

	<b>TIAC Code</b>	<b>Vapour Retarder</b>	<b>Thickness (mm)</b>
Rectangular cold and dual temperature supply air ducts	C-1	yes	50
Round cold and dual temperature supply air ducts	C-2	yes	50

**END OF SECTION 23 07 13**

**Part 1            General**

**1.1                SUMMARY**

- .1 Section Includes:
  - .1 Materials and installation of low-pressure metallic ductwork, joints and accessories.
- .2 Related Sections:
  - .1 Section 01 33 00 - Submittal Procedures.
  - .2 Section 01 35 28 - Health and Safety Requirements.

**1.2                REFERENCES**

- .1 American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE).
- .2 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM A480/A480M-03c, Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
  - .2 ASTM A635/A635M-02, Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot Rolled.
  - .3 ASTM A653/A653M-03, Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- .3 Department of Justice Canada (Jus).
  - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1 Material Safety Data Sheets (MSDS).
- .5 National Fire Protection Association (NFPA).
  - .1 NFPA 90A-02, Standard for the Installation of Air-Conditioning and Ventilating Systems.
  - .2 NFPA 90B-02, Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.
- .6 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).
  - .1 SMACNA HVAC Duct Construction Standards - Metal and Flexible, 2nd Edition 1995 and Addendum No. 1, 1997.
  - .2 SMACNA HVAC Air Duct Leakage Test Manual, 1985, 1st Edition.
  - .3 IAQ Guideline for Occupied Buildings Under Construction 1995, 1st Edition.
- .7 Transport Canada (TC).
  - .1 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

**1.3 SUBMITTALS**

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets for the following:
  - .1 Sealants.
  - .2 Tape.
  - .3 Proprietary Joints.

**1.4 QUALITY ASSURANCE**

- .1 Certification of Ratings:
  - .1 Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 28 - Health and Safety Requirements.
- .3 Indoor Air Quality (IAQ) Management Plan.
  - .1 During construction meet or exceed the requirements of SMACNA IAQ Guideline for Occupied Buildings under Construction.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Protect on site stored or installed absorptive material from moisture damage.

**Part 2 Products**

**2.1 SEAL CLASSIFICATION**

- .1 Classification as follows:

Maximum Pressure Pa	SMACNA Seal Class
750	C
250	C
125	C
125	Unsealed

- .2 Seal classification:
  - .1 Class A: longitudinal seams, transverse joints, duct wall penetrations and connections made airtight with sealant and tape.
  - .2 Class B: longitudinal seams, transverse joints and connections made airtight with sealant.
  - .3 Class C: transverse joints and connections made air tight with gaskets sealant. Longitudinal seams unsealed.

.4 Unsealed seams and joints.

## **2.2 SEALANT**

.1 Sealant: oil resistant, water based, polymer type flame resistant duct sealant. Temperature range of minus -30°C to +93°C.

## **2.3 TAPE**

.1 Tape: polyvinyl treated, open weave fiberglass tape, 5 mm wide.

## **2.4 DUCT LEAKAGE**

.1 In accordance with SMACNA HVAC Air Duct Leakage Test Manual.

## **2.5 FITTINGS**

.1 Fabrication: to SMACNA.

.2 Radiused elbows.

.1 Rectangular: standard radius short radius with single thickness turning vanes  
Centreline radius: 1.5 times width of duct.

.2 Round: smooth radius five piece. Centreline radius: 1.5 times diameter.

.3 Mitred elbows, rectangular:

.1 To 400 mm: with single thickness turning vanes.

.2 Over 400 mm: with double thickness turning vanes.

.4 Branches:

.1 Rectangular main and branch: with radius on branch 1.5 times width of duct 45 degrees entry on branch.

.2 Round main and branch: enter main duct at 45 degrees with conical connection.

.3 Provide volume control damper in branch duct near connection to main duct.

.4 Main duct branches: with splitter damper.

.5 Transitions:

.1 Diverging: 20 degrees maximum included angle.

.2 Converging: 30 degrees maximum included angle.

.6 Offsets:

.1 Full radiused elbows as indicated.

.7 Obstruction deflectors: maintain full cross-sectional area.

.1 Maximum included angles: as for transitions.

## **2.6 GALVANIZED STEEL**

.1 Lock forming quality: to ASTM A653/A653M, Z90 zinc coating.

.2 Thickness, fabrication and reinforcement: to SMACNA.

- .3 Joints: to SMACNA proprietary manufactured duct joint. Proprietary manufactured flanged duct joint to be considered to be a class A seal.

**Part 3 Execution**

**3.1 GENERAL**

- .1 Do work in accordance with NFPA 90A, NFPA 90B, ASHRAE, & SMACNA.
- .2 Do not break continuity of insulation vapour barrier with hangers or rods.
  - .1 Insulate strap hangers 100 mm beyond insulated duct Ensure diffuser is fully seated.
- .3 Support risers in accordance with SMACNA as indicated.
- .4 Install breakaway joints in ductwork on sides of fire separation.
- .5 Install proprietary manufactured flanged duct joints in accordance with manufacturer's instructions.
- .6 Manufacture duct in lengths and diameter to accommodate installation of acoustic duct lining where required.
- .7 Ground across flex connector with No. 2 braided copper strap.
- .8 Seal and protect duct work during construction. Cover open ends.

**3.2 HANGERS**

- .1 Strap hangers: install in accordance with SMACNA.
- .2 Angle hangers: complete with locking nuts and washers.
- .3 Hanger spacing: in accordance with SMACNA as follows:

Duct Size (mm)	Spacing (mm)
To 1500	3000
1501 and over	2500

**3.3 SEALING AND TAPING**

- .1 Apply sealant to outside of joint to manufacturer's recommendations.
- .2 Bed tape in sealant and recoat with minimum of one coat of sealant to manufacturer's recommendations.

**3.4 LEAKAGE TESTS**

- .1 In accordance with SMACNA HVAC Duct Leakage Test Manual.

- .2 Do leakage tests in sections.
- .3 Make trial leakage tests as instructed to demonstrate workmanship.
- .4 Do not install additional ductwork until trial test has been passed.
- .5 Test section minimum of 30 m long with not less than three branch takeoffs and two 90 degrees elbows.
- .6 Complete test before performance insulation or concealment of work.

**END OF SECTION 23 31 13**

**Part 1            General**

**1.1                SUMMARY**

- .1            Section Includes:
  - .1            Materials and installation of flexible ductwork, joints and accessories.

**1.2                RELATED SECTIONS:**

- .1            Section 01 33 00 - Submittal Procedures.
- .2            Section 01 35 30 - Health and Safety Requirements.

**1.3                REFERENCES**

- .1            American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE).
- .2            Department of Justice Canada (Jus).
  - .1            Canadian Environmental Protection Act (CEPA), 1999, c. 33.
  - .2            Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34.
- .3            Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1            Material Safety Data Sheets (MSDS).
- .4            National Fire Protection Association (NFPA).
  - .1            NFPA 90A-02, Standard for the Installation of Air-Conditioning and Ventilating Systems.
  - .2            NFPA 90B-02, Standard for Installation of Warm Air Heating and Air-Conditioning Systems.
- .5            Sheet Metal and Air-Conditioning Contractors' National Association (SMACNA).
  - .1            SMACNA HVAC Duct Construction Standards - Metal and Flexible, 95 (Addendum No.1, November 1997).
  - .2            SMACNA IAQ Guideline for Occupied Buildings under Construction, 1st Edition 1995.
- .6            Underwriters' Laboratories Inc. (UL).
  - .1            UL 181-96, Standard for Factory-Made Air Ducts and Air Connectors.
- .7            Underwriters' Laboratories of Canada (ULC).
  - .1            CAN/ULC-S110-1986 (R2001), Fire Tests for Air Ducts.

**1.4                SUBMITTALS**

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

- .2 Samples: submit samples with product data of different types of flexible duct being used in accordance with Section 01 33 00 - Submittal Procedures.

## **1.5 QUALITY ASSURANCE**

- .1 Certification of Ratings:
  - .1 Catalogue or published ratings to be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

## **Part 2 Products**

### **2.1 GENERAL**

- .1 Factory fabricated to CAN/ULC-S110.
- .2 Pressure drop coefficients listed below are based on relative sheet metal duct pressure drop coefficient of 1.00.
- .3 Flame spread rating not to exceed 25. Smoke developed rating not to exceed 50.

### **2.2 METALLIC - INSULATED**

- .1 Type 2 : spiral wound flexible aluminum with factory applied, 37mm thick flexible glass fibre thermal insulation with vapour barrier and vinyl reinforced mylar/neoprene laminate aluminum jacket, as indicated.
- .2 Performance:
  - .1 Factory tested to 2.5 kPa without leakage.
  - .2 Maximum relative pressure drop coefficient: 3.

### **2.3 NON-METALLIC - INSULATED**

- .1 Type 3: non-collapsible, coated mineral base fabric aluminum foil/mylar type mechanically bonded to, and helically supported by, external steel wire with factory applied, 37mm thick flexible mineral fibre thermal insulation with vapour barrier and vinyl reinforced mylar/neoprene laminate jacket, as indicated.
- .2 Performance:
  - .1 Factory tested to 2.5 kPa without leakage.
  - .2 Maximum relative pressure drop coefficient: 3.

**Part 3            Execution**

**3.1                DUCT INSTALLATION**

- .1        Install in accordance with: CAN/ULC-S110 UL-181 NFPA 90A, NFPA 90B, SMACNA.
- .2        Located between air terminal units and diffusers in concealed locations.
- .3        Maximum length 2.0m. Minimum 2 hangers per length.
- .4        Connections to be made airtight with duct tape.

**END OF SECTION 23 33 46**

**Part 1            General**

**1.1                SUMMARY**

- .1            Section Includes:
  - .1            Supply, return and exhaust grilles and registers, diffusers and linear grilles, for commercial and residential use.

**1.2                SYSTEM DESCRIPTION**

- .1            Performance Requirements:
  - .1            Catalogued or published ratings for manufactured items: obtained from tests carried out by manufacturer or those ordered by manufacturer from independent testing agency signifying adherence to codes and standards.

**1.3                SUBMITTALS**

- .1            Product Data:
  - .1            Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
    - .1            Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
  - .2            Indicate following:
    - .1            Capacity.
    - .2            Throw and terminal velocity.
    - .3            Noise criteria.
    - .4            Pressure drop.
    - .5            Neck velocity.
- .2            Samples:
  - .1            Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .3            Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
  - .1            Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .2            Instructions: submit manufacturer's installation instructions.
    - .1            Departmental Representative will make available 1 copy of systems supplier's installation instructions.

#### **1.4 QUALITY ASSURANCE**

- .1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

#### **1.5 MAINTENANCE**

- .1 Extra Materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Include:
    - .1 Keys for volume control adjustment.
    - .2 Keys for air flow pattern adjustment.

### **Part 2 Products**

#### **2.1 GENERAL**

- .1 To meet capacity, pressure drop, terminal velocity, throw, noise level, neck velocity as indicated.
- .2 Frames:
  - .1 Full perimeter gaskets.
  - .2 Plaster frames where set into plaster or gypsum board and as specified.
  - .3 Concealed fasteners.
- .3 Concealed manual volume control damper operators.
- .4 Colour: standard as directed by Departmental Representative.

#### **2.2 MANUFACTURED UNITS**

- .1 Grilles, registers and diffusers of same generic type, products of one manufacturer.

#### **2.3 RETURN AND EXHAUST GRILLES AND REGISTERS**

- .1 General: with opposed blade dampers.
- .2 Type R & E: steel, 19 mm border, single 0 45 degrees deflection, horizontal face bars. Model: as indicated on drawings.

#### **2.4 DIFFUSERS**

- .1 General: volume control dampers with flow straightening devices and blank-off quadrants and gaskets.
- .2 Type S: steel aluminum, square type, having fixed pattern, lay-in. Model: as indicated on drawings.

**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 datasheet.

**3.2                INSTALLATION**

- .1        Install in accordance with manufacturers instructions.
- .2        Install with flat head oval head stainless steel cadmium plated screws in countersunk holes where fastenings are visible.

**END OF SECTION 23 37 13**

**Part 1            General**

**1.1                SUMMARY**

- .1            Section Includes:
  - .1            At minimum, Shop Drawings for EMCS to include a detailed narrative description of Sequence of Operation of each system including ramping periods and reset schedules if required:
    - .1            Control Description Logic (CDL) for each system.
    - .2            Input/Output Point Summary Tables for each system.
    - .3            System Diagrams consisting of the following; EMCS System architectural diagram, Control Design Schematic for each system (as viewed on OWS), System flow diagram for each system with electrical ladder diagram for MCC starter interface.

**1.2                REFERENCES**

- .1            Public Works and Government Services Canada (PWGSC) / Real Property Branch / Architectural and Engineering Services:
  - .1            MD13800-September 2000, Energy Management and Control Systems (EMCS) Design Manual. English: <ftp://ftp.pwgsc.gc.ca/rps/docentre/mechanical/me214-e.pdf>

**Part 2            Products**

**2.1                STANDARD ROUTINES**

- .1            Refer to sequence of operation shown on control schematic.
- .2            Work to be done by Johnson Controls

**Part 3            Execution**

**3.1**

- .1            Not Used.

**END OF SECTION 25 90 01**

**Part 1            General**

**1.1                SUMMARY**

- .1        Section Includes:
  - .1        General requirements that are common to Sections of Division 26 - Electrical and Division 28 - Electronic Safety and Security.
  - .2        Sustainable requirements for construction and verification.

**1.2                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.

**1.3                REFERENCES**

- .1        Canadian Standards Association (CSA International) Latest Edition of the following:
  - .1        CSA C22.1-12, Canadian Electrical Code.
  - .2        CAN/CSA-C22.3 No. 1-01, Overhead Systems.
  - .3        CAN3-C235-83, (R2010), Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
- .2        Electrical and Electronic Manufacturer's Association of Canada (EEMAC) Latest Edition of the following:
  - .1        EEMAC 2Y-1, (1958) Light Gray Colour for Indoor Switch Gear.
- .3        Health Canada / Workplace Hazardous Materials Information System (WHMIS) Latest Edition of the following:
  - .1        Material Safety Data Sheets (MSDS).

**1.4                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.

**1.5                DESIGN REQUIREMENTS**

- .1        Operating voltages: to CAN3-C235.
- .2        Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

- .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates and labels for control items in English and French.
- .4 Use one nameplate or label for each language.

## **1.6 SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Indicate details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or material.
  - .2 Where applicable, include wiring, single line and schematic diagrams.
  - .3 Include wiring drawings or diagrams showing interconnection with work of other Sections.
- .2 Product Data: submit WHMIS MSDS in accordance with sections of Division 01 as applicable.
- .3 Shop drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province(s) of Canada.
  - .2 Submit two (2) copies of drawings and specification to Authority Having Jurisdiction and inspection authorities.
  - .3 If changes are required, notify Departmental Representative of these changes before they are made.
- .4 Quality Control: in accordance with sections of Division 01 as applicable.
  - .1 Provide CSA certified equipment and material.
  - .2 Where CSA certified equipment and material is not available, submit such equipment and material to inspection authorities for special approval before delivery to site.
  - .3 Submit test results of installed electrical systems and instrumentation.
  - .4 Permits and fees: in accordance with General Conditions of contract.
  - .5 Submit, upon completion of Work, load balance report as described in PART 3 - Load Balance.
  - .6 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Departmental Representative.
- .5 Manufacturer's Field Reports: submit to Departmental Representative manufacturer's written report, within three (3) days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.

## **1.7 OPERATION AND MAINTENANCE DATA**

- .1 Provide operation and maintenance data for incorporation into operation and maintenance manual specified in Section 01 33 00 – Submittal Procedures.

- .2 Include in Operation and Maintenance Data:
  - .1 Details of design elements, construction requirements, to permit effective start-up, operation, maintenance, repair, modification, extension and expansion of any portion of feature of installation.
  - .2 Technical data, product data, supplemented by bulletins, component illustrations, exploded view, technical descriptions of items and parts lists. Advertising or seals literature not acceptable.
  - .3 Wiring and schematic diagrams and performance curves.
  - .4 Names and addresses of local suppliers for items included in maintenance manuals.
  - .5 Copy of reviewed shop drawings.

## **1.8 MAINTENANCE MATERIALS**

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

## **1.9 QUALITY ASSURANCE**

- .1 Quality Assurance: in accordance with Sections of Division 01 as applicable.
- .2 Qualifications: electrical Work to be carried out by qualified, licensed electricians who hold valid Master Electrical Contractor license or apprentices in accordance with authorities having jurisdiction as per the conditions of Provincial Act respecting manpower vocational training and qualification.
  - .1 Employees registered in provincial apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.
  - .2 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.
- .3 Site Meetings:
  - .1 In accordance with Construction Progress Schedule - Critical Path Method (CPM) of Division 01 as applicable.
  - .2 Site Meetings: as part of Manufacturer's Field Services described in Part 3 - FIELD QUALITY CONTROL, and/or in appropriate NMS Section, schedule site visits, to review Work, at stages listed.
    - .1 After delivery and storage of products, and when preparatory Work is complete but before installation begins.
    - .2 Twice during progress of Work at 25% and 60% complete.
    - .3 Upon completion of Work, after cleaning is carried out.
- .4 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 28 - Health and Safety Requirements.

## **1.10 DELIVERY, STORAGE AND HANDLING**

- .1 Material Delivery Schedule: provide Departmental Representative with schedule within 30 days after award of Contract.
- .2 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Sections of Division 01 as applicable.

**1.11 SYSTEM STARTUP**

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

**1.12 OPERATING INSTRUCTIONS**

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

**1.13 ELECTRICAL DRAWINGS**

- .1 Drawings are diagrammatic.
- .2 Obtain accurate dimensions from architectural and equipment layout drawings.

**1.14 VOLTAGE RATINGS**

- .1 Operating Voltages: to CAN3-C235-83(R2010) - Preferred Voltage Levels for AC Systems 0 to 50,000V.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

**1.15 PERMITS, FEES AND INSPECTION**

- .1 Submit to Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.
- .2 Obtain an electrical work permit and pay associated fees.
- .3 Departmental Representative will provide drawings, specifications required by Electrical Inspection Department and Supply Authority at no cost.
- .4 Notify Departmental Representative of changes required by the Inspection Department prior to making changes.
- .5 Furnish Certificates of Acceptance from Electrical Inspection Department on completion of work to Departmental Representative.
- .6 Within 30 days of award of contract, submit a list of suppliers and delivery dates for equipment.

**Part 2 Products**

**2.1 MATERIALS AND EQUIPMENT**

- .1 Provide material and equipment in accordance with sections of Division 01 as applicable.
- .2 Material and equipment to be CSA certified. Where CSA certified material and equipment are not available, obtain special approval from authority having jurisdiction, inspection authorities before delivery to site and submit such approval as described and Section 01 33 00 - Submittal Procedures.
- .3 Factory assemble control panels and component assemblies.

**2.2 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS**

- .1 Verify installation and co-ordination responsibilities related to motors, equipment and controls, as indicated.
- .2 Division 26 responsibility is as follows:
  - .1 Supply and installation of breakers and/or switches.
  - .2 Supply and installation of power feeder (conduit and wire) from panel to starter, from starter to disconnect switch and from disconnect switch to motor.
  - .3 Supply and installation of starters complete with motor protection unless noted otherwise.
  - .4 Supply and installation of disconnect switches at motors unless noted otherwise on mechanical drawings.
  - .6 Supply and installation of 120V power feeders to mechanical equipment such as time clocks and control panels.
- .3 Control wiring and conduit is by Division 25 unless noted otherwise on electrical drawings.

### 2.3 WARNING SIGNS

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

### 2.4 WIRING TERMINATIONS

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

### 2.5 EQUIPMENT IDENTIFICATION

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

NAMEPLATE SIZES			
Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .3 Wording on nameplates to be approved by Departmental Representative prior to manufacture.
- .4 Allow for minimum of twenty-five (25) letters per nameplate.
- .5 Identification to be English and French. Use one (1) nameplate for each language.
- .6 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .7 Disconnects, starters and contactors: indicate equipment being controlled and voltage.
- .8 Terminal cabinets and pull boxes: indicate system and voltage.
- .9 Transformers: indicate capacity, primary and secondary voltages.
- .10 Receptacles: Mounted above device plate, to indicate panel and circuit number.
- .11 Communications, voice, data, radio, CATV outlets: Size 1 nameplate.

### 2.6 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1-12.

- .4 Use colour coded wires in communication cables, matched throughout system.

## 2.7 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	PRIMARY	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
51-240V	Yellow	
Above 240V	Yellow	Green
Telephone	Green	
Public Address	Blue	
Data	Blue	White
Security	Brown	
Fire Alarm	Red	
Television		
Emergency Lighting & Exit Signs	(ac) Orange	White
Emergency Lighting & Exist Signs	(dc) Brown	White
Mechanical Controls	Orange	

## 2.8 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
- .1 Paint outdoor electrical equipment "equipment green" finish to EEMACV1-1-1955.
- .2 Paint indoor switchgear and distribution enclosures light gray to EEMAC 2Y-1-1958.

## 2.9 ACCEPTANCE OF ALTERNATIVE MATERIALS

- .1 Acceptable Manufacturer:
- .1 Where materials are specified by the trade name, refer to the "Special Instructions to Tenderers" form for procedure to be followed in applying for approval of alternatives.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Do complete installation in accordance with CSA C22.1-12 except where specified otherwise.
- .2 Do overhead and underground systems in accordance with CSA C22.3 No.1 except where specified otherwise.

**3.2 NAMEPLATES AND LABELS**

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

**3.3 CONDUIT AND CABLE INSTALLATION**

- .1 Install conduit and sleeves prior to pouring of concrete.
  - .1 Sleeves through concrete: schedule 40 steel pipe, sized for free passage of conduit, and protruding 50 mm.
- .2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .3 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.

**3.4 LOCATION OF OUTLETS**

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

**3.5 MOUNTING HEIGHTS**

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

- .3 Install electrical equipment at following heights unless indicated otherwise.
  - .1 Local switches: 1220 mm.
  - .2 Wall receptacles:
    - .1 General: 460 mm.
    - .2 Above top of continuous baseboard heater: 200 mm.
    - .3 Above top of counters or counter splash backs: 175 mm.
    - .4 In mechanical rooms: 1220 mm.
  - .3 Wall mounted fire alarm speaker/strobes: 1220 mm.
  - .4 Wall mounted speakers: 2100 mm.

### 3.6 FIELD QUALITY CONTROL

- .1 Conduct and pay for following tests in accordance with Sections of Division 01 as applicable:
  - .1 Circuits originating from branch distribution panels.
  - .2 Lighting and its control.
  - .3 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
  - .4 Systems: fire alarm system, communications, intercom/PA, emergency lighting and exit signs.
  - .5 Insulation resistance testing:
    - .1 Megger circuits, feeders and equipment up to 350V with a 500V instrument.
    - .2 Megger 350-600 V circuits, feeders and equipment with a 1000V instrument.
    - .3 Check resistance to ground before energizing.
    - .4 Replace conductors as required.
- .2 Carry out tests in presence of Departmental Representative.
- .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .4 Manufacturer's Field Services:
  - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
  - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
  - .3 Schedule site visits, to review Work, as directed in Quality Control sections of Division 01 as applicable.
- .5 Verification requirements in accordance with Sections of Division 01 including:
  - .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.

### **3.7 FIRESTOPPING & SMOKE SEALS**

- .1 Do this work in accordance with Sections of Division 01 as applicable.
- .2 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

### **3.8 FIREPROOFING**

- .1 Where cables or conduits pass through floors and fire rated walls, pack space between wiring and sleeve fill with Dow Corning RTV Foam Sealant System and seal with caulking compound conforming to CAN/CGSB 19.130 M82.

### **3.9 AS-BUILT RECORD DRAWING BY CONTRACTOR**

- .1 General: To be read in conjunction with Section 01 78 00 - Closeout Submittals.
- .2 Site Records:
  - .1 Obtain sets of white prints and mark thereon all changes as work progresses and as changes occur. Incorporate all information issued in Addenda, Site Instructions, Change Orders and all changes in actual installation as a result of site conditions and coordination. At the end of the project, obtain a copy of CAD files of tender documents and update the CAD files to reflect the As-Built conditions.
- .3 As-Built Drawings:
  - .1 Prior to start of testing, balancing and adjusting, finalize production of as-built drawings.
  - .2 Identify each drawing in lower right hand corner in letters at least 1/2" high as follows: AS-BUILT DRAWINGS (This drawing has been revised to show electrical systems as installed) (Signature of Contractor) (Date).
  - .3 Submit to the Project Manager for approval and make all corrections as directed.
  - .4 Testing, balancing and adjusting to be performed using as-built drawings.
  - .5 Hand over 100 % updated CAD files and one hard copy of as-built drawings with Operating and Maintenance Manuals.
- .4 Provide a report on the status of the as-built drawings with each monthly Progress Claim.
- .5 At the Project Completion Stage, provide one (1) set of up-to-date prints of "As-Built" drawings, to the Departmental Representative for review.

**3.10 CLEANING**

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

***END OF SECTION 26 05 00***

**Part 1            General**

**1.1                SECTION INCLUDES**

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

**1.2                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.

**1.3                REFERENCES**

- .1        Canadian Standards Association (CSA International) Latest Edition of the following:
  - .1        CSA C22.1-12, Canadian Electrical Code.
  - .2        CAN/CSA-C22.2, No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.
  - .3        CSA C22.2 No. 65 Wire Connectors.
- .2        Electrical and Electronic Manufacturers' Association of Canada (EEMAC) Latest Edition of the following:
  - .1        EEMAC 1Y-2, 1961 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).
- .3        National Electrical Manufacturers Association (NEMA) Latest Edition.

**1.4                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate and recycle waste materials in accordance with Sections of Division 01 as applicable.
- .2        Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3        Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .4        Divert unused wiring materials from landfill to metal recycling facility as approved by Departmental Representative.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Pressure type wire connectors with current carrying parts of copper sized to fit copper conductors as required.
- .2 Fixture type splicing connectors with current carrying parts of copper sized to fit copper conductors 10 AWG or less.
- .3 Bushing stud connectors to consist of:
  - .1 Connector body and stud clamp for stranded, copper or conductors .
  - .2 Clamp for stranded copper conductors.
  - .3 Stud clamp bolts.
  - .4 Bolts for copper conductors.
  - .5 Bolts for aluminum conductors.
  - .6 Sized for conductors as indicated.
- .4 Clamps or connectors for armoured cable, flexible conduit, as required.
- .5 Joints required in connecting all wiring up to and including # 8, are to be made using twist-on connectors.
- .6 Joints for all other wiring shall be made using T&B or Ideal colour-keyed compression type connectors. A first layer of tape shall be compound type followed by a layer of Scotch # 33 vinyl plastic tape.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Remove insulation carefully from ends of conductors 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 CSA C22.2 No. 65.
  - .3 Install fixture type connectors and tighten. Replace insulating cap.
  - .4 Install bushing stud connectors in accordance with EEMAC 1Y-2 NEMA.

***END OF SECTION 26 05 20***

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.
- .7        Section 26 05 20 - Wire and Box Connectors - 0 - 1000V.

**1.2                REFERENCES**

- .1        CSA C22.2 No .0.3-96, Test Methods for Electrical Wires and Cables Latest Edition.

**1.3                PRODUCT DATA**

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

**1.4                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate and recycle waste materials in accordance with sections of Division 01 as applicable.
- .2        Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
- .3        Fold up metal banding, flatten and place in designated area for recycling.

**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 600V insulation of chemically cross-linked thermosetting polyethylene material rated RW90.
- .3        Neutral conductor insulated for 600V shall be continuous with no fuses, switches, or breaks of any kind.
- .4        Wiring for specialized systems such as fire alarm and public address, etc. shall be indicated in other sections or on drawings.

- .5 The voltage drop in no case shall exceed 3% of the line volts for 15A, 120V branch circuits. The following table shall be used:

<b>Branch Circuit Run From Panel to Load Incl. Vertical Drops</b>	<b>Branch Circuit Conductor Size</b>	<b>Dedicated Neutral</b>	<b>Common Neutral</b>	<b>Bond Wire Size</b>
24.4M	#12	#12	#10	#14
24.4M - 38.1M	#10	#10	#8	#12
38.2M 0 56.4M	#8	#8	#6	#10
56.M – 103.5M	#6	#6	#4	#8

- .6 Oversized #10 AWG branch circuit wiring conductors to be extended to outlet box of device they feed. Oversized #8 AWG branch circuit wiring conductors to be extended from panelboard to junction box located on wall or ceiling directly above receptacles. #8 AWG wire to be reduced to #10 AWG for vertical portion of drop only.
- .7 Voltage drop calculation: distance is measured to the last device along the conductor run.

## 2.2 ARMOURED CABLES

- .1 Conductors: insulated, copper, size as indicated.
- .2 Type: AC90.
- .3 Armour: interlocking type fabricated from galvanized steel strip.
- .4 Connectors: Steel set screw.
- .5 AC-90 cables may only be used:
- .1 As individual cable drops from junction boxes to fixtures provided they are not longer than 1.5M, do not run from room to room and are adequately supported.
  - .2 The wiring of outlets or devices in cabinetry where it is impractical to install conduit.

## Part 3 Execution

### 3.1 INSTALLATION OF BUILDING WIRES

- .1 Install wiring as follows:
- .1 In conduit systems in underground, trenches and accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings .
  - .2 Use vibration proof expanding spring wire connectors for No. 10 and smaller.

### 3.2 INSTALLATION OF ARMOURED CABLES

- .1 Group cables wherever possible.

- .2 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - 0 - 1000V.
- .3 Fixture drops are to run from the junction box in the respective room and not to fixtures in other rooms. Fixture drops shall be from the side of the outlet boxes and not through the coverplate. Maximum of four fixture drops from any single junction box. AC 90 cables shall be secured within one foot of the junction boxes.
- .4 Support and securing of AC 90 cables shall not be derived from suspended ceiling support wires or by laying on top of the ceiling.

***END OF SECTION 26 05 21***

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.

**1.2                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate and recycle waste materials in accordance with sections of Division 01 as applicable.
- .2        Remove from site and dispose of all 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.
- .4        Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
- .5        Fold up metal banding, flatten and place in designated area for recycling.

**Part 2            Products**

**2.1                SUPPORT CHANNELS**

- .1        U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted or suspended.

**Part 3            Execution**

**3.1                INSTALLATION**

- .1        Secure equipment to hollow or solid masonry, tile and plaster surfaces with lead anchors or nylon shields.
- .2        Secure equipment to poured concrete with expandable inserts.
- .3        Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

- .4 Secure surface mounted equipment with twist clip fasteners to inverted T-bar ceilings. Ensure that T-bars are adequately supported to carry weight of equipment specified before installation.
- .5 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.
- .6 Fasten exposed conduit or cables to building construction or support system using straps.
  - .1 One-hole steel straps to secure surface conduits and cables 50mm and smaller.
  - .2 Two-hole steel straps for conduits and cables larger than 50mm.
  - .3 Beam clamps to secure conduit to exposed steel work.
- .7 Suspended support systems.
  - .1 Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.
  - .2 Support two (2) or more cables or conduits on channels supported by 6 mm dia. threaded rod hangers where direct fastening to building construction is impractical.
- .8 For surface mounting of two or more conduits use channels at 1.5m on centre spacing.
- .9 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.
- .10 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
- .11 Do not use wire lashing or perforated strap to support or secure raceways or cables.
- .12 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.
- .13 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.
- .14 Powder actuated fasteners are not acceptable.

***END OF SECTION SECTION 26 05 29***

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.

**1.2                SHOP DRAWINGS AND PRODUCT DATA**

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

**1.3                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate and recycle waste materials in accordance with sections of Division 01 as applicable and with the Waste Reduction Workplan.
- .2        Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
- .3        Fold up metal banding, flatten and place in designated area for recycling.

**Part 2            Products**

**2.1                SPLITTERS**

- .1        Sheet metal enclosure, welded corners and formed hinged cover suitable for locking in closed position.
- .2        Main and branch lugs to match required size and number of incoming and outgoing conductors as indicated.
- .3        At least three spare terminals on each set of lugs in splitters less than 400 A.

**2.2                JUNCTION AND PULL BOXES**

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

### **2.3 CABINETS**

- .1 Type E: sheet steel, hinged door and return flange overlapping sides, handle, lock and catch, for surface mounting.
- .2 Type T: sheet steel cabinet, with hinged door, latch, lock, 2 keys, containing 19mm G1S plywood backboard for surface mounting.

### **Part 3 Execution**

#### **3.1 SPLITTER INSTALLATION**

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

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

- .1 Install pull boxes in inconspicuous but accessible locations.
- .2 Mount cabinets with top not higher than 2m above finished floor.
- .3 Install terminal block as indicated in Type T cabinets.
- .4 Only main junction and pull boxes are indicated. Install pull boxes so as not to exceed 30m of conduit run or 2-90° bends between pull boxes.

#### **3.3 IDENTIFICATION**

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results - Electrical.
- .2 Install size 2 identification labels indicating system name, voltage and phase.

***END OF SECTION 26 05 31***

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.

**1.2                REFERENCES**

- .1        CSA C22.1-12, Canadian Electrical Code, Part 1, Latest Edition.

**1.3                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate and recycle waste materials in accordance with Sections of Division 01 as applicable and with the Waste Reduction Workplan.
- .2        Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

**Part 2            Products**

**2.1                OUTLET AND CONDUIT BOXES GENERAL**

- .1        Size boxes in accordance with CSA C22.1 - 2006.
- .2        102 mm square or larger outlet boxes as required for special devices.
- .3        Gang boxes where wiring devices are grouped.
- .4        Blank cover plates for boxes without wiring devices.
- .5        347 V outlet boxes for 347 V switching devices.
- .6        Combination boxes with barriers where outlets for more than one system are grouped.

**2.2                SHEET STEEL OUTLET BOXES**

- .1        Electro-galvanized steel 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.

- .2 Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 x 54 x 48 mm.
- .3 102 mm square or octagonal outlet boxes for lighting fixture outlets.
- .4 102 mm square outlet boxes with extension and plaster rings for flush mounting devices in finished plaster walls.

### **2.3 MASONRY BOXES**

- .1 Electro-galvanized steel masonry single and multi gang boxes for devices flush mounted in exposed block walls.

### **2.4 CONCRETE BOXES**

- .1 Electro-galvanized sheet steel concrete type boxes for flush mount in concrete with matching extension and plaster rings as required.

### **2.5 FLOOR BOXES**

- .1 Concrete tight electro-galvanized sheet steel floor boxes with adjustable finishing rings to suit floor finish with brass faceplate. Device mounting plate to accommodate short or long ear duplex or single receptacles. Minimum depth: 28 mm for receptacles; 73 mm for communication equipment.
- .2 Adjustable, watertight, concrete tight, cast floor boxes with openings drilled and tapped for 12 mm and 19 mm conduit. Minimum size: 73 mm deep.

### **2.6 CONDUIT BOXES**

- .1 Cast FS or boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacle.

### **2.7 FITTINGS FOR FLEXIBLE CONDUIT**

- .1 Threaded type steel couplings and fittings.
- .2 Bushing and connectors with nylon insulated throats.
- .3 Knock-out fillers to prevent any debris.
- .4 Conduit outlet bodies for conduit up to 35mm and pull boxes for larger conduits.
- .5 Double locknuts and insulated bushings on sheet metal boxes.
- .6 Compression nut, grounding ferrule, sealing ring and body shop.

**2.8 FITTINGS FOR THIN WALL CONDUIT**

- .1 Steel set screw type connectors and couplings.
- .2 Double locknuts and insulated bushings on sheet metal boxes.

**2.9 FITTINGS IN WET OR DAMP LOCATIONS**

- .1 Watertight fittings on conduit in wet or damp locations.

**2.10 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 32 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. Reducing washers are not allowed.

***END OF SECTION 26 05 32***

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.

**1.2                REFERENCES**

- .1        Canadian Standards Association (CSA) Latest Edition of the following:
  - .1        CSA C22.1-12, Canadian Electrical Code.
  - .2        CAN/CSA C22.2, Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware.
  - .3        CSA C22.2 No. 45, Rigid Metal Conduit.
  - .4        CSA C22.2 No. 56, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
  - .5        CSA C22.2 No. 83, Electrical Metallic Tubing.
  - .6        CSA C22.2 No. 211.2, Rigid PVC (Unplasticized) Conduit.

**1.3                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate and recycle waste materials in accordance with Sections of Division 01 as applicable, and with the Waste Reduction Workplan.
- .2        Place materials defined as hazardous or toxic waste in designated containers.
- .3        Ensure emptied containers are sealed and stored safely for disposal away from children.
- .4        Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

**Part 2            Products**

**2.1                CONDUITS**

- .1        Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.
- .2        Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.

- .3 Rigid pvc conduit: to CSA C22.2 No. 211.2.
- .4 Flexible metal conduit: to CSA C22.2 No. 56, steel and liquid-tight flexible metal.

## **2.2 CONDUIT FASTENINGS**

- .1 One hole steel straps to secure surface conduits 50mm and smaller. Two hole steel straps for conduits larger than 50mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits at 1.5m oc.
- .4 Threaded rods, 6 mm dia., to support suspended channels.

## **2.3 CONDUIT FITTINGS**

- .1 Galvanized rigid steel couplings shall be used with all rigid steel threaded conduit.
- .2 Rain tight EMT connectors shall be used on "vertical" sections of conduit runs where terminating into tops of electrical equipment incorporating drip shields or hoods.
- .3 Fittings: Use steel set screw connectors for EMT. Coating: same as conduit.
- .4 Factory "ells" where 90 degree bends are required for 27mm and larger conduits.
- .5 Couplings and connectors for PVC rigid conduit shall be CSA approved for their respective use.
- .6 Connectors for flexible conduit, shall be set screw galvanized steel.
- .7 Connectors for liquid tight flexible conduit shall be water tight, compression type galvanized steel.
- .8 Threaded plastic or metal bushings to be installed on all EMT connectors sizes 35mm and larger.
- .9 Fittings: manufactured for use with conduit specified. Coating: same as conduit.
- .10 Factory "ells" where 90E bends are required for NPS 1 25 mm and larger conduits.

## **2.4 FISH CORD**

- .1 Polypropylene.

**Part 3 Execution**

**3.1 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 and in unfinished areas.
- .3 Use rigid galvanized steel threaded conduit for branch circuits in hazardous areas.
- .4 EMT shall be installed as a complete system.
- .5 Support of electrical systems raceway shall be independent of any type of suspended ceiling support rods, wires, etc. and mechanical piping or duct systems.
- .6 Use electrical metal tubing (EMT) for all work, unless otherwise indicated, for panelboard feeders, branch circuit wiring, fire alarm and communications, etc., where not installed underground unless specifically indicated otherwise. Provide a separate green ground for all conduit systems, including E.M.T.
- .7 Flexible Metal Conduit:
  - .1 Use flexible metal conduit for connection to surface or recessed fluorescent fixtures.
  - .2 Flexible metal conduit, permitted above T-bar ceilings, for drops to various fire alarm devices mounted on flush outlet boxes in finished ceiling. Minimum size of flexible conduit: 21mm, Maximum length of drop: 1.5 meters.
  - .3 For connection to access Floor Boxes and under floor smoke detectors, include a separate ground wire.
- .8 Use flexible metal conduit for connection to motors in dry areas connection to recessed incandescent fixtures without a prewired outlet box connection to surface or recessed fluorescent fixtures work in movable metal partitions.
- .9 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment, furniture and transformers. Include a separate ground wire.
- .10 Install conduit sealing fittings in hazardous areas. Fill with compound.
- .11 Minimum conduit size for lighting and power circuits: 21mm.
- .12 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .13 Mechanically bend steel conduit over 21mm dia.
- .14 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .15 Install fish cord in empty conduits.

- .16 Run 2-25 mm spare conduits up to ceiling space and 2-25 mm spare conduits down to ceiling space from each flush panel. 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.
- .17 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- .18 Dry conduits out before installing wire.
- .19 Securely fasten in place within 1 meter of each outlet box, junction box, cabinet, coupling or fitting, maximum spacing between supports as follows:
  - .1 1.5 meters for 21mm EMT.
  - .2 2.1 meters for 27mm and 35mm EMT.
  - .3 3 meters for 41mm EMT and larger.
- .20 Ground Wires:
- .21 Provide a separate green ground wire in all conduit, including EMT.

### **3.2 SURFACE CONDUITS**

- .1 Run parallel or perpendicular to building lines.
- .2 Run conduits in flanged portion of structural steel.
- .3 Group conduits wherever possible on suspended or surface channels.
- .4 Do not pass conduits through structural members except as indicated.
- .5 Do not locate conduits less than 75mm parallel to steam or hot water lines with minimum of 25mm at crossovers.

### **3.3 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 26 05 34***

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Materials for moulded-case circuit breakers.

**1.2                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.

**1.3                REFERENCES**

- .1        Canadian Standards Association (CSA International) Latest Edition of the following:
  - .1        CSA C22.1-12, Canadian Electrical Code.
  - .2        CSA-C22.2 No. 5, Moulded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures (Tri-national standard with UL 489, tenth edition, and the second edition of NMX-J-266-ANCE).

**1.4                SUBMITTALS**

- .1        Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Include time-current characteristic curves for breakers with ampacity of 100 A and over.

**1.5                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate waste materials for reuse and recycling in accordance with Sections of Division 01 as applicable.
- .2        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.
- .3        Separate for reuse and recycling and place in designated containers Steel, Metal, Plastic waste in accordance with Waste Management Plan.

**Part 2            Products**

**2.1                BREAKERS GENERAL**

- .1            Moulded-case circuit breakers: to CSA C22.2 No. 5.
- .2            Bolt-on moulded case circuit breaker: quick- make, quick-break type, for manual and automatic operation with temperature compensation for 40 degrees C ambient.
- .3            Common-trip breakers: with single handle for multi-pole applications.
- .4            Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.
  - .1            Trip settings on breakers with adjustable trips to range from 3-8 times current rating.

**2.2                THERMAL MAGNETIC BREAKERS DESIGN A**

- .1            Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

**2.3                ACCEPTABLE MATERIALS**

- .1            Breakers shall be compatible with existing panelboards and shall meet the KA ratings as indicated.

**Part 3            Execution**

**3.1                INSTALLATION**

- .1            Install circuit breakers as indicated.

***END OF SECTION 26 28 16.02***

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Materials and installation for fused and non-fused disconnect switches.

**1.2                RELATED SECTIONS**

- .1        Section 01 10 10 - General Instructions.
- .2        Section 01 33 00 - Submittal Procedures.
- .3        Section 01 35 26 - Electrical and Fire Safety Requirements.
- .4        Section 01 35 28 - Health and Safety Requirements.
- .5        Section 01 35 54 - Site Security Requirements.
- .6        Section 01 78 00 - Closeout Submittals.
- .7        Section 26 05 00 - Common Work Results - Electrical.

**1.3                REFERENCES**

- .1        Canadian Standards Association (CSA International) Latest Edition of the following:
  - .1        CSA C22.1-12, Canadian Electrical Code.
  - .2        CAN/CSA C22.2 No.4, Enclosed Switches.
  - .3        CSA C22.2 No.39, Fuseholder Assemblies.

**1.4                SUBMITTALS**

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

**1.5                HEALTH AND SAFETY**

- .1        Do construction occupational health and safety in accordance with Section 01 35 28 - Health and Safety Requirements.

**1.6                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate waste materials for reuse and recycling in accordance with Sections of Division 01 as applicable.
- .2        Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3        Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4        Separate for reuse and recycling and place in designated containers Steel Metal Plastic waste in accordance with Waste Management Plan.

- .5 Fold up metal banding, flatten and place in designated area for recycling.

**Part 2 Products**

**2.1 DISCONNECT SWITCHES**

- .1 Fusible, non-fusible, horsepower rated disconnect switch in CSA Enclosure 1, to CAN/CSA C22.2 No.4 size as indicated.
- .2 Provision for padlocking in off switch position by three locks.
- .3 Mechanically interlocked door to prevent opening when handle in ON position.
- .4 Fuses: size as indicated.
- .5 Fuseholders: to CSA C22.2 No.39 relocateable and suitable without adaptors, for type and size of fuse indicated.
- .6 Quick-make, quick-break action.
- .7 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 - Electrical.
- .2 Indicate name of load controlled on size 4 nameplate.

**Part 3 Execution**

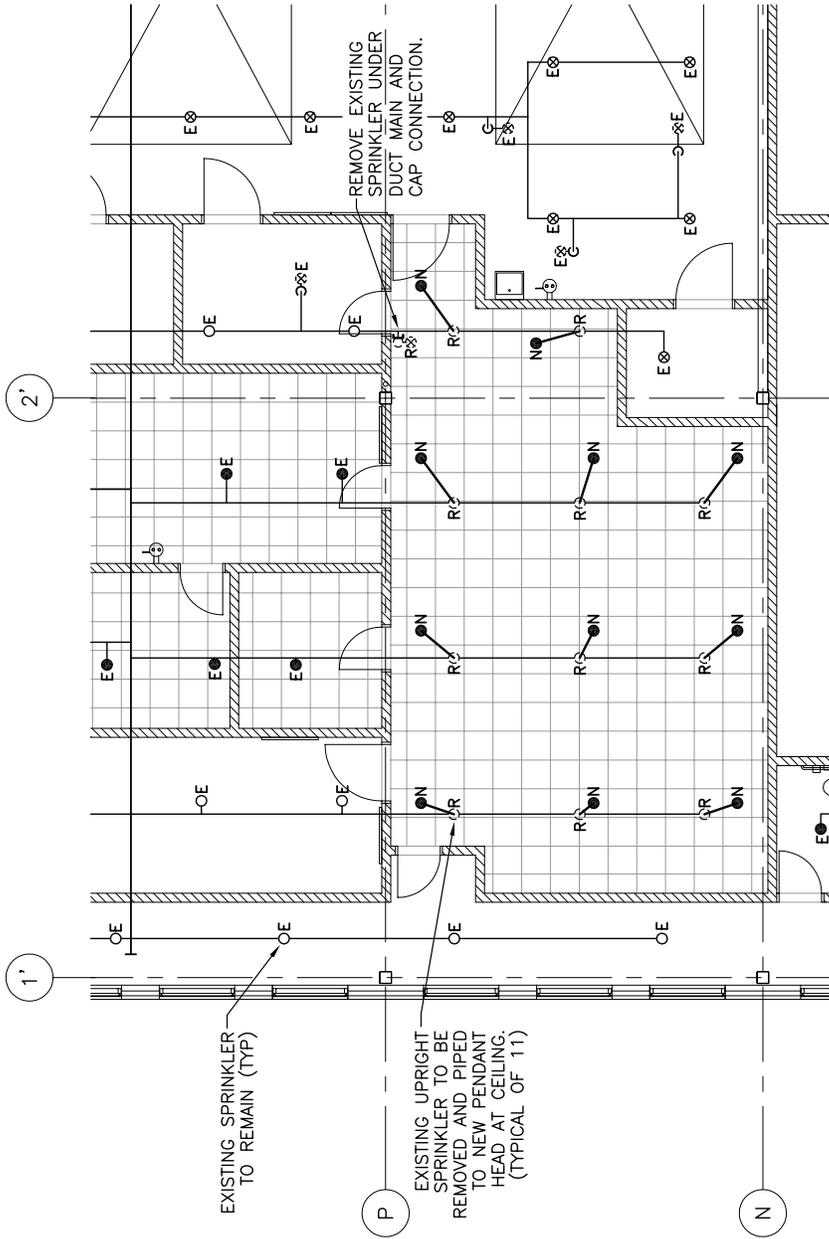
**3.1 INSTALLATION**

- .1 Install disconnect switches complete with fuses if applicable, where indicated.

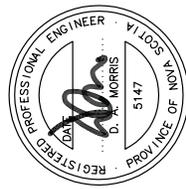
**3.2 TESTING**

- .1 Operate each disconnect switch to verify that the loads are disconnected.

***END OF SECTION 26 28 23***



SPRINKLER LEGEND	
○●E	EXISTING SPRINKLER OF VARIOUS TYPES TO REMAIN
●N	NEW 1/2" QUICK RESPONSE PENDANT SPRINKLER, VIC V2708, K=5.6
○R	EXISTING UPRIGHT SPRINKLER TO BE REMOVED. RE-PIPE AS SHOWN
⊗R	EXISTING UPRIGHT SPRINKLER UNDER DUCT TO BE REMOVED AND CAPPED

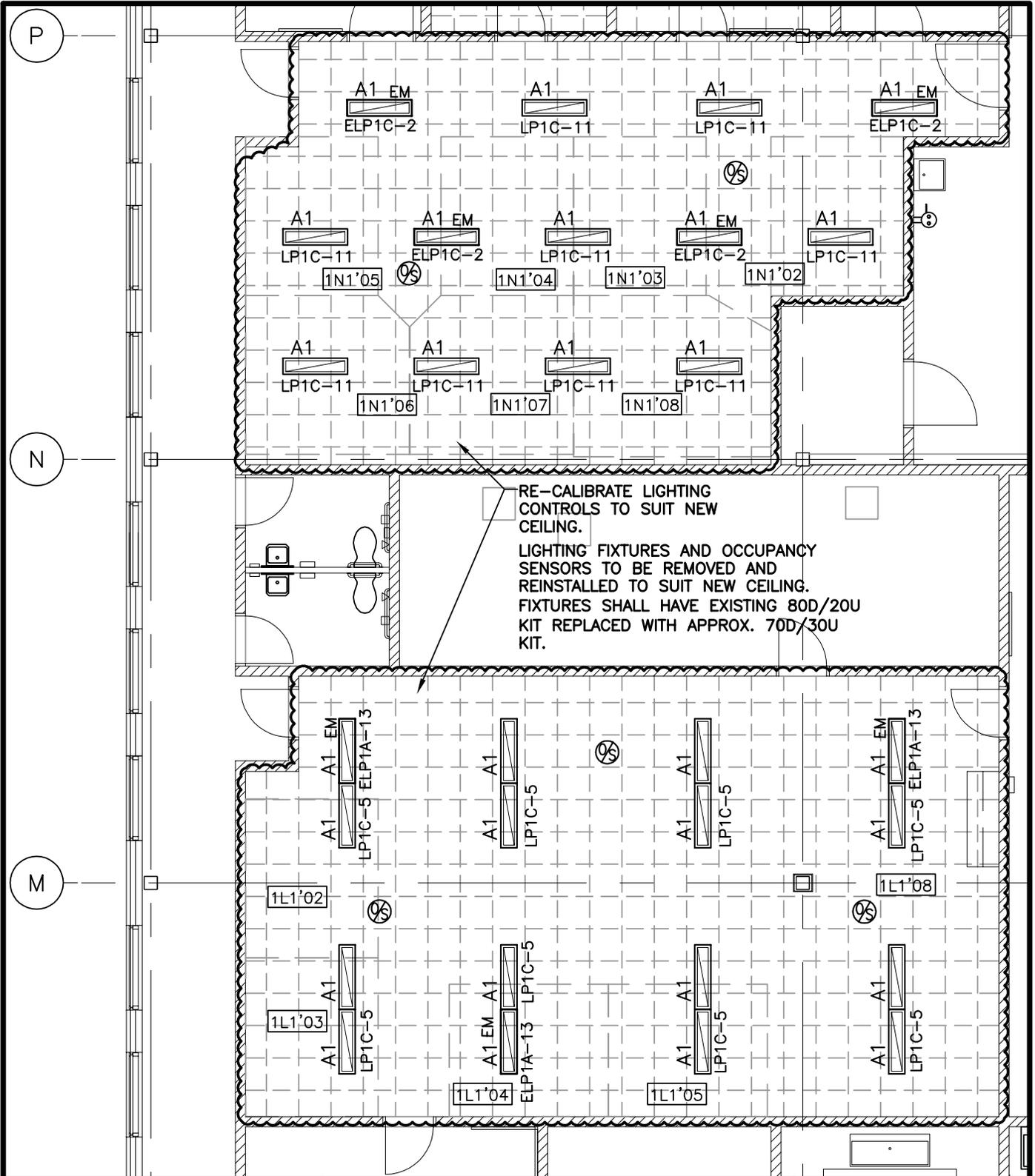


**M&R ENGINEERING LIMITED**  
 5531 Cornwallis St., Halifax, NS, B3K 1B3  
 Tel: (902) 422-7393, Fax: (902) 423-4945  
 Website: www.mreng.ca

**PROJECT**  
 GOV. OF CANADA BLDG.  
 HALIFAX REG. MUNICIPALITY, N.S.

**TITLE**  
 SPRINKLER, LEVEL 1, PART 'C'  
 ROOM 1N1'05

**SCALE** 1:100  
**DATE** JAN 27, 2014  
**JOB NO.** 10-10-020  
**DWG. NO.** MSK-SP-16




**M&R ENGINEERING LIMITED**  
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 WEBSITE: WWW.MRENG.CA

**PROJECT** NEW GOVERNMENT OF CANADA  
 BUILDING, HRM  
 DARTMOUTH, NOVA SCOTIA

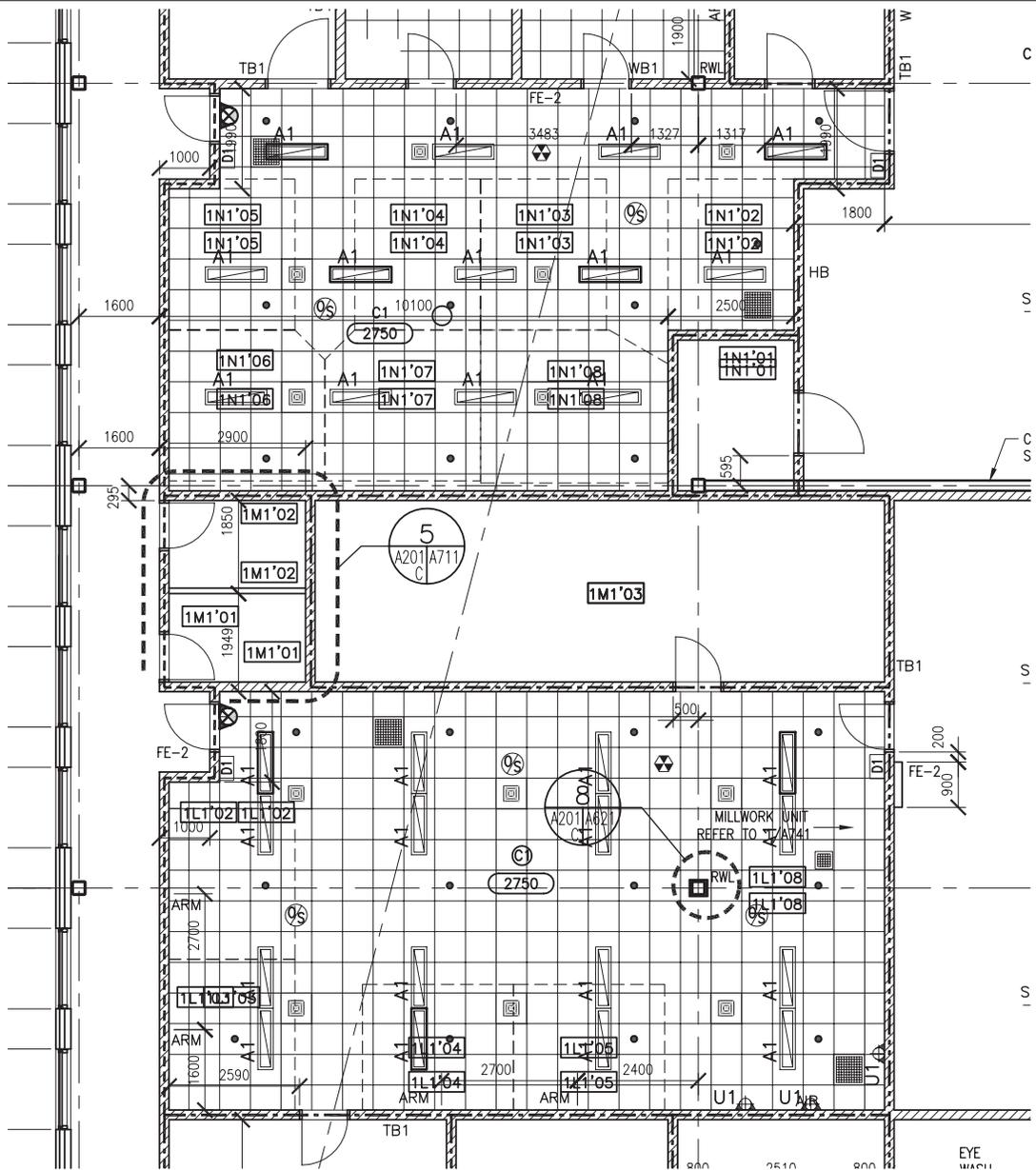
**TITLE** PARTIAL LEVEL 1 PART 'C'  
 LIGHTING – REVISIONS  
 REFERENCE DWG. E201C

**SCALE** 1:100

**DATE** JAN. 27, 2014

**JOB NO.** 309206

**DWG. NO.** ESK-190



LEGEND/NOTES:

(C1) 24" X 24" ACOUSTIC CEILING PANELS IN METAL 'TEGULAR' SUSPENSION GRID.

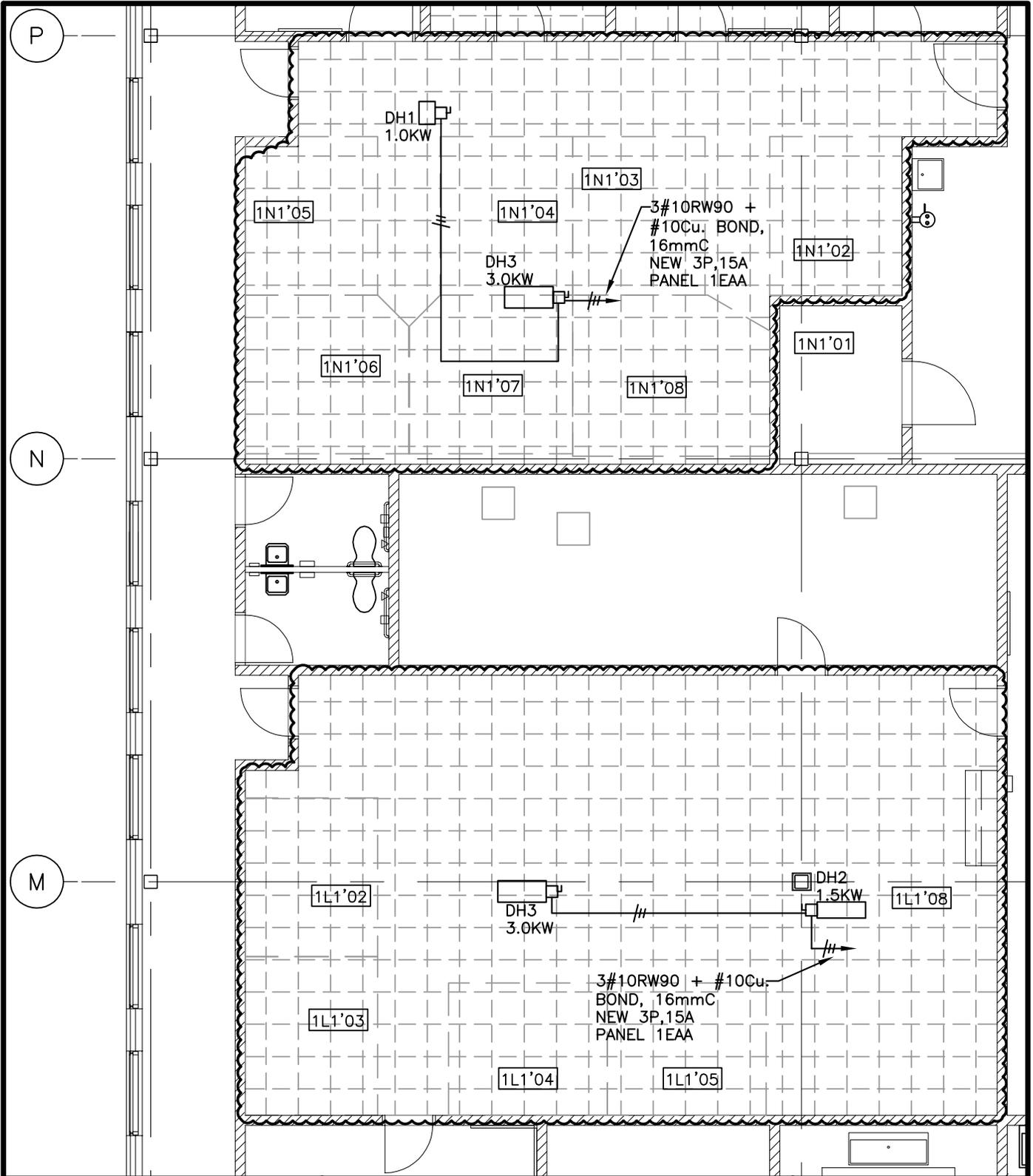
REFER M & E DRAWINGS FOR ALL CEILING MOUNTED END DEVICES AND SYSTEMS.

SYSTEMS IN ADJACENT SPACES NOT SHOWN.



1672 BARRINGTON STREET  
 HALIFAX, NOVA SCOTIA B3J 2A2  
 TEL: 902 422-1446  
 FAX: 902 422-1449

PROJECT	GOVERNMENT OF CANADA BUILDING HALIFAX REGIONAL MUNICIPALITY, NOVA SCOTIA	
	DRAWN LLAL	DATE 20140114
DRAWING TITLE	APPROVED LLAL	SCALE N.T.S.
	CHECKED LLAL	PROJECT No. 69078
	DRAWING No. ASK 506	

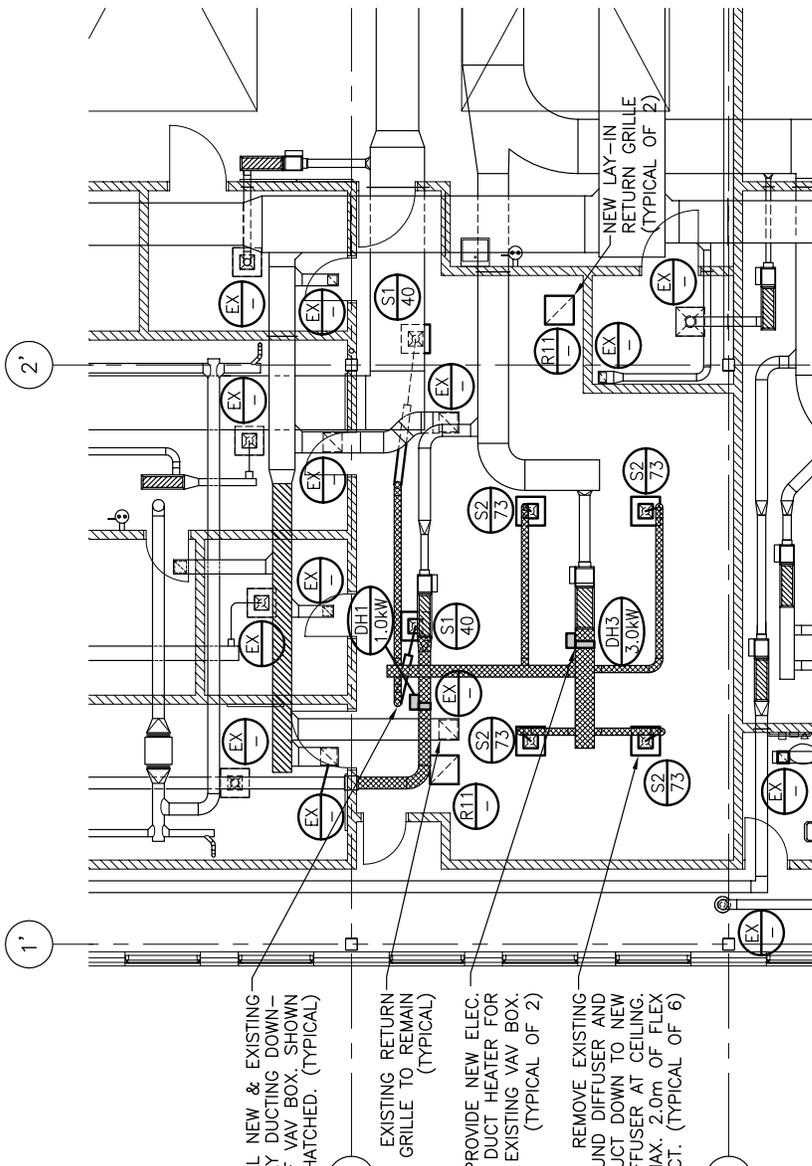


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 TEL: (902) 422-7393, FAX: (902) 423-4945  
 WEBSITE: WWW.MRENG.CA

**PROJECT** NEW GOVERNMENT OF CANADA  
 BUILDING, HRM  
 DARTMOUTH, NOVA SCOTIA

**TITLE** PARTIAL LEVEL 1 PART 'C'  
 POWER – REVISIONS  
 REFERENCE DWG. E301C

<b>SCALE</b>	1:100
<b>DATE</b>	JAN. 27, 2014
<b>JOB NO.</b>	309206
<b>DWG. NO.</b>	<b>ESK-192</b>



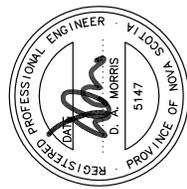
INSULATE ALL NEW & EXISTING SUPPLY DUCTING DOWN-STREAM OF VAV BOX. SHOWN AS HATCHED. (TYPICAL)

EXISTING RETURN GRILLE TO REMAIN (TYPICAL)

PROVIDE NEW ELEC. DUCT HEATER FOR EXISTING VAV BOX. (TYPICAL OF 2)

REMOVE EXISTING ROUND DIFFUSER AND DUCT DOWN TO NEW DIFFUSER AT CEILING. MAX. 2.0m OF FLEX DUCT. (TYPICAL OF 6)

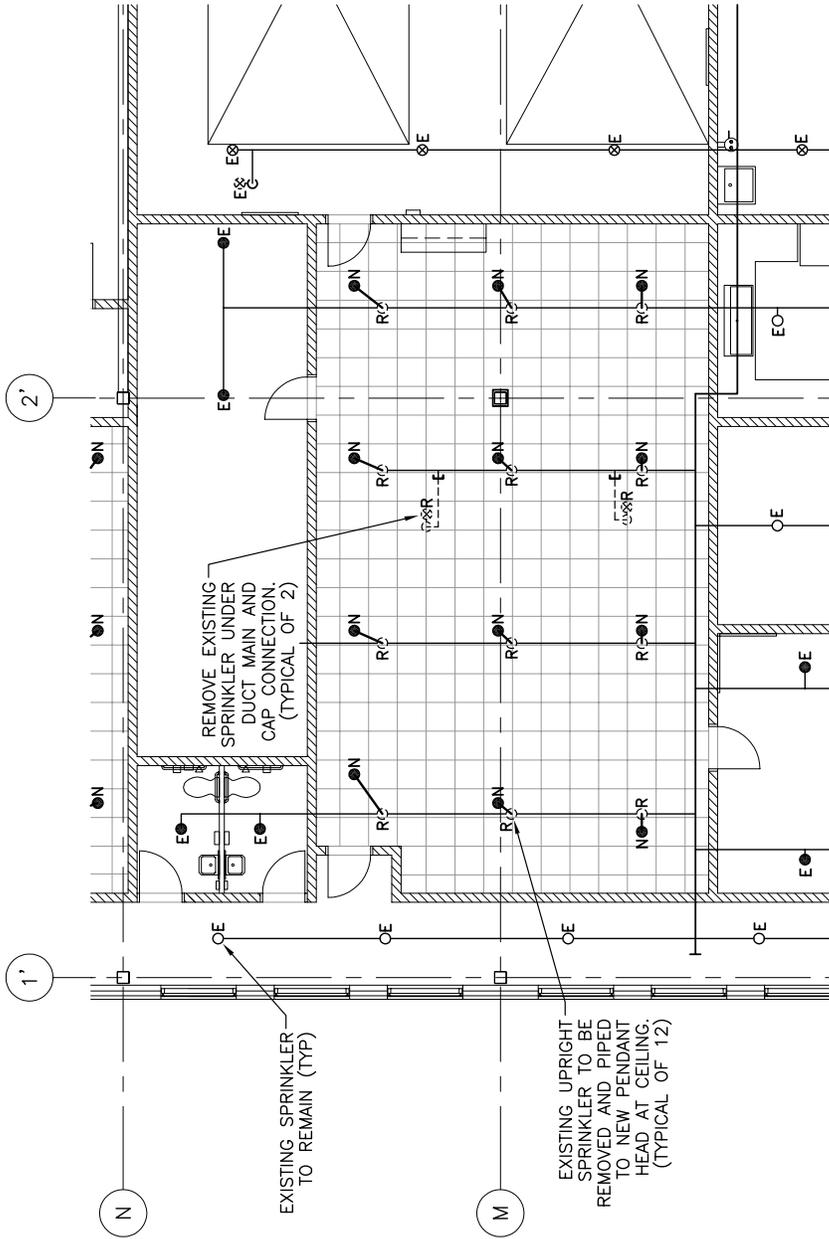
HVAC EQUIPMENT LIST	
	EXISTING EQUIPMENT TO REMAIN
	EXISTING EQUIPMENT TO BE RELOCATED AS INDICATED
	SUPPLY DIFFUSER: NAILOR MODEL RNSA1-PL-AW, 300x300 FACE, 600x600 PANEL, 150Ø NECK, c/w VOLUME DAMPER.
	SUPPLY DIFFUSER: NAILOR MODEL RNSA1-PL-AW, 300x300 FACE, 600x600 PANEL, 200Ø NECK, c/w VOLUME DAMPER.
	SUPPLY DIFFUSER: NAILOR MODEL RNSA1-L-AW, 600x600 FACE, 200Ø NECK, c/w VOLUME DAMPER.
	RETURN GRILLE: NAILOR MODEL 51EC-AW, 600x600, 12x12x12 ALUM. EGGRATE, TYPE 'A' CONCEALED FRAME.
	ELECTRIC DUCT HEATER: THERMOLEC MODEL THERMO-V, SLIP-IN, 1.5kW, 600V/3Ø/60, 250Ø* DUCT, c/w AIRFLOW SWITCH AND DISCONNECT.
	ELECTRIC DUCT HEATER: THERMOLEC MODEL THERMO-V, SLIP-IN, 3.0kW, 600V/3Ø/60, 350x300* DUCT, c/w AIRFLOW SWITCH AND DISCONNECT.
	ELECTRIC DUCT HEATER: THERMOLEC MODEL THERMO-V, SLIP-IN, 3.0kW, 600V/3Ø/60, 350x300* DUCT, c/w AIRFLOW SWITCH AND DISCONNECT.
* CONFIRM DUCT SIZES ON SITE BEFORE ORDERING DUCT HEATERS.	



**M&R ENGINEERING LIMITED**  
 5531 Cornwallis St. Halifax, NS, B3K 1B3  
 Tel: (902) 422-7993, Fax: (902) 423-4945  
 Website: www.mreng.ca

PROJECT: GOV. OF CANADA BLDG. HALIFAX REG. MUNICIPALITY, N.S.  
 TITLE: HVAC, LEVEL 1, PART 'C' ROOM 1N105

SCALE: 1:100  
 DATE: JAN 27, 2014  
 JOB NO.: 10-10-020  
 DWG. NO.: MSK-MV-129



REMOVE EXISTING SPRINKLER UNDER DUCT MAIN AND CAP CONNECTION. (TYPICAL OF 2)

EXISTING UPRIGHT SPRINKLER TO BE REMOVED AND PIPED TO NEW PENDANT HEAD AT CEILING. (TYPICAL OF 12)

EXISTING SPRINKLER TO REMAIN (TYP)

SPRINKLER LEGEND	
OE	EXISTING SPRINKLER OF VARIOUS TYPES TO REMAIN
N	NEW 1/2" QUICK RESPONSE PENDANT SPRINKLER, VIC V2708, K=5.6
OR	EXISTING UPRIGHT SPRINKLER TO BE REMOVED. RE-PIPE AS SHOWN
ØR	EXISTING UPRIGHT SPRINKLER UNDER DUCT TO BE REMOVED AND CAPPED

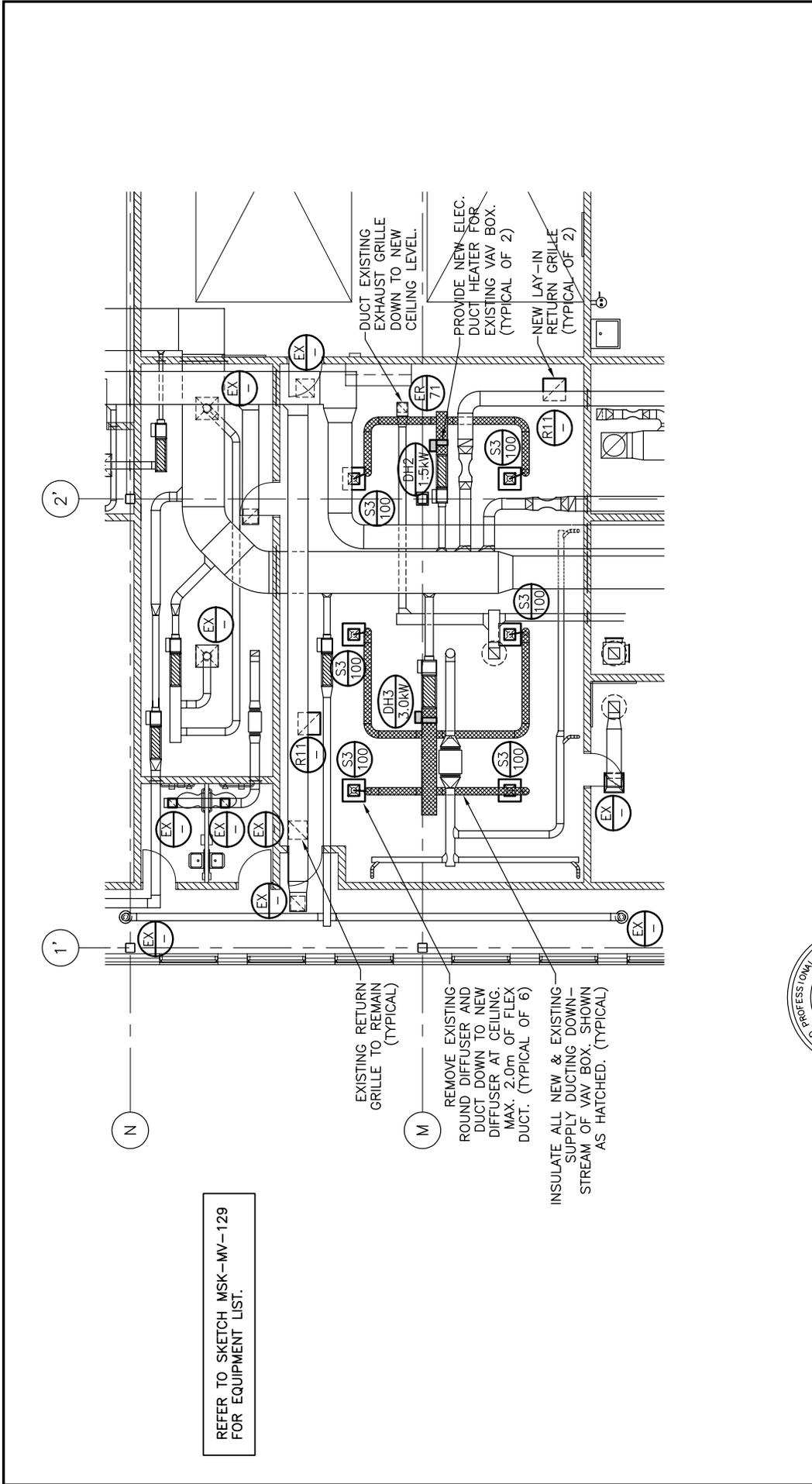


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 Website: www.mreng.ca

**PROJECT**  
 GOV. OF CANADA BLDG.  
 HALIFAX REG. MUNICIPALITY, N.S.

**TITLE**  
 SPRINKLER, LEVEL 1, PART 'C'  
 ROOM 111'08

**SCALE** 1:100  
**DATE** JAN 27, 2014  
**JOB NO.** 10-10-020  
**DWG. NO.** MSK-SP-17

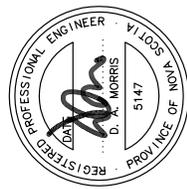


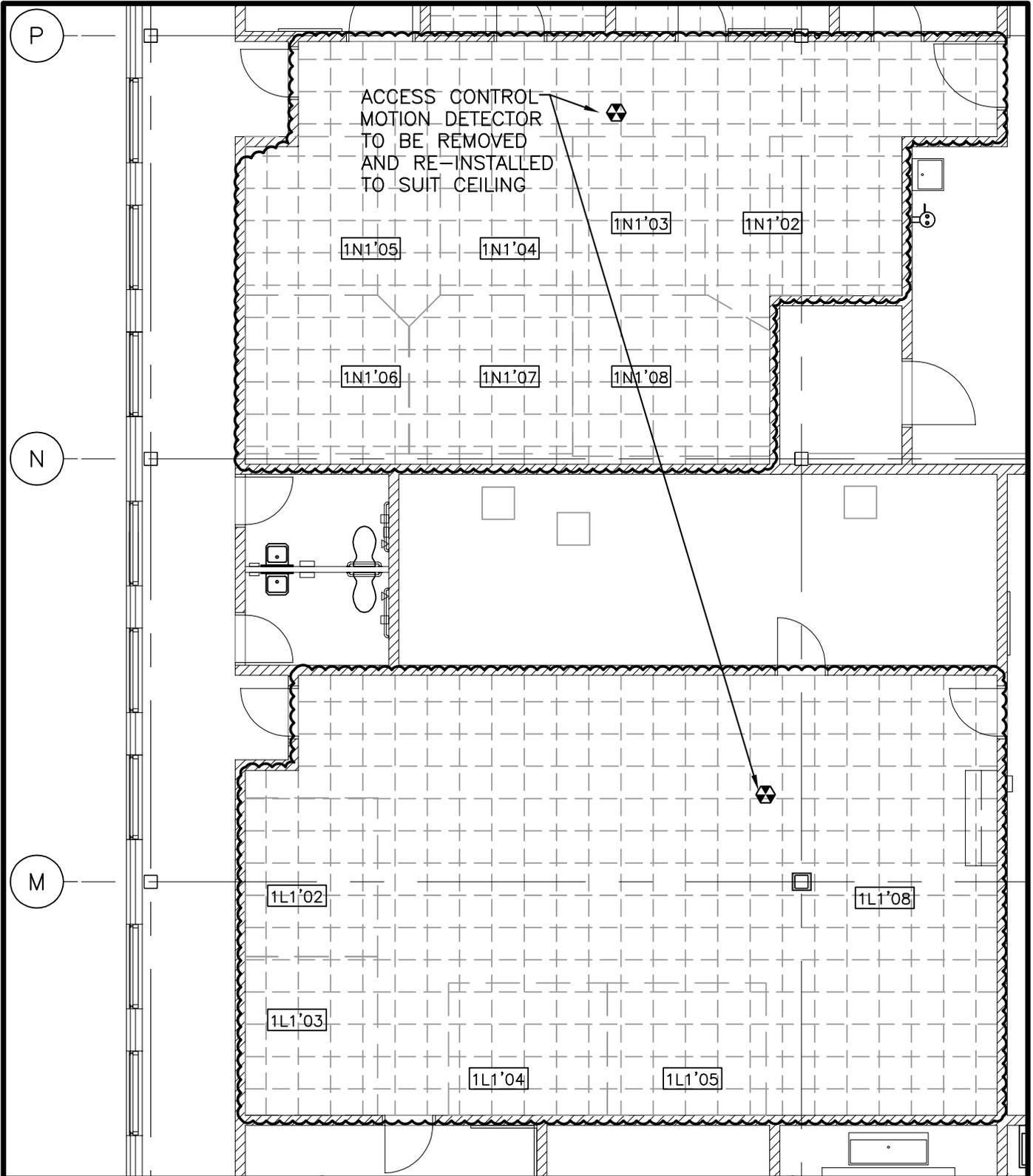
REFER TO SKETCH MSK-MV-129 FOR EQUIPMENT LIST.

SCALE	1:100
DATE	JAN 27, 2014
JOB NO.	10-10-020
DWG. NO.	MSK-MV-130

PROJECT  
 GOV. OF CANADA BLDG.  
 HALIFAX REG. MUNICIPALITY, N.S.  
 TITLE  
 HVAC, LEVEL 1, PART 'C'  
 ROOM 1L1'08

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**PROJECT** NEW GOVERNMENT OF CANADA  
 BUILDING, HRM  
 DARTMOUTH, NOVA SCOTIA

**TITLE**  
 PARTIAL LEVEL 1 PART 'C'  
 ACCESS CONTROL – REVISIONS  
 REFERENCE DWG. E341C

<b>SCALE</b>	1:100
<b>DATE</b>	JAN. 27, 2014
<b>JOB NO.</b>	309206
<b>DWG. NO.</b>	<b>ESK-191</b>