COLES ARCHITECTURE ENGINEERING PROJECT MANAGEMENT

201-85 Fitzroy Street
Charlottetown, PE C1A 1R6
(902) 368-2300
www.colesassociates.com

SPECIFICATIONS

ELIOT RIVER ELEMENTARY SCHOOL
CORNWALL, PEI

CONTRACT #1 – ROOF REPLACEMENT

MAY 6/21.

ARCHITECTS ASSOCIATION
19-12
CERTIFICATE of PRACTICE
Scott Daniel MacNeill
Coles Associates Ltd.
AAPEI
OF PRINCE EDWARD ISLAND
#201103

Coles Associates Ltd.
Project #: 201104

Issued for Tender: May 06, 2021

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Section 07 72 33 - Roof Hatches 4

Section 07 92 00 - Joint Sealants 9

Division 22 - PLUMBING

Section 22 42 01 - Plumbing Specialties and Accessories 2

1 General

1.1 CONTRACT #1 ROOF REPLACEMENT - DRAWING LIST

.1 A1-000 Cover Page

.2 ARCHITECTURAL DRAWINGS

- .1 A1-001 Context Plan & Project Info
- .2 A1-050 Roof Demolition Plan
- .3 A1-051 Roof Demolition Plan
- .4 A1-100 New Roof Plan
- .5 A1-101 New Roof Plan
- .6 A1-800 Roof Details

END OF SECTION

1 General

1.1 LIST OF APPENDICES

.1 APPENDIX 'A'
COVID-19 Contractor Affidavit

END OF SECTION

1 General

1.1 TENDER CALL

.1

The Government of Prince Edward Island, as represented by the Minister of Transportation & Infrastructure will receive sealed tenders at the Security Desk at the main entrance of the Jones Building, 11 Kent Street, Charlottetown, PEI, CIA 7N8. Tenders must be submitted on the forms provided and be in a sealed envelope clearly marked to indicate the project being tendered on.

ELIOT RIVER ELEMENTARY SCHOOL
CONTRACT #1 - ROOF REPLACEMENT
CORNWALL, PE

Tenders for the General Contract will be accepted until 2:00 PM (local time) on Thursday, 20 MAY 2021.

Project comprises the roof replacement at the existing Eliot River Elementary School, located in Cornwall, PEI.

All enquiries are to be directed to the Consultant, Coles Associates Ltd a minimum of three (3) days prior to tender closing as follows:

Attention: Nick White, GSC, C. Tech., RSE.
Email: nwhite@colesassociates.com
Phone: 902-368-2300

Tender documentation will only be available electronically. Electronic documents will be posted electronically to the Government tender page:
https://www.princeedwardisland.ca/en/tenders

Electronic documents will be issued to Construction Association of PEI (CAPEI) as well as to NB and NS Construction Associations. Addenda will only be posted to the Government tender site and issued to the Construction Associations. It is the Contractor's responsibility to ensure that they have incorporated all addenda into their bid submission.

- Tender envelopes must be clearly marked with the Project Name.
- Tender documents will need to be received prior to 2:00 PM (local time) on the date specified in the tender.
- No submissions will be accepted after the 2:00 PM closing time.
- The tender opening will not be opened to the public.
- Tender envelops will be opened immediately after the tender closing and there will be a representative of CAPEI present to witness the opening.

The lowest or any tender will not necessarily be accepted.

END OF SECTION

1 General

1.1 SUMMARY OF WORK

.1 The project involves the roof replacement at the existing Eliot River Elementary School, located in Cornwall, PEI.

.2 All in accordance with the requirements of the specifications and drawings listed on their respective Index of Specifications and Drawings.

1.2 ENQUIRIES

.1 Direct all inquiries during the tender period to:

Coles Associates Ltd.
P.O. Box 695
85 Fitzroy Street, Suite 201
Charlottetown, PEI
C1A 1R6

Phone: (902) 368-2300
Email: nwhite@colesassociates.com
CC: tellsworth@colesassociates.com

Attention: Nick White, GSC, C. Tech., RSE

.2 All enquiries are to be directed to the Consultant a minimum of three (3) days prior to tender closing in order to allow the Consultant to issue an addendum a minimum of two (2) days prior to tender close.

1.3 TENDERING PROCEDURE

.1 General Contractors:

.1 Submit their tender for the entire work of this Contract, INCLUDING the work of the Civil, Mechanical, Sprinkler and Electrical subcontracts, directly to the Owner in accordance with the requirements of the Invitation to Tender and this specification.

.2 Civil, Mechanical, Sprinkler and Electrical Subcontractors:

.1 Bidders for the work of the Civil, Mechanical, Sprinkler and Electrical subcontracts will submit their tenders directly to the General Contract bidders, for incorporation by the General Contractors into their General Contract tenders.

.3 General Contract bidders shall take particular care to ensure that their tender is submitted on the proper tender form.

.1 Civil, Mechanical, Sprinkler and Electrical subcontract bidders will submit their tenders to the General Contract bidder, on, or in a form acceptable to the individual General Contract bidders, to whom bids are submitted.

1.4 SPECIFICATION EXPLANATION

.1 Whenever the words "as shown," "as noted," "as called for," "indicated," or similar phrases are used, they shall be understood to refer to this specification and/or the accompanying drawings and addenda.

.2 The words "provided", "install" or similar words shall mean the work described shall be completely supplied, and erected or installed by the Contractor, unless otherwise noted.

.3 All materials are to be new unless noted otherwise.

1.5 EXAMINATION OF SITE

.1 All bidders submitting tenders for this work shall first examine the site and all conditions

thereon and/or therein, including:

.1 Existing conditions visually evident at the time of tender upon which the Work of this Contract will be installed.

.2 Conditions attached to, abut against or in any other way affected by existing conditions.

.2 All tenders shall take into consideration all such conditions as may affect the work under this Contract.

.3 No extra payment will be made to the Contractor, above the Contract Price, for costs resultant from failure to determine the conditions that affect the Work.

.4 There will be a schedule Bidder's tour, date as stated in the timing requirements.

1.6 EXISTING CONDITIONS

.1 If in the performance of the contract, subsurface or latent conditions at the site are found to be materially different from those indicated by the drawings and specifications, or unknown conditions not usually inherent in work of the character shown and specified, the attention of the Consultant shall be called immediately in writing to such conditions before they are disturbed. Upon such notice or resulting from his own observation of such conditions the Consultant shall promptly make such changes in the drawings and specifications as he finds necessary to conform to the different conditions and any increase or decrease in the cost shall be adjusted as provided under Changes in the Work.

1.7 DOCUMENT INTERPRETATION

.1 The Consultant's interpretation of Contract Documents shall be final.

.2 Should the Bidder find discrepancies in, or omissions from the drawings, specifications or other tender documents, or be in doubt as to their meaning or interpretation, the Bidder should at once notify the Consultant in writing for clarification.

.3 Any instructions or clarifications to Bidders issued during the period of bidding will be in the form of Addenda and are to be included in the tender. Addenda will form part of the Contract Documents.

.4 The Owner, User Groups or Consultant will not be responsible for verbal instructions.

.5 Addenda will be posted online via https://www.princeedwardisland.ca/en/tenders.

.6 Every effort will be made to issue addenda not less than two (2) days prior to the time for the closing of tenders, at the Consultant's discretion.

1.8 PREPARATION AND SUBMISSION OF BIDS

.1 Contractors shall submit their bids on the Tender Form provided, which will be received at the time and place indicated on the Invitation to Tender. Late tenders will not be accepted and will be returned unopened to the bidder.

.2 Bidders shall fill in all information requested on the Tender Form.

.1 This form must be completely filled out in ink, or be typewritten with the signature in longhand. The completed forms shall be without interlineation, alteration or erasure.

.2 Failure to fill in the Tender Form, as provided, in its entirety may result in the rejection of the bid; however, bidders are not obligated to provide alternative prices to products listed on the Appendix provided for that specific purpose, as part of the tender form.

.3 Tender amount shall be stated both in writing and in figures.

.4 Signatures shall be without alteration or erasure.

.5 Receipt of addenda for the project shall be acknowledged by filling in the addendum number and date of issue for each addendum on the appropriate line on the Tender Form. These lines shall be initialed by the person signing the tender after they have been filled in.

.3 Each tender submitted will be accepted on the understanding that it covers all the Work called for in the specifications and on the drawings, regardless of any notations by Bidder that certain parts of the required Work are omitted from their proposal.

.4 Each bid must:

.1 Give the full business address of the Bidder and be signed by him with his usual signature.

.2 Bids by partnerships must furnish the full name of all partners and must be signed in the partnership name of one of the members of the partnership or by some authorized representative, followed by the signature and designation of the person signing.

.3 Bids by corporations must be signed with the legal name of the corporation, followed by the name of the Province of incorporation, and by the signature designation of the president, secretary, or other person authorized to bind it in the matter. The name of each person signed shall also be typed or printed below the signature.

.4 A bid by a person who affixes to his signature the word "president," "secretary," or "agent," or other designation, without disclosing his principal, may be held to be the bid of the individual signing on behalf of the corporation.

.5 A bid of any individual or any group of individuals operating as co-partners or the bid of any corporation which may be submitted shall be executed and authorized so that it shall be and it will constitute a legal binding act of the persons, co-partners, or corporate entity making the bid.

.5 Bidders shall include with their tender, in the space designated in Section 00 41 13, Appendix A, the name of each Subcontractor and/or Supplier, as designated, whose price has been included in their tender and who will perform the trade work. Substitution for another Subcontractor in the event that the listed Subcontractor is unable to do the work shall be subject to the approval of the Owner and contingent on evidence satisfactory to the Owner that the original Subcontractor's price was legitimately carried in the Tender, and that the original Subcontractor is now incapable of carrying out the work required under the subcontract, or that he refuses to carry out the work and provides documented reasons for such incapacity or refusal.

.6 The term "Own Forces," as a subcontractor, may be used by a Bidder where the Bidder is equipped to and in fact normally carries out the trade work using employees in the direct employment of the Contractor or a wholly owned subsidiary company. Other designations such as "Own Estimate" are unacceptable and may be cause for rejection of the tender by the Owner.

.7 When a Bidder indicates "Own Forces" as a subcontractor, the Bidder may be required to demonstrate to the Owner that he has the resources, experience and employees necessary, available and qualified to perform the trade work in a manner and quality satisfactory to fulfill the obligations of the Contract Documents and that the trade work is a normal and continual part of his business operation.

.8 A Bidder, whose tender is accepted, that included "Own Forces" for a subcontract will if requested, provide the Owner with payroll records verifying that the employees carrying out the "Own Forces" subcontract work are direct employees of the Contractor or of a wholly owned subsidiary company of the Contractor.

.9 Each bidder shall be prepared, if so requested by the Owner, prior to the award of the Contract to present evidence of his experience, qualifications and financial ability to carry out the terms of the Contract.

.10 The Owner will evaluate Tenders submitted for this project. The criteria to be considered by the Owner in awarding the Contract will include a combination of:

.1 Bid price;

.2 Scheduling;

.3 Compliance;

.4 Expertise;

.5 Qualifications of the Contractor and named Subcontractors / Suppliers and

.6 Any other such conditions as may be determined by the Owner to be in the best interests of the Owner. A decision on the acceptance of a Tender will be made by the Owner based on the results of the Owner's evaluation.

.11 Bidders may, at their own discretion, submit Alternatives to items identified as "Acceptable Material".

.1 All proposed Alternatives shall be listed in Appendix "B", ALTERNATIVE PRICES and be identified by name and model number where applicable and each Alternative shall have an associated tender price change "INCREASED BY" $_____ or "DECREASED BY" $_____ or "N/A," as compared with the "Acceptable Material" item carried in the tender amount.

.2 Alternate prices will include ALL related costs associated with charges from Accepted Material. No additional costs will be accepted for failure of the Contractor to identify the full impact of using alternate systems.

.3 Alternate prices will NOT be used in determining the tender price or as the basis for awarding the tender.

.12 Bidders are to complete any other appendices forming part of the Tender Form as directed under Section 00 41 13 - Bid Form.

.13 Tender Forms and accompanying documents shall be enclosed in a sealed envelope marked "TENDER" and bearing the following identification.

.1 Name of project.

.2 Name of Contractor submitting tender.

.14 Envelope to be addressed to the recipient of tenders indicated in the Invitation to Tender and delivered by hand, registered mail or courier.

.15 Submit one (1) only signed copy of Tender Form.

.16 Accompanying the Tender Form shall be:

.1 One (1) copy of Bid Guarantee, together with Surety's Letter of Consent, as specified.

.2 One (1) copy of a preliminary schedule demonstrating the full scope of work to be completed within the identified time for the completion of the contract work.

.3 One (1) copy of a letter from Bidder's insurance provider identifying a list of any claims made against the Bidder within the last five (5) years.

.17 Tender forms and securities must bear original signatures.

.18 Where the bid amount is shown in both written words and number and the two are in conflict, written words will take precedence.

1.9 BID GUARANTEE

.1 Each tender submitted shall be accompanied by the following Security:

.1 For a General Contract Tender less than Three Million Dollars ($3,000,000.00), including Mechanical and Electrical Subcontract values:

.1 A Bid Bond equal to at least ten percent (10%) of the tender amount and a Letter of Surety from a bonding company guaranteeing to supply a Performance Bond in the amount of fifty percent (50%) of the total contract amount.
OR

.2 A security Deposit equal to at least ten percent (10%) of the tender amount.

.2 General Contract Tender more than Three Million Dollars ($3,000,000.00), including Mechanical and Electrical Subcontract values:

.1 A Bid Bond equal to at least ten percent (10%) of the tender amount and a Letter of Surety from a bonding company guaranteeing to supply a Performance Bond

in the amount of fifty percent (50%) of the total contract amount and a Labour and Materials Payment Bond in the amount of fifty percent (50%) of the total contract amount.

.3 All Bonds and Letters of Surety supplied by General Contractors, made payable to the Government of Prince Edward Island as represented by the Minister of Transportation & Infrastructure.

.1 Bonds and Letters of Surety supplied by the General Contractor to the Owner shall be from a recognized surety company, satisfactory to, and approved by the Owner.

.2 If a performance bond is utilized, it shall be maintained in force for a period of not less than twelve (12) months after the issuance of the total performance criteria.

.3 Security Deposits, provided by General Contractors, must be in the form of a Certified Cheque or Bank Draft drawn on a Bank to which the Bank Act applies or a credit Union, payable to the Government of Prince Edward Island as represented by the Minister of Transportation & Infrastructure.
OR

.4 Bonds of the Government of Canada, unconditionally guaranteed, as to the principal and interest by the Government of Canada if such Bonds are:

.1 Payable to the bearer, or

.2 Accompanied by a duly executed instrument of transfer to the Government of Prince Edward Island as represented by the Minister of Transportation & Infrastructure, in the form prescribed by the Domestic Bonds of Canada Regulations, or

.3 Negotiated as to principal or as to principal and interest in the name of the Government of Prince Edward Island as represented by the Minister of Transportation & Infrastructure, pursuant to the Domestic Bonds of Canada Regulations.

.5 Security deposits submitted by subcontractors, to General Contractors, shall be in a form satisfactory to the General Contractor.

1.10 CONTRACT SECURITY

.1 Upon award of a contract the General Contractor is to provide the following contract security:

.1 General Contract Tender less than Three Million Dollars ($3,000,000.00), including Mechanical and Electrical Subcontract values:

.1 A Performance Bond in the amount of fifty percent (50%) of the total contract amount.
OR

.2 A Security Deposit in an amount equal to at least ten percent (10%) of the contract amount.

.2 General Contract Tender more than Three Million Dollars ($3,000,000.00), including Mechanical, Sprinkler and Electrical Subcontract values:

.1 A Performance Bond and a Labour and Materials Payment Bond, each in the amount of fifty percent (50%) of the total contract amount.

.3 All Bonds provided by General Contractors, made payable to the Government of Prince Edward Island as represented by the Minister of Transportation & Infrastructure.

.1 Bonds shall be from a recognized surety company, and approved by the Owner.

.2 If a performance bond is utilized, it shall be maintained in force for a period of not less than twelve (12) months after the issuance of the total performance criteria.

.4 Security Deposits, provided by General Contractors, must be in the form of a Certified Cheque or Bank Draft drawn on a Bank to which the Bank Act applies or a Credit Union,

payable to Minister of Finance, Province of Prince Edward Island.
OR

.5 Bonds of the Government of Canada, unconditionally guaranteed, as to the principal and interest by the Government of Canada if such Bonds are:

.1 Payable to the bearer, OR

.2 Accompanied by a duly executed instrument of transfer to the Government of Prince Edward Island as represented by the Minister of Transportation & Infrastructure, in the form prescribed by the Domestic Bonds of Canada Regulations, or

.3 Negotiated as to principle or as to principle and interest in the name of the Owner, pursuant to the Domestic Bonds of Canada Regulations, or

.4 Contract security shall be provided at the expense of the Contractor, bonds shall be provided by an established surety company satisfactory to, and approved by the Owner. Certified Cheques or Bank Drafts shall be drawn on an account with a recognized financial institution.

.6 If in accordance with the Bid Guarantee requirements the successful Contractor has used a Certified Cheque or Bank Draft as a bid guarantee, the Certified Cheque or Bank Draft will be securely retained and, subject to the progress of the work being acceptable to the Owner and Consultant, will be held without interest until the date of Substantial Performance for the Contract, as defined under Definition 19 of CCDC2-2008, at which time it will be returned to the Contractor.

1.11 RECEIPT AND OPENING OF BIDS - UPDATED FOR COVID 19

.1 We have developed modifications to the tender process to minimize everyone's potential exposure to COVID-19.

.1 Sealed tenders will be received at the Security Desk located at the main entrance to the Jones Building, 11 Kent Street, Charlottetown, PE, C1A 7N8 until 2:00 PM, local time, on date of Tender closing .

.2 Sealed tenders are to be clearly marked with the Bidder's Name and the Project Name.

.3 Tender documents will need to be received prior to 2:00 PM local time on the date specified in the Tender. No submission will be accepted after that time.

.4 Amendments to submitted offer will be permitted if received in writing prior to bid closing and if endorsed by same party or parties who signed and sealed offer. Amendments may be submitted by fax to Department of Transportation & Infrastructure, fax number (902) 569-0590.

1.12 ADJUSTMENT AND WITHDRAWAL OF BIDS

.1 Bids may be withdrawn or adjusted in writing by mail, delivered in person or facsimile transmission delivered to the party to whom the bids were submitted, provided such withdrawal or adjustment is prior to the time fixed for the opening of the bids. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal or adjustment of the bid after the expiration of the time within which bids may be submitted.

.1 All withdrawals or adjustments to previously submitted tenders must be faxed to Department of Transportation & Infrastructure, fax number (902) 569-0590, prior to the time fixed for the opening of bids.

.2 Neither the Owner nor Coles Associates Ltd. accepts responsibility for the Contractors inability to submit faxed modifications within the allotted time for such circumstances, including but not limited to power and equipment failures, transmission failures, paper outages, busy fax line, etc.

.3 Adjustments must be signed by the same person who signed the original bid.

1.13 AWARD OF CONTRACT

.1 The Contract, if awarded, will be awarded as promptly after the opening of bids as is

possible, and at the discretion of the Owner. The award date will not extend beyond the period indicated on the Tender Form following the scheduled time of tender closing, without first obtaining permission of the three (3) low bidders, or low bidder only, at the discretion of the Owner.

.2 The Form of Agreement, (Contract) which the successful Bidder will be required to enter into with the Owner, may be seen on application to the Consultant. The drawings, specifications and any addenda issued during the tender period, will be suitably marked for identification at the time the Form of Agreement is signed by both parties, shall be considered as being included in the Contract, together with the completed Tender form and are hereinafter referred to as the "Contract Documents." All of these documents shall be read together and construed as one document. Following execution of the Contract, the Contractor shall receive from the Owner one (1) complete signed set of Contract Documents.

.3 Final award of Contract shall be subject to approval of all agencies having direct interest in the project.

.4 Where identical bids are received, the low bidder will be selected on the basis of a coin toss by the Owner in the presence of the identical bidders.

1.14 ACCEPTANCE / REJECTION OF TENDERS

.1 Bids shall remain open to acceptance and irrevocable for a period of thirty (30) days after the bid closing date.

.2 The Owner reserves the right to reject any and all tenders.

.3 In making the decision to award the Contract pursuant to this invitation to tender, the Owner may take into account:

.1 The history of work performance of each Bidder on similar or different types of work in prior Contracts with the Owner.

.2 The Bidder's qualifications to perform the work, the quality of the Bidder's past work, the Bidder's financial capability to do the work, the past history of the Contractor's construction scheduling ability to meet the Owner's specified substantial completion targets and the competence of the Bidder.

.4 If the tender is accepted the Contract will be awarded as promptly after the opening of bids as is possible. The selection of the tender that is accepted shall be at the sole discretion of the Owner.

.5 Each Bidder shall be prepared, if so requested by the Owner, prior to the award of the Contract to present evidence of their experience, qualifications and financial ability to carry out the terms of the Contract.

1.15 REJECTION OF BIDS

.1 The Owner reserves the right to reject any and all bids.

.2 The lowest or any bid will not necessarily be accepted.

.3 Bids submitted which indicate "own forces" for subcontract work, that in the opinion of the Owner cannot be successfully completed by the Contractor's employees will not be accepted.

.4 Bids not submitted on the required form will be rejected.

.5 Bids which are incomplete or qualified will be rejected.

.6 All Bidders acknowledge that they shall have no claim against, or entitlement to damages from the Owner or Consultant by reason of the Owner's rejection of their individual bids or all bids.

1.16 SUBCONTRACT WORK

.1 Contractor is to ensure that all Subcontractors understand the full extent of their responsibilities in order to complete the entire work of the project. Subcontract work may appear in various Sections of Specifications and on various Drawings.

.2 Contractors and their Subcontractors are advised to become familiar with all specifications and drawings.

1.17 CONDITIONS OF WORK AND EMPLOYMENT IN PEI

.1 All Construction Companies and Contractors and subcontractors submitting tenders for this work, or a portion thereof, are advised, in their own interest, to contact the Construction Association of Prince Edward Island, the accredited association for commercial and industrial sectors of the construction industry, to inquire and determine the terms and conditions of work and employment in the Province of Prince Edward Island.

1.18 COVID-19

.1 The parties acknowledge that the obligations of each party from time to time to meet certain terms and conditions of this Contract, may be impeded by the COVID-19 pandemic and related issues. The parties agree to act in good faith by making all reasonable accommodations as the circumstances of the pandemic may require and each party will exercise reasonable efforts to comply with this Contract notwithstanding the effect of the pandemic. No party will require or encourage any person acting on its behalf to violate the terms of any public health directive or to perform any act which would place such person at a material risk of contracting the COVID-19 virus.

.2 This contractor acknowledges that any costs associated with COVID-19 construction protocol related to all required Health and Safety measures during the duration of this construction contract, as referenced in the Tender Documents, shall be included in the base bid for this Contract.

.3 COVID-19 Implications:

.1 Until further notice, and as directed by the Provincial Chief Public Health Office (CPHO), all works shall be conducted with the intent and spirit of the health directives given. As such, bidders shall include provisions within their bids to achieve social and physical distancing between all workers during travel times to and from the site, working, rest breaks, lunch breaks, etc. For more information related to CPHO and COVID-19 refer to the following links provided by the Government of PEI:

.1 Government of PEI:
www.princeedwardisland.ca/covid19

.2 Government of Canada:
www.canada.ca/coronavirus

.3 CAPEI:
www.capei.ca/

.4 In response to the current COVID-19 pandemic we will require all Contractors to:

.1 Develop a written work site specific Pandemic Preparedness plan based on the criteria in the CAPEI industry guide "PANDEMIC PLANNING FOR THE CONSTRUCTION INDUSTRY - A GUIDE" found at the following link:
https://capei.ca/member_access/LiveEditor/images/pdf/INDUSTRY_GUIDE_COVID_19.pdf

.5 The successful Contractor shall have designated an on-site staff person with the authority to enforce the requirements of the 'Pandemic Preparedness Plan' throughout the project(s) or until such directive is deferred by the Chief Provincial Health Office (CPHO). The Owner will require that the Contractor develop a written site specific Pandemic Preparedness Plan and have it available upon award of this tender.

1.19 LABOUR

.1 No prospective employee in the Province of Prince Edward Island shall, with relation to his employment or eligibility for employment, be discriminated against or favored by reason of sex, racial origin, religious views, or political affiliations.

.2 Contractors, to the extent possible, are encouraged to maximize the employment of the local labour force for the Work of this Contract.

1.20 COMPLIANCE WITH STATUTES

.1 It shall be the sole responsibility of the Contractor to prepare and submit any required applications, reports, payments or contributions with respect to Sales Taxes, Income Taxes, Canada Pension Plan contributions, Employment Insurance Premiums, Harmonized Sales Taxes or any other similar matter which may be required by law to be made by the Contractor in connection with the services to be performed under this Agreement.

.2 The Agreement shall be interpreted and applied in accordance with the laws, and in the courts, of the Province of Prince Edward Island.

.3 The Contractor agrees to accept sole responsibility to comply with all federal, provincial and municipal legislation which may have application to the Work and agrees to comply with all provincial and federal legislation affecting conditions of work and wage rates including the Employment Standards Act R.S.P.E.I. 1988, Cap. E-6.2, the Workers Compensation Act R.S.P.E.I. 1988, Cap. W-7.1, or any other laws that impose obligations in the nature of employers' obligations. The Consultant agrees to follow the Public Service Commission Human Resource Policies listed below while working on Government sites, in Government vehicles or alongside Government staff.

.1 Prince Edward Island Public Service Commission, Human Resource Policies

.1 9.05 Violence in the Workplace Policy
https://psc.gpei.ca/sites/psc.gpei.ca/files/HRPolicy/HRManual_9.05.pdf

.2 9.08 Drug, Alcohol and Medication Policy
https://psc.gpei.ca/sites/psc.gpei.ca/files/9.08%20AlcoholDrugandMedicationPolicy.pdf

.3 11.01 Policy for the Prevention and Resolution of Harassment in the Workplace
https://psc.gpei.ca/files/PDF%20Files/hrp-manual/hrppm_11.01.pdf

.4 The Contractor, before undertaking any Work shall provide to Government either a certificate of good standing by the Workers Compensation Board or written confirmation from the Workers Compensation Board that such certificate is not required.

.5 The Contractor agrees to accept the full cost of doing those things required under this paragraph and will not charge or seek reimbursement from Government in any way, such costs having been taken into consideration and included in the rates of payment stipulated in the Payments, Records and Accounts section of this Agreement.

1.21 TAXES

.1 The Harmonized Sales Tax (HST) shall be EXCLUDED from the tender amount. The Contractor, as per current Provincial Regulations, shall include on all invoices the Harmonized Sales Tax (HST) as an additional line item. This would be in addition to the tender amount which does not include HST.

.2 Vendors are required to charge HST on invoices to Province of PEI Departments, Agencies, Crown Corporations, and Regional Health Authorities.

1.22 ACCEPTABLE PRODUCTS

.1 The Bidder shall carry in his tender the base bid product(s) identified in the specifications as "Acceptable Material", or Approved Equals as they are identified throughout the tender period.

.2 The Bidder is also encouraged to carry the products of other manufacturers, that are not considered equals, as "Alternatives Prices," listing them by name on the Appendix provided for that specific purpose, as part of the Tender Form, together with the price difference compared to the specified products, when such Appendix is identified under Section 00 41 13 - Bid Form.

1.23 APPROVED EQUALS

.1 Submission for an Approved Equal is to contain literature and descriptive information with full specification data. Where the requested item is contained on a printed document with other items, it is to be clearly identified.

.2 The Consultant will not search catalogs, e-mails or websites or contact suppliers to obtain the necessary information for proper evaluation.

.3 Submission by Bidders for evaluation of products requested to be considered as equal must be submitted to Consultant no less than 5 working days prior to closing of tenders. No consideration will be given to approving equals after the close of tenders, except when the specified product is found to have been discontinued by the manufacturer.

.4 The consideration of a product(s) for Approved Equal status and the acceptance of individual products as approved equals is entirely at the discretion of the Consultant.

.5 When products are given Approved Equal status these products may, at the discretion of bidders, be carried in their tender price, provided that ALL costs related to changes to the contract work required to incorporate the Approved Equal product are included in the tender price.

.6 The acceptance of a product by the Consultant as an "Approved Equal," even where not specifically indicated on the Approved Equals listing in the Addendum, is to be understood as being contingent upon the provision of the particular series, model and/or type, complete with all options to meet the specified requirements of the Acceptable Material product.

.7 Products given approved status that are found, during construction period, to not have all specified options available, or to have discontinued production of same, or to have made other design changes since the time of approval, will not be accepted for use on this project, except when financial compensation has been mutually agreed upon between the Contractor and the Owner and deemed acceptable by the Consultant. Compensation will not be paid to the Contractor for products acknowledged by the Consultant to be superior to the specified products.

1.24 ALTERNATIVES

.1 Alternative products, when requested under Section 00 41 13 - Bid Form, must be listed in Appendix "B" provided as part of the Tender Form, and are to be understood as being offered only for the Owner's consideration as substitutes for the specified Acceptable Material products, at the amount of increase or decrease in the tender amount indicated in the Appendix. These products and related prices are not to be included in the tender amount.

.2 Alternative products and their related increase or decrease in the base bid amount are not used as the basis for awarding tenders.

.3 When alternative products are listed in Appendix "B", ALL costs related to changes to the contract work required to incorporate the alternative product into the work are to be included in the amount stated in Appendix "B".

.4 Alternative products may or may not be accepted at the discretion of the Owner at the price difference quoted, without any other monetary consideration. If requested, bidders shall promptly supply full details of any or all Alternatives listed. Specific written direction from the Consultant must be given to the Contractor to substitute an alternative product.

.5 Alternative prices shall include all fees, taxes and markups.

1.25 UNIT PRICES

.1 Unit Prices, when requested under Section 00 41 13 - Bid Form, must be listed in Appendix "C", as part of the Tender Form and are to be understood as being offered only for the Owner's consideration; to be accepted or not accepted, at the Owner's discretion in a timely manner during the Work of the Contract, ONLY as a method of adjustment to the Contract Work for changes in the Work, should the Owner opt for the Unit Price

Method.

.2 Unit prices shall include all fees, taxes and markups.

1.26 SEPARATE PRICES

.1 Separate Prices, when requested under Section 00 41 13 - Bid Form, must be listed in Appendix "D", as part of the Tender Form and are to be understood as being offered only for the Owner's consideration; to be accepted or, not accepted, in whole or in part, at the Owner's discretion. If used the Separate Prices may be incorporated into the Contract Work either at the time of Award of Contract or in a timely manner during the Work of the Contract, at the Owner's discretion.

.2 Separate Prices shall include all fees, taxes (excluding HST) and markups.

1.27 GUARANTEES

.1 The Contractor will be required to guarantee the work of this Contract in accordance with the requirements of GC12.3 of the Agreement.

.2 Not withstanding the above, the bidder's attention is directed to the fact that certain individual items on this project may be required to be guaranteed by the manufacturer for periods in excess of twelve months. These specific requirements are to be found in various Sections of the specifications for this project.

1.28 PAYMENT OF WORKERS

.1 The Contractor shall, in addition to any fringe benefits, pay the workers employed by the Contractor on the work at wage rates, not less than those established by the Minimum Wage Order, issued under authority of the Labour Act, which is in effect. The Contractor shall pay workers employed on the work at intervals of not less than twice per month.

.2 The Contractor shall require each Subcontractor, or person doing any part of the work, to covenant with the Owner that workers are employed at the wage rates and in the manner required by this provision.

.3 Where any person employed by the Contractor or any Subcontractor, or other person engaged on the Work of this Contract, is paid less than the amount required to be paid under the provisions of this Contract, the Owner may deduct from any monies payable to the Contractor, under this or any other Contract, and pay to such person, a sum sufficient to bring the person's wages up to the amount required to be paid under this Contract.

.4 No claim for extra payment from the Contractor will be considered by the Owner concerning any change in the Minimum Wage Order which may occur during prosecution of the Contract.

1.29 CONFIDENTIALITY AND FREEDOM OF INFORMATION

.1 By submitting your bid, you agree to disclosure of the information supplied, subject to the provisions of the Freedom of Information and Protection of Privacy (FOIPP) Act.

.2 Anything submitted in your bid that you consider to be "confidential information" because of its proprietary nature should be marked as "Confidential", and will be subjected to appropriate consideration under the Freedom of Information and Protection of Privacy Act.

.3 During the delivery and installation of goods and/or services, you may have access to confidential or personal information. Should this occur, you must ensure that such information is not released to any third party or unauthorized individual.

.4 Any information provided on this contract may be subjected to release under the Freedom of Information and Protection of Privacy Act. You will be consulted prior to the release of any information.

1.30 TIMING REQUIREMENTS

.1 This project will require the achievement of the following project milestones.

- .1 Tender Call 06 MAY 2021
- .2 Pre-tender Site Meeting 13 MAY 2021 @ 9:00 AM
  - .1 Contractors are asked to meet at main entrance of Eliot River Elementary School.
- .3 Tender Close 20 MAY 2021 @ 2:00 PM
  - .1 Location of Closing: Jones Building, 11 Kent Street.
- .4 Tender Award 28 MAY 2021
- .5 Construction Start Immediately following award.
- .6 Substantial Completion: 01 OCT 2021
- .7 Other Timing Notes:
  - .1 The last day of school for 2020/2021 school year is June 28, 2021.
  - .2 The first day of school for 2021/2022 school year is September 01, 2021.
  - .3 Any work taking place outside of the the June 28, 2021 to September 01, 2021 timeframe will need to ensure that the provision of safety measures for students is in place.

END OF SECTION

1 General

1.1 TENDER

.1 SUBMITTED BY:

_____(Name)

_____(Address)

_____(Contact)

DATE: _____

FOR: PROJECT NAME: ELIOT RIVER ELEMENTARY SCHOOL
CONTRACT #1 - ROOF REPLACEMENT
LOCATION: CORNWALL, PE

TO: PROJECT OWNER: GOVERNMENT OF PRINCE EDWARD ISLAND, AS REPRESENTED BY THE MINISTER OF TRANSPORTATION & INFRASTRUCTURE
LOCATION: 11 KENT STREET, CHARLOTTETOWN

Having examined ALL the drawings and specifications for this project, as well as any addenda issued, as prepared by Coles Associates Ltd. and/or their consultants; WE HEREBY OFFER to furnish all materials, plant and labour necessary for the full and proper completion of the Contract work for:

PROJECT NAME: ELIOT RIVER ELEMENTARY SCHOOL
CONTRACT #1 - ROOF REPLACEMENT
LOCATION: CORNWALL, PE

INCLUDING all prime cost allowances and Government sales or other taxes in force at this date, EXCLUDING Harmonized Sales Tax (HST) but not any other additional or deductible allowances or taxes which may be applicable subsequent to this date, and which shall be payable by or to the Owner, in accordance with the above mentioned Documents, for the bid amount of:

_____(Dollars)
($)

in lawful money of Canada.

In submitting this Tender we recognize the necessity to complete the information requested by any appendices, as well as, the right of the Owner to reject all Tenders or to accept any Tender at the price submitted, on the condition that revised Tenders will not be called for if minor changes are made.

In the event of this Tender being accepted within thirty (30) days of the time stated for the closing of Tenders, and our failing or declining to enter into a Contract, then our Bid Guarantee, submitted with our Tender shall be forfeited to the Owner in lieu of any damages which the Owner may suffer by reason of our failure or refusal to enter into such Contract.

In the event of our Tender not being accepted with thirty (30) days of the time stated for the closing of Tenders, our Bid Guarantee, submitted with our Tender will be returned to us forthwith, unless a satisfactory arrangement is made with us covering its retention for a further stated period.

If we are notified of the acceptance of this Tender within the above specified time, we will:

.1 Enter into a formal Contract Agreement with the Owner.
.2 Furnish the Performance Bond and Labour and Materials Payment Bonds, or other form of Contract Security, when specifically permitted, as Contract Security in accordance with the requirements of the specifications.
.3 Furnish a cost breakdown of the Contract sum, the total aggregating the amount of our Tender, in accordance with the requirements of the specifications.
.4 Furnish a certified copy of all insurance policies.
.5 Furnish a certified copy of all insurance policies carried by the named subtrades.
.6 Complete the entire work on or before the dates stated.
.7 Provide and update as required a Construction Schedule which clearly shows the state of progress required to complete the work on the date specified.
.8 Enter into subcontract agreements where applicable.

1.2 ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA

.1 Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

1.3 FORM OF TENDER APPENDICES

.1 Appendix 'A' must be completed by bidders.
.2 Appendix 'B' (only the items indicated) may be completed by bidders, any other items are at the bidder's discretion.
.3 Appendix 'C' must be completed by bidders.
.4 Appendix 'D' must be completed by bidders.

1.4 DOCUMENTS ACCOMPANYING BID FORM

.1 As per Section 00 21 13, Par 1.8.16

.1 One (1) copy of Bid Guarantee, together with Surety's letter of consent. _____ initial
.2 One (1) copy of preliminary schedule. _____ initial
.3 One (1) copy of letter from Bidders Insurance Provider identifying list of claims made against Bidder within last five (5) years. _____ initial

1.5 SUPERINTENDENT

.1 Name of Superintendent _____.

.2 Years of Experience with Contractor _____.

1.6 CONFLICT OF INTEREST

.1 The Contractor warrants that as at the date of this Agreement, no conflict of interest, or any circumstance that might interfere with independent and objective exercise of judgment, exists or is likely to arise in relation to execution of this Agreement or its subject matter. The Contractor shall immediately notify Government, in writing, if any such actual or potential conflict of interest should arise at any time during the Term. In the event Government discovers or is notified by the Contractor of an actual or potential conflict of interest, Government, in its sole discretion, may either:

.1 Allow the Contractor to resolve the actual or potential conflict to the satisfaction of Government;
OR

.2 Terminate the Agreement in accordance with the Termination section of this Agreement.

1.7 CONTRACTOR'S SIGNATURE

.1 Signed sealed and submitted for and on behalf of:

_____
(Company Name)

_____

_____
(Address)

_____ _____
(Authorized Signature) (Witness)

_____ _____
(Name and Title) (Name and Title)

_____
(Date)

1.8 APPENDIX 'A'

.1 Herewith are identified the Subcontractors we propose to use on this project. Carrying Sub-Contractor options next to identified work, is not acceptable and may be cause for rejection of the Tender by the Owner.

Building Demolition: _____

Roofing: _____

Roof Hatch: _____

Metal Fabrication: _____

Sheet Metal Flashing & Trim: _____

Painting: _____

COMPANY: _____

AUTHORIZED SIGNATURE: _____

1.9 APPENDIX 'B'

.1 ALTERNATIVE PRICES

We herewith submit for consideration by the Owner the following systems or products as Alternatives to the Base Bid items indicated below and identify the increase or decrease, as applicable, in our tender price, for each item should it be selected by the Owner for installation in lieu of the Base Bid item. The change in tender price includes for all necessary modifications to the base bid systems.

Alternative prices shall include all fees, taxes and markups.

SECTION ITEM BASE BID ALTERNATIVE:	TENDER PRICE INCREASED BY:	TENDER PRICE DECREASED BY:
_____	$_____	$_____
_____	$_____	$_____
_____	$_____	$_____
_____	$_____	$_____

COMPANY: _____

AUTHORIZED SIGNATURE: _____

1.10 APPENDIX 'C'

.1 UNIT PRICE COMPONENT

We submit herewith our Unit Prices for the additions or deletions to the work listed below. The Unit Prices listed apply to performing the Units of Work, in accordance with the requirements of the appropriate specifications herein, only during the time scheduled for such work in the project work schedule.

Unit prices shall include all fees, taxes and markups.

	UNIT OF WORK	ONE (1) UNIT PRICE ONLY FOR EITHER ADDITION OR DELETION
.1	_____	$ _____
.2	_____	$ _____
.3	_____	$ _____
.4	_____	$ _____

COMPANY: _____

AUTHORIZED SIGNATURE: _____

1.11 APPENDIX 'D'

.1 SEPARATE PRICES

We submit herewith our Separate Price for the addition of the work listed below and amounts are NOT included in our Stipulated Price. In accordance with the requirements of the appropriate specifications herein, only during the time scheduled for such work in the project work schedule.

Separate prices shall include all fees, taxes and markups.

	UNIT OF WORK	ONE (1) UNIT PRICE ONLY FOR EITHER ADDITION OR DELETION
.1	_____	$ _____
.2	_____	$ _____
.3	_____	$ _____
.4	_____	$ _____

COMPANY: _____

AUTHORIZED SIGNATURE: _____

END OF SECTION

1 General

1.1 FORM OF AGREEMENT

.1 The Form of Agreement between Contractor and Owner shall be Canadian Construction Documents Committee CCDC2-2008, "Stipulated Price Contract", including the Definitions and General Conditions therein dated 2008 including items GC1.1 inclusive to GC12.3, and the modifications to items GC1.1 to GC12.3 incorporated into Section 00 73 00 - Supplementary Conditions of this Specification.

.2 Document CCDC2-2008 may be examined at the Construction Association office in Charlottetown, PEI.

END OF SECTION

1 General

1.1 GENERAL

.1 The Definitions and General Conditions governing the Work shall be those specified in the following amendments and supplements to those provisions, and shall apply to all Sections of this Specification.

.2 Where any Article or portion of Article conflicts with the Laws of the Province concerned, such Article or portion of the Article is hereby stricken.

.3 The following amendments shall apply to the Definitions of CCDC2 Stipulated Price Contract 2008.

1.2 DEFINITIONS

.1 Paragraph 4 Consultant, add the following:

.1 The Consultant shall be the Owner's Prime Consultant, Coles Associates Ltd., 85 Fitzroy Street, Charlottetown, PEI.

.2 Paragraph 12 Owner, add the following:

.1 The Owner shall be Government of Prince Edward Island as represented by the Minister of Transportation & Infrastructure.

.3 Paragraph 19 Subcontractor, add the following:

.1 All dealings with the Subcontractor shall be through the medium of the Contractor, who will be responsible for the proper coordination and execution of the Sub-contractor's work.

.4 New Paragraph 27 Engineer:

.1 This shall mean the designated engineering representative(s) of the Consultant.

1.3 ARTICLE GC1.1 CONTRACT DOCUMENTS

.1 Paragraph 1.1.8 - Delete as written and substitute:
1.1.8 The Contractor shall receive up to fifteen (15) sets of drawings and specifications at no cost from the Owner. Additional sets of drawings will be supplied at cost of reproduction. The above covers the requirements for all trades.

.2 Paragraph 1.1.11 - Add new Paragraph as follows:
1.1.11 The Contract Documents are prepared solely for use by the party with whom the Consultant has entered into a Contract and there are no representations of any kind made by the Consultant to any party with whom the Consultant has not entered into a Contract.

.3 Paragraph 1.1.12 - Add new Paragraph as follows:
1.1.12 Electronic documents are and shall remain the Consultant's property. Copies of electronic documents may be made available for the preparations of shop drawings at the Consultant's sole discretion and for a fee.

1.4 ARTICLE GC3.1 CONTROL OF THE WORK

.1 Paragraph 3.1.1 - add new Sub-Clause 3.1.1.1 as follows:

.1 The Contractor shall co-ordinate his own work and the work of all Subcontractors so as to facilitate and expedite the progress of the work.

.2 Paragraph 3.1.1 Add new Sub-Clause 3.1.1.2 as follows:

.1 It is the responsibility of the Contractor to immediately notify the Consultant of any signs of distress or any other indications of actual or potential damage to the contract work, without regard to his awareness of any errors, inconsistencies or omissions in the Contract Documents.

.3 Add new Paragraph 3.1.3 as follows:

.1 Before ordering any materials or doing any Work, Contractor shall verify all compensation has been allowed on account of differences between actual site

dimensions and the measurements indicated on the drawings. Any difference, which may be found, shall be submitted to the Consultant for consideration before proceeding with the work.

.4 Add new Paragraph 3.1.4 as follows:

.1 The Contractor will be responsible for effecting the removal from the site of any trade, firm, group or person who is delaying the Work, or whose Work is unsatisfactory. The Contractor will arrange for other competent trades people to complete the Work at no expense to the Owner.

1.5 ARTICLE GC3.6 SUPERVISOR

.1 Add new Paragraph 3.6.3 as follows:

.1 The Consultant may require the Contractor to inform him, in writing, of the name and experience of the supervisory personnel he intends to use on the project.

1.6 ARTICLE GC3.8 LABOUR AND PRODUCTS

.1 Add new Paragraph 3.8.4 as follows:

.1 All manufactured articles, materials and equipment shall be installed, applied, connected, erected, used, cleaned, conditioned and commissioned as directed by the manufacturer unless specified to the contrary.

1.7 ARTICLE GC3.9 DOCUMENTS AT THE SITE

.1 Add new Paragraph 3.9.2 as follows:

.1 Maintain at job site, one copy each document as follows:

.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Reviewed Shop Drawings.
.5 List of Outstanding Shop Drawings.
.6 Notice of Change.
.7 Change Orders.
.8 Other Modifications to Contract.
.9 Field Test Reports.
.10 Approved Work Schedule.
.11 Health and Safety Plan and Other Safety Related Documents.
.12 CSA Z317.13-07 - Infection Control Guidelines.
.13 Other documents as specified.

1.8 ARTICLE GC4.1 CASH ALLOWANCES

.1 Article GC4.1 - Delete this article.

1.9 ARTICLE GC4.2 CONTINGENCY ALLOWANCE

.1 Article GC4.2 - Delete this article.

1.10 ARTICLE GC5.2 APPLICATIONS FOR PROGRESS PAYMENT

.1 Paragraph 5.2.2 - add two new Sentences as follows:

.1 Payment shall be less any holdback release, which may have been made in accordance with the specific terms of this Agreement as dictated by GC 5.6. Any such holdback release by the Owner to the Contractor shall be a payment to the Contractor in trust for the specific Subcontractor in respect of whose work the release is made.

.2 Payments shall be less 15% Mechanics' Lien Holdback amount claimed against each progress claim.

.2 Add new paragraph 5.2.6 as follows:

.1 Authorized Change Orders shall be listed on the application for payment indicating the amount claimed against each to date of claim.

.3 Paragraph 5.2.7 - Add new sentences as follows:

.1 Payment for materials will be considered only if such materials are properly stored on site in a secure enclosure acceptable to the Consultant. Security of materials so stored is the responsibility of the Contractor.

.4 Add new Paragraph 5.2.8 as follows:

.1 With the second and all subsequent applications for payment the Contractor shall include a statutory declaration form CCDC 9B, or other similar form acceptable to the Consultant, declaring that all labour and materials entering into the work, including Subcontractors, covered by the previous application, have been paid. With application for release of lien holdback, the Contractor shall include a statutory declaration form CCDC 9A, or other similar form acceptable to the Consultant.

.2 With the second and all subsequent applications for payment the Contractor shall include a Letter of Clearance from the PEI Workers Compensation Board.

1.11 ARTICLE GC5.3 PROGRESS PAYMENT

.1 Paragraph 5.3.1 - Add new Sentence as follows:

.1 When any claim for payment during the course of construction includes for completed or partially completed Work, which in the opinion of the Consultant is defective or otherwise unacceptable, a sum of monies determined by the Consultant to be two (2) times the value of the defective or unacceptable Work, or two (2) times the value of the Work required to correct the defect or an amount solely at the Consultants discretion, will be withheld from the claim.

.2 Paragraph 5.3.1 - Add 3 new Sentences as follows:

.1 Deficiency monies may be held back at any time during the course of the project for Work deemed incomplete or unacceptable.

.2 It remains the Contractor's responsibility to undertake his own deficiency reviews and ensure the entire Work conforms to the Contract including quality, completeness and commissioning.

.3 Two final deficiency reviews will be conducted by the Consultant. The first review with the Owner and Contractor will identify any minor items which may remain outstanding, and the second review will confirm that these items have been completed. All other deficiency reviews where deficiencies are incomplete or not ready for requested inspections, will be charged at cost to the Contractor. The invoice for the additional reviews will be submitted to the Owner with a corresponding amount deducted from the Contractor's progress payment.

1.12 ARTICLE GC5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Paragraph 5.5.1, Add new Sub-Clause .3 as follows:

.1 5.5.1.3 Submit with application for payment letter of clearance from The Workers Compensation Board to the Owner stating that the Contractor is in good standing with the Board.

1.13 ARTICLE GC5.7 FINAL PAYMENT

.1 Paragraph 5.7.2 - Add new Sentence as follows:

.1 Any delay in delivering the required Project Record Drawings (As-Builts) as described in Section 01 78 00 - Closeout Submittals will have the effect of delaying the final payment to the Contractor until the Consultant has received them complete and in good condition.

1.14 ARTICLE GC6.2 CHANGE ORDER

.1 Delete Paragraph 6.2.1 and replace with a new paragraph as follows:

.1 6.2.1 When a change in Work is proposed or required, the Consultant will provide the Contractor with a written description of the proposed change in the Work. The Contractor shall promptly present, in forms acceptable to the Consultant, a detailed breakdown of the costs associated with the change, if any; and the adjustment in the Contract Time, if any. The breakdown shall include:

.1 Actual (not list) costs of material, as well as Subtrade and Supplier costs.

.2 Labour costs, including fringe benefits and wage levies.

.3 Equipment rental (excluding hand and small power tool).

.2 Change Orders calling for normal changes or additions to the Work will be priced in detail giving actual material trade prices (not list prices) and actual labour costs and wage levies (including Employment Insurance, Worker's Compensation, Holiday Pay) and actual equipment rental.

.3 Each Change Order will be considered as a whole to complete the work, inclusive of all Sub-Contract and/or General Contract work.

.4 To these prices, the Contractor will add:

.1 For Work less than $2,500, involving the General Contractor only, the General Contractor adds 20% to his costs.

.2 For Work over $2,500, involving the General Contractor only, the General Contractor adds 15% to his costs.

.3 For Work less than $2,500, involving a Subcontractor only, the Subcontractor adds 20% to his costs, submits this price to the General Contractor who adds 10%.

.4 For Work over $2,500, involving a Subcontractor only, the Subcontractor adds 15% to his costs, submits this price to the General Contractor who adds 5%.

.5 For Work less than $2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 20% to his costs, submits his price to the General Contractor who adds 10%; to this amount the General Contractor adds the cost of his own Work plus 20% of the cost of his own Work only. The General Contractor does NOT add a further 10% to the cost of his own Work.

.6 For Work over $2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 15% to his cost, submits this price to the General Contractor who adds 5%; to this amount the General Contractor adds the cost of his own Work plus 15% of the cost of his own Work only. The General Contractor does NOT add a further 5% to the cost of his own Work.

.7 Deletions to Contract: A mark-up by either Sub-Contractor or General Contractor shall not be charged or credited on credit Change Orders.

.8 Supervision related to Change Orders shall be considered as included in the allowable mark-up, and shall not be added as additional charges for a Change order.

.5 Note: Costs related to management, supervision, estimating, scheduling, bonding, insurance, as built drawings, copying, courier, safety, cleaning, site overhead, site vehicle, hand and small power tools etc. are covered by the mark up indicated in Paragraph 6.2.1.4 and shall not be included on Change Orders.

1.15 ARTICLE GC6.3 CHANGE DIRECTIVE

.1 Delete Paragraphs 6.3.6.1, 6.3.6.2 and 6.3.6.3 and replace with the following.

.2 The Owner or the Consultant, without invalidating the contract, may make changes by altering, adding to, or deducting from the work, the contract sum being adjusted accordingly. All such work shall be executed under the conditions of the Contract.

.3 Where work is required to proceed immediately, work may proceed under a Change

Directive. The Contractor will be instructed to proceed on a time and materials basis and maintain accurate accounting records for the cost of the change.

.4 Change Directives calling for changes to the Work will be priced in detail giving actual material trade prices (not list prices) and actual labour costs and wage levies (including Employment Insurance, Worker's Compensation, Holiday Pay) and actual equipment rental.

.5 Each Change Directive will be considered as a whole to complete the work, inclusive of all Sub-Contract and/or General Contract work.

.6 To these prices, the Contractor will add:

.1 For Work less than $2,500, involving the General Contractor only, the General Contractor adds 20% to his costs.

.2 For Work over $2,500, involving the General Contractor only, the General Contractor adds 15% to his costs.

.3 For Work less than $2,500, involving a Subcontractor only, the Subcontractor adds 20% to his costs, submits this price to the General Contractor who adds 10%.

.4 For Work over $2,500, involving a Subcontractor only, the Subcontractor adds 15% to his costs, submits this price to the General Contractor who adds 5%.

.5 For Work less than $2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 20% to his costs, submits his price to the General Contractor who adds 10%; to this amount the General Contractor adds the cost of his own Work plus 20% of the cost of his own Work only. The General Contractor does NOT add a further 10% to the cost of his own Work.

.6 For Work over $2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 15% to his cost, submits this price to the General Contractor who adds 5%; to this amount the General Contractor adds the cost of his own Work plus 15% of the cost of his own Work only. The General Contractor does NOT add a further 5% to the cost of his own Work.

.7 Deletions to Contract: A mark-up by either Sub-Contractor or General Contractor shall not be charged or credited on credit Change Orders

.8 Supervision related to Change Orders shall be considered as included in the allowable mark-up, and shall not be included in the labour changes for a Change order.

1.16 ARTICLE GC9.1 PROTECTION OF WORK AND PROPERTY

.1 Add new Paragraph 9.1.5 as follows:

.1 The Contractor shall be responsible for implementing all necessary security measures required to protect the areas of Work under his control and shall be responsible for damage which may arise from the failure of, or the failure to implement such security measures.

1.17 ARTICLE GC10.1 TAXES AND DUTIES

.1 Paragraph G.C. 10.1.1 - Revise as follows:

.1 Delete the words ..."at the time of closing except for Value Added Taxes"...and replace with the words ..."at the time of closing including Value Added Taxes"...

1.18 ARTICLE GC10.2 LAWS, NOTICES, PERMITS, AND FEES

.1 Paragraph G.C. 10.2.2 - Delete "the building permit" and add the new sub-clause 10.2.2.1 as follows:

.1 The Owner shall apply for, obtain and pay for the building permit.

1.19 INSURANCE

.1 Without restricting the generality of GC 12.1 - INDEMNIFICATION, the Contractor shall provide, maintain and pay for the following insurance coverages:

.1 General liability insurance with limits of at least FIVE Million Dollars ($5,000,000.00) in the name of the Contractor and include, or in the case of a single, blanket policy, be endorsed to name, the Owner and the Consultant as insureds but only with respect to liability, other than legal liability arising out of their sole negligence, arising out of the operations of the Contractor with regard to the Work. General liability insurance shall be maintained from the date of commencement of the Work until one year from the date of Substantial Performance of the Work. Liability coverage shall be provided for completed operations hazards from the date of Substantial Performance of the Work, as set out in the certificate of Substantial Performance of the Work, on an ongoing basis for a period of 6 years following Substantial Performance of the Work.

.2 Automobile Liability Insurance with limits of at least TWO Million Dollars ($2,000,000.00) from the date of commencement of the Work until one year after the date of Substantial Performance of the Work.

.3 Aircraft or Watercraft Liability Insurance with limits of at least FIVE Million Dollars ($5,000,000.00) when owned or non-owned aircraft or watercraft are used directly or indirectly in the performance of the Work. The term Aircraft includes drones and other unmanned aircraft.

.4 Broad Form" property insurance (also known as Builders Risk) in the joint names of the Contractor, the Owner and the Consultant. The policy shall include as insureds all Subcontractors. The "Broad Form" property insurance shall be provided from the date of commencement of the Work until the earliest of:

.1 10 calendar days after the date of Substantial Performance of the Work.

.2 On the commencement of use or occupancy of any part or section of the Work unless such use or occupancy is for construction purposes, habitational, office, banking, convenience store under 465 square metres in area, or parking purposes, or for the installation, testing and commissioning of equipment forming part of the Work.

.3 When left unattended for more than 30 consecutive calendar days or when construction activity has ceased for more that 30 consecutive calendar days.

.5 Boiler and machinery insurance in the joint names of the Contractor, the Owner and the Consultant. The policy shall include as insureds all Subcontractors. The coverage shall be maintained continuously from commencement of use or operation of the boiler and machinery objects insured by the policy and until 10 calendar days after the date of Substantial Performance of the Work. The policies shall include any periods of testing prior to full acceptance of the project as required by this Contract, but including coverage for risks arising out of such part of the Work. Coverage to extend to 36 months after the date of Final Completion of the last component of the project.

.6 The "Broad Form" property and boiler and machinery policies shall provide that, in the case of a loss or damage, payment shall be made to the Owner and the Contractor as their respective interests may appear. In the event of loss or damage:

.1 The Contractor shall act on behalf of the Owner for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the Contractor shall proceed to restore the Work. Loss or damage shall not affect the rights and obligations of either party under the Contract except that the Contractor shall be entitled to such reasonable extension of Contract

Time relative to the extent of the loss or damage as the Consultant may recommend in consultation with the Contractor.

.2 The Contractor shall be entitled to receive from the Owner, in addition to the amount due under the Contract, the amount which the Owner's interest in restoration of the Work has been appraised, such amount to be paid as the restoration of the Work proceeds in accordance with the progress payment provisions. In addition the Contractor shall be entitled to receive from the payments made by the insurer the amount of the Contractor's interest in the restoration of the Work; and to

.3 The Work arising from the work of the Owner, the Owner's own forces or another contractor, the Owner shall, in accordance with the Owner's obligations under the provisions relating to construction by Owner or other contractors, pay the Contractor the cost of restoring the Work as the restoration of the Work proceeds and as in accordance with the progress payment provisions.

.7 The insurer shall acknowledge that the policies are primary and any other insurance policies that may be in effect or any other sources of recovery the including Government of Prince Edward Island's Self Insurance and Risk Management Fund shall not contribute in any way to any judgments, awards, payments, or costs or expenses of any kind whatsoever made as a result of actual or alleged claims.

.2 Prior to commencement of the Work and upon placement, renewal, amendment, or extension of all or any part of the insurance, the Contractor shall promptly provide the Owner with confirmation of coverage in the form of certificates of insurance by an authorized representative of the insurer together with copies of any amending endorsements applicable to the Work.

.3 The parties shall pay their share of the deductible amounts in direct proportion to their responsibility in regards to any loss for which the above policies are required to pay, except where such amounts may be excluded by the terms of the Contract.

.4 If the Contractor fails to provide or maintain insurance as required by the Contract Documents, then the Owner shall have the right to provide and maintain such insurance and give evidence to the Contractor and the Consultant. The Contractor shall pay the cost thereof to the Owner on demand or the Owner may deduct the cost from the amount which is due or may become due to the Contractor.

.5 All required insurance policies shall be with insurers licenced to underwrite insurance in the jurisdiction of the Place of Work.

.6 Indemnification:

.1 The Contractor shall indemnify and hold harmless the Government of Prince Edward Island, its agents, representatives and employees from and against all claims, demands, losses, costs, damages, actions, suits or proceedings of every nature and kind whatsoever arising out of or resulting from the performance of work (herein called the "claims"), provided that any such claim is caused in whole or in part of any act, error or omission, including but not limited to those of negligence of the Contractor, or anyone directly or indirectly employed by the Contractor anyone for whom the Contractor may be liable.

1.20 ARTICLE GC12.3 WARRANTY

.1 Add new Paragraph 12.3.7 as follows:

.1 When a part of the work is occupied by the Owner, directly or for the use intended prior to Substantial Performance, the warranty for the Work directly related to the construction and normal operation of that part of the Work, shall start on the date of occupancy.

.2 Add new paragraph 12.3.8 as follows:

.1 The Contractor shall ensure that his subcontractors are bound to the requirements of GC12.3 insofar as their work is concerned.

END OF SECTION

1 General

1.1 SCOPE OF WORK

.1 The Contractor is to provide each item, and properly execute all work as specified herein, indicated by drawings, addenda, or change orders issued with respect to this project.

.2 The Contractor shall coordinate, administer, and supervise all work, material acquisition and labour.

.3 The project involves the roof replacement at the existing Eliot River Elementary School, located in Cornwall, PEI.

1.2 WORK BY OTHERS

.1 Co-operate and coordinate with other Contractors in carrying out the respective works and carry out instructions from Consultant.

.2 Schedule the Work of this Contract in consultation and cooperation with the Work of other Contractors and/or Owners own forces to produce a coordinated construction schedule.

1.3 COORDINATION

.1 All Trades on site are responsible to co-operate and co-ordinate with each other.

.2 Coordination prior to installation of all building components is mandatory.

.3 Where work must be modified or reinstalled to be properly coordinated, the cost to do so will be paid by the Trades involved. The Owner will not pay for uncoordinated work nor will the Owner pay to resolve uncoordinated work.

.4 If resolution cannot be achieved among the involved Trades, the Consultant will assess Trade involvement and assign costs accordingly.

1.4 DAMAGE

.1 Where damage is done to work in progress or existing areas of the building and is unclaimed by a Trade, the cost to repair the damage will be assessed by the Construction Manager and Consultant and assigned on a pro-rated tender cost basis to all Trades on site at the time the damage occurred.

.2 The Owner will not participate in paying for such damage.

1.5 DEDUCTIONS FOR UNCORRECTED WORK

.1 If, in the opinion of the Consultant, it is not expedient to correct defective work or work not done in accordance with the Contract documents, the Owner may deduct from the Contract price the difference in value between the work as done and that called for by the Contract, the amount of which shall be determined in the final instance by the Consultant.

1.6 CORRECTION AFTER COMPLETION

.1 Subject to any special provisions in the Contract documents, the Contractor shall remedy any defects due to faulty materials or workmanship appearing within a period of one (1) year from the date of substantial completion of the work and shall pay for any damage to other work resulting there from which appears within such period and neither the final certificate nor payment there under shall relieve the Contractor from responsibility hereunder. The Owner shall give notice of observed defects promptly.

1.7 EMERGENCIES

.1 The Consultant has authority in an emergency to stop the progress of the work whenever in his or her opinion, such stoppage may be necessary to ensure the safety of life, or of the structure, or neighbouring property. This includes authority to make such

changes and to order, access and award the cost of such work extra to the Contract or otherwise as may in his or her opinion be necessary.

1.8 WORK SEQUENCE

.1 Coordinate Progress Schedule referred to in Section 01 32 16 - Construction Progress Schedule and coordinate with Owner Occupancy during construction.

.2 Maintain fire access/control.

1.9 EXECUTION

.1 Execute work with least possible interference or disturbance to building operations, public and normal use of premises.

1.10 DOCUMENTS

.1 The Contract Documents are complementary and what is called for by any one shall be as binding as if called for by all.

.2 Descriptions of materials or work which have well known technical or trade meanings shall be held to refer to such recognized standards.

.3 Should the specifications conflict with the drawings, the specifications shall govern.

.4 In the case of discrepancies between drawings, those of larger scale, or if the scale are the same, those of later date shall govern.

.5 All drawings and specifications shall be interpreted in conformity with the agreement.

1.11 PROTECTION OF WORK AND PROPERTY

.1 The Contractor shall maintain continuously adequate protection of all their work from damage and shall take reasonable precautions to protect the Owner's property from all injury arising in connection with this Contract. The Contractor shall make good any damage or injury to their work and shall make good any damage or injury to the property of the Owner resulting from the lack of reasonable protective precautions. The Contractor shall not be responsible, however, for any damage or injury to their work and to the property of the Owner which may be directly due to errors in the Contract documents or caused by the Owner, their agents, or employees, or from any work or risk which the Owner has agreed to insure, provided the Contractor has taken reasonable protective precautions. The Contractor shall adequately protect adjacent property as required by law and the Contract documents.

1.12 COMMUNICATION

.1 All submissions and inquiries shall be directed to the Consultant for review.

.2 All direction will be transmitted to the Contractor by the Consultant.

1.13 CODES AND REGULATIONS

.1 Perform work in accordance with National Building Code of Canada (NBC) 2015 and any other code of provincial or local application, provided that in any case of conflict or discrepancy the more stringent requirements shall apply.

.2 Meet or exceed requirements of contract documents and specified standards.

.3 References to standards, including manufacturer's direction for installation shall be the latest edition.

.4 All materials, components and equipment as well as construction methods shall comply with the NBC (2015) and all other applicable Provincial codes or regulations.

.5 The latest edition of the Canadian Electrical Code shall govern all electrical work, whether pre-wired and/or assembled remote from the site or not.

.6 All equipment supplied or installed shall be CSA approved for the intended use.

.7 The latest edition of the PEI Occupational Health and Safety Act and Regulations shall govern safe construction practices.

.8 Provide a copy of all certificates of acceptance issued by Provincial or local authorities.

1.14 WORK SCHEDULE AND PROGRESS REPORTS

.1 The Contractor will prepare and maintain a consolidated schedule in weekly increments showing scheduled work versus actual work. The schedule shall indicate the contract commencement and completion date for the total project.

.2 The Contractor is to develop a detailed schedule identifying specific components of the mechanical, sprinkler, refrigeration and electrical trades. A single line items for each is not acceptable.

.3 Provide updated schedule information from time to time as the progress of the work or Consultant may require.

.4 The Contractor shall furnish monthly progress reports from the date of commencement. These reports shall show the percentage of completion of the various divisions of work and contain comments on the general progress of the project.

1.15 CONTRACTOR'S USE OF SITE

.1 Do not unreasonably encumber site with materials or equipment.

.2 Move stored products or equipment, which interfere with operations of Consultant or other Contractors.

.3 Obtain and pay for use of additional off site storage or work areas needed for operations.

.4 The work related to modifying the site roadways must be carried out so that one half of the roadway is open to vehicle traffic at all times.

1.16 PROJECT MEETINGS

.1 Hold bi-weekly project meetings at the site, in the Contractor's site office and at a time approved by Consultant. In addition hold any additional meetings as the need arises or as directed by the Consultant.

.2 Notify all parties concerned of such meetings.

.3 The Contractor will record minutes of meetings and distribute to all parties within three (3) days of meeting.

.4 Failure of the Contractor to accurately record minutes or distribute the minutes in a timely manner will result in the Consultant taking over the duties invoicing the owner and deducting an equal amount from the progress claims as compensation.

1.17 OWNER'S SITE INSPECTOR

.1 There will be an Inspector representing the Department of Transportation & Infrastructure, Province of PEI. No work is to be covered without having received approval from the Inspector. The Inspector will have the authority to cause any part of the work to cease, should, in his or her opinion, there be cause to do so.

.2 This work shall be examined by the Department and approval granted to resume when a satisfactory solution has been found out.

.3 The Inspector does not have authority to authorize changes to work. He or she shall confer with the Consultant who, if necessary will authorize any change.

.4 The fact that the Inspector does not reject any work shall not remove the irresponsibility for completing all work as specified from the Contractor.

1.18 SITE INSPECTOR

.1 No work is to be covered without having received approval from the Consultant. The Consultant will have the authority to cause any part of the work to cease, should, in his or her opinion, there be cause to do so.

.2 This work shall be examined by the Consultant and approval granted to resume when a satisfactory solution has been found out.

.3 The fact that the Construction Manager or Consultant does not reject any work shall not

remove the responsibility for completing all work as specified from the Contractor.

1.19 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations.

.2 Provide all equipment, materials and devices needed to lay out and construct work.

.3 Supply such devices as straight edges and templates required to facilitate Consultant's inspection of work.

1.20 CONCEALMENT

.1 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.21 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Consultant of impending installation and obtain his approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.22 CUTTING, FITTING AND PATCHING

.1 Execute cutting, core drilling, fitting and patching, required to install and make new work under this contract fit properly.

.1 Includes all cutting and patching in building for connection of new mechanical and electrical services to service lines.

.2 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

1.23 EXISTING SERVICES

.1 Before commencing work, establish the location and extent of service lines and notify Consultant of findings if in conflict with information or intent shown.

.2 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

.3 Contractor shall pay for any or all repairs to existing services that have been damaged due to the Contractor's negligence in the course of his work.

.4 Notify Consultant and utilities of intended interruption of services and obtain permission.

.5 Where Work involves breaking into or connecting to existing services, give Consultant 24 hours notice for necessary interruption. Minimize duration of interruptions. Carry out Work at times as directed by governing authorities or Owner with minimum disturbance.

.6 Provide temporary services when directed by Consultant to maintain critical building and tenant systems.

.7 Provide alternative routes for personnel and vehicular traffic.

.8 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

.9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by Authorities Having Jurisdiction.

.10 Record locations of maintained, re-routed and abandoned service lines.

.11 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.24 ADDITIONAL DRAWINGS

.1 The Consultant may furnish as necessary for the execution of the work, additional instructions, by means of drawings or otherwise. All such additional instructions shall be consistent with the contract documents. In giving such additional instructions the Consultant shall have authority to make minor changes in the work, consistent with the Contract.

1.25 RELICS AND ANTIQUITIES

.1 Relics and antiquities and items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during the work, shall remain property of the Owner. Protect such articles and request directives from Consultant.

.2 Give immediate notice to Consultant if evidence of archaeological finds are encountered during construction, and await Consultant's written instructions before proceeding with work in this area.

END OF SECTION

1 General

1.1 REFERENCES

.1 Owner/Contractor Agreement.

.2 Canadian Construction Documents Committee (CCDC).

.1 CCDC 2-2008, Stipulated Price Contract.

.3 Section 00 73 00 - Supplementary Conditions.

1.2 APPLICATIONS FOR PROGRESS PAYMENT

.1 Make applications for payment on account as provided in Agreement as Work progresses.

.2 Date applications for payment last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.

.3 Submit to Consultant, at least 14 days before first application for payment, Schedule of Values for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment.

1.3 SCHEDULE OF VALUES

.1 Make schedule of values out in such form and supported by such evidence as Consultant may reasonably direct and when accepted by Consultant, be used as basis for applications for payment.

.2 Include statement based on schedule of values with each application for payment.

.3 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Consultant may reasonably require to establish value and delivery of products.

.4 Provide, minimum fourteen (14) days before submitting first application for payment, a Schedule of Values, aggregating the Total Contract Price. After approval by the Consultant the Schedule of Values will be used as a basis for the application for progress payments.

.5 Contractor shall submit with the Schedule of Values, an itemized list of all trades and applicable labour rates for each, which will be used as a basis for labour rates in changes to contract Work.

.6 The schedule of values is to indicate separate line items each for mechanical commissioning, electrical commissioning, mechanical operation & maintenance manuals and electrical operations ' maintenance manuals.

1.4 PREPARING SCHEDULE OF UNIT PRICE TABLE ITEMS

.1 Submit separate Schedule of Unit Price items of Work requested in Bid form.

.2 Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values. Include in unit prices only:

.1 Cost of material.

.2 Delivery and unloading at site.

.3 Sales taxes.

.4 Installation, overhead and profit.

.3 Ensure unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.5 PROGRESS PAYMENT

.1 Consultant will issue to Owner, no later than 10 days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be properly due. If Consultant amends application, Consultant

will give notification in writing giving reasons for amendment.

1.6 SUBSTANTIAL PERFORMANCE OF WORK

.1 Refer to Section 00 73 00 - Supplementary Conditions.

.2 Prepare and submit to Consultant comprehensive list of items to be completed or corrected and apply for a review by Consultant to establish Substantial Performance of Work or substantial performance of designated portion of Work when Work is substantially performed if permitted by lien legislation applicable to Place of Work designated portion thereof which Owner agrees to accept separately is substantially performed. Failure to include an item on list does not alter responsibility to complete Contract.

.3 No later than 10 days after receipt of list and application, Consultant will review Work to verify validity of application, and no later than 7 days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.

.4 Consultant shall state date of Substantial Performance of Work or designated portion of Work in certificate.

.5 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Consultant, establish reasonable date for finishing Work.

1.7 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

.1 After issuance of certificate of Substantial Performance of Work:

.1 Submit an application for payment of holdback amount.

.2 Submit sworn statement that all accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of Work and for which Owner might in any way be held responsible have been paid in full, except for amounts properly retained as holdback or as identified amount in dispute.

.2 After receipt of application for payment and sworn statement, Consultant will issue certificate for payment of holdback amount.

.3 Where holdback amount has not been placed in a separate holdback account, Owner shall, 10 days prior to expiry of holdback period stipulated in lien legislation applicable to Place of Work, place holdback amount in bank account in joint names of Owner and Contractor.

.4 Amount authorized by certificate for payment of holdback amount is due and payable on day following expiration of holdback period stipulated in lien legislation applicable to Place of Work. Owner may retain out of holdback amount any sums required by law to satisfy any liens against Work or, if permitted by lien legislation applicable to Place of Work, other third party monetary claims against Contractor which are enforceable against Owner.

1.8 PROGRESSIVE RELEASE OF HOLDBACK

.1 Where legislation permits, if Consultant has certified that Work of subcontractor or supplier has been performed prior to Substantial Performance of Work, Owner shall pay holdback amount retained for such subcontract Work, or products supplied by such supplier, on day following expiration of holdback period for such Work stipulated in lien legislation applicable to Place of Work.

.2 Notwithstanding provisions of preceding paragraph, and notwithstanding wording of such certificates, ensure that such subcontract Work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

1.9 FINAL PAYMENT

.1 Submit an application for final payment when Work is completed.

.2 Consultant will, no later than 10 days after receipt of an application for final payment, review Work to verify validity of application. Consultant will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.

.3 Consultant will issue final certificate for payment when application for final payment is found valid.

END OF SECTION

1 General

1.1 APPOINTMENT AND PAYMENT

.1 The Contractor will arrange and pay for the services of an independent Consultant to carry out the following tests:

- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .2 Inspection and testing performed exclusively for Contractor's convenience.
- .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
- .4 Mill tests and certificates of compliance.
- .5 Tests specified to be carried out by Contractor under the supervision of Consultant.
- .6 Additional tests specified in Article 1.3.7 below.
- .7 Where tests or inspections reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected work.

1.2 CONTRACTOR'S RESPONSIBILITIES - GENERAL

.1 Provide labour, equipment and facilities to:

- .1 Provide access to Work for inspection and testing.
- .2 Facilitate inspections and tests.
- .3 Make good Work disturbed by inspection and test.
- .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify Consultant sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Consultant.

.5 Provide Consultant with two (2) sets of fully documented test reports, submitted immediately following the testing operations.

1.3 CONTRACTOR'S RESPONSIBILITIES - INSPECTION & TESTING REQUIREMENTS

.1 Testing of all soil material types at source, including collection of sample material by testing firm, to verify compliance with material specifications.

.2 Follow up testing of all soil material types delivered to site.

.3 Monitoring placement and verifying compaction densities which have not passed initial testing.

.4 Monitoring of upgrading work.

.5 Verifying the new compaction densities.

.6 Asphalt Paving:

- .1 Review of asphalt mix design submitted by Contractor.
- .2 Monitoring placement and compaction of seal course.
- .3 Testing of asphalt for compliance with material specifications from asphalt core samples taken by testing firm.

.7 All Flooring

- .1 Moisture vapour transmission levels.
  - .1 Moisture tests.
  - .2 PH levels tests.

.3 Bonding tests.

.8 Testing work may occur under various Sections of the Specification.

1.4 OWNERS RESPONSIBILITIES: TESTING REQUIREMENTS

.1 Testing of the following will be paid for by the Owner but coordinated by the Contractor.

.1 Soil compaction tests.

.2 Concrete compression and slump tests.

1.5 FINAL REPORT

.1 Submit to the Owner at completion of job, two (2) bound hard copies and one (1) electronic copy of inspection report. This report to include:

.1 All copies of test results, indexed to correspond with testing requirements of this Section.

.2 Written report from the testing firm carrying out the work of this Contract stating that the work as itemized under Par. 4 of this Section has been performed in strict accordance with the requirements of the Contract documents.

.3 The report will be signed and sealed by a Professional Engineer registered to practice in the Province of Prince Edward Island and practicing in the field of materials testing.

END OF SECTION

1 General

1.1 TIME AND ORDER OF COMPLETION

.1 The Consultant may direct the Contractor in writing as to the time, precedence or order in which any work to be done under the contract shall be performed.

1.2 TIME OF COMMENCEMENT

.1 The Contractor shall commence work within three (3) days after the execution of the Contract, unless specifically indicated or directed otherwise by the Consultant, and shall proceed continuously, diligently and with all reasonable dispatch consistent with the Construction Schedule, and the proper execution of the work, until final completion. The rate of progress made with the work shall be such as to ensure its final completion within the specified time.

1.3 TIME OF COMPLETION

.1 The whole of the work to be done under this contract shall be finally completed in full accordance with all the terms and conditions of this contract on or before the day specified for such completion in the tender which forms part of this contract.

.2 The Contractor will be responsible for all costs incurred for failure to complete the project within the project schedule, plus 20 working days.

.3 Costs for Insurance and bonding extensions, Consultant fees for extended services and Construction Management services and expenses for extended services will all be totaled and charged against the Contractors. Costs will be deducted from Progress Claims.

1.4 EXTENSION OF TIME

.1 An extension of time may be granted in writing by the Consultant in the event of the work being delayed beyond the prescribed time for completion as a result of causes beyond the Contractor's control. Such extensions shall be for such time as the Consultant may prescribe, and the Consultant shall fix the terms on which the said extension may be granted. An application by the Contractor for an extension of time shall be made to the Owner in writing as least fifteen calendar days prior to the date of completion fixed by the contract. Where applicable, all bonds or other surety including Liability Insurance furnished to the Owner by the Contractor shall be amended where necessary at the expense of the Contractor to provide coverage beyond the date of any extension of time granted, and the Contractor shall furnish the Owner with evidence of such amendment of the bonds or other surety and Liability Insurance.

.2 Any extension of time that may be granted to the Contractor shall be so granted and accepted without prejudice to any rights of the Owner whatsoever under the Contract, and all of such rights shall continue in full force and effect after the time limited in the Contract for the completion of the work and whenever in the Contract, power and authority is given to the Consultant or any person to take any action consequent upon the act, default, breach, neglect, delay, non-observance or non-performance by the Contractor in respect of the work or Contract, or any portion thereof, such powers or authorities may be exercised from time to time and not only in the event of the happening of such contingencies before the time limited in the Contract for the completion of the work but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to proceed with the execution of the work under an extension of time granted by the Consultant.

1.5 SUSPENSION OF WORK

.1 The Contractor shall, upon written notice from the Consultant, discontinue or delay any or all of the work when, in the opinion of the Consultant, it is unwise to proceed for any reason whatsoever, and the work shall not be resumed until the Consultant shall in

writing so direct.

1.6 LABOUR DISPUTE

.1 Except to the extent that relief is granted under of the Contract, the Contractor shall bear the risk and responsibility of any loss, damage or expense to the work or to himself or any nature and kind whatsoever arising from strikes or labour disputes other than such loss, damage or expense caused by the failure of the Owner to meet its obligations under the Contract.

1.7 CHARACTER AND EMPLOYMENT OF WORKERS

.1 The Contractor shall employ only orderly, competent and skillful workers to do the work and shall give preference to available residents in the area of the Contract. Whenever the Consultant shall inform the Contractor in writing that any person or persons on the work are, in the opinion of the Consultant, incompetent, unfaithful or disorderly, such person or persons shall be discharged from the work and shall not again be employed on the work without the consent in writing of the Consultant.

1.8 LIMITATIONS OF OPERATIONS

.1 The Consultant may, in writing, require the Contractor to cease or limit operations under the Contract, on any day or days if the operations are of such nature that the Consultant deems it necessary or expedient to do so.

.2 The Contractor shall cooperate with other contractors, utility companies and the Owner and they shall be allowed free access to their work at all times. The Consultant reserves the right to alter the method of operations on this Contract to avoid interference with other work.

.3 The Contractor shall have access to their work to allow the incorporation of a double shift if the Contractor deems it necessary to meet the obligations under the contract.

END OF SECTION

1 General

1.1 DEFINITIONS

.1 Activity: An element of Work performed during course of Project. An activity normally has an expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart). A graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: Original approved plan (for Project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: Number of work periods (not including holidays or other nonworking periods) required to complete an activity or other Project element. Usually expressed as workdays or workweeks.

.6 Master Plan: A summary-level schedule that identifies major activities and key milestones.

.7 Milestone: A significant event in Project, usually completion of major deliverable.

.8 Project Schedule: The planned dates for performing activities and the planned dates for meeting milestones. A dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: Overall system operated by Consultant to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

.1 Submit to Consultant within 5 working days of Award of Contract Bar (GANTT) Chart representing the project schedule as Master Plan for planning, monitoring and reporting of project progress.

1.4 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Consultant will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

.1 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.
.2 Shop Drawings, Samples.
.3 Permits.
.4 Mobilization.
.5 Excavation.
.6 Backfill.
.7 Slab on grade.
.8 Roofing.
.9 Interior Architecture (Walls, Floors and Ceiling).
.10 Millwork.
.11 Plumbing.
.12 Lighting.
.13 Electrical.
.14 Piping.
.15 Controls.
.16 Heating, Ventilating, and Air Conditioning.
.17 Fire Systems.
.18 Testing and Commissioning.
.19 Supplied equipment long delivery items.
.20 Owner supplied equipment required dates.
.21 Substantial Completion.
.22 Deficiency Completion.
.23 Submittal.
.24 Total Completion.

1.6 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.7 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

END OF SECTION

1 General

1.1 GENERAL

.1 All submittals are to be delivered within 30 days of award of Contract.

.2 Make specified submittals to the Consultant at commencement of Contract, before beginning work on site (and no later than 10 days after award). Include:

- .1 Contract Security
- .2 Proof of Insurance
- .3 Workers' Compensation clearance letter
- .4 Cost Breakdown
- .5 Permits as required
- .6 Construction schedule for Trade Package activity
- .7 Corporate Safety Plan
- .8 Site specific safety plan
- .9 Shop drawing schedule

.3 During Construction provide:

- .1 Updated trade construction schedule
- .2 Shop drawings as required
- .3 Inspection and test reports
- .4 Request for Information
- .5 Submission required for payment purposes

.4 At completion of Work provide

- .1 Submission at completion of work as specified in Project Close Out, Commissioning, and Operations and Maintenance Data Sections.

1.2 ADMINISTRATIVE

.1 Refer to GC 3.10 Shop Drawings

.2 Submit to Consultant submittals listed for review. Submit 10 working days after award of contract in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

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

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

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

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

.7 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.8 Verify field measurements and affected adjacent Work are coordinated.

.9 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.

.10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.

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

1.3 SUBMITTAL SCHEDULES:

.1 Within 10 days following award of contract, prepare and submit a summary of all

submittals required by the Trade Package.

.2 Submittal schedule shall be formatted as follows:

SECTION NUMBER	ITEM/ EQUIP	SHOP DWG DEL DATE	ORDER DATE	ITEM DEL DATE

.3 The initial submission shall include completion of the first 3 columns of the above table example. Once approved shop drawings are received by the Contractor, the balance of the summary shall be updated and submitted accordingly.

1.4 SHOP DRAWINGS AND PRODUCT DATA

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

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

.3 Allow 10 days for Consultant's review of each submission.

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

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

.6 Submissions include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.7 After Consultant's review, distribute copies.

.8 Submit digital copy of all shop drawings, product data sheets, reports, MSDS sheets and

other traditional paper submissions.

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

.10 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.

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

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

.11 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.

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

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

.12 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.

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

.13 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.

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

.14 Submit two (2) hard copies of Operation and Maintenance Data for requirements requested in specification Sections, plus one (1) electronic copy and as requested by Consultant.

.15 Delete information not applicable to project.

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

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

1.5 SAMPLES

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

.2 Deliver samples prepaid to Consultant's business address.

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

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

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

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

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

1.6 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

END OF SECTION

1 General

1.1 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).

.1 Material Safety Data Sheets (MSDS).

.3 Province of Prince Edward Island

.1 Occupational Health and Safety Act, R.S.P.E.I.1988 (including any amendments to and regulations).

.4 CSA C22.1-18 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.

.5 CSA C22.3 No. 7-94 (R2005) - Underground Systems

.6 COSH, Canada Occupational Health and Safety Regulations (SOR/86-304)

.7 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:

.1 FCC No. 301 - June 1982 Standard for Construction Operations.(or latest edition)

.2 FCC No. 302 - June 1982 Standard for Welding and Cutting. (or latest edition)

1.2 COMPLIANCE REQUIREMENTS

.1 Comply with Occupational Health and Safety Act, Occupational Health and Safety Act Regulations PEI (including any amendments to and regulations).

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

.3 Perform lockouts in compliance with:

.1 Canadian Electrical Code

.2 Federal and Provincial Occupational Health and Safety Acts and Regulations.

.3 Regulations and code of practice as applicable to mechanical equipment or other machinery being de-energized.

.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, the Consultant will advise on the course of action to be followed.

1.3 CONSTRUCTION SAFETY MEASURES

.1 Observe and enforce construction safety measures required by latest National Building Code, Part 8, Provincial Government, Worker's Compensation Board and municipal statues and authorities.

.2 Provide and maintain first aid equipment appropriate to the work and its location in accordance with the First Aid Regulations. Implement recommendations from Occupational Health and Safety Division specific to the project work site.

.1 Have minimum 2 years site-related working experience specific to activities associated with Construction.

.2 Having working knowledge of occupational health and safety regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

1.4 HEALTH AND SAFETY COORDINATOR

.1 Employ and assign to work, competent and authorized representative as Health and

Safety Coordinator. Health and Safety Coordinator must:

.1 Have minimum 2 years site-related working experience specific to activities associated with Construction.

.2 Having working knowledge of occupational health and safety regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

1.5 SAFETY ASSESSMENT

.1 Perform site specific hazard assessment related to project.

.2 Perform on-going hazard assessments during the progress of Work identifying new or potential health risks and safety hazards not previously known. As a minimum, hazard assessments shall be carried out when:

.1 New subtrade work, new subcontractor(s) or new workers arrive at the site to commence another portion of work.

.2 The scope of work has been changed by Change Order.

.3 Potential hazard or weakness in current health and safety practices are identified by Consultant or by an authorized safety representative.

.3 Each hazard assessment to be made in writing. Keep copies of all assessments on site for duration of Work. Upon request, make available to Consultant for inspection.

1.6 SUBMITTALS

.1 Upon request, submit within seven (7) days to the Consultant, one copy electronically and one hard copy of the site-specific Health and Safety Plan.

.2 Upon request, submit within seven (7) days to the Consultant, one copy electronically and one hard copy of the Contractor's authorized representative's worksite health and safety inspection reports.

.3 Upon request, submit within seven (7) days to the Consultant, one copy electronically and one hard copy of the construction safety tool box meetings and formal contractor safety meetings.

.4 In the event of an incident/accident, immediately submit to the Consultant one copy electronically and one hard copy of the incident/accident report.

1.7 SITE CONTROL AND ACCESS

.1 Control worksite and entry points. Grant and allow entry to only workers and other persons so authorized. Immediately stop non-authorized persons from circulating within construction areas and remove from site.

.2 Prior to gaining access to the site, all contractors, subcontractors and suppliers shall file with the General Contractor their proof of Workers Compensation coverage, proof of required Insurance and proof of contract. Upon request, proof of these documents will be provided to the Owner and Consultant.

.3 Delineate and isolate construction areas from other areas of site by use of appropriate means. Erect barricades, fences, hoarding and temporary lighting as required.

.4 Erect signage at entry points and at other strategic locations around site, clearly identifying construction areas(s) as being "off limits" to non-authorized persons. Signage must be professionally made.

.5 Ensure persons granted access is fitted and wear appropriate personal protective equipment (PPE).

1.8 PROTECTION

.1 Provide temporary facilities for protection and safe passage of building occupants, public

pedestrian and vehicular traffic around and adjacent to work site.

.2 Provide safety barricades, lights and signage within work site as required to provide a safe working environment for workers.

1.9 MEETINGS

.1 Prior to commencement of work hold a Health and Safety meeting. Have Contractor's Site Superintendent in attendance.

.2 Provide site safety orientation session to all workers and all workers new to the site and other authorized persons prior to granting them access to work site. Brief persons on site conditions and on the site safety rules in force at site.

.3 Conduct site specific occupational health and safety meetings during the entire work as follows and submit minutes as requested.

.1 Formal meetings on a minimum monthly basis.

.2 Informal tool box meetings on a regular basis from a predetermined schedule.

.4 Attend Health and Safety meetings as directed by the Contractor.

1.10 HAZARDOUS MATERIALS

.1 Should material resembling hazardous materials (other than those identified within the Contract Documents) be encountered in the course of work, stop work immediately. Do not proceed until written instructions have been received from the Consultant.

.2 Any material which contains asbestos, lead paint or PCB's that is disturbed or removed during construction work shall be removed in accordance with the regulations set out by the Occupational Health and Safety Act.

1.11 WHIMIS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) Regulations regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of Safety Data Sheets.

.2 Have a copy of WHMIS Safety Data Sheets available at the workplace on delivery of hazardous products.

1.12 SITE CLEANING

.1 Except where special permission is obtained, maintain clean access on public sidewalks and roads.

.2 Maintain walks and roads clear of construction materials and debris, including excavated material. Clean walks and roads as frequently as required to ensure that they are cleared of materials, debris and excavated material.

.3 Remove snow and ice from areas as required to execute the work.

1.13 FIRE SAFETY REQUIREMENTS

.1 Comply with requirements of latest standard for Building Construction Operations issued by the Fire Commissioner of Canada and Fire Safety Regulations of Local Authority. (latest editions)

.2 Implement and follow fire safety measures during Work. Comply with following:

.1 National Fire Code, (latest edition)

.2 Fire Protection Standards FCC 301 and FCC 302, (latest edition).

.3 Federal and Provincial Occupational Health and Safety Acts and Regulations.0

.3 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 requirements, Consultant will advise on the course of action.

1.14 EMERGENCY MANAGEMENT PLAN

.1 Must include response for medical and fire emergencies.

.2 Know the location of the nearest fire alarm box and telephone (if no cell phone available), including the emergency phone number.

.3 Know where the "Civic Address" of worksite is posted to report to emergency personnel.

.4 Report immediately all fire incidents to the fire department as follows:

.1 Activate nearest fire alarm box.

.2 Telephone 911.

.3 Where fire alarm box is exterior to building, the person activating the fire alarm box shall remain at the box to direct Fire Department to scene of the fire.

.4 When reporting a fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

.5 Notify the Owner of any emergency.

1.15 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

1.16 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by Authority having Jurisdiction or by Consultant.

.2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

1.17 OPEN EXCAVATIONS

.1 If open foundations or demolition areas are to be left at the end of a work day, a protective barrier must be placed around the entire perimeter of the open excavation or demolition areas to limit access by others. Barrier to be approved by the requirements established in the OH&S Regulations.

END OF SECTION

1 General

1.1 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).

.1 Material Safety Data Sheets (MSDS).

.3 Province of Prince Edward Island

.1 Occupational Health and Safety Act, R.S.P.E.I. 1988.

.4 CSA C22.1-2002 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.

.5 CSA C22.3 No. 1-M87 (R2001) - Overhead Systems.

.6 CSA C22.3 No. 7-94 (R2000) - Underground Systems.

.7 CSA - S269.1 - Falsework for Construction Purposes.

.8 CAN/CSA - S269.2 - Access Scaffolding for Construction Purposes.

.9 COSH, Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.

.10 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:

.1 FCC No. 301 - June 1982 Standard for Construction Operations.

.2 FCC No. 302 - June 1982 Standard for Welding and Cutting.

.3 FCC standards, may be viewed at the Regional Fire Protection Services' office (previously known as the Fire Commissioner of Canada) located at 99 Wyse Road, 8th Floor, Dartmouth, NS, Tel: (902) 426-6053.

1.2 SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Part 1:
List of individual health risks and safety hazards identified by hazard assessments.

.2 Part 2:
List specific measures to control or mitigate each hazard and risk identified in part one of Plan. State engineering controls, personal protective equipment and safe work practices to be used for work having identified hazard(s) or risk(s).

.3 Part 3:
Emergency and Communications Measures as follows:

.1 Emergency Procedures: standard operating procedures, evacuation measures and emergency response implemented on site during an accident or incident. State step by step procedures, applicable to each identified hazard.

.2 Emergency Communications: list names and telephone numbers of officials, to be contacted if incident, accident or emergency situation occurs, including:

.1 General Contractor and all Subcontractors.

.2 Provincial Departments and resources from local emergency organizations, based on type of hazard, incident or accident which might occur and as stipulated in applicable laws and regulations.

.3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Consultant.

.4 Submit copies of incident and accident reports.

.5 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures.

.6 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 2 days after receipt of comments from Consultant.

.7 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.8 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

.9 Maintain Worker's Compensation Coverage for duration of contract. Submit Letter of Good Standing to Consultant.

1.3 DEFINITIONS

.1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.

.2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment is isolated.

.3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).

.4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.

.5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.

.6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

1.4 PERMITS

.1 Obtain permits, licenses and compliance certificates, at appropriate times and frequency as stipulated by authorities having jurisdiction.

.2 Post all permits on site. Submit copies to Consultant.

1.5 FILING OF NOTICE

.1 File Notice of Project and other Notices with Provincial authorities prior to commencement of Work.

1.6 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

1.7 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.

.2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.8 MEETINGS

.1 Preconstruction Conference:

.1 The safety officer shall attend and chair the preconstruction conference and prepare a comprehensive agenda for the conference.

.2 Meeting On Work Procedures:

.1 Meet with Contracting Officer to discuss work procedures and safety precautions. Ensure the participation of the Contractor's superintendent, the quality control, officer and representatives of each subcontractor or trade performing work at the site.

.3 Weekly Safety Meetings:

.1 Hold weekly at the project site. Prepare minutes showing contract title, signatures of attendees, a list of topics discussed and meeting minutes.

.4 Work Phase Meetings:

.1 The appropriate activity hazard analysis shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection.

.5 Prior to commencement of work hold Health and Safety meeting. Have Contractor's Site Superintendent in attendance.

.6 Provide site safety orientation session to all workers, all workers new to the site and other authorized persons prior to granting them access to work site. Brief persons on site conditions and on the minimum site safety rules in force at site. Maintain records of orientation on site.

.7 Conduct site specific occupational health and safety meetings for the duration of the work as follows:

.1 Formal meetings on a minimum monthly basis.

.2 Informal tool box meetings on a regular basis from a predetermined schedule.

.8 Keep workers informed of anticipated hazards, on safety practices and procedures to be followed and of other pertinent safety information related to:

.1 Progress of Work;

.2 New sub-trades arriving on site and;

.3 Changes in site and project conditions.

.9 Record and post minutes of meetings. Make copies available to Consultant upon request.

1.9 SITE SAFETY OFFICER (SSO)

.1 Employ and assign to Work, competent and authorized representative as Site Safety Officer (SSO). The SSO must:

.1 Have minimum 2 years site-related working experience specific to activities associated with Construction.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.2 The selection of the SSO will be subject to the approval of the Consultant, and changes shall be made as requested by the Consultant.

.3 The SSO shall be responsible for ensuring that all provisions of the Health and Safety Plan and relevant legislation are implemented.

.4 The SSO shall ensure that all monitoring and testing, as specified and at the direction of the Consultant, are conducted.

.5 The SSO shall maintain records of all readings that are taken by the Contractor report and any abnormal or dangerous situation to the Consultant and the Municipality, after having implemented emergency measures, as required, work shall not continue or proceed until the situation has been rectified.

.6 The Safety Officer shall be at the work site at all times whenever work or testing is being performed, shall conduct daily safety inspections.

.7 The SSO shall be authorized to act on behalf of the Contractor on all matters related to Health and Safety.

.8 Qualifications of Site Safety Officer:

.1 Ability to manage the on-site Contractor safety program through appropriate management controls.

.2 Ability to identify hazards and have the capability to expend resources necessary to abate the hazards.

.3 Must have worked on similar types of projects that are equal to or exceed the scope of the project assigned with the same responsibilities.

.4 Shall, as a minimum, have attended a recognized training qualification program including at least 40 hours of classroom instruction.

.9 Qualifications of Qualified Person, Confined Space Entry:

.1 The qualified person shall be capable (by educations and specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space. This person shall be capable of specifying necessary control and protective action to ensure worker safety.

1.10 RECORD KEEPING

.1 ALL activities associated with Health and Safety shall be recorded daily in a bound notebook. Include as a minimum: activity date, time, location of occurrence, mitigation action taken and results. Records shall be assessed by the Consultant.

1.11 SUSPENSION OF ACTIVITIES

.1 Exposure to contaminants shall be controlled so that no worker is exposed to contaminants at a concentration greater than the Time Weighted Average (TWA) concentration for the contaminant, for up to a 10 hour workday, 40 hour work week.

.2 The Contractor will halt activities immediately during unsafe conditions. All costs relating to suspension of work for Contractor's failure to maintain Health and Safety procedures shall be borne by the Contractor.

.3 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

1.12 HEALTH AND SAFETY PLAN

.1 Prior to commencement of the work, submit to the Consultant a detailed Health and Safety Plan for review. The Health and Safety Plan shall comply with the provisions of this section, and shall illustrate the Contractor's knowledge and understanding of health and safety aspects of the work, the Contractor's intention to maintain a high level of safety on-site, and shall include, but not be limited to:

.1 Description of Work.

.2 Description of Site-specific Hazards:

.1 Physical

.2 Chemical

.3 Environmental

.3 Protective Equipment:

.1 Respiratory

.2 Contact

.4 Decontamination Procedures:

.1 Personal protective equipment (PPE)

.2 Equipment

.3 Infection Control personal protective equipment required by CSA Z317.13-03.

.5 Medical - Monitoring:

.1 Workers medical profile and suitability to work at the site.

.6 Air - Monitoring Procedures:

.1 Action levels

.2 Site monitoring

.3 Perimeter monitoring

.7 Emergency Procedures:

.1 Emergency Equipment

.2 Contingency Plans:

.1 Spill control

.2 Fire

.3 Ventilation

.4 Medical Emergency

.8 General Safety:

.1 Designation of site-safety officer

.1 Safety log

.2 Trenching, digging, excavations

.3 Storage of flammables, compressed gases

.4 Safety inspections

.9 Site Training:

.1 Initial hazard

.2 Daily safety

.2 All workers shall be trained and be familiar with the Health and Safety Plan and the use of personal protective equipment.

.3 Safety Document Submission:

.1 Ensure Safety Document Submission applies to Work of this specific project and site.

.2 Submit two (2) copies of Safety Document at the Pre-Construction Meeting. Do not commence Work nor deliver material on-site prior to submission.

.3 Included in Safety Document submission specific information detailing the methods and procedures to be implemented ensuring adherence to the acts, regulations, codes and policies specified in this section and to:

.1 Ensure the health and safety of persons at or near the Work; including, but not limited to, the Public.

.2 Ensure the measures and procedures of the regulatory agencies specified are carried out.

.3 Ensure every employee, self-employed person and employer performing Work under this contract complies with the regulatory agencies specified.

.4 Where changes to the methods and procedures in the execution of work change submitted safety methods and procedures, modify submitted Safety Documentation and submit modifications, in writing to the

Consultant and Minister prior to implementation.

.4 Safety Document Organization:

.1 Organize information in the form of an instructional manual as follows:

.1 Place in binders of commercial quality, 8-1/2" x 11" x 3" maximum ring size.

.2 Cover: Identify binder with typed or printed title "Project Safety Document" and list the title of the project.

.3 Provide tabbed fly leaf for each separate heading, with typed heading on tab.

.4 Where drawings are within the safety document, provide with reinforced punched binder tab. Bind in with text; fold in larger drawings to size text pages.

.5 Arrange content under Safety Document headings specified herein.

.5 Safety Document Headings:

.1 Employee Safety Training:

.1 Place, under this heading, a statement indicating employees working on this specific project have met specified training requirements.

.2 Company Safety Policy

.1 Place, under this heading, information pertaining to the company's policy and commitment to Occupational Health and Safety, including the responsibilities of management, supervisors and works.

1.13 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

.2 Perform on-going hazard assessments during the progress of Work identifying new or potential health risks and safety hazards not previously known. As a minimum hazard assessments shall be carried out when:

.1 New subtrade work, new subcontractor(s) or new workers arrive at the site to commence another portion of work.

.2 The scope of work has been changed by Change Order.

.3 Potential hazard or weakness in current health and safety practices are identified by Consultant or by an authorized safety representative.

.3 Each hazard assessment to be made in writing. Keep copies of all assessments on site for duration of Work. Upon request, make available to Consultant for inspection.

.4 Contractor to conduct a hazard assessment in conjunction with the Owner's maintenance staff as part of the planning process including isolating existing equipment where applicable and identification of hidden services where anchoring is required. Hazard Assessments to conform with requirements of Health and Safety Section 01 35 29 - Health, Safety, and Emergency Response Procedures.

1.14 COMPLIANCE REQUIREMENTS

.1 Observe and enforce construction safety measures required by National Building Code, latest edition, National Fire Code, Provincial Building Code Act, Worker's Compensation Act and Municipal Statutes and Authorities.

.2 Comply with Canada Labour Code and Canada Occupational Health and Safety Act.

.3 Latest edition of the Occupational Health & Safety Act Statutes of Prince Edward Island (including any amendments to and regulations).

.4 Fire Prevention Act.

.5 Dangerous Goods Transportation Act.

.6 Industrial Best Practices for Equipment Isolation and Lockout Policy.

.7 In case of conflict or discrepancy the more stringent requirement shall apply.

.8 Maintain clear emergency exit paths.

.9 Ensure that employees working on this specific project have met training requirements as legislated by the Prince Edward Island Occupational Health and Safety Act and its regulations.

.10 Where reference is made to jurisdictional authorities, it shall mean all authorities who have within their constituted powers the right to enforce the laws of the place of the building and workplace.

.11 Provide Consultant with Material Safety Data Sheets (MSDS).

.12 Provide and maintain first aid equipment, supplied and medications appropriate to the work and its location in accordance with the First Aid Regulations. Obtain and implement recommendations from Occupational Health and Safety Division specific to the project work site.

1.15 WHMIS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada and Provincial Department of Labour.

.2 Submit WHMIS data sheets to Consultant in accordance with Section 01 33 00 - Submittal Procedures.

.3 Maintain WHMIS information station and ensure designated personnel are trained in its use.

.4 Submit copies of all Tool Box or Safety Meeting notes.

.5 Submit copies of all Worksite Safety Inspections.

1.16 SMOKING, ALCOHOL & RESTRICTED SUBSTANCES

.1 Worksites are inherently dangerous, including travelling to and from the site.

.2 Alcohol, medical and recreational cannabis are restricted substances governed by Federal and Provincial laws as are other forms of illegal drugs.

.3 The smoking of or use of tobacco products, including e-cigarettes, the use of alcohol and restricted substances including cannabis in any form in the building or on the work site is strictly prohibited.

.4 Where workers have a prescription for medical cannabis, or other prescription drugs that may cause drowsiness, they are to advise their supervisor and discuss with their supervisor safe and appropriate task(s) while under the influence of these prescriptions on the worksite.

.5 Workers who violate this requirement will be removed from the worksite.

1.17 SITE CONTROL AND ACCESS

.1 Control work site and entry points. Grant and allow entry to only workers and other persons so authorized. Immediately stop non-authorized persons from circulating within construction areas and remove from site.

.2 Prior to gaining access to the site, all contractors, subcontractors and suppliers shall file with the General Contractor their proof of Workers Compensation coverage, proof of required Insurance and proof of contract. Upon request, proof of these documents will be provided to the Owner and Consultant.

.3 Delineate and isolate construction areas from other areas of site by use of appropriate means. Erect barricades, fences, hoarding and temporary lighting as required. See Section 01 50 00 - Facilities and Controls for minimum type of barriers acceptable.

.4 Erect signage at entry points and at other strategic locations around site, clearly identifying construction area(s) as being "off limits" to non-authorized persons. Signage must be professionally made.

1.18 PROTECTION

.1 Provide temporary facilities for protection and safe passage of building occupants, public pedestrian and vehicular traffic around and adjacent to work site.

.2 Provide safety barricades, lights and signage on work site as required to provide a safe working environment for workers.

.3 Use personal protection equipment as required by Occupational Health and Safety Act and as required by this site.

.4 Training of workers in the proper use, fitting, inspection and storage of personal protective equipment shall be done prior to use of the equipment.

1.19 UNFORESEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

1.20 TESTING AND MONITORING

.1 Test and monitor for hazardous conditions, as required to demonstrate compliance with provincial regulations.

.2 If multiple locations are being worked simultaneously, provide monitoring at all locations where work is being carried out, including providing additional monitoring instruments.

1.21 ISOLATION OF EXISTING SERVICES

.1 Obtain Consultant's written authorization prior to conducting work on an existing active, energized service or facility required as part of the work and before proceeding with lockout of such services or facility.

.2 To obtain authorization, submit to Consultant following documentation:

.1 Written Request for Isolation of the service or facility and;

.2 Copy of Contractor's Lockout Procedures.

.3 Make a Request for Isolation for each event, unless directed otherwise by Consultant, and as follows:

.1 Fill-out standard forms in current use at the Facility when so directed by Consultant or;

.2 Where no form exist at Facility, make request in writing identifying:

.1 Identification of system or equipment to be isolated, including it's location;

.2 Time duration, indicating Start time & date and Completion time & date when isolation will be in effect.

.3 Voltage of service feed to system or equipment being isolated.

.4 Name of person making the request.

.3 Document to be in typewritten format.

.4 Do not proceed until receipt of written notification from Consultant granting the Isolation Request and authorization to proceed with the isolation of designated equipment or facility. Consultant may designate other individual at the Facility as the person authorized to grant the Isolation Request.

.5 Conduct safe, orderly shut down of equipment or facilities, de-energize and isolate power and other sources of energy and lockout items in accordance with requirement of clause 1.8 below.

.6 Plan and schedule shut down of existing services in consultation with the Consultant and the Facility Manager. Minimize impact and downtime of facility operations.

.7 Determine in advance, as much as possible, in cooperation with the Consultant,

the type and frequency of situations which will require a Request for Isolation. Follow Consultant's directives in this regard.

.8 Conduct hazard assessment as part of the planning process of isolating existing equipment and facilities. Hazard Assessments to conform with requirements of Health and Safety Section 01 35 29 - Health, Safety and Emergency Response Procedures.

1.22 LOCKOUTS

.1 Perform lockouts in compliance with:

.1 Canadian Electrical Code

.2 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29 - Health, Safety, and Emergency Response Procedures.

.3 Regulations and code of practice as applicable to mechanical equipment or other machinery being de-energized.

.4 Procedures specified herein.

.2 Isolate and lockout electrical facilities, mechanical equipment and machinery from all potential energy sources prior to starting work on such items.

.3 Develop and implement lockout procedures to be followed on site as an integral part of the Work.

.4 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.

.5 Use industry standard lockout tags.

.6 Provide appropriate safety grounding and guards as required.

.7 Prepare Lockout Procedures in writing. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tagout facilities and equipment.

.8 Include within procedures a system of worker request and issuance of individual lockout permit by a person, employed by Contractor, designated to be "in-charge" and being responsible for:

.1 Controlling issuance of permits or tags to workers.

.2 Determining permit duration.

.3 Maintaining record of permits and tags issued.

.4 Submitting a Request for Isolation to Consultant when required by Contractors and / or Owners safety plan.

.5 Designating a Safety Watcher, when one is required based on type of work.

.6 Ensuring equipment or facility has been properly isolated, providing a Guarantee of Isolation to worker(s) prior to proceeding with work.

.7 Collecting and safekeeping lockout tags, returned by workers, as a record of the event.

.9 Clearly establish, describe and allocate, within procedures, the responsibilities of:

.1 Workers.

.2 Designated person controlling issuance of lockout tags/permits.

.3 Safety Watcher.

.4 Subcontractors and General Contractor.

.10 Procedures shall meet the requirements of Provincial and Federal Codes and Regulations.

.11 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the procedures applicable to this contract.

.1 Incorporate site specific rules and procedures established by Facility Manager

and in force at site. Obtain such procedures through Consultant.

.12 Procedures to be in typewritten format.

.13 Submit copy of Lockout Procedures to Consultant, in accordance with submittal requirements, prior to commencement of work.

1.23 CONFORMANCE

.1 Ensure that lockout procedures, as established for project on site, are stringently followed. Enforce use and compliance by all workers.

.2 Brief all persons working on electrical facilities, mechanical and other equipment fed by an energy source on requirements of this section.

.3 Failure to perform lockouts in accordance with regulatory requirements or follow procedures specified herein may result in the issuance of a Non-Compliance Notification at Consultant's discretion with possible disciplinary measures imposed as specified in Section 01 35 29 - Health, Safety, and Emergency Response Procedures.

1.24 FIRE SAFETY REQUIREMENTS

.1 Comply with requirements of latest standard for Building Construction Operations issued by the Fire Commissioner of Canada and Fire Safety Regulations of Local Authority.

.2 Enforce fire protection methods, good housekeeping and adherence to local and underwriter's fire regulations including, but not limited to, Fire Protection Act and the Provincial Building Code Act. Provide UL approved fire extinguishers, and other fire fighting services and equipment, except where more explicit requirements are specified as the responsibility of individual Sections.

.3 Implement and follow fire safety measures during Work. Comply with following:

.1 National Fire Code, 2010.

.2 Fire Protection Standards FCC 301 and FCC 302.

.3 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29 - Health, Safety, and Emergency Response Procedures.

.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, Consultant will advise on the course of action.

.5 Advise the Fire Chief in the area of Work of any work that would impede fire apparatus response, including but not limited to violation of minimum overhead clearance prescribed by the fire chief, erecting of barricades and digging of trenches.

.6 Fire Separations:

.1 Ensure that fire separations are installed to maintain total integrity and that they are not breached by Work following their installation.

.2 Replace fire separations which have suffered a lessening of their required rating during construction.

.7 Ensure nothing subverts the integrity of fire protection provided for the building structure.

.8 Coordinate work of all sections so that they do not encroach on space required for fire protection and its installation. Ensure that fire protection damage during construction is totally replaced.

1.25 FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm systems shall not be:

.1 Obstructed.

.2 Shut-off, unless approved by Consultant.

.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 Costs incurred, from the fire department, Facility owner and tenants, resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.

1.26 FIRE SAFETY

.1 The Sub-Contractors are to participate on the Fire Safety Committee under the Joint Health and Safety Committee. The Fire Safety Committee under the direction of the Contractor is responsible for implementation and maintenance of the Construction Fire Safety Plan.

.2 Construction Fire Safety Plan:

- .1 The Construction Fire Safety Plan will include the following:
  - .1 Introduction of plan and purpose
  - .2 Fire Safety Committee
  - .3 Terms of reference.
- .2 Committee composition.
- .3 Emergency Procedures.
- .4 Fire protection equipment.
- .5 Building description.
- .6 Provisions for fire fighting.
- .7 Portable extinguishers.
- .8 Exits.
- .9 Emergency Lighting.
- .10 Reduced drawings.
- .11 Fire safety maintenance schedule:
  - .1 General.
  - .2 Maintenance levels.
  - .3 Skill categories.
  - .4 Frequency.
  - .5 Checklists.
- .12 Other information:
  - .1 Instruction on use of fire extinguishers.
  - .2 Emergency Fire Drill procedures.

.3 Portable Fire Extinguishers:

- .1 During construction, Contractor is to provide and maintain on the site at all times, ULC listed 25 lb ABC dry chemical type portable fire extinguishers.

.4 Blockage of Roadways:

- .1 The Fire Department shall be advised of any work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by the Fire Department, erecting of barricades and the digging of trenches.

.5 Rubbish and Waste Materials:

- .1 Rubbish and waste materials are to be kept to a minimum.
- .2 The burning of rubbish is prohibited.
- .3 Removal:
  - .1 All rubbish shall be removed from the work site at the end of the workday or shift or as directed by Consultant.
- .4 Storage:
  - .1 Extreme care is required where it is necessary to store oily waste in work areas to ensure maximum possible cleanliness and safety.
  - .2 Greasy or oily rags or materials subject to spontaneous ignition shall be

deposited and kept in an approved receptacle and removed as required in 1.7.3.1.

.6 Flammable Liquids:

.1 The handling, storage and use of flammable liquids are to be governed by the current National Fire Code of Canada.

.2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 45 liters provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable liquids exceeding 45 liters for work purposes, requires the permission of the Fire Department.

.3 Transfer of flammable liquids having a flash point below 38ºC is prohibited within buildings.

.4 Transfer of flammable liquids shall not be carried out in the vicinity of open flames or any type of heat-producing devices.

.5 Flammable liquids having a flash point below 38ºC, such as naphtha or gasoline, shall not be used as solvents or cleaning agents.

.6 Flammable waste liquids, for disposal, shall be stored in approved containers located in a safe ventilated area. Quantities are to be kept to minimum and the Fire Department is to be notified when disposal is required.

.7 Fire Inspection:

.1 The Fire Department shall be allowed unrestricted access to the work site.

.2 The Contractor shall cooperate with the Fire Department during routine inspections of the work site.

.3 The Contractor shall immediately remedy all unsafe fire situations observed by the Fire Department.

.8 Reporting Fires:

.1 Know the location of the nearest fire alarm box and telephone, including the emergency phone number.

.2 Report immediately all fire incidents to the fire department as follows:

.1 Activate nearest fire alarm box, or

.2 Telephone 911.

.3 Where fire alarm box is exterior to building, the person activating the fire alarm box shall remain at the box to direct Fire Department to scene of the fire.

.4 When reporting a fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

1.27 WELDING AND CUTTING

.1 Use noncombustible shields for electric and gas welding or cutting executed within two (2) meters of combustible material or in occupied space.

.2 Place tanks supplying gases as close to work as possible. Fix in upright position, free from exposure to sun or high temperatures.

.3 Locate fire extinguishing equipment near all welding and cutting operations.

1.28 OPEN FLAMES, SPARKS, EXPLOSION PROTECTION

.1 Keep open flames and sparks to minimum. When flame or sparks are required, follow proper procedures to prevent fire or explosion.

1.29 HOT WORK AUTHORIZATION

.1 Hot Work will not be permitted on or within the building structure, tanks, or confined spaces, except as outlined herein.

.2 Obtain Consultant's written "Authorization to Proceed" before conducting any form of Hot

work on site.

.3 To obtain authorization submit to Consultant:

.1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.

.2 Description of the type and frequency of Hot Work required.

.3 Sample Hot Work Permit to be used. Shall be included in the safety documentation submission.

.4 Upon review and confirmation that effective fire safety measures will be implemented during performance of hot work, Consultant will provide authorization to proceed as follows:

.1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;

.2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Consultant. Follow Consultant's directives in this regard.

.5 Requirement for individual authorization based on:

.1 Nature or phasing of work;

.2 Risk to Facility operations;

.3 Quantity of various trades needing to perform hot work on project or;

.4 Other situation deemed necessary by Consultant to ensure fire safety on premises.

.6 Do not perform any Hot Work until receipt of Consultant's written "Authorization to Proceed" for that portion of work.

.7 In tenant occupied Facility, coordinate performance of Hot Work with Facility Manager through the Consultant. When directed, perform Hot Work only during non-operative hours of Facility. Follow Consultant's directives in this regard.

1.30 HOT WORK PROCEDURES

.1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.

.2 Procedures to include:

.1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of Section 01 35 29 - Health, Safety, and Emergency Response Procedures.

.2 Use of a Hot Work Permit system for each hot work event.

.3 The step by step process of how to prepare and issue permit.

.4 Permit shall be issued by Contractor's site Superintendent, or other authorized person designated by Contractor, granting permission to worker or subcontractor to proceed with hot work.

.5 Maintain a fire extinguisher in the immediate area where hot work is being undertaken.

.6 Provision of a designated person to carryout a Fire Safety Watch for a minimum of 2 hours immediately upon completion of the hot work.

.7 Compliance with fire safety codes and standards specified herein and Occupational Health and Safety regulations specified in Section 01 35 29 - Health, Safety, and Emergency Response Procedures.

.3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.

.4 Hot Work Procedures shall clearly establish worker instructions and allocate responsibilities of:

.1 Worker(s),
.2 Authorized person issuing the Hot Work Permit,
.3 Fire Safety Watcher,
.4 Subcontractors and Contractor.

.5 Brief all workers and Subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.
.1 Failure to comply with the established procedures may result in the issuance of a Non-Compliance Notification at Consultant's discretion with possible disciplinary measures imposed as specified in Section 01 35 29 - Health, Safety, and Emergency Response Procedures.

1.31 HOT WORK PERMIT

.1 Hot Work Permit to include, as a minimum, the following data:
.1 Project name and project number;
.2 Building name, address and specific room or area where hot work will be performed;
.3 Date when permit issued
.4 Description of hot work type to be performed;
.5 Special precautions required, including type of fire extinguisher needed;
.6 Name and signature of person authorized to issue the permit.
.7 Name of worker (clearly printed) to which the permit is being issued.
.8 Time Duration that permit is valid (not to exceed 8 hours). Indicate start time & date and completion time & date.
.9 Worker signature with date and time upon hot work termination.
.10 Specified time period requiring safety watch.
.11 Name and signature of designated Fire Safety Watcher, complete with time & date when safety watch terminated, certifying that surrounding area was under his continual surveillance and inspection during the full watch time period specified in Permit and commenced immediately upon completion of Hot Work.

.2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.

.3 Each Hot Work Permit to be completed in full and signed as follows:
.1 Authorized person issuing Permit before hot work commences;
.2 Worker upon completion of Hot Work;
.3 Fire Safety Watcher upon termination of safety watch;
.4 Returned to Contractor's Site Superintendent for safe keeping.
.5 The permit shall describe compliance with the following procedures. After tank or confined space interiors or building areas have been decontaminated, hot work may be conducted only when the tank or confined space is inverted. Hot work shall not be performed unless monitoring indicates atmospheres within and immediately surrounding are less than eight percent (8%) oxygen inside less than ten percent (10%) of the LFL outside; continuous monitoring shall continue until the hot work is completed. The hot work prohibition includes welding, cutting, grinding, sawing, or other similar operations which could be expected to potentially generate combustion-producing temperatures or sparks, or which could produce potentially hazardous fumes or vapours. An individual at each hot work site shall be designated as a fire watch. This person's sole responsibility shall be to monitor the hot work and have immediate access to at least two (2) twenty (20) pound fire extinguishers located at each hot work site. All extinguishers shall be currently inspection tagged, approved safety pin and tamper resistant seal. A new permit shall be obtained at the start of each work shift during which hot work will be conducted.

1.32 BLASTING

.1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Consultant.

1.33 POWER ACTUATED DEVICES

.1 Use power actuated devices only after receipt of written permission from Consultant.

1.34 HANDLING AND TRANSPORTATION OF DANGEROUS GOODS

.1 Observe and enforce all measures required by the regulatory agencies including but not limited to Environment Canada, Prince Edward Island Department of Environment, and Transport Canada.

.2 Most current regulatory guidelines and Acts will apply to the work.

.3 In case of any conflict, the more stringent requirements will apply.

1.35 OPEN EXCAVATIONS

.1 If open foundations or demolition areas are to be left at the end of a work day, protective fencing must be placed around the entire perimeter to limit access by others. Fencing to be self-supporting, approved by the Department of Labour and the Construction Safety and Industrial Safety Regulations.

1.36 POTENTIAL HAZARDS

.1 Hazards include, but are not limited to, toxic, flammable and explosion hazards associated with cleaning solvents.

.2 The Contractor shall become familiar with all potential hazards associated with the work, and shall take necessary measures to avoid injury or damage of any kind.

1.37 HAZARDOUS MATERIALS

.1 Should material resembling hazardous materials, other than those identified with the Contract Documents, including but not limited to spray or trowel applied asbestos, be encountered in course of work; stop work immediately. Do not proceed until written instructions have been received from Consultant.

.2 Any material which contains asbestos that is disturbed or removed during construction work, shall be removed in accordance with the regulations set out by the Occupational Health and Safety Act. All costs for proper cutting, removal and disposal of all asbestos indentified in this contract shall be included in Tender.

.3 Where work entails use, storage, or disposal of toxic or hazardous materials, chemicals and/or explosives, or otherwise creates a hazard to life, safety, health, or the environment; work shall be in accordance with the Authority Having Jurisdiction (AHJ).

1.38 ENVIRONMENTAL PROTECTION

.1 Ensure that pollution and environmental control of construction activities are exercised during the Work to requirements of the federal and provincial environmental acts; including, but not limited to, the Prince Edward Island Environmental Protection Act.

1.39 SANITATION / DECONTAMINATION PRACTICES

.1 After each use, all disposable protective equipment shall be collected in a dedicated container for disposal.

.2 All respiratory equipment shall be decontaminated daily after use.

.3 All tools, pumps and equipment used during cleanup should be dedicated to the handling of contaminants and labeled as such and thoroughly decontaminated at the completion of the project.

.4 Contaminated work clothing shall not be worn outside of regulated areas.

.5 Workers shall wash their hands and exposed skin before eating, drinking, smoking or using toilet facilities during work shift, and at the completion of a work shift.

.6 Food, drink and tobacco products shall not be permitted in regulated areas.

1.40 WORK PRACTICES AND ENGINEERING CONTROLS

.1 Access to work areas shall be regulated and limited to authorized persons. A daily roster shall be kept of persons entering such areas.

.2 Handling Contaminants and General Work Practices.

.1 Transportation and handling of contaminants to meet applicable local, provincial and federal regulations.

.2 Emergency respiratory equipment shall be located in readily accessible locations which will remain minimally contaminated with contaminants in an emergency.

.3 Containers and systems shall be handled and opened with care. Approved protective clothing shall be worn by all employees engaged in regulated areas.

.4 All wastes and residues containing contaminants shall be collected in appropriate containers.

.3 Confined or Enclosed Spaces

.1 Entry into confined or enclosed spaces, where there is limited egress, shall be controlled by a permit system. Permits shall be signed by an authorized representative of the employer and shall certify that appropriate measures have been taken to prevent adverse effects on the worker's health as a result of his or her entry into such space.

.2 Confined or enclosed spaces which have contained contaminants shall be thoroughly ventilated to assure an adequate supply of oxygen, tested for contaminants, and inspected for compliance with these requirements prior to each entry. Adequate ventilation shall be maintained while workers are in such spaces. Each individual entering such confined or enclosed space shall be furnished with appropriate personal protective equipment and clothing and be connected by a lifeline harness to standby worker stations outside of the space. The standby worker shall also be equipped for entry with approved personal protective equipment and clothing and have contact with a third person. The standby person shall maintain communication (visual, voice, signal line, telephone, radio, or other suitable means) with the employee inside the confined or enclosed space.

.3 Workers entering confined spaces and standby workers shall be trained at a recognized confined space training program.

1.41 PRE-CONSTRUCTION CONTRACTOR SAFETY CHECKLIST

.1 Use this text as a guideline for completing the following checklist. This checklist is a general, pre-construction review of the Contractor safety program, as well as an information session to identify what the Owner requires of the Contractor. Where the item requires a submission, ensure that it is received. If the item does not apply, enter N/A for not applicable.

.2 The following information will assist in establishing what will be reviewed in each section:

.1 Safety Policy:
Each employer is required by law (in Prince Edward Island) to have a safety policy and program and to implement that policy. The Owner will ask for a copy of that program.

.2 Safety Representative:
Each Contractor is required to advise the Owner who their safety representative is. That representative has duties as described in the Occupational Health and Safety Act.

.3 Emergency Procedure:
Each Contractor must have a site specific layout and emergency plan complete with emergency phone numbers.

.4 Employee Orientation:
Each and every person working for a Contractor, including Sub-Contractors, will be given an orientation to familiarize them with the site safety program. Unless otherwise specified, each Sub-Contractor is responsible for the orientation of their workers.

.5 Safe Work Plan:
Most Contractors are involved in tasks that subject workers to hazards. In order to ensure that these workers are secured from hazard, the Contractor will supply the Owner with a written safe work plan which affords protection against the hazards. This plan must be signed by a company representative and communicated to the workers involved in the task.

.6 Personal Protective Equipment Review:
Advise that all workers require CSA Class "B" hard-hat, CSA "Green Patch" (eight inch) footwear, eye, ear and respiratory protection as required (boots and hats at all times).

.7 Fall Protection:
Fall restraint or fall arrest protection required where a fall of 2.4 meters or more is possible. NO EXCEPTIONS.

.8 Housekeeping:
Advise of daily, or as needed, clean-up requirements.

.9 Tool Box Talks:
Each Contractor is required to conduct weekly safety meetings with their forces and advise the Owner they have been done.

.10 Material Handling / Storage:
Advise Contractor about storage areas and handling of material so as not to endanger their worker or another worker. Stacked material to be banded, chained, blocked or otherwise secured.

.11 Landing Platform:
Advise Contractor about movement of material on or off platforms. All material to be secured. Platform gates or chains to be kept closed at all times workers are on platform. If not possible, worker to be tied off with fall restraint system independent of platform.

.12 WHMIS Training:
Receive verification that all workers are trained and that the Contractor submits their MSDS.

.13 GFCI:
Advise Contractor that all tools are required to have ground fault circuit interrupters (where electricity is supplied by Contractor).

.14 Accident Investigations:
Any injury to any of their workers must be investigated and reported to the Owner.

.15 Verbal, Written, Gone:
Explain Zero Tolerance Program.

.16 Joint / Worker Safety Committee:
Sites of over 20 workers must establish a safety committee; over 50 workers, an additional worker committee. Workers required to attend committee meetings will do so and not be prevented by employers.

.17 Fire Protection:
All trades involved in performing hot work of any kind are required to provide fire protection at the work location.

.18 Guardrails:
Advise Contractor that where temporary removal guardrails required, guardrails must be replaced as soon as possible.

.19 First Aider:
Each Contractor is required to have a first aid kit and trained first aider. Employer must name their first aider.

.20 Visitors:
Advise Contractor that any visitors to site must be suitably protected from hazard. They must wear hard hat, safety vest, and proper safety footwear while on site.

.21 Task Lighting:
Review responsibilities of task specific lighting (who provides it).

.22 Swamper / Rigger Competency:
Where cranes are used, the Contractor must use a swamper / rigger. They shall provide the Owner with a written statement identifying, by name(s) their rigger and that the named person is a competent work as described in the Construction regulation.

.23 Scaffolds:
Review scaffold building requirement:
- Use all braces required by design.
- Access ladder for platform over 1.5 meters.
- Full width platform if height over 3 meters.
  PEI Regulations require double planks.
- Tied in three time base dimension or use of outriggers.
- Engineered over 16 meters in height (standard frame type).

.24 Elevating Work Platforms:
- All boom and scissors lifts required to be CSA approved and have approval on machine.
- Operators manual required on machine at all times.
- Maintenance record on machine at all times.
- Operator must receive training in operation of equipment.
- Fall protection must be used at all times on a boom lift.
- Fall protection required to be used on scissors lift when unit is being moved.

.25 Protruding Rebar:Installers of reinforcing steel must protect the protruding hazard or make arrangements to have it protected. Removal of protective coverings for task purposes only is allowed, however, protective covering must be replaced as soon as possible.

.26 WCB Clearance Certificates:Advise Contractor that the Owner will not release any funds for payment until Workers Compensation Board Clearance Certificate has been received by the Owner.

.3 The following checklist is a general pre-construction review of the Contractor's safety program as required by the Owner.

PROJECT: _____ DATE: _____

CONTRACTOR: _____

WORK BEING PERFORMED: _____

Checkmark means YES / X means NO

.1 ____ Safety Policy Submitted
.2 ____ Safety Representative
.3 ____ Emergency Procedure Review
.4 ____ Employee Orientation
.5 ____ Written Safe Work Plan
.6 ____ Personal Protective Equipment Review
  .1 ____ Hard Hat & Footwear
  .2 ____ Safety Glasses & Hearing
  .3 ____ Dust & Fumes
.7 ____ Fall Protection
.8 ____ Housekeeping
.9 ____ Tool Box Safety Talks (Weekly)
.10 ____ Material Handling / Storage
.11 ____ Landing Platforms
.12 ____ WHMIS Training Verification
.13 ____ GFCI Requirements
.14 ____ Accident / Incident Investigations Notification
.15 ____ Verbal, Written, Gone
.16 ____ Joint / Worker Safety Committee
.17 ____ Fire Protection
.18 ____ Guardrails
.19 ____ First Aider on Staff - Name Supplied
.20 ____ Visitors & Safety Equipment
.21 ____ Task Lighting
.22 ____ Swampers / Riggers Competency (in writing)
.23 ____ Scaffolds
.24 ____ Elevating Work Platforms
.25 ____ Protruding Rebar Protection - MSDS Received
.26 ____ WCB Clearance Certificate.

_____	_____
(Print name and title)	(Print name and title)
_____	_____
Owner Representatives (Signature)	Contractor Representatives (Signature)
_____(Date)	_____(Date)

END OF SECTION

1 General

1.1 FIRES / DISPOSAL OF WASTES

.1 Fires and burning of rubbish on site not permitted.

.2 Do not bury rubbish and waste materials on site.

.3 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.2 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.3 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties.

.2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.

.3 Protect roots of designated trees to drip line during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Consultant.

1.4 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 Design and construct temporary crossings to minimize erosion to waterways.

1.5 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this contract.

.2 Control emissions from equipment and plant to local authorities emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.6 SMOKING RESTRICTIONS

.1 Smoking is not permitted inside the building or on the property at any time or at any stage of construction.

1.7 ENVIRONMENTAL PERMIT APPROVAL

.1 Comply with requirements contained in the Transportation and Infrastructure Environmental Management Division environmental approval permit for the project.

.2 Contractor is to remove all protections upon project completion.

END OF SECTION

1 General

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) 2015 including all amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of demolition work, immediately stop work and notify Consultant.

.2 Should material suspected of containing PCB's be encountered in the course of demolition work, immediately stop work and notify Consultant.

END OF SECTION

1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.2 INSPECTION

.1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Consultant may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies are to be engaged by Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Contractor.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of Inspection/Testing Agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency may request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to Owner. Pay costs for retesting and re inspection.

1.4 PROCEDURES

.1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Consultant.

1.6 REPORTS

.1 Submit 3 copies of inspection and test reports to Consultant.

.2 Provide copies to Subcontractor of work being inspected or tested.

1.7 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as may be requested.

.2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Consultant and may be authorized as recoverable.

1.8 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.

.2 Construct in all locations acceptable to Consultant.

.3 Prepare mock-ups for Consultant's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Consultant will assist in preparing a schedule fixing dates for preparation.

.6 Remove mock-up at conclusion of Work or when acceptable to Consultant.

.7 Mock-ups may remain as part of Work as directed by Consultant.

1.9 MILL TESTS

.1 Submit mill test certificates as requested.

1.10 EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

END OF SECTION

1 General

1.1 SITE ACCESS AND PARKING

.1 The Owner will designate Contractor's access to project site as well as parking facilities for equipment.

.2 A location for parking will be designated for Contractors, Sub-Contractor & workers.

.3 The Contractor will maintain all roads and sidewalks free from mud and debris tracked from construction site, on a daily basis, at no cost to Owner.

.4 The Contractor will provide snow removal within the site fence during period of work as required to maintain access to building, at no cost to the Owner.

.5 The Contractor will provide and maintain signs, barricades and other devices required to indicate construction activities or other temporary and unusual conditions resulting from project work, at no cost.

1.2 SITE SAFETY FENCING

.1 Contractor to provide site safety fencing around entire construction site to separate construction zone from public.

.2 Size of compound to be determined by Contractor, but must contain all construction and construction related activities within the compound, except parking for workers.

.3 Contractor to provide 1800mm high page wire fence supported by steel "T" bars driven into the ground. Space at 2400mm maximum.

.4 Contractor to provide double gates at entrance complete with lock.

.5 Contractor to lock gate after every days activities are completed.

.6 Contractor to post notices for both construction zone and personal protective equipment requirements.

1.3 PARKING

.1 Parking space for workers' vehicles will be restricted to within the limit of contract and security fencing.

.2 Parking for delivery and service vehicles for the supply and removal of construction materials and debris will be restricted to within the limit of contract and security fencing.

1.4 SNOW REMOVAL

.1 General snow removal to the building site inside Limit of Contract by the Contractor.

.2 All snow removal to access Contractor's construction trailers and storage, and to perform own work by the Contractor.

1.5 STORAGE SHEDS

.1 Provide adequate weather tight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.

.2 Provide heat when materials being stored are subject to frost damage.

.3 Under no circumstances will Consultant accept materials damaged due to exposure to weather elements, for incorporation into construction. Consultant will determine what constitutes damaged material.

.4 All storage sheds or trailers must be located within the limits of the contract and/or temporary construction fence.

1.6 LAYOUT

.1 The Contractor will provide a bench mark and control grid.

.2 Contractor shall be responsible for detailed setting out of his work.

1.7 MATERIAL STORAGE

.1 Locate site storage trailers where directed by Consultant. Place in location of least interference with existing facility operations.

.2 Material storage space on site is limited. Coordinate delivery to minimize storage period on site before being needed for incorporation into work.

.3 Make arrangements elsewhere in the City as deemed required and pay all costs for storage of materials not ready for incorporation into work.

1.8 REMOVAL OF TEMPORARY FACILITIES

.1 Remove temporary facilities from site when directed by Consultant.

1.9 WASTE REMOVAL

.1 The Contractor will provide bins as required. Contractor responsible for placement and sorting of waste in the collection bins and removal of waste from site.

END OF SECTION

1 General

1.1 INSTALLATION AND REMOVAL

.1 Contractor to provide temporary utilities identified in this Section, in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.2 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

.2 Filter water containing silt through geofabric prior to discharge into municipal storm water system or water course.

1.3 WATER SUPPLY

.1 Water supply is available on site and will be provided for construction usage at no cost. Make arrangements for the use and transportation of such services to work area through the Consultant.

1.4 SANITARY FACILITIES

.1 The Contractor will provide, at no cost to the Owner, sanitary facilities for work force in accordance with governing regulations and ordinances for entire duration of project. Facilities within the existing building are not available to the Contractor's work force.

.2 The Contractor will post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

.3 Sanitary facilities must be located within the limits of the temporary construction fence, provided under the work of this Contract.

1.5 POWER

.1 Power supply is available and will be provided for construction usage at no cost.

- .1 Make arrangements for the use of such services through the Consultant.
- .2 Consultant will designate and approve each location of existing power source to which connections can be made to obtain temporary power service.
- .3 Connect to existing power supply in accordance with Canadian Electrical Code.

.2 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage.

1.6 TEMPORARY HEATING AND VENTILATING

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building/hoarding must be vented to outside or be flameless (vent free) type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:

- .1 Facilitate progress of Work.
- .2 Protect Work and products against dampness and cold.
- .3 Prevent moisture condensation on surfaces.
- .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
- .5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Maintain temperatures of minimum 10 degrees Celsius in areas where construction is in progress.

.5 Ventilating:
- .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
- .2 Ventilate storage spaces containing hazardous or volatile materials.
- .3 Ventilate temporary sanitary facilities.

.6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
- .1 Conform with applicable codes and standards.
- .2 Enforce safe practices.
- .3 Prevent abuse of services.
- .4 Prevent damage to finishes.
- .5 Vent direct-fired combustion units to outside.

.7 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.7 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies, authorities having jurisdiction, governing codes, regulations and bylaws.

END OF SECTION

1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
  .1 CCDC 2-2008, Stipulated Price Contract.
.2 Canadian General Standards Board (CGSB)
  .1 CGSB 1-GP-189M-84, Primer, Alkyd, Wood, Exterior.
  .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
.3 Canadian Standards Association (CSA International)
  .1 CAN3-A23.1-/A23.2-94, Concrete Materials and Methods for Concrete Construction/Method of Test for Concrete.
  .2 CSA-0121-M1978, Douglas Fir Plywood.
  .3 CAN/CSA-Z321-96, Signs and Symbols for the Occupational Environment.
  .4 CSA 5269.1-16, Falsework and Formwork.
.4 Fall Protection and Scaffolding Regulations, Province of Prince Edward Island.

1.2 INSTALLATION AND REMOVAL

.1 Provide construction facilities in order to execute work expeditiously.
.2 Remove from site all such work after use.

1.3 OVERLOADING

.1 Ensure no part of work is subjected to a load that will endanger its safety or cause permanent deformation.

1.4 FALSEWORK

.1 Design and construct falsework in accordance with CSA s269.2.

1.5 SCAFFOLDING AND FALL ARREST

.1 Provide and maintain scaffolding.
.2 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2.
.3 Erect scaffolding independent of walls. Remove when no longer required.
.4 Comply with the requirements of the Fall Protection and Scaffolding Regulations, Province of Prince Edward Island.
.5 Each user of scaffolding shall examine scaffolding for sufficiency before using it. Make scaffolding secure or notify Consultant.

1.6 HOISTING

.1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.
.2 Hoists and cranes shall be operated by qualified operator.
.3 Maintain current inspection certificate.
.4 Qualifications of crane operator must be submitted to Consultant for approval and must be authorized to operate the crane.

1.7 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

.3 Provide adequate weather tight, heat and ventilation appropriate for the use and storage of equipment, tools and materials.

.4 Each user of equipment or tools shall be appropriately trained and be responsible to examine for sufficiency before use. Make equipment and tools safe if necessary, or notify the Contractor in writing that user will not commence work with such tools until it is made safe.

1.9 CONSTRUCTION SIGNAGE

.1 Signs and notices for safety and instruction shall be in English; Graphic symbols shall conform to CAN3-Z321.

.2 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

END OF SECTION

1 General

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)
- .1 CGSB 1.189M-84, Primer, Alkyd, Wood, Exterior.
- .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

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

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

.3 Temp barrier for 01 50 00.

1.3 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs, and other areas where a change in elevation of greater than 900mm exists.

.2 Provide as required by governing authorities.

1.4 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.5 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.7 PROTECTION OF BUILDING FINISHES

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

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Consultant locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.8 PROTECTION OF LANDSCAPE ELEMENT

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

.2 Be responsible for damage incurred due to lack of or improper protection.

END OF SECTION

1 General

1.1 GENERAL

.1 Use new material and equipment unless otherwise specified.

.2 Within 7 days of written request by Consultant, submit following information for materials and products proposed for supply:

.1 Name and address of manufacturer.

.2 Trade name, model and catalog number.

.3 Performance, descriptive and test data.

.4 Manufacturer's installation or application instructions.

.5 Evidence of arrangements to procure.

.3 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

1.2 REFERENCE STANDARDS

.1 Conform to reference standards, in whole or in part as specifically requested in specifications.

.2 If there is question as to whether any product or system is in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.

.3 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

1.3 CONFORMANCE

.1 When material or equipment is specified by standard or performance specifications, upon request of Consultant, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.

1.4 SUBSTITUTION OF MATERIAL

.1 Proposals for substitution may be submitted only after award of Contract. Such requests must include statements of respective costs of items originally specified and proposed substitutions.

.2 Proposals will be considered by Consultant if:

.1 Products selected by tenderer from those specified, are not available, or

.2 Delivery date of products selected from those specified would unduly delay completion of Contract.

.3 Alternative products to those specified, which are brought to attention of, and considered by Consultant as equivalent to those specified and will result in credit to Contract amount.

.4 Should proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as a result of substitution.

.5 Amounts of all credits arising from approval of substitutions will be determined by Consultant and Contract price will be reduced accordingly. No substitutions will be permitted without prior written approval of Consultant.

1.5 QUALITY OF PRODUCTS

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected,

regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.6 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.7 AVAILABILITY

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

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

1.8 TRANSPORTATION

.1 Pay costs of transportation and handling of products required in performance of Work.

.2 Transportation cost of products supplied by Owner will be paid for by Owner. Contractor to unload, handle and store such products.

1.9 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Consultant.

.9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up

materials to match original. Do not paint over name plates.

1.10 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.11 CO-ORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.12 FASTENINGS - GENERAL

.1 Provide metal fastenings and accessories in same texture, color and finish as base metal in which they occur.

.2 Prevent electrolytic action between dissimilar metals.

.3 Use non-corrosive fasteners, anchors and spacers for securing exterior work.

.4 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood plugs not acceptable.

.5 Keep exposed fastenings to minimum, space evenly and lay out neatly.

.6 Fastenings which cause spalling or cracking are not acceptable.

.7 Obtain Consultant's approval before using explosive actuated fastening devices. If approval is obtained comply with CSA Z166-1975, and observe restrictions in Section 01 35 29 - Health, Safety and Emergency Response Procedures.

1.13 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and resilient washers with stainless steel.

1.14 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.15 CONCEALMENT

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Consultant if there is interference. Install as directed by Consultant.

1.16 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.17 CONSTRUCTION EQUIPMENT AND PLANT

.1 On request, prove to the satisfaction of Consultant that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.

.2 Maintain construction equipment and plant in good operating order.

END OF SECTION

1 General

1.1 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.

.2 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.3 Provide on-site containers for collection of waste materials and debris.

.4 Provide and use clearly marked separate bins.

.5 Remove waste and debris from site and deposit in waste container at end of each working day.

.6 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each day.

.8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 CLEANING DURING CONSTRUCTION

.1 Maintain work site in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.

.2 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

.3 Immediately clean all dust, dirt, smears, scuffs and soiled surfaces in lobbies, corridors, stairwells and within tenant occupied areas resulting from use by workers.

.1 Perform cleaning, dusting and washing operations, carpet vacuuming (including shampooing if deemed required by Consultant) and floor washing as necessary to thoroughly clean all soiled surfaces.

1.3 FINAL CLEANING

.1 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.2 Remove waste products and debris.

.3 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.4 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls and floors.

.5 Clean lighting reflectors, lenses, and other lighting surfaces.

.6 Vacuum clean and dust building interiors, behind grilles, louvers and screens.

.7 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.8 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.9 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.10 Remove dirt and other disfiguration from exterior surfaces.

.11 Clean and sweep roofs, gutters, area ways, and sunken wells.

.12 Sweep and wash clean paved areas.

.13 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.

.14 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.15 Remove snow and ice from access to construction.

END OF SECTION

1 General

1.1 INSPECTION AND DECLARATION

.1 Contractor's Inspection:

.1 Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Consultant's Inspection.

.2 Consultant's Inspection:

.1 Consultant, Owner and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and are fully operational.

.4 Certificates required by Boiler Inspection Branch have been submitted.

.5 Systems have been commissioned.

.6 Operation of systems have been demonstrated to Owner's personnel.

.7 Work is complete and ready for Final Inspection.

.4 Final Inspection:

.1 When items noted above are completed, request final inspection of Work by Owner and Consultant. If Work is deemed incomplete by Consultant complete outstanding items and request re inspection.

.5 Declaration of Substantial Performance:

.1 When Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Certificate of Substantial Performance. Refer to CCDC 2, General Conditions Article for specifics to application.

.6 Commencement of Lien and Warranty Periods:

.1 Date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. Refer to CCDC 2. If Work is deemed incomplete by Owner, complete outstanding items and request re inspection. Cost of re inspection will be deducted from final payment.

.8 Payment of Holdback:

.1 After issuance of Certificate of Substantial Performance of Work, submit an application of payment of holdback amount in accordance with CCDC2.

1.2 CERTIFICATE OF SUBSTANTIAL PERFORMANCE

.1 Upon approval, a Certificate of Substantial Performance will be issued to the Owner by the Consultant with a copy delivered to the Contractor. This Certificate will take the form shown in Section 01 77 00 - Closeout Procedures.

.2 The Certificate of Substantial Performance will establish the date of the Consultant's inspection as the date of Substantial Performance of the Contract, and will commence

the required 60-day period before release of the lien holdback amount.

.3 During the 60-day period, Contractor shall continue to complete the work.

.4 The Contractor shall immediately deliver to the Consultant specified submissions upon receipt of the Certificate of Substantial Performance.

1.3 ESTABLISHMENT OF WARRANTIES

.1 Warranties shall commence at date of Substantial Performance of the Work.

1.4 CERTIFICATE FOR PAYMENT OF LIEN HOLDBACK AMOUNT

.1 The Contractor shall submit statement and supporting documents for application of Release of Lien Holdback amount. These documents include those listed in Paragraph 2.2.2 and 2.2.3 and the Statutory Declaration Form CCDC 9A.

.2 Within five working days of receipt of application for Release of Lien Holdback amount and if approved, the Consultant will prepare a Certificate for Payment of the Lien Holdback amount. This Certificate dated on the day following termination of the 60 day period will be issued to the Owner with a copy delivered to the Contractor.

.3 The Owner will before the date of this Certificate ensure that no liens related to the Contract are registered and that no notice of liens has been received at the end of the 60-day period.

.4 Should no liens exist, the Lien Holdback will be due and payable one day after termination of the 60-day period in the amount indicated on the approved application for Certificate of Substantial Performance.

.5 The Owner will review jointly with the Contractor's Insurance related to the Contract before the 60-day period is terminated to ensure that all parties are adequately covered.

1.5 TOTAL PERFORMANCE

.1 The Contractor shall inspect the work to establish its completion in accordance with the Contract Documents and when satisfied of this completion request of the Consultant a final inspection.

.2 The Consultant will compile a final deficiency list at this inspection and issue it to the Contractor and Owner.

.3 The Contractor shall correct final deficiencies before a date agreed upon by the Contractor and Consultant.

.4 When the Contractor has satisfied himself that these corrections have been completed in a satisfactory manner by his inspection, he shall schedule a re-inspection by the Consultant, and the Owner's representatives if required, within five working days of the Contractor's request.

.5 When the Consultant is satisfied that all deficiencies have been rectified and the work is complete, the Contractor shall submit an application for the final progress payment.

.6 When "seasonal deficiencies", as determined by the Owner and/or Consultant exist, a sum of money will be withheld in accordance with the requirements of CCDC2-GC5.8.

1.6 WARRANTY PERIOD

.1 The Owner will advise the Consultant of defects observed during Warranty periods.

.2 The Consultant will notify the Contractor of these defects and request him to remedy the defects in accordance with the Contract Documents.

.3 Thirty days before expiration of Warranties the Owner's representatives, the Consultant and the Contractor will review the work as arranged by the Contractor noting defects of products and workmanship.

.4 The Contractor shall immediately remedy such noted defects.

1.7 CERTIFICATE

.1 CONTRACTOR: _____

PROJECT: _____

DATE OF SUBSTANTIAL PERFORMANCE: _____

.1 Substantial Performance Inspection for above described work was carried out _____ (date) by:

.1 For Owner _____
.2 For Consultant _____
.3 For Contractor _____

.2 The items which are not in accordance with the Plans and Specifications and require correction under the Conditions of the Contract Agreement are listed as an attachment to this Document.

CONTRACTOR'S CERTIFICATION
I hereby Certify that the work has been executed in accordance with the Plans and Specifications with the exception of deficiencies listed herewith. The undersigned hereby agrees that notwithstanding the generality of the foregoing, the acceptance of the works shall not prejudice any rights of the Owner or affect any liabilities of the undersigned Contractor pursuant to the provisions of the Contract.

_____
Contractor Date

OWNER'S ACCEPTANCE
I hereby accept the work on behalf of the Owner providing that the deficiencies listed herewith are completed. This acceptance is not to be construed as relieving the Contractor from the responsibility to correct other defects in the work, whether latent or patent, as may become apparent within the guarantee/ warranty period. This acceptance is made without prejudice to the rights of the Owner or to the liabilities of the Contractor which may arise and/or continue after acceptance of the work.

_____
Owner Date

CONSULTANT'S DECLARATION
Based on periodic visits to the job site and general familiarity with the progress of the work, I declare that, to the best of my knowledge, information and belief, construction is proceeding in accordance with the intent of the design and in general compliance with the plans and specifications, with the exception of the deficiencies listed herewith.

_____
Consultant Date

1.8 DEFICIENCIES

.1 The following is a list of deficiencies to be corrected. This acceptance is not to be construed as relieving the Contractor from the responsibility of correcting other defects in the work as may become apparent during the Guarantee/Warranty Period.

.1 _____
.2 _____
.3 _____

END OF SECTION

1 General

1.1 SECTION INCLUDES

.1 Project Record Documents as follows:
- .1 As-Built drawings;
- .2 As-Built specifications;
- .3 Reviewed shop drawings.

.2 Operations and Maintenance data as follows:
- .1 Operations and Maintenance Manual;
- .2 Maintenance Materials;
- .3 Spare Parts;
- .4 Special Tools.

1.2 PROJECT RECORD DOCUMENTS

.1 Consultant will provide two white print sets of contract drawings and two copies of Specifications Manual specifically for "as-built" purposes.

.2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.

.3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Consultant at any time during construction.

.4 As-Built Drawings:
- .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to interim inspection, neatly transfer notations to second set (also by use of red ink). Submit both sets to Consultant. All drawings of both sets shall be stamped "As-Built Drawings" and be signed and dated by Contractor.
- .2 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
- .3 Record following information:
  - .1 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;
  - .2 Field changes of dimension and detail;
  - .3 Location of all capped or terminated services and utilities.
  - .4 Chases for mechanical, electrical and other services;
  - .5 Ceiling and floor elevations;
  - .6 Reflected ceiling plan condition showing finished layout of all ceiling-mounted services and devices;
  - .7 Plumbing, heating, air conditioning and ventilation, sprinkler and electrical service installation locations; all to be dimensioned and referenced to building columns or load bearing walls;
  - .8 All design elevations, sections, floor plans and details dimensioned and marked-up to consistently report finished installation conditions;
  - .9 Any details produced in the course of the contract by the Consultant to supplement or to change existing design drawings must also be marked-up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document;
  - .10 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.

.5 As-built Specifications: legibly mark in red each item to record actual construction,

including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.

.2 Changes made by Addenda and Change Orders.

.3 Mark up both copies of specifications; stamp "as-built", sign and date similarly to drawings as per above clause.

.6 Maintain As-built documents current as the contract progresses. Consultant will conduct reviews and inspections of the documents on a regular basis. Frequency of reviews will be subject to Consultant's discretion. Failure to maintain as-builts current and complete to satisfaction of the Consultant shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.

1.3 REVIEWED SHOP DRAWINGS

.1 Compile full set of shop drawings and product data reviewed on project and incorporate into Operations and Maintenance Manual. Supply number of shop drawing sets equal to the required number of final Operations and Maintenance manuals.

.2 Submit shop drawing sets at same time and as part of the contents of the Operation and Maintenance manuals specified in this section.

1.4 OPERATIONS AND MAINTENANCE MANUALS

.1 Definition: an organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual sections of the specifications.

.2 Manual Language: final manuals to be in English language.

.3 Number of copies required:

.1 Submit two (2) draft copies of the manual for review and inspection by Consultant. Make revisions and additions as directed and resubmit.

.2 Upon review and acceptance by Consultant, submit two (2) final chard copies, and one (1) electronic copy. Initial copies are not to be considered as part of the final copies unless they have been fully revised and are identical to the final approved version.

.4 Submission Date: submit complete operation and maintenance manual to Consultant 3 weeks prior to application for Interim Certificate of Completion of project.

.5 Manual Binding & Format:

.1 Organize data in the form of an instructional manual.

.2 Assemble, coordinate, bind and index required data into Operation and Maintenance Manual.

.3 Use vinyl, hard covered, 3 "D" ring binders, loose leaf, sized for 215 x 280 mm paper, with spine and face pockets.

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Where multiple binders are needed, correlate data into related consistent groupings. Identify contents of each binder on spine.

.6 Organize and divide data into sections the same as the Masterformat Divisions numerical order of contract specifications and thereafter subdivided into various equipment or building systems, under Section numbers and sequence of Table of Contents.

.7 Material: separate each section by use of cardboard dividers and labels. Provide tabbed fly leaf for each separate product or system within each section and with typed description of product and major component parts of equipment.

.8 Text: Manufacturer's printed data, or typewritten data. Do not hand write.

.9 Drawings, diagrams and manufacturers' literature must be legible, determined solely by the Consultant. Provide with reinforced, punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.6 Manual Contents:

.1 Cover sheet containing:

.1 Date submitted.

.2 Project title, location and project number.

.3 Names and addresses of Contractor, and all Sub-contractors.

.2 Table of Contents: provide full table of contents in each binder(s), clearly indicate which contents are in each binder.

.3 List of maintenance materials.

.4 List of spare parts.

.5 List of special tools.

.6 Original or certified copy of Warranties and Guarantees.

.7 Copies of approvals, and certificates issued by Inspection Authorities.

.8 Copies of reports and results from tests designated as Contractor's responsibilities.

.9 Product Information Data on all materials, equipment and systems as specified in individual sections of the specifications to include:

.1 List of equipment including manufacturer's name, supplier, local source of supplies and service depot(s). Provide full addresses and telephone numbers.

.2 Nameplate information including equipment number, make, size, capacity, model number and serial number.

.3 Parts list.

.4 Installation details.

.5 Operating instructions.

.6 Maintenance instructions for equipment.

.7 Maintenance instructions for finishes.

.7 Shop drawings:

.1 Bind one complete set of reviewed shop drawings into each copy of operations and maintenance manual.

.2 Bind the shop drawings in a manner such that they correspond with the specification section they relate to.

.3 Where large quantity of data is supplied due to size of project, fold and bind professionally into separate correctly sized binder.

.8 Equipment and Systems Data: the following list indicates the type of data and extent of information required to be included for each item of equipment and for each system:

.1 Description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed color coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include seasonal and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment,

adjusting, balancing, and checking instructions.

.6 Servicing and lubrication schedule, and list of lubricants required.

.7 Manufacturer's printed operation and maintenance instructions.

.8 Sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed color coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports.

.15 Additional requirements as specified in individual specification sections.

.9 Materials and Finishes Maintenance Data:

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and color and texture designations.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.5 SPARE PARTS, TOOLS AND MAINTENANCE MATERIALS

.1 Provide spare parts, special tools and extra materials for maintenance purposes in quantities specified in individual specification sections.

.2 Tag all items with associated function or equipment.

.3 Provide items of same manufacture and quality as items in Work.

.4 Deliver to site in well packaged condition. Store in location as directed by Consultant.

.5 Clearly mark as to contents indicating:

.1 Part number.

.2 Identification of equipment or system for which parts are applicable.

.3 Installation instructions or intended use as applicable.

.4 Name, address and telephone number of nearest supplier.

.6 Prepare and submit complete inventory list of items supplied. Include list within Maintenance Manual.

.7 Turnover to Facility Manager and obtain signature. Include receipt with Maintenance Manual.

1.6 SPECIAL TOOLS

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site; place and store.

.4 Receive and catalog all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

.5 Turnover to Facility Manager and obtain signature. Include receipt with Maintenance Manual.

1.7 SUBMISSION

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Copy will be returned after final inspection, with Consultant's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Consultant, two (2) final hard copies and one (1) electronic final copy of operating and maintenance manuals in English.

.5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.6 If requested, furnish evidence as to type, source and quality of products provided.

.7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.8 Pay costs of transportation.

.9 Failure to deliver maintenance materials, spare parts, special tools and as-builts will delay progress payments.

1.8 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

.1 date of submission; names,

.2 addresses, and telephone numbers of Consultant and Contractor with name of responsible parties;

.3 schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control and Section 01 77 00 - Closeout Procedures.

.6 Training: Refer to Section 01 91 13 - General Commissioning Requirements.

1.9 AS-BUILTS - RECORDING ACTUAL SITE CONDITIONS

.1 Record information on 2 sets of white print, opaque drawings, and in copy of Project Manual.

.2 Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.
.7 References to related shop drawings and modifications.

.5 Specifications: legibly mark each item to record actual construction, including:
.1 Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.
.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, required by individual specifications sections.

1.10 STORAGE, HANDLING AND PROTECTION

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

1.11 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
.2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
.3 Obtain warranties and bonds, executed in duplicate by Subcontractors, suppliers, and manufacturers where specifically requested by individual specification sections, within ten days after completion of the applicable item of work.
.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
.5 Verify that documents are in proper form, contain full information, and are notarized.
.6 Co-execute submittals when required.
.7 Retain warranties and bonds until time specified for submittal.

END OF SECTION

1 General

1.1 COMMISSIONING OBJECTIVE

.1 Perform commissioning activities in order to achieve the following objectives:

.1 Collect data on equipment and systems supplied; and to document their installation;

.2 Conduct checks and tests on fully installed building component, equipment, systems and integrated systems to:

.1 Verify whether they operate in accordance with requirements of Contract Documents;

.2 Verify performance against design criteria and user requirements and measure peak capacities;

.3 Prepare a Building Management Manual (BMM) which contains operations and maintenance data, as-built record documents, commissioning reports, training data and other critical information for future use by Facility operational staff;

.4 Ensure transfer of knowledge on the operations, maintenance and management of the Facility to Owner and Operational personnel by means of appropriate training.

.2 Commissioning activities conducted by Owner and/or Consultant does not replace checks, tests, adjustments, balancing and other performance verification responsibilities to be performed by General and all Sub-Contractors as part of the work and as specified in other sections of the Specifications.

1.2 DEFINITIONS

.1 For the purpose of this contract, the following terms, used in this section, as they relate directly or indirectly to the commissioning process, shall be deemed to have the meaning as defined hereafter.

.2 Commissioning Process: a planned program of tasks, activities and procedures carried out systematically during the Construction and Occupancy Stages in accordance with the commissioning objectives, specified in clause 1.2 above, to:

.1 Verify whether the fully installed equipment, systems and integrated systems operate in accordance with Contract Documents, design criteria, manufacturers' recommendations and;

.2 Ensure that appropriate documentation is compiled to effectively train Operation and Maintenance staff and prepare a comprehensive Building Management Manual (BMM).

.3 Commission (ie: to commission a building component or system): tests and checks conducted on all systems and integrated systems of Facility; carried out only after they are fully installed, functional and Contractor's Performance Verification responsibilities have been completed and approved.

.1 Contractor provides assistance during this process by operating equipment and systems, by troubleshooting and making adjustments as may be required.

.2 Systems are run under their full operation and under various modes to determine if they function correctly, consistently, at peak efficiency and interactively with each other as intended in accordance with Contract Documents, design criteria and manufacturers' recommendations.

.3 During these checks, adjustments may be made enhancing performance to meet environmental or user requirements.

.4 Contractor: means the Contractor, however it also refers to any personnel from Subcontractors, including the controls subcontractors, suppliers and certified manufacturer techncians with whom the Contractor contracts or obtains services for the performance of work and designated commissioning duties.

.5 Consultant: persons from the civil, architectural, mechanical and electrical design disciplines of the consultant firm(s) engaged by Owner to prepare the final design and contract documents.

.6 Design Criteria: All those factors included in the design of a Facility prescribed by the tenant needs or as determined by Consultant as necessary in order to meet all Facility functional and user operational requirements.

.7 Installation/Start-up Checks:(sometimes referred to as pre-functional checks). Checks and inspections to be performed by Contractor during the pre-start-up and start-up of a particular equipment or system component.

.1 Checklist sheets are to be produced, which include but are not limited to the following data:

.1 Product manufacturer's installation instructions and recommended checks and;

.2 Special procedures as specified in relevant sections of Specifications;

.3 Other items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.

.2 Standard Installation/Start-up Checklist sheets prepared by equipment manufacturer are acceptable for use. Supplement with additional data representative of specific project conditions as deemed required by Consultant.

.3 Use Checklist sheets for all equipment installation. Document in writing on checklist the various checks made, deficiencies noted and corrective action taken.

.4 Installing Sub-Contractor and/or certified manufacturers technicians, to sign Checklist sheets upon completion, certifying that stated checks and inspections have been performed.

.8 Performance Verification: (sometimes referred to Functional Testing) checks, running dynamic tests and adjustments carried out by Contractor on equipment and systems, upon their installation, to ensure they operate correctly, efficiently and function independently and interactively with other systems as intended in accordance with contract documents and manufacturer's recommendations.

.1 Performance Verification shall not be considered part of the commissioning process. It is however considered an essential and integral part of Contractor's responsibilities in the equipment installation process which must be stringently conducted, successfully completed and approved by Owner before a piece of equipment or system is considered fully installed and functional.

.2 Facility components and systems will not be commissioned until performance verification has been completed and approved.

.9 Product Information (PI Data): a compilation of data gathered on a particular piece of equipment, typically produced by manufacturer, which includes nameplate information, installation/startup instructions, parts list, operating instructions, maintenance guidelines and other pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of such equipment. This documentation is included in the Building Management Manual (BMM).

1.3 CONTRACTOR'S COMMISSIONING RESPONSIBILITIES

.1 General:

.1 Coordinate the participation of the various subcontractors, their specialists and manufacturer's certified technicians in providing the commissioning activities described below.

.2 Workers and manufacturer's certified technicians are to be knowledgeable and qualified to interpret system functions and intended design criteria.

.3 Develop a commissioning schedule.

.4 Notify Consultant in writing when entire system is ready to be commissioned. Give fourteen (14) calendar day notice.

.5 Commissioning of Facility and designated systems will only commence once that required documentation has been received and all installed equipment and systems have undergone successful performance verification.

.6 Be aware that inspection certificate will only be issued by Consultant when:

.1 All commissioning documentation has been received, reviewed for suitability and approved by Consultant;

.2 Designated facility components and systems have been commissioned and;

.3 Training has been completed and signed off on.

.7 Non-Conformance of Performance Verification Requirements:

.1 Should incorrectly installed or malfunctioning equipment, system components or associated controls be found while Facility is being commissioned, Contractor shall be required to re-verify 100% of all equipment and components within the non-functional system, including other related system as deemed required by Consultant, to correct deficiencies and ensure effective performance of the fully functional system as designed.

.2 Costs to correct work and any additional tests or inspections, as deemed required by Consultant, to determine acceptability and proper performance of such items to be paid for by Contractor.

.1 Above costs held against Contractor will be as financial penalties in the form of progress payment reductions or holdback assessments.

.2 Prior to Facility being Commissioned:

.1 Submit commissioning documentation as specified in Clause 1.8 for use during commissioning.

.2 Carryout pre-start-up and start-up of equipment.

.3 Conduct performance verification on all installed equipment and systems. Ensure they are fully functional.

.4 Address deficiencies in Work identified during performance verification of equipment and systems. Conduct additional performance verification checks and tests to ensure acceptability of Work.

.5 Arrange for special tools, devices and services, identified at commissioning meeting(s), as deemed required to assist with commissioning.

.6 Provide access ladders, two way radios and other equipment required by Commissioning Agents to facilitate commissioning.

.3 When Facility is being Commissioned:

.1 Provide qualified tradespersons to be present at site to assist commissioning activity.

.2 Assist in commissioning architectural and structural building component, and mechanical, electrical and civil systems specified and as follows:

.1 Operate designated building component, mechanical/electrical equipment and system under all modes of operation and conduct checks and tests as directed by Consultant.

.2 Check and verify that building component, equipment, systems and integrated systems, including their controls, are functioning and responding correctly and interactively with each other.

.3 Test systems independently and then in unison with other related systems.

.4 Conduct all Commissioning checks and tests in presence of and

witnessed by Consultant.

.3 Specific procedures used to commission Facility may be provided by Consultant which includes:

.1 Sequential order of building component and system to be tested.

.2 Running systems under various anticipated modes and demands (example: high and low cooling or heating loads, duplicating outside temperature conditions, fire alarm and power failure conditions etc...).

.3 Running building controls through all sequences of operation to verify and confirm that equipment and systems are responding as designed and intended.

.4 Operating designated equipment at peak capacities, recording output data against design criteria.

.4 Run component or systems as long as necessary to effectively commission all items as deemed required by Consultant.

.5 Monitor equipment and system responses.

.6 Record test results, measurements and other data.

.7 Assist in analyzing results. Identify system deficiencies and components not responding as intended.

.8 Correct deficiencies and system non-conformance issues. Adjust, calibrate or fine tune system components as required. Debug system software as may be required.

.9 Retest systems when directed to confirm compliance.

.4 Upon completion of Facility Commissioning:

.1 Provide training to Maintenance & Operational personnel as specified in clause 1.7 below.

.2 Turn over any filled-in checks sheets, reports or signed and dated certificates resulting from commissioning.

.5 During Warranty period at Occupancy Stage:

.1 Fine tune components, systems and integrated systems and continue system debugging to optimize Facility performance.

.2 Rectify warranty issues.

.3 Submit written report to Consultant.

.1 Indicate results noted and corrective action taken.

.2 Note improvements made to operating parameters and control settings.

.3 Recommend modifications deemed advisable to improve performance, environmental conditions, energy consumptions and other issues.

.4 Consultant to be present during such work.

1.4 COMMISSIONING MEETINGS

.1 Convene commissioning meetings following project meetings: as required through the project to coordinate commissioning requirements.

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

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

.4 At 60% construction completion stage. Contractor to call a separate commissioning scope meeting to review progress including Consultant, discuss schedule of equipment start-up activities and prepare for commissioning . Issues at meeting to include:

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

.2 Determine the degree of involvement of trades and manufacturer's

representatives in the commissioning process.

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

.6 Meeting will be chaired by Contractor, who will record and distribute minutes within 3 business days.

.7 Ensure Subcontractors and relevant manufacturer representatives are present at subsequent commissioning meetings and as required.

1.5 COMMISSIONING SCHEDULE

.1 Address commissioning activities within the construction work schedule. Clearly identify allocated time period for commissioning and training activities.

.2 Provide a commissioning schedule at the 60% construction stage in order that specific issues and individual details of commissioning can be reviewed, discussed and dealt with from that period onward to project completion. Submit updates thereafter,

.3 Indicate allocated time period and anticipated dates for:

.1 Submission of commissioning documentation, including O&M Manuals and Verification Reports

.2 Equipment and system start-up and performance verification, making them ready to be commissioned.

.3 Allocated period to commission designated building components and systems.

.4 Training period.

.5 Work during Warranty period.

.4 Submit schedule to Consultant for review.

.5 Day-to-day operations are to be maintained throughout the facility during the work and activities which may be potentially disruptive are to be included in the schedule. After hours and / or overtime work may be required to facilitate day-to-day operations throughout the facility and should be included in the schedule.

1.6 INSTRUCTORS

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

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

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

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

.2 Contractor and equipment manufacturer to provide instruction on:

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

1.7 TRAINING OBJECTIVES

.1 Training to be detailed and duration to ensure:

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

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

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

.4 Ability to update documentation.

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

1.8 TRAINING MATERIALS

.1 Contractor to be responsible for content and quality.

.2 Training materials to include:
  .1 "As-Built" Contract Documents.
  .2 Operating Manual.
  .3 Maintenance Manual.
  .4 Management Manual.
  .5 Testing, Adjusting and Balancing, Performance Verification Reports and Certificates.
.3 Training materials to be in a format that permits future training procedures to same degree of detail.
.4 Supplement training materials:
  .1 Multimedia presentations or other supplemental digital information.
  .2 Manufacturer's training videos.
.5 Equipment models.

1.9 RESPONSIBILITIES

.1 Be responsible for:
  .1 Implementation of training activities,
  .2 Coordination among instructors,
  .3 Quality of training, training materials,
.2 Consultant will evaluate training and materials.
.3 Upon completion of training, provide written report, signed by Instructors, witnessed by Consultant.
  .1 Report to include a list of all attendees.

1.10 TRAINING CONTENT

.1 Training to include demonstrations by Instructors using the installed equipment and systems.
.2 Content includes:
  .1 Review of facility and occupancy profile.
  .2 Functional requirements.
  .3 System philosophy, limitations of systems and emergency procedures.
  .4 Review of system layout, equipment, components and controls.
  .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
  .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
  .7 Maintenance and servicing.
  .8 Trouble-shooting diagnosis.
  .9 Inter-Action among systems during integrated operation.
  .10 Review of O&M documentation.
.3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.11 VIDEO-BASED TRAINING

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

.3 Production methods to be professional grade with good audio and video quality.

.4 Video to be recorded digitally and submitted on CD or EEProm Drive, in accordance with Section 01 33 00 - Submittal Procedures.

1.12 TRAINING

.1 Commence process of familiarizing O&M personnel in the early stages of work on purpose and operation of various equipment and systems. Continue process throughout the entire construction duration.

.1 Provide informal briefings during occasional site visits, at planned commissioning meetings and during the final commissioning site activities.

.2 Conduct formal demonstration and training sessions only after all identified systems have been commissioned and Consultant has given approval to proceed with the training process.

.3 Provide training and demonstration on equipment, sub-systems, systems and integrated systems.

.4 Carryout training in accordance with requirements of Section 01 91 13 - General Commissioning Requirements.

.5 Submit written agenda of training session(s) 4 weeks before hand for review by Consultant.

.6 Submit training manuals for review 2 weeks prior to actual training.

.7 Ensure required tools and O&M Manuals are on site for training and system demonstration.

.8 As a minimum, the training sessions to cover the following information:

.1 Introduction.

.2 Description of the system with factory personnel being involved at appropriate times.

.3 Instructions on start-up procedures including seasonal procedures, system check-lists and emergency procedures.

.4 Operational procedures, including occupancy considerations, seasonal change-over, manual and automatic operations and emergency modes.

.5 Instruction on system shutdowns, including checklists.

.6 Instructions on all aspects of system maintenance, including routine servicing, lubrication, overhaul and factory servicing.

.7 Information concerning the scope of warranties and their use.

.8 A description of spare parts in stock and their service.

.9 A description of normal tools required for servicing the systems/equipment.

.9 Submit typewritten record of training sessions given and list of attendees. Use forms of format approved by Consultant.

1.13 DESCRIPTION

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection.

.2 Owner will provide list of personnel to receive instructions, and will co-ordinate their attendance at agreed-upon times.

1.14 QUALITY CONTROL

.1 When specified in individual Sections require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

.2 Obtain signature from attendees and provide a copy in the Building Maintenance Manual.

1.15 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Consultant's approval.

.3 Submit reports and certificates within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.4 Record signatures of all attendees.

.5 Give time and date of each demonstration, with list of persons present.

1.16 CONDITIONS FOR DEMONSTRATIONS

.1 Equipment has been inspected and put into operation in accordance with respective applicable Sections.

.2 Testing, adjusting, and balancing has been performed and equipment and systems are fully operational.

.3 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.17 PREPARATIONS

.1 Verify that conditions for demonstration and instructions comply with requirements.

.2 Verify that designated personnel are present.

1.18 DEMONSTRATION AND INSTRUCTIONS

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, sequencing, winter/summer operating, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.

.2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.

.3 Review contents of manual in detail to explain aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

1.19 COMMISSIONING DOCUMENTATION

.1 Submit the following documentation for use during commissioning and for incorporation thereafter into a Building Management Manual (BMM).

.2 Operations and Maintenance Manuals, Project Record Documents and other data as specified in Section 01 78 00 - Closeout Submittals. Data to include:

.1 Equipment Product Information (PI Data) complete with:

.1 Nameplate info,

.2 Installation instructions,

.3 Operating procedures and

.4 Maintenance guidelines.

.5 Reviewed shop drawings,

.6 As-built record drawings and Specifications.

.2 Completed Installation/Start-up Checklist sheets used.

.3 Copy of any static and dynamic test and reports conducted.

.4 Reports as specified in various trade sections.

.3 Documentation to include detailed information and number of copies as specified for maintenance manuals of Section 01 78 00 - Closeout Submittals.

END OF SECTION

1 General

1.1 DESCRIPTION OF WORK

.1 The work of this Section comprises the furnishing of all labour, materials and equipment necessary for all demolition work required to complete the Work of this Contract in accordance with the requirements of this Section and as shown on the Drawings, which includes, but is NOT necessarily limited to:

.1 Removal of existing roof systems as scheduled for application of new roof system.

.2 Removal of cladding for storage and for re-installing.

1.2 PROTECTION

.1 Size, depth and location of existing utilities and structures as indicated are for guidance only; completeness and accuracy are not guaranteed.

.2 Protect existing items designated to remain. In event of damage, immediately replace such items or make repairs to approval of Consultant and at no additional cost to the Owner.

.3 Protect existing surface features which may be affected by work from damage while work is in progress and repair damage resulting from work.

.4 Prevent movement, settlement or damage of adjacent utilities and structures. Provide bracing, shoring and underpinning required. Make good damage and be liable for injury caused by demolition.

.5 If safety of structure being repaired or adjacent structures appear to be endangered, cease operations and notify Consultant and Owner. Take precautions to support structures.

.6 Maintain and protect from damage, all structures, utilities encountered during the execution of Work. Obtain direction of Consultant before moving or otherwise disturbing utilities or structures.

.7 Record in accordance with requirements of Division 01 - General Requirements, locations of maintained, re-routed and abandoned underground lines.

.8 Make good and pay for damage to any lines resulting from work.

1.3 SAFETY CODE

.1 Carry out demolition work in accordance with ALL applicable codes and regulations and as outlined in Section 01 54 50 Safety Requirements.

2 Products

2.1 NOT APPLICABLE

.1 Not applicable.

3 Execution

3.1 PREPARATION

.1 Inspect building and site and verify items designated for removal and items to be preserved.

.2 Locate and protect all utility services.

.3 Any damage to existing utilities and services shall be immediately repaired to the satisfaction of the Owner.

3.2 REMOVAL OF SALVAGED ITEMS

.1 Remove items designated for salvage and stockpile on site or inside building as designated by Owner.

.2 Items not designated for salvage and re-use shall be removed and dispose of off-site by the Contractor.

3.3 DISPOSAL OF MATERIAL

.1 Dispose of all removed materials off-site.

.2 Pay all fees that may be charged to dispose of materials at licensed disposal sites.

.3 Remove all material contaminated with oil, gasoline, calcium chloride or other toxic or dangerous materials and dispose of in manner to minimize danger at site and to a location off site approved by Provincial Authority governing such disposal.

3.4 RESTORATION

.1 Upon completion of work, remove debris, trim surfaces and leave work site clean.

.2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

END OF SECTION

1 General

1.1 SUMMARY

.1 Work included: Provide metal fabrications including but not limited to following:

.1 Miscellaneous sections and framing.

.2 Roof Ladder.

.3 Miscellaneous mechanical equipment brackets.

.4 Miscellaneous masonry angles, lintels & brackets.

1.2 RELATED REQUIREMENTS

.1 Following description of work is included for reference only and shall not be presumed to be complete:

.1 Section 09 91 00 - Painting.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM A53/A53M-07, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A269-10, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

.3 ASTM A307-07b, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.4 ASTM A123/A123M-09, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.5 ASTM A153/A153M-09, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

.6 ASTM A325M-07a, Specification for High-Strength Bolts for Structural Steel joints.

.7 ASTM A653M-09a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.8 ASTM B117-09, Practice for Operating Salt Spray (Fog) Apparatus.

.9 ASTM E119-09c, Test Methods for Fire Tests of Building Construction and Materials.

.10 ASTM E736-00 (2006), Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.

.11 ASTM F436M-10, Specification for Hardened Steel Washers.

.12 ASTM F738M-02 (2008), Specification for Stainless Steel Metric Bolts, Screws, and Studs.

.13 ASTM F836M-02, Specification for Style 1 Stainless Steel Metric Nuts.

.14 ASTM F844-07a, Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.40-97, Anti-corrosive Structural Steel Alkyd Primer.

.2 CAN/CGSB 1.181-99, Ready Mixed Organic Zinc-Rich Coating

.3 CAN/CGSB 85.10-99, Protective Coatings for Metals

.3 Canadian Standards Association (CSA International)

.1 CAN/CSA G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA S16-09, Design of Steel Structures.

.4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.
.5 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding).
.6 CSA S136-07 - North American Specification for the Design of Cold Formed Steel Structural Members (Using Appendix B provisions applicable to Canada).
.7 CSA W47.1-09 - Certification of Companies for Fusion Welding of Steel.
.8 CSA W47.2-M1987 (R2008) - Certification of Companies for Fusion Welding of Aluminum.
.9 CSA W48.1-M1991 (R1998) - Carbon Steel Covered Electrodes for Shielded Metal Arc Welding.
.10 CSA W48-06 - Filler Metals and Allied Materials for Metal Arc Welding.
.11 CSA W59-03 (R2008) - Welded Steel Construction (Metal Arc Welding).
.12 CSA W117.2-06 - Safety in Welding, Cutting, and Allied Processes.
.13 SSPC - Steel Structures Painting Council, "Steel Structures Painting Manual, Vol. 2".

1.4 SYSTEM DESCRIPTION

.1 Design Requirements:
.1 Drawings and details are diagrammatic and are intended to show design concept, configuration, components and arrangements; they are not intended to identify nor solve completely problems of thermal and structural movements, assembly framing, fixings and anchorages.
.2 Design work to withstand within acceptable deflection limitations, variations from plumb in vertical and horizontal lines, its own weight, forces applied by movements of building structure and attached adjacent components and maximum design loads due to pressure and suction of wind, snow, ice, rain and hail.
.3 Design load bearing structures to NBC requirements and provide miscellaneous steel supports and anchors to suit design. Conform to CAN/CSA-S16.1 and CAN/CSA-S136.

1.5 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's literature, data sheets for each type of material provided under this Section for Project. Data sheets shall provide all required information. Submit 3 copies of detailed instructions for maintaining, preserving and keeping materials in clean and safe conditions and give adequate warning of maintenance practices of materials detrimental to specified materials. Submit manufacturer's installation instructions.
.2 Material Safety Data Sheets:
.1 Submit MSDS for inclusion in Operation and Maintenance Manual without limitations for adhesives, sealants, patching and leveling compound, solid polymer and as designed by Consultant.
.3 Shop Drawings
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 In addition to minimum requirements indicated following:
.1 Large scale details of members, materials and connections.
.2 Joint details.
.3 Methods of setting, sealing, securing, anchorage.
.4 Field connections.
.3 Each shop drawing submitted shall bear stamp and signature of qualified professional engineer registered or licensed to practice in the Province of Prince

Edward Island, Canada.

.4 Samples:

.1 Extruded and formed metals: minimum 300 mm long.

.2 Metal sheet: minimum 300 mm square and of specified thickness.

1.6 QUALITY ASSURANCE

.1 Test Reports: Submit 6 copies of certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: Submit 6 copies of product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Welding: Provide welding in accordance with CSA W59-m performed by a fabricator and mechanics fully approved by the Canadian Welding Bureau as specified herein.

.4 Structural Design and Inspection:

.1 Employ a professional structural engineer carrying a minimum $3,000,000.00 professional liability insurance and is registered in the province of Prince Edward Island to:

.1 Design components of the work of this Section requiring structural performance.

.2 Be responsible for full assemblies and connections

.3 Be responsible for determining sizes, joint spacing to allow thermal movement and loading of components in accordance with applicable codes and regulations.

.4 Be responsible for production and review of Shop Drawings.

.5 Inspect work of this Section during fabrication and erection.

.6 Stamp and sign each shop drawing.

.7 Provide site administration and inspection of this part of the Work.

.2 Design following:

.1 Stairs including landings and supports.

.2 Balustrades, handrails, railings.

.3 Certification:

.1 Submit certification from registered professional structural Engineering registered in province of Prince Edward Island, who shall affix his/her seal and signature to certificate, stating structure is capable of supporting its own weight and specified live loads.

.2 Welders employed on this project may be asked by Consultant at any time for their welding certificate.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Coordinate deliveries to comply with construction schedule and arrange ahead for strategic off-the-ground, undercover storage locations. Do not load areas beyond the designed limits.

.2 Handle and store metal materials at job site in such a manner to prevent damage to other materials, (to existing buildings) or property.

.3 Handle components with care, and Provide protection for surfaces against marring or other damage. Ship and store members with cardboard or other resilient spacers between surfaces. Use lifting chokers of material which will not damage surface of steel members.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 MATERIALS

.1 Steel sections and plates: New Material Conforming to CAN/CSA-G40.20/G40.21, Grade 300W.

.2 Hollow Structural Sections: New material conforming to CSA G40.20 and CSA G40.21, Grade 350W, Class H.

.3 Steel Pipe: ASTM A53, Type E or S, Grade A or B, Standard weight, Schedule 40.

.4 Stainless Steel:

.1 Provide highest architectural quality in various forms, straight and true. Ensure there are no scratches, scars, creases, buckles, ripples or chatter marks. Provide finished surfaces suitable for polishing where required. Ensure finished surfaces exposed to view are free of pitting, seam marks, roller marks, oil-canning, stains, discolorations or other imperfections.

.2 Stainless Steel Sheet, Strip, Plate, and Flat Bar: ASTM A167 or ASTM A666, Type 304 and Type 316 alloy with exposed surfaces having No. 4 polished finish. Sizes as required to meet design requirements.

.3 Stainless Steel Tubing: ASTM A554, Grade MT 304.

.4 Stainless Steel Exterior Tubing: ASTM A554, Grade MT 316.

.5 Stainless Steel Pipe: ASTM A312M, Grade TP 304.

.6 Stainless Steel Exterior Pipe: ASTM A312M, Grade TP 316.

.7 Castings: ASTM A743M, Grade CF 8 or Grade CF 20. Type 304.

.8 Castings: ASTM A743M, Grade CF 8M. Type 316.

.5 Structural aluminum: to CSA HA series - M, Type 6061-T6, clear anodized.

.6 Welding Materials: Conforming to CSA W48.1-M and CSA W59-M.

.7 High Strength Bolts: Supply bolts, nuts and washers conforming with ASTM A 325M. Supply each type and size of bolt and nut of same manufacture and of same lot.

.1 Bolts: Heavy, hexagon head high strength structural bolts, of standard size, of lengths required for thickness of members joined and for type of connection.

.2 Nuts: Heavy hexagon semi-finished nuts.

.3 Washers: For general use bolt, nut and stud application to provide increased bearing surfaces, spacing and to prevent galling. Flat and smooth hardened washers, quenched and tempered to suit applications and conforms to ASTM F844. Provide AISI Type 304 stainless steel washers at exterior locations.

.4 Hardened Steel Washers: To suit applications and conforms to ASTM F436M.

.5 Stainless Steel Bolts: To suit applications and conforms to ASTM F738M.

.6 Stainless Steel Nuts: To suit applications and conforms to ASTM F836M.

.7 Lock Washers: Helical spring type steel "lock" washers to suit applications and conforms to federal specification FF-W-84. Provide AISI Type 304 stainless steel lock washers at exterior locations.

.8 Security Fasteners: Button head Torx® Plus R screw tamper resistant # 10, 25 mm long 2 per glass stop minimum stainless steel machine screws.

.8 Common or Ordinary Bolts and Anchor Bolts: Unfinished bolts conforming with ASTM A307, Grade A, with hexagon heads and nuts where exposed in the finish work. Supply common bolts of lengths required to suit thickness of material being joined, but not projecting more than 6 mm beyond nut, without the use of washers. Supply anchor bolts of lengths noted, but projecting not less than 13 mm beyond nut unless otherwise noted.

.9 Galvanized Primer Paint: Zinc rich conforming to CAN/CGSB-1.181 for new galvanized metal.

.10 High Performance Corrosion Protection for Perimeter Steel: 1 component, moisture cured, micaceous iron oxide/zinc filled primer, UL Classified in accordance with UL 263 (ASTM E119), corrosion protection in accordance with ASTM B117, meeting Class B Slip Certification in accordance with American Institute of Steel Construction (AISC) requirements for slip critical bolted connections, tested in accordance with ASTM E736 for its suitability for application of primer over steel to receive sprayed fireproofing "Series394, Perime Prime" by Tnemec Company Incorporated; www.tnemec.com.

.11 Steel Pipe Handrails: Conforming to ASTM A53M, Type "S", Schedule 40, Grade A steel pipe of sizes down.

.12 Steel Pipe Bollards: Conforming to ASTM A53M, Schedule 80 steel pipe of sizes shown.

.13 Galvanized: Hot dipped galvanized with minimum zinc coating of 600 g/m² to CAN/CSA-G164-M.

.14 Galvanized Sheet Steel: Supply 0.91 mm (20 ga) core thickness commercial quality to ASTM A653M, CS Type A, with Z275 zinc coating designation to ASTM A653M.

.15 Perforated Sheet Steel: Commercial flattened sheet steel of thickness indicated, with machine die cut round holes of 3 mm dia. at 5.537 mm oc in 60° staggered pattern and similar to sheet stock manufactured by Greening Donald Co. Ltd., or by Unalloy WRC-a division of Samuel Manu-Tech Inc. or by Gerard Daniel Worldwide.

.16 Expanded Steel Mesh: Flattened, expanded, carbon steel mesh of 10 msg gauge thickness, weighing minimum 112 lbs/100 sq ft, style 1.330" SWD x 3.2000" LWD, 11-1/2" - No. 9 by Gerard Daniel Worldwide, Canadian Division, or Expanded Metal Corporation or Dramex International.

.17 Aluminum Extrusions: ASTM B209M, size accurately formed as shown on Drawings, extruded aluminum alloy AA-6063-T5 or T6 for aluminum. Ensure surfaces are free from defects impairing appearance, strength and durability.

.18 Aluminum Sheet: ASTM B221M, Minimum thickness 3 mm of type and characteristics to match finished extrusions; sheet which is not exposed shall be Utility Aluminum mill finished; for intricate forming with decorative finishes use AA 1100 and for siding and exposed panels use AA-3003 with specified finish.

.19 Handrail Wall Brackets: In accordance with OBC requirements and to meet design requirements indicated on Drawings.

.20 Grout:

.1 Cementitious, non shrinking, non expanding grout: 'Sika Grout 212' by Sika Canada Inc., or 'Non Shrink Structural Grout - Dry Pack Grout' by Euclid Chemical Company or 'Sealtight CG 86 Construction Grout' by W.R. Meadows.

.2 Epoxy, non-shrinking, non expanding grout: 'Sika Anchor Fix.

.3 Master Flow 100.

.4 Master Emaco ADH 1420.

2.2 FABRICATION

.1 Fabricate each item of work of this Section in accordance with following general requirements:

.1 Members square and straight.

.2 Members plumb and true.

.3 Joints accurately and tightly fitted.

.4 Intersecting members in true, finish planes.

.5 Fasteners concealed.

.2 Fabricate, fit and assemble work in shop where possible. Where shop fabrication is not possible, make trial assembly in shop.

.3 Provide hangers, rods, bars, bolts, anchors, brackets, rivets, bearing plate and bracing,

fitting, drilling, stopping, soldering, as required for a complete assembly.

.4 Isolate dissimilar metals to prevent galvanic corrosion.

.5 Weld connections unless otherwise indicated.

.6 Shop Welding:

.1 Execute welding to avoid damage or distortion to work. Should there be, in the opinion of Consultant or Inspection Company, doubts as to adequacy of welds, they shall be tested for efficiency and any work not meeting Standards be removed and replaced with new work satisfactory to Consultant. Carry out welding in accordance with following standards:

.1 Fabricator shall be fully certified by Canadian Welding Bureau for fusion welding of steel structures to CSA W47.1 and for fusion welding of aluminum to CSA W47.2.

.2 CSA W48-M - for Electrodes (if rods are used, only coated rods are allowed).

.3 CSA W59-M - for design of connections and workmanship.

.4 CSA W117.2 - for safety.

.7 Thoroughly clean welded joints and steel exposed for a sufficient space to properly perform welding operation. Neatly finish welds. Ensure welds exposed to view and finish painted are continuous and ground smooth.

.8 Provide exposed metal fastenings and accessories of same material, texture, color and finish as base metal to which they are applied or fastened.

2.3 FINISHES

.1 Cleaning and Shop Painting:

.1 Clean steel to SSPC SP6 and remove loose mill scale, weld flux and splatter.

.2 Shop prime steel with 1 coat of primer paint to dry film thickness of 0.025 mm (1 mil). Paint on dry surfaces free from rust, scale, grease. Do not paint when temperature is lower than 7 deg C. Paint items under cover and leave under cover until primer is dry. Follow paint manufacturer's recommendations regarding application methods, equipment, temperature, and humidity conditions.

.3 Shop prime non galvanized perimeter steel members and structural steel members to receive sprayed fire resistive materials with 1 coat of high performance corrosion protection primer to dry film thickness of 0.025 mm (1 mil). Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 deg C. Paint items under cover and leave under cover until primer is dry. Follow paint manufacturer's recommendations regarding application methods, equipment, temperature, and humidity conditions.

.4 Shop prime galvanized steel in accordance with CAN/CGSB-85.10.

.5 Clean but do not paint surfaces being welded in the field and surfaces in contact after assembly.

.2 Hot Dip Galvanizing:

.1 After fabrication, hot dip galvanize specific miscellaneous steel items noted on Drawings and/or called for herein. Plug relief vents air tight. After galvanizing, remove plugs, ream holes to proper size and re-tap threads. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with "Galvafroid" by W.R. Meadows in accordance with manufacturer's printed directions.

.2 Galvanized members exposed to elements when in final location; members embedded in concrete; members specified in this Section or noted on Drawings.

.3 Hot-dip galvanize members, in accordance with CAN/CSA-G164-M and the requirements of following ASTM standards, with minimum coating weights or thickness as specified:

.1 Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips: ASTM A123M; average weight of zinc coating per sq/ft of actual surface, for 4.8 mm and less thickness members 2 ounces, for 6 mm and heavier members 2.3 ounces.

.2 Iron and Steel Hardware: ASTM A153M; minimum weight of zinc coating, in ounces per sq ft of surface shall be in accordance with Table 1 of ASTM A153M, for the various classes of materials used on the Project.

.3 Steel Sheet: ASTM A653M; weight of zinc coating, per sq ft on both sides of sheet. Coating designation Z275 (G90), minimized spangle and chemically treated.

.3 Color: to be selected by Consultant.

.4 Aluminum: Exposed aluminum surfaces shall have clear anodized coating (Architectural Class II). Pre-treat aluminum with caustic tech treatment prior to applying integral, clear, anodic oxide coating. Apply clear, anodic oxide coating in accordance with AAMA 611, 0.4 mils minimum coating thickness and also conforms to Aluminum Finish Designation AA-M12C22A31, Architectural Class II. Protect clear anodized coating with removable protective film.

.5 Zinc-rich primer: Ready, mixed, zinc-rich primer conforming to CAN/CGSB-1.181.

.1 Acceptable material:

.1 Sealtight Galvafroid Zinc-Rich Coating by W.R. Meadows of Canada Limited.

.2 Zinc Clad No. 7 Organic Zinc Rich Primer by Sherwin Williams Company of Canada Ltd.

.6 Isolation Coating: Bituminous paint, alkali-resistant bituminous paint or epoxy resin solution to provide dielectric separation which will dry to be tack-free and withstand high temperatures. Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers. Carboline Bitumastic 50 by Carboline Canada, or Copper Creek Top Service 760 Black by Sherwin Williams Company, 410-02 by Bakor Inc. or other Product and manufacturer acceptable to Consultant.

2.4 LADDERS, ROOF ACCESS

.1 Fabricate all ladders with 20 mm diameter steel rod rungs welded to 10 x 64 mm steel stringers at 300 mm o.c. c/w 10 x 75 mm x 240 long steel bar brackets with 75 mm long 90° bend at end pre-drilled for wall anchors, welded to stringers at maximum 1000 mm o.c. Space stringers 400 mm apart. Provide cage from 2400 mm above roof from 10x64mm straps.

.1 Exterior ladders: fabricate as indicate with steel checker plate tread over top of parapet and cage above 2438 above roof level.

.2 All components to be hot dip galvanized.

.3 Prime paint ready for finish painting by others.

.1 Use zinc rich primer at exterior ladders.

.2 Provide steel brackets c/w backing plate pre-drilled for bolting to structural framing behind metal wall cladding and to ladder stringers.

.3 Hot dip galvanize entire assembly after fabrication.

.4 Bolt brackets to structural framing prior to installation of metal wall cladding and bolt ladder to brackets using 13 mm diameter hot-dip galvanized bolts, nuts and washers to provide, rigid secure installation.

.5 Touch-up any damage to galvanizing with zinc primer and leave ready for painting.

3 Execution

3.1 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Provide components for building by other sections in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CAN/CSA-S16.1, or weld.

.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 INSTALLATION

.1 Verify dimensions at the Place of the Work to ensure work of this Section fits to that of other parts of the Work.

.2 Erect the work of this Section plumb, square, true and level.

.3 Securely anchor work of this Section and rivet, weld or bolt to structural framing of the building. Where secured to concrete, Provide bolts for setting in concrete. Provide expansion bolt supports to masonry.

.4 Provide necessary fitting, setting and cutting required in connection with the fitting of work of this Section to other parts of the Work.

.5 Field Painting: Paint bolt heads, washers, nuts, field welds and previously unpainted items. Touch up with matching paint, shop primer damaged during transit and installation.

.6 Erect stair work to line, plumb, square, true and level, with runs of stairs registering level with floor levels.

3.3 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

.3 On completion of installation, carefully clean metal work.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 05 50 00 - Metal Fabrications.
.2 Section 09 91 00 - Painting.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)
  .1 ANSI A14.3: Ladders - Fixed - Safety Requirements.
.2 Canadian General Standards Board (CGSB)

1.3 SYSTEM DESCRIPTION

.1 Ladder to be constructed using high grade steel, incorporating a profiled rung design.
.2 Ladder side rails to extend 900mm or more above landing surface, except where a roof hatch is provided.
.3 Fall protection must be incorporated by means of an enclosed cage for all ladders where the top surface is greater than 4.9 metres above the ground, or where there is a danger of a worker falling more than 5 metres from the ladder to the ground level, roof or floor, even if the length of the climb is less than 5 metres.
.4 System applications include:
  .1 Perrmanent applications providing access to elevated areas and roofs for maintenance.
  .2 Safe access between varying roof levels.
  .3 Safe access into ceiling spaces and machinery platforms for plant and equipment maintenance.
.5 Finish:
  .1 All componentry and accessories are manufactured from high grade structural steel, shop primed for painting.

1.4 QUALITY ASSURANCE

.1 Structural Design and Inspection:
  .1 Certification:
    .1 Submit certification from registered professional structural Engineering registered in the province of Prince Edward Island, who shall affix his/her seal and signature to certificate, stating structure is capable of supporting its own weight and specified live loads.
    .2 Welders employed on this project may be asked by Consultant at any time for their welding certificate.
.2 Design Requirements:
  .1 Industrial rated, suited to high frequency usage. Recommended for single person use - 150kg rated.
  .2 Ladder must meet the loads of NBCC.
.3 Verify field measurements prior to assembly and/or ordering.

1.5 SUBMITTALS

.1 Shop Drawings:
  .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  .2 Indicate profiles, sizes, connections, size, and type of fasteners and accessories.
  .3 Submit shop drawing bearing stamp of a qualified professional engineer registered in Province of Prince Edward Island.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 MODULAR LADDER SYSTEM

.1 Manufactured from high grade structural steel.

.2 Overall ladder width: 605mm.

.3 Distance between vertical side rails: 525mm.

.4 Rung diameter: 50 x 35mm (profiled).

.5 Rung spacing: 300mm.

.6 Vertical side rail extension above landing surface: 1100mm.

.7 Minimum clearance behind ladder: 200mm.

.8 Maximum distance between rest platforms: 6000mm.

.9 Rung section: 2.9kg/M (ex. fixing brackets and fixings)

.10 Cage sections: 8.3 kg/M

.11 Assembly: Upright tops shall be plugged with weather and light resistant material where required.

3 Execution

3.1 INSTALLATION

.1 Support structure integrity, suitability and fixing method to be assessed and determined by design and materials to which it is being fixed prior to installation and reflected on Shop Drawings.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 21 16 - Blanket Insulation.
.2 Section 07 26 00 - Vapor Retarders
.3 Section 07 52 00 - Modified Bituminous Membrane Roofing
.4 Section 09 91 00 - Painting

1.2 REFERENCES

.1 American National Standards Institute (ANSI)
  .1 ANSI A208.1-1999, Particleboard, Mat Formed Wood.
.2 American Society for Testing and Materials (ASTM)
  .1 ASTM D1761-00, Standard Test Methods for Mechanical Fasteners in Wood.
  .2 ASTM D5055-00, Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists.
  .3 ASTM D5456-01ae1, Specification for Evaluation of Structural Composite Lumber Products.
.3 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-11.3-M87, Hardboard.
  .2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
  .3 CAN/CGSB-51.34-M86, Vapor Barrier, Polyethylene Sheet for Use in Building Construction.
  .4 CAN/CGSB-71.26-M88, Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.
.4 Canadian Standards Association (CSA)
  .1 CSA A123.2-M1979(R1999), Asphalt Coated Roofing Sheets.
  .2 CAN/CSA-A247-M86, Insulating Fiberboard.
  .3 CSA B111-1974, Wire Nails, Spikes and Staples
  .4 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.
  .5 CSA O112 Series-M1977, CSA Standards for Wood Adhesives.
  .6 CSA O121-M1978, Douglas Fir Plywood.
  .7 CAN/CSA-O122-M89, Structural Glued-Laminated Timber.
  .8 CAN/CSA-O141-91, Softwood Lumber.
  .9 CSA O151-M1978, Canadian Softwood Plywood.
  .10 CSA O153-M1980, Poplar Plywood.
  .11 CAN/CSA-O325.0-92(R1988), Construction Sheathing.
  .12 CAN3-O437 Series-93, Standards on OSB and Waferboard.
.5 National Lumber Grades Authority (NLGA)
  .1 Standard Grading Rules for Canadian Lumber 2010.
.6 Truss Design and Procedures for Light Metal Connected Wood Trusses, Truss Plate Institute of Canada.

1.3 QUALITY ASSURANCE

.1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
.2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Set aside damaged wood and dimensional lumber off-cuts for approved alternative uses

(e.g. bracing, blocking, cripples, bridging).

.2 Collect and separate for disposal waste material generated by this Section.

.3 Place in appropriate on-site bins in accordance with Waste Management Plan.

.4 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 FRAMING AND STRUCTURAL MATERIALS

.1 Lumber:

.1 Unless specified otherwise, softwood, S4S, moisture content 19% (S-dry) or less in accordance with following standards:

.1 CAN/CSA-O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Glued end-jointed (finger-jointed) lumber are not acceptable.

.2 Glulam in accordance with Structural Glued-Laminated Timber CAN/CSA-O122.

.3 Wood I-joists in accordance with Prefabricated Wood I-Joists ASTM D5055.

.4 Light-frame trusses in accordance with "Truss Design and Procedures for Light Metal Connected Wood Trusses", Truss Plate Institute of Canada.

.5 Structural Composite Lumber (SCL) in accordance with ASTM D5456.

.6 Framing and board lumber: in accordance with NBC.

.7 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:

.1 S4S is acceptable.

.2 Board sizes: "Standard" or better grade.

.3 Dimension sizes: "Standard" light framing or better grade.

.4 Post and timbers sizes: "Standard" or better grade.

2.2 PANEL MATERIALS

.1 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.0.

.2 Douglas fir plywood (DFP): to CSA O121, standard construction.

.3 Canadian softwood plywood (CSP): to CSA O151, standard construction.

.4 Poplar plywood (PP): to CSA O153, standard construction.

.5 Interior mat-formed wood particleboard: to ANSI 208.1.

.6 Mat-formed structural panel boards (OSB wafer): to CAN3-O437.0.

.7 Glass fiber board sheathing: non-structural, rigid, faced, fiberglass.

.8 Gypsum sheathing: to ASTM C36/C36M.

.9 Specifically:

.1 Roof sheathing: Douglas Fir Plywood (DFP) exterior sheathing grade, square edge, to thickness indicated, to CSA O121.

.2 OSB Structural Exterior Sheathing to meet or exceed Canadian Standards Association requirements CSA 0325 and/or CSA 0427, to NBCC 2015.

.3 Exterior wall sheathing: Douglas Fir Plywood (DFP) exterior sheathing grade, square edge, 12.7mm thickness, to CSA 0121.

.4 Sub flooring: Douglas Fir Plywood (DFP), G1S grade, T & G, 19.0mm thickness, to CSA 0121.

.5 Plywood underlay: Douglas Fir plywood (DFP), to CSA O121 - M1978, GIS with solid wood boats, (PASTE TYPE FILLERS NOT ACCEPTABLE), 8mm thickness.

.6 Exterior soffits at roof overhangs: Douglas Fir Plywood (DFP) with medium

density overlay (MDO) finish, square edge, to thickness indicated.

.7 Miscellaneous exterior facing: Douglas Fir Plywood (DFP) with medium density overlay (MDO) finish, square edge, 12.7mm thickness.

.8 Mechanical & Electrical equipment backboards: Douglas fir plywood (DFP), to CSA O121, G1S, square edge to thickness indicated.

2.3 ACCESSORIES

.1 Polyethylene film: to CAN/CGSB-51.34, Type 1, 0.15 mm thick (6 mil).

.2 Air seal sill gasket: closed cell polyurethane or polyethylene.

.3 Sealants: Section 07 92 00 - Joint Sealants.

.4 Sub flooring adhesive: to CGSB-71.26, cartridge loaded.

.5 General purpose adhesive: to CSA O112 Series.

.6 Nails, spikes and staples: to CSA B111.

.1 Use common spiral nails and spiral spikes except where indicated otherwise.

.2 Use hot galvanized finish steel for exterior work, including sheathing.

.7 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

.8 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and inorganic fiber plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

.9 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, sheet metal, fiber, formed to prevent dishing. Bell or cup shapes not acceptable.

.10 Roof sheathing H-Clips: formed "H" shape, thickness to suit panel material, extruded 6063-T6 aluminum alloy type approved by Consultant.

.11 Use surface fastenings of following type except where specific type is indicated.

.1 To hollow masonry, drywall and panel surfaces, use toggle bolt.

.2 To solid masonry and concrete use expansion shield with lag screw.

.3 To structural steel use bolts through drilled hole, or welded stud-bolts or power drilled hole, or welded stud-bolts or power driven self-drilling screws, or welded stud-bolts, or explosive actuated stud-bolts.

.4 To exterior face of concrete foundation wall with galvanized power driven fasteners penetrating minimum 38mm into concrete.

.5 Joist hangers: minimum 1mm thick sheet steel, galvanized G90 coating designation, 6672N bearing strength.

.6 Roof sheathing H-clips: formed "H" shape, thickness to suit panel material, type approved by Consultant.

.12 Galvanizing: to CSA G164-M1981, use galvanized fasteners for work in exterior walls, work in high humidity areas, etc. and with pressure-preservative treated lumber.

2.4 MISCELLANEOUS HARDWARE

.1 Beam anchors:

.1 Purpose made for connecting wood beams to concrete, hot-dripped galvanized steel, 2.6mm base thickness, c/w integral anchor lugs and pre-drilled for nails.

.2 Acceptable Material:

.1 Simpson "Strong Tie" (Coordinate with beam size and confirm model number before ordering)

.2 Beam anchors:

.1 Purpose-made for connecting wood beams to wood posts, hot-dipped galvanized steel, 1.6mm (16 ga) base thickness, pre-drilled for nails.

.2 Acceptable Material:

.1 Simpson "Strong Tie" (Coordinate with beam and post sizes and confirm model number before ordering).

.3 Post anchors:
- .1 Purpose-made for connecting wood posts to concrete, elevated type, hot-dipped galvanized 2.6mm (14 ga) stand-off and adjustment plates, 1.6mm (16 ga) cover plates pre-drilled for nails.
- .2 Acceptable Material:
  - .1 Simpson "Strong Tie" (Coordinate with post size and confirm model number before ordering)

.4 Wire mesh:
- .1 Re-galvanized, welded steel wire hardware grade cloth, 6mm +/- mesh.
- .2 Acceptable Material:
  - .1 Greening - Donald #4/0.047.

.5 Louvers at entry gables:
- .1 Purpose-made vinyl c/w insect screen, triangular configuration as indicated.
- .2 Acceptable Material:
  - .1 Allsco "Homeguard" Vents.
  - .2 Hardi-Vents.

2.5 AIR BARRIER SHEET

.1 Refer to Section 07 27 00 - Air Barriers.

2.6 WOOD PRESERVATIVE

.1 Lumber and plywood: CCA vacuum pressure impregnated to CAN/CSA 080.1-M89 and CAN/CSA 080.9-M89, Spruce species. At all framing where wood comes in contact with earth, concrete or masonry.
- .1 Acceptable Material:
  - .1 Wolmanizing.

3 Execution

3.1 PREPARATION

.1 Store wood products in dry environment.

3.2 INSTALLATION

.1 Comply with requirements of NBCC 2015 Part 9 supplemented by following paragraphs.

.2 Install members true to line, levels and elevations, square and plumb.

.3 Construct continuous members from pieces of longest practical length.

.4 Install spanning members with "crown-edge" up.

.5 Select exposed framing for appearance. Install lumber materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.

.6 Install sub flooring with panel end-joints located on solid bearing, staggered at least 800 mm.
- .1 In addition to mechanical fasteners, drywall "Grabber" screws floor sub flooring to floor joists using glue. Place continuous adhesive bead in accordance with manufacturer's instructions, single-bead on each joist and double-bead on joists where panel ends butt.

.7 Install wall sheathing in accordance with manufacturer's printed instructions.

.8 Install roof sheathing in accordance with requirements of NBCC.

.9 Install H-clips as required by spacing of roof framing.

.10 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting

boards, and other work as required.

.11 Install furring to support siding applied vertically where there is no blocking and where sheathing is not suitable for direct nailing.

.1 Align and plumb faces of furring and blocking to tolerance of 1:600.

.12 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.13 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.

.14 Install sleepers as indicated.

.15 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.

3.3 PARAPETS, CURBS AND RELATED BLOCKING ETC.

.1 Fabricate as detailed and to CRCA recommendations except where specifically detailed otherwise.

.2 Use pressure treated lumber and plywood throughout all external applications and as shown.

.3 Apply two (2) coats of brush applied wood preservative to all end cuts of lumber and plywood.

.4 Install wood framing and plywood sheathing at roof parapets, curbs, etc., as indicated in longest practical lengths.

.5 Anchor to steel framing and/or concrete with galvanized bolts at spacing indicated.

.6 Supply wood spreader to Section 05 50 00 - Metal Fabrications for attachment to galvanized metal.

3.4 MISCELLANEOUS FURRING, BLOCKING AND STRAPPING

.1 Install furring and blocking as required to space out and support casework, cabinets, toilet and bath accessories, recessed panels and cabinets for work of Electrical and Mechanical Divisions, and other work as required, which includes, but is not limited to the following:

.1 At vanity tops and counter tops/worktops provide 38 x 140 wood blocking between steel studs at each metal bracket and at each end of vanity top and counter top/worktops.

.2 At all toilet and bath accessories provide wood blocking between studs, as required.

.3 Generally both vertical and horizontal blocking will be required to secure 100 mm deep accessories recessed in 100 mm thick walls.

.4 At all wall-hung lavatories provide 37 x 285 wood blocking between double, back to back, studs to receive steel hanger.

.5 At cabinetwork provide 38 x 140 blocking between studs, as required to support cabinetwork.

.6 At wall mounted handrails provide 38 x 140 blocking between studs, located at mounting brackets for handrail.

.7 At zone valve boxes, fire hose cabinets and fire-extinguisher cabinets provide blocking between studs as required to support and secure cabinets.

.8 At lockers, as required to secure lockers to wall.

.9 At all wall mounted doorstops.

.10 At ALL other wall-mounted items provide wood blocking between studs as required.

.2 Install furring to support any sheathing type material where there is no blocking and where sheathing is not suitable for direct nailing.

.3 Spacing of furring as required to provide adequate support for material.

.4 Install strapping as indicated or required to support panel material, except where metal strapping is specifically indicated.

.5 Align and plumb faces of furring and blocking to tolerance of 1:600.

3.5 NAILING STRIPS, FRAMING AND ROUGH BUCKS

.1 Install rough bucks, nailers and linings to rough openings as required to provide backing for window frames, door frames and other work.

.2 Install continuous pressure treated wood framing as indicated under all window stools.

.3 Install sloped sill framing and water stop as required by NBCC, latest edition.

.4 Countersink bolts where necessary to provide flush surface.

3.6 FASTENERS

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Provide minimum three (3) 50 mm nails at each end to secure blocking between studs.

.3 Countersink bolts where necessary to provide clearance for other work.

.4 Screws for fastening pressure treated lumber to be ceramic coated.

3.7 EQUIPMENT BACKBOARDS

.1 Provide backboards for mounting equipment. Use 19mm thick DFP.G1S on 19 x 38mm furring around perimeter and at maximum 300mm intermediate spacing.

.2 Supply and install these backboards where indicated or directed by Mechanical and Electrical Division.

.3 For bidding purposes, include for the following, cut to size required:

.1 Electrical Divisions: two (2) 1219 x 2438.

.2 Mechanical Divisions: two (2) 1219 x 2438.

3.8 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

.3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry.
.2 Section 07 21 16 - Blanket Insulation.
.3 Section 07 26 00 - Vapor Retarders.
.4 Section 07 52 00 - Modified Bituminous Membrane Roofing.
.5 Section 09 21 16 - Gypsum Board Assemblies.
.6 Section 09 22 16 - Non-Structural Metal Framing.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
  .1 ASTM E96-00e1, Test Methods for Water Vapor Transmission of Materials.
  .2 ASTM C208-95(R2001), Specification for Cellulosic Fiber Insulating Board.
  .3 ASTM C591-01, Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
  .4 ASTM C612-00a, Specification for Mineral Fiber Block and Board Thermal Insulation.
  .5 ASTM C165 (2012), Standard Test Method for Measuring Compressive Properties of Thermal Insulations.
  .6 ASTM C665 (2011), Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
  .7 ASTM C728-97e1, Specification for Perlite Thermal Insulation Board.
  .8 ASTM C1126-00, Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.
  .9 ASTM C1289-02, Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  .10 ASTM C1338 (2008), Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
.2 Canadian General Standards Board (CGSB).
  .1 CGSB 71-GP-24M-77(R1983), Adhesive, Flexible, for Bonding Cellular Polystyrene Insulation.
.3 Underwriters Laboratories of Canada (ULC).
  .1 CAN/ULC-S102 (2010), Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
  .2 CAN/ULC-S604-91, Type A Chimneys.
  .3 CAN/ULC-S701-01, Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
  .4 CAN/ULC-S702 (2012), Standard for Thermal Insulation Mineral Fibre for Buildings.
  .5 CAN/ULC-S704-01, Thermal Insulation Polyurethane and Polyisocyanurate, Boards, Faced.

1.3 QUALITY ASSURANCE

.1 Pre-Installation Meetings: attend pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.
.2 Place in appropriate on-site bins in accordance with Waste Management Plan.
.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe

condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 ROOF INSULATION & TAPERED ROOF INSULATION

.1 Rigid Cellular Poly-isocyanurate, to thickness indicated.
  .1 Faced: to ASTM C 1289-98, glass fiber reinforced polyisocyanurate core, surfaced with glass fiber faces. Minimum two layers with joints staggered.
.2 Tapered insulation minimum 1% slope to drains.
.3 Insulation at roof drains is to be a minimum of R30 at square sump at roof drains.
.4 Thermal Resistance: R Value per inch = 6.0.
.5 Acceptable Material:
  .1 IKO Therm Poly-Isocyanurate Insulation.
  .2 Soprema, Sopra-Iso.

2.2 ADHESIVE

.1 Synthetic rubber base insulated Type A adhesive having a moisture permeability of 1.71 ng/Pa.s.m².
.2 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.

2.3 ACCESSORIES

.1 Mechanical fasteners in accordance with insulation manufacturer's written recommendations.
.2 Insulation clips: in accordance with manufacturer's written recommendations.
.3 Foundation sealing compound: Bitumen sealing compound.
.4 Adhesive: All purpose construction adhesive in accordance with insulation manufacturer's written recommendations.

3 Execution

3.1 EXAMINATION

.1 Examine substrates and immediately inform Consultant in writing of defects.
.2 Prior to commencement of work ensure: substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

3.2 MANUFACTURER'S INSTRUCTIONS

.1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.3 WORKMANSHIP

.1 Install insulation after building substrate materials are dry.
.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.
.3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN4-S604 type A chimneys.
.5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use

only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.6 Offset both vertical and horizontal joints in multiple layer applications.

.7 Do not enclose insulation until it has been inspected and approved by Consultant.

3.4 RIGID INSULATION INSTALLATION

.1 Apply adhesive in accordance with manufacturer's recommendations.

.2 Embed insulation boards into vapour barrier type adhesive, applied as specified, prior to skinning of adhesive.

.3 In addition to adhesive, install insulation boards with insulation clips and disk, per manufacturer requirements.

.4 Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150 mm wide 0.15 mm modified bituminous membrane over expansion and control joints using compatible adhesive and primer before application of insulation.

3.5 ROOF INSTALLATION

.1 Install to depths indicated on drawings. See Section 07 52 00 - Modified Bitumen Membrane Roofing.

3.6 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 General

1.1 WORK INCLUDED

.1 Provide and install all thermal and sound insulation and accessories on the interior of the building between the steel studs and as indicated above ceiling necessary to complete all as shown on the drawings or specified.

1.2 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry.
.2 Section 07 21 13 - Board Insulation.
.3 Section 07 26 00 - Vapor Retarders.
.4 Section 09 22 16 - Non-Structural Metal Framing

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
- .1 ASTM C167, Standard Test Method for Thickness and Density of Blanket or Batt Thermal Insulations.
- .2 ASTM C356, Standard Test Method for Linear Shrinkage of Performed High-Temperature Thermal Insulation Subjected to Soaking Heat.
- .3 ASTM C423, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- .4 ASTM C518, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- .5 ASTM C553-02, Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- .6 ASTM C665-01e1, Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- .7 ASTM C1320-99, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
- .8 ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .9 ASTM E413, Classification for Rating Sound Insulation.
- .10 ASTM E1050, Standard Test Method for Impedance and Absorption of Acoustical Materials using a Tube, Two Microphones and a Digital Frequency Analysis System.

.2 Underwriters Laboratories of Canada (ULC).
- .1 CAN/ULC S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .2 CAN/ULC S114, Standard Method of Test for Determination of Non-Combustibility in Building Materials.
- .3 CAN/ULC S115, Standard Method of Test Firestop Systems.
- .4 CAN/ULC-S604-1991, Type A Chimneys.
- .5 CAN/ULC-S702-1997, Standard for Thermal Insulation Mineral Fiber for Buildings.

1.4 SUBMITTALS

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

.2 Product Data: Submit project data including manufacturer's literature for insulation materials and accessories, indicating compliance with specified requirements and material characteristics.

.1 Submit list on insulation manufacturer's letterhead of materials and accessories to be incorporated into the Work.
.2 MSDS report.
.3 Include product name.
.4 Include preparation instructions and recommendations, installation methods and storage and handing requirements.
.5 Include contact information for manufacturer and their representative for this project.

.3 Samples:
.1 If requested, submit 140mm x 190mm minimum sample of insulation in thickness used on project.

.4 Test Reports:
.1 Submit evaluation service reports or other independent testing agency reports, showing compliance with specified performance characteristics and physical properties.

.5 Field Reports:
.1 Submit manufacturer's field reports within three (3) days of each manufacturer representative's site visit and inspection.

.6 Insulation Installer Qualifications:
.1 Submit letter verifying insulation installer's experience with work similar to work of this Section.

1.5 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Supply maintenance data for insulation materials for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.
.1 List materials used in insulation work.
.2 Warranty: Submit warranty documents specified.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver and acceptance requirements:
.1 Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
.2 Deliver materials and accessories in insulation manufacturer's original packaging with identification labels intact and in sizes to suit project.
.3 Ensure insulation materials are not exposed to moisture during delivery.
.4 Replace wet or damaged insulation materials.

.2 Storage and handling requirements: Store materials off ground in dry location and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
.1 Store in original packaging until installed.

1.7 QUALITY ASSURANCE

.1 Pre-installation Meetings: attend pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.8 WARRANTY

.1 Manufacturer's warranty: Submit for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights the Owner may have under Contract conditions.

.2 Warranty period, one (1) year commencing on date of Substantial Performance of Work.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 INSULATION - THERMAL

.1 Thermal batt insulation for exterior stud walls: To CAN/ULC S702, Type 1.

- .1 Fire performance:
  - .1 Non-combustibility: To CAN/ULC S114.
  - .2 Surface burning characteristics: To CAN/ULC S102.
    - .1 Flame spread: 0.
    - .2 Smoke developed: 0.
  - .3 Thermal Resistance: R Value per 152mm = 24.

.2 Acceptable Materials:

- .1 EcoTouch - Owens Corning.
- .2 Unfaced Fiber Glass Batts - Johns Manville.
- .3 CertainTeed Insulation Canada.
- .4 Knauf Insulation - Ecobatt Thermal.

2.2 INSULATION FOR FIRESTOPPING

.1 Insulation for firestopping installations to ASTM C612.

- .1 Fire performance:
  - .1 Non-combustibility: To CAN/ULC S114.
  - .2 Surface burning characteristics: To CAN/ULC S102.
    - .1 Flame spread: 0.
    - .2 Smoke developed: 0.
- .2 Accoustical Performance:
  - .1 Airborne sound transmission loss: To ASTM E90.
  - .2 Rating sound insulation: To ASTM E413.
  - .3 Sound absorption co-efficients: To ASTM E423.
  - .4 Impedance and absorption of acoustic materials: To ASTM E1050.
- .3 Acceptable Material:
  - .1 Rockwool, AFB, Acoustical Fire Batt.

2.3 ACCESSORIES

.1 Staples: 12.7mm minimum leg.

.2 Tape: as recommended by manufacturer.

.3 Mechanical fasteners in accordance with insulation manufacturer's written recommendations.

.4 Acoustical sealant in accordance with Section 07 92 19 - Acoustical Joint Sealants.

3 Execution

3.1 INSULATION INSTALLATION

.1 Install thermal or acoustic insulation between studs to maintain continuity of thermal or acoustical protection to building elements and spaces.

.2 Install acoustic insulation above ceiling at locations shown.

.3 Install insulation in areas as indicated. Friction-fit in position installed as recommended by manufacturer.

.4 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.5 Do not compress insulation to fit into spaces.

.6 Keep insulation minimum 75mm from heat emitting devices such as recessed light fixtures, and minimum 50mm from sidewalls of CAN/CGA-B149.1 and CAN/CGA-B149.2 Type B vents.

.7 Seal joints with acoustical joint sealant.

.8 Do not enclose insulation until it has been inspected and approved by Consultant.

.9 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.2 MANUFACTURER'S INSTRUCTIONS

.1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry
.2 Section 07 21 13 - Board Insulation
.3 Section 07 21 16 - Blanket Insulation
.4 Section 07 26 00 - Vapor Retarders
.5 Section 07 27 00 - Air Barriers
.6 Section 09 21 16 - Gypsum Board Assemblies
.7 Section 09 22 16 - Non-Structural Metal Framing

1.2 REFERENCES

.1 CAN/ULC S705.1-01 (Including amendment 1 & 2 Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
.2 CAN/ULC-S705.2- Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, - Application.
.3 Canadian Urethane Foam Contractors Association, (CFCA) "Manual for Installers of Spray Polyurethane Foam Thermal Insulation".
.4 CUFCA Quality Assurance Program
.5 CCMC 13244 -L Spray Polyurethane Foam Insulation.

1.3 SUBMITTALS AND SAMPLES

.1 Make submissions in accordance with Section 01 33 00 - Submittal Procedures
.2 Result of independent laboratory test reports, data sheets, physical proprieties, meeting or exceed requirements of the standard and specification.
.3 MSDS sheets.
.4 Submit a laboratory report of the adhesion compatibility with: flashing membranes, coatings and substrates.
.5 License under CUFCA and certification applicators under CUFCA/NECA (National Energy Conservation Association) to be submitted to the Consultant upon request, prior to the commencement of work.)
.6 Submit by the manufacturer a conformity certification to NBC of the polyurethane foam system.
.7 Submit independent laboratory results on vapour permeance proprieties (ASTM E96 system) for each composition wall.
.8 Submit test results by independent laboratory on air barrier material performance, conducted in order to prove that the air barrier material rating meets National Building Code requirements.

1.4 QUALITY ASSURANCE

.1 Contractor performing work under this section must be licensed under CUFCA (Canadian Urethane Foam Contractors Association.
.2 Applicators performing work under this section must be trained and certified by CUFCA/ NECA (National Energy Conservation Association).
.3 Upon request of consultant, submit a copy of the contractor quality control report as requested in CAN/ULC-S705.2.
.4 Conduct site tests of sprayed work as require by the CUFCA Quality Assurance Program.
.5 Upon request of consultant, submit manufacturer/supplier field applied product quality control report.

1.5 MOCK UP

.1 Provide mock up of insulation air barrier in accordance with Section 01 33 00 - Submittal Procedures.
.2 Construct typical exterior sample wall incorporating window, window frame head jamb and sill, building corner condition with foundation wall junction.
.3 Acceptance mock up sample may form part of the completed work.
.4 Do not commence work until sample installation has been accepted.
.5 Acceptance of sample preparation will be a reference for minimum acceptance of the work. Any need for deviation of the mock up acceptance shall be report in writing.
.6 Upon consultant request, provide manufacturer writing acceptance of the mock up quality.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Materials shall be delivered in manufacturers original sealed containers clearly labeled with manufacturer's name, product identification, safety, information, net weight of contents, and expiration date.
.2 Material is to be stored in a safe manner and where the temperatures are in the limits specified by the material manufacturer.
.3 Empty containers have to be removed from site on a daily basis in accordance with CAN/ULC-S705.2.

1.7 APPLICATION CONDITIONS

.1 At the beginning and during the work, leave access on the job site to manufacture representatives for technical support and assistance
.2 Execute the work of this section when the temperature of the air and substrate are within the limits of the data sheet supplied by the manufacturer.
.3 Apply the spray foam only when the relative humidity is lower than 80%
.4 Prepare all oily surfaces with primer, follow manufacturer's recommendations and CAN/ ULC S 705.2 standard.

1.8 PROTECTION

.1 Ventilate area to receive insulation to maintain non-toxic unpolluted, safe working conditions.
.2 Protect workers as recommended by standards and manufacturer's recommendations.
.3 Protect adjacent surfaces, windows, equipment, and site areas from damage of over spray.

1.9 WARRANTY

.1 Warrant work of this section against defects and deficiencies for a period of two years from date work completion.
.2 Provide a CWC warranty certificate in conformity to CUFCA Quality Assurance Program.
.3 Provide manufacturer warranty for the field-applied product.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.
.2 Place in appropriate on-site bins in accordance with Waste Management Plan.
.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 ENVIRONMENTAL REQUIREMENTS

.1 The product shall not have any CFC or HCFC or any depletion substance affecting the Ozone layer.

.2 The Spray Polyurethane Foam Insulation shall have a total minimum of 18% recycled content from post-consummation and post-consummation and post-industrial source. The % shall be calculated by weight basis ration of the recycled source to the SPF system to apply on the building.

.3 The Spray Polyurethane Foam shall contain in the formula some renewable vegetable content such as Soya, Linen, Sunflower.

2.2 MATERIALS

.1 Spray Applied Polyurethane Foam Insulation system in accordance with CAN/ULC S705.1-01(Including amendment 1 & 2) "Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification and those specific objectives performances.

.2 Acceptable Material

.1 Polarfoam Soya

2.3 PHYSICAL PROPERTIES

.1

PHYSICAL PROPERTIES	TEST
Density	ASTM D1622
Thermal Resistance	ASTM C518 180 days/23°C
Long Term Thermal Resistance	CAN/ULC S 770
Dimensional Stability	ASTM D-2126 (% of change in volume at 28 days)
	-20°C
	70°C R.H.>97 +/- 3%
	80°C
Flames spread Index	CAN/ULC S 102-03
Smoke Develop Index	CAN/ULC S 102-03
Compressive strength	ASTM D1621
Tensile strength	ASTM D1623
Open cells	ASTM D2856
Water	ASTM D2842 (96 hrs)
Air barrier Material at 75 Pa	CCMC 07273 (25mm core only)
Fungi Resistance	ASTM C 1338
V.O.C.	CAN/ULC S 774
Water vapour Permeance	ASTM E96 (25mm core only)

OBJECTIVE	RESULT	UNIT
Min.	33	Kg/m2
Min.	1.17 / 25mm	RSI
	6.6/1"	R
Min.		RSI
		R
Min.	-0.03	%
Max.	+9.8	%
Max.	+2.9	%
Max.	200	FSI
Max.	396	SDI
Min.	195	KPa
Min.	335	KPa
Min.	8.0	%

Max.	0.8	%
Max.	0.00004	L/s•m² at 75 Pa
Min	No Fungal Growth	
Max.	1	Day
Max.	69	ng/Pa s m²

2.4 PRIMERS

.1 As per manufacturers recommendations and CAN / ULC S705.2 for surfaces conditions.

.1 For oily steel surface (such as Z-Bar, steel deck roof) use LSC 517 Contact Cement for Lepage, color: red

2.5 EQUIPMENT

.1 Equipment shall be as recommended in CAN/ULC-S705.2 and approved by foam manufacturer for type of application.

3 Execution

3.1 EXAMINATION

.1 According to the prescriptions of the standard CAN/ULC S705.2 verify the conditions of surfaces.

.1 Surfaces to be covered with spray foam should be free of moisture, frost, oil, rust and any other foreign material able to have a negative affect on the adhesion of the product.

.2 Make sure of the complete cure of the substrates: concrete, mortar, fillers, membranes, primers, coatings or other surfaces, before pulverizing, taking into account climatic conditions.

.3 If the thickness of application is greater than 50 mm use mechanical fastener to secure self-adhesive membranes around openings (galvanized steel angle: 13 mm x 25 mm x 0.42 mm in thickness (gypsum corner bead). Fixed at 600 mm C/C.

.2 Respect the moisture content of the different building materials.

.3 In the case of particular conditions follow the recommendations of the manufacturer.

.4 Report in writing, any defects in surfaces or conditions that may adversely affect the performance of products installed under this section to the consultant before commencement of work.

.5 Commencement of work outlined in this section shall be deemed as acceptance of existing work conditions.

3.2 APPLICATION

.1 Apply at locations where batt insulation is not accessible or will not provide a complete application.

.2 Spray application of polyurethane foam shall be performed in accordance with CAN/ULC-S705.2. Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, Installer's Responsibilities.

.3 Apply only when surfaces and environmental conditions are within limits prescribed by the material manufacturer. Refers to technical data sheets.

.4 Apply consecutive passes (min. 15 mm, max. 50 mm) to obtain the thickness as indicated on drawings.

.5 Do not spray closer than 75 mm to chimneys, recess spotlight or other source of heat.

3.3 TOLERANCE

.1 Applied the product to result of an average thickness from (9 readings in 1 M²) ± 6mm of the thickness requirements in the drawings at a minimum of 1M² readings each 150 m²

surface sprayed.

.2 Applied the insulation uniform in accordance to NBC article 9.25.2.3.1.

3.4 PROTECTION

.1 All plastic insulation must be protected from interior occupancy space by an approved thermal barrier to meet the requirements of local Building Codes.

END OF SECTION

1 General

1.1 DESCRIPTION OF WORK

.1 The work of this Section involves the provisions of a sheet vapour seals in the following locations:
  .1 At entire warm side of exterior wall framing.
  .2 All other locations where shown on drawings.

1.2 RELATED REQUIREMENTS

.1 Section 07 21 16 - Blanket Insulation
.2 Section 07 27 00 - Air Barriers
.3 Section 07 92 00 - Joint Sealants.
.4 Section 09 21 16 - Gypsum Board Assemblies
.5 Section 09 22 16 - Non Structural Metal Framing

1.3 REFERENCES

.1 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-51.34-M86, Vapor Barrier, Polyethylene Sheet, for Use in Building Construction.

1.4 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit product data sheets for sheet vapour retarders. Include:
  .1 Product characteristics.
  .2 Performance criteria.
  .3 Limitations.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.
.2 Place in appropriate on-site bins in accordance with Waste Management Plan.
.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.
.4 Place materials defined as hazardous or toxic waste in designated containers.
.5 Use the least toxic sealants and adhesives necessary to comply with requirements of this section.
.6 Place used hazardous sealant tubes and adhesive containers in areas designated for hazardous materials.

2 Products

2.1 SHEET VAPOUR BARRIER

.1 Polyethylene film: 6mil thick above grade, 10mil thick below grade

2.2 ACCESSORIES

.1 Joint sealing tape: air resistant pressure sensitive adhesive tape, cloth fabric duct tape, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.
.2 Sealant: EcoLogo certified, not to contain total of volatile organic compounds in excess of 5 % by weight, asbestos-free sealant, compatible with vapour retarder materials, recommended by vapour retarder manufacturer and as specified in Section 07 92 00 - Joint Sealants.

.3 Staples: minimum 6 mm leg.

.4 Molded box vapour barrier: factory-molded polyethylene box for use with recessed electric switch and outlet device boxes.

3 Execution

3.1 INSTALLATION

.1 Ensure services are installed and inspected prior to installation of retarder.

.2 Install sheet vapour retarder on warm side of exterior wall assemblies prior to installation of gypsum board to form continuous retarder.

.3 Use sheets of largest practical size to minimize joints.

.4 Tie vapor retarder into roof membrane.

.5 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

3.2 EXTERIOR SURFACE OPENINGS

.1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to all door and window frames.

3.3 PERIMETER SEALS

.1 Seal perimeter of sheet vapour barrier as follows:

.1 Apply continuous bead of sealant to substrate at perimeter of sheets.

.2 Lap sheet over sealant and press into sealant bead.

.3 Install staples through lapped sheets at sealant bead into wood substrate.

.4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.4 LAP JOINT SEALS

.1 Seal lap joints of sheet vapour barrier as follows:

.1 Attach first sheet to substrate.

.2 Apply continuous bead of sealant over solid backing at joint.

.3 Lap adjoining sheet minimum 150 mm and press into sealant bead.

.4 Install staples through lapped sheets at sealant bead into wood substrate.

.5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.5 ELECTRICAL BOXES

.1 Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:

.1 Install molded box vapour barrier.

.2 Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

END OF SECTION

1 General

1.1 SECTION INCLUDES

.1 Materials and installation methods providing primary air vapour barrier materials and assemblies including tie ins to vapor barriers and all other terminations.

.2 Air/vapour barrier materials to provide continuous seal between components of building envelope and building penetrations, including all windows and doors.

1.2 RELATED REQUIREMENTS

.1 Section 07 26 00 - Vapor Retarders.

.2 Section 07 92 00 - Joint Sealants.

1.3 SUBMITTALS

.1 At least 4 weeks prior to commencing installation of air/vapour barrier membrane submit sample of membrane for Consultants review and approval.

1.4 QUALITY ASSURANCE

.1 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program and requirements for materials.

.2 Manufacturer's Representative to visit the site during the installation of the preparation for and installation of the first two (2) mock-ups. Manufacturer's Representative to review mock-up and provide a written report confirming the installation is in accordance with Manufacturer's requirements.

1.5 QUALITY ASSURANCE MOCK-UP

.1 Fabricate a mock-up that will demonstrate the various aspects of the air barrier / window connection / cladding (brick, steel, wood, EIFS and/or vinyl) installation and detailing.

.2 The installation is to reflect the intent to have a full tie in of the air barrier to the entire perimeter of all wall openings, including windows, doors and louvers, providing a tight air and water seal and the relationship of the cladding installation to the openings.

.3 The mock-up is to be reviewed by the Contractor, Membrane Installer, Window Installer, Owner and Consultant prior to the Contractor moving forward with the installation of all other windows.

.4 Allow 24 hours to convene the review on site.

.5 Mock-up to be approved prior to fabrication of additional openings.

.6 Openings installed prior to review and approval will be removed at the Contractors expense and rebuilt.

.7 The approved mock-up may remain on site as part of the work and it will form the standard of acceptance for the remainder of the work.

1.6 QUALIFICATIONS

.1 Applicator: Company specializing in performing work of this section with minimum 3 years documented experience with installation of air/vapour barrier systems.

1.7 PRE- INSTALLATION MEETINGS

.1 Attend a pre installation meeting to verify project requirements, manufacturers installation instructions, tie ins & quality expectations.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver, store and handle materials in accordance with manufacturer(s written instructions.

1.9 SEQUENCING

.1 Sequence work to permit installation of materials in conjunction with related materials and seals.

1.10 GUARANTEES

.1 The product manufacturer shall issue a written and signed document, issued in the name of the Owner, certifying the product will meet all the physical characteristics published by the manufacturer, for a period of five (5) years, starting from the date of Substantial Completion.

1.11 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 SHEET MATERIALS

.1 Air/vapour barrier membrane (Self-Adhering): SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, and having the following physical properties:

- .1 Thickness: 1.0 mm;
- .2 Air leakage: <0.011 L/s·m² @ 75 Pa to ASTM E283-91;
- .3 Vapor permeance: 2.8 ng/Pa.m².s (0.05 perms) to ASTM E96;
- .4 Low temperature flexibility: -30°C to CGSB 37-GP-56M;
- .5 Elongation: 200% to ASTM D412-modified;
- .6 Acceptable Materials:
  - .1 Blueskin SA by Bakor
  - .2 Soprema - Sopraseal Stick 1100.
  - .3 IKO - Aqua Barrier AVB
  - .4 Grace "Perm-A-Barrier"
  - .5 Nordshield "Air/Vapor Barrier"
  - .6 Caelisle Coatings & Waterproofing (CCW) CCW-705 LT Self Adhering Air & Vapor Barrier and CCW-702 high-tack adhesive.

.2 Through-wall flashing membrane (Self-Adhering): SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, having the following physical properties:

- .1 Thickness: 1 mm (40 mils) min.
- .2 Film Thickness: 0.225mm (9.0 mils)
- .3 Elongation: 200% to ASTM D412;
- .4 Tensile Strength (film): 34500 kPa (5000 psi) ASTN D882
- .5 Vapor permeance: 2.8 ng/Pa.m².s (0.05 perms) to ASTM E96
- .6 Low temperature flexibility: -30°C to CGSB 37-GP-56M;
- .7 Acceptable Materials:
  - .1 Blueskin TWF by Bakor
  - .2 Soprema - Sopraseal Stick 1100
  - .3 IKO TWF.

.3 Primer: By manufacturer of membrane, all membranes to be primed.

3 Execution

3.1 EXAMINATION

.1 Verify that surfaces and conditions are ready to accept the Work of this section.

.2 Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer(s requirements.

.3 Report any unsatisfactory conditions to the Consultant in writing.

.4 Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

3.2 PREPARATION

.1 Remove loose or foreign matter which might impair adhesion of materials.

.2 Ensure all substrates are clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.

.3 Ensure all substrates are free of surface moisture prior to application of self-adhesive membrane and primer.

.4 Ensure metal closures are free of sharp edges and burrs.

.5 Prime substrate surfaces to receive adhesive in accordance with manufacturer's instructions.

3.3 INSTALLATION

.1 Apply primer to all surfaces to receive membrane in a manner and at a rate recommended by manufacturer. Primed surfaces not covered by membrane during the same working day must be re-primed.

.2 Apply membrane starting at bottom of wall, lapping both ends and sides in accordance with manufacturer's instructions.

.3 Seal end of membrane to substrate at end of days work and around any projections through membrane using only sealant recommended by membrane manufacturer.

.4 Carry membrane around into all wall openings and seal at frames or other building components. Reinforce all corners with adhesive applied membrane using heated trowel to ensure joint tightness.

.5 Coordinate with installation of roofing vapour barrier to ensure continuity of air/vapour barrier membrane at roof/wall intersections.

.6 Where work of other trades is incomplete leave sufficient membrane to complete work of this Section to ensure continuity and integrity of air/vapour barrier.

.7 Repair damage to membrane at masonry connectors and ties and elsewhere as necessary.

3.4 THROUGH - WALL MASONRY FLASHING

.1 Supply to Section 04 05 23 - Masonry Accessories together with manufacturer's written instruction for installation in masonry cavity walls.

.2 Coordinate the work of this Section with installation of through wall flashing to ensure continuity of air/vapour barrier membrane.

3.5 PROTECTION OF WORK

.1 Do not permit adjacent work to damage work of this section.

.2 Ensure finished Work is protected from climatic conditions.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry.
.2 Section 07 21 13 - Board Insulation.
.3 Section 07 62 00 - Sheet Metal Flashing and Trim.
.4 Section 07 92 00 - Joint Sealants.
.5 Section 22 42 01 - Plumbing Specialties and Accessories.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
  .1 ASTM C726-00a, Standard Specification for Mineral Fiber Roof Insulation Board.
  .2 ASTM C 1177/C1177M-01, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  .3 ASTM D41-94(2002)e1, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
  .4 ASTM D312-00, Asphalt Used in Roofing.
  .5 ASTM D6162-00a, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
  .6 ASTM D6163-00e1, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
  .7 ASTM D6164-00, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
.2 Canadian Standards Association (CSA):
  .1 CSA A123.23.
  .2 CSA A123.21-14 - Standard test method for the dynamic wind uplift resistance of Membrane - Roofing Systems.
  .3 Factory Mutual (FM Global).
    .1 FM Approvals - Roofing Products.
    .2 FM- 4470 Wind Uplift Requirements
  .4 Canadian Roofing Contractors Association (CRCA).
    .1 CRCA Roofing Specifications Manual-1997.
  .5 Health Canada / Workplace Hazardous Materials Information System (WHMIS).
    .1 Material Safety Data Sheets (MSDS).
  .6 Underwriters Laboratories' of Canada (ULC).
    .1 CAN/ULC-S701-11, Expanded Polystyrene, Board and Pipe Covering.
    .2 CAN/ULC-S704-03, Thermal Insulation, Polyurethane and Polyisocyanurate Boards Faced.
    .3 CAN/ULC-S107-01, Methods of Fire Tests of Roof Coverings, Class A.

1.3 PERFORMANCE REQUIREMENTS

.1 Compatibility between components of roofing system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

1.4 GENERAL REQUIREMENTS FOR ROOFING SYSTEM

.1 SBS modified bituminous membrane. The system used as the Standard of Acceptance for the work consists of:
  .1 Two (2)-ply SBS modified bitumen membrane.
  .2 Protection board

.3 Polyisocyanurate insulation
.4 Vapor barrier
.5 Support panels

.2 The specified roofing system is based on Soprema. Other complete and comparable membrane, insulations and vapor barrier systems will be considered if proposed and accepted as approved equals, prior to tender close.

1.5 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit two (2) copies of the most current technical data sheets. These documents must describe the physical properties of materials and explanations about product installation, including restrictions, limitations and other manufacturer recommendations.
.3 Indicate flashing, details.
.4 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.
.5 Manufacturer's Certificate: certify that products meet or exceed specified requirements.
.6 Manufacturer's field report: in accordance with Section 01 45 00 - Quality Control.
.7 Provide shop drawing indicating fastening pattern at field, edges, corners and around roof mounted equipment.
.8 Sub-contractor and installed certificate of approval issued by the system manufacturer.

1.6 QUALITY ASSURANCE

.1 System manufacturer to attend a minimum of three (3) site visits.
.2 Membrane: applied by sub-contractor and installer, certified by manufacturer for application of its products.

1.7 FIRE PROTECTION

.1 All materials will be delivered and stored in their original packaging, in conformance with the requirements described in the manufacturer's technical documentation.
.2 At all times, materials will be adequately protected and stored in a dry and properly ventilated area, away from any welding flame or spark, and sheltered from the elements and any harmful substances.
.3 Store adhesives and solvent-based mastics at a minimum of 5°C.
.4 Materials delivered in rolls will be carefully stored upright; flashings will be stored to avoid wrinkling, buckling, scratches or any other possible damage.
.5 Avoid gathering construction materials on the roof, which may affect the structural integrity by imposing loads exceeding what is admissible.

1.8 PROTECTION

.1 Prior to the start of work, conduct a site inspection to ensure its safety in order to minimize fire risks and hazards.
.2 Respect safety measures recommended by the related local authorities.
.3 At the end of each workday, use a heat detector gun to spot any smoldering or concealed fire. Job planning must be organized to ensure workers are still on location at least two (2) hours after welding works. An inspection must be performed by an employee of the roofing contractor who specializes in this kind of job at the end of works and, if necessary, with the help of a member of the fire protection service of the municipality.
.4 Never apply the torch directly to flammable materials.
.5 Throughout roofing installation, maintain a clean site and have a fire hose (when possible) and at least one ULC-approved Class A, B or C fire extinguisher, charged and in perfect operating condition, within 6 m (20 ft) of each torch. Respect all safety

measures described in technical data sheets of sealants. Welding torches must never be placed near combustible or flammable products, nor be used where the flame is not visible or cannot be easily controlled.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Do not install roofing when temperature remains below -18ºC for torch application, or to manufacturers recommendations for mop application.

.2 Minimum temperature for solvent-based adhesive is -5ºC.

.3 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.10 FULL SYSTEM WARRANTY

.1 The membrane manufacturer will issue a written document in the Owner's name, valid for a fifteen (15) year period, stating that it will repair any leaks in the roofing membrane to restore the roofing system to a dry and water tight condition, to the extent that manufacturing or installation defects caused such water infiltration. The warranty must cover all roofing components from the deck up to the finish cap sheet and the total cost of repair(s) during the entire warranty period. The warranty must be transferable, at no extra cost, to subsequent building owners. The warranty certificate must reflect these requirements.

1.11 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

.4 Place materials defined as hazardous or toxic in designated containers.

2 Products

2.1 COMPATIBILITY

.1 All roofing waterproofing materials shall be provided by the same manufacturer.

2.2 FASTENING

.1 Roof system to be mechanically fastened to meet CSA A123.21 Standards.

.2 Prior to installation manufacturer to submit their test report, with proposed products, demonstrating compliance with wind uplife resistance standard.

2.3 VAPOUR BARRIER SUPPORT PANELS

.1 Refer to roof assembly on Drawings.

2.4 VAPOUR BARRIER

.1 Self-Adhesive Vapour Barrier

.1 Self-adhesive membrane composed of SBS modified bitumen, with a surface screen made of high-density polyethylene laminated between two layers of polyethylene films. The width of the membrane is 1.14 m to allow the membrane to fit on the top of most structural steel deck profiles. The self-adhesive underface is protected with a silicone plastic release film. Resistance to water vapour transmission: 1.7ng/Pa.5.m² (0.03 perm).

.2 Acceptable Material:

.1 Sopravap'r by Soprema.

.2 M.V.P. by IKO.

.3 PERMATE STICK by Lexcor.

2.5 INSULATION

.1 The total system from the top of the deck to top of membrane to provide minimum R-value as noted on roof assemblies. Minimum two (2) layers with joints offset.

.2 Polyisocyanurate Insulation:

.1 Refer to Section 07 21 13 - Board Insulation for acceptable material.

2.6 INSULATION SUBSTRATE OVERLAY

.1 Bituminous Board

.1 Semi-rigid roofing support panel composed of a mineral-reinforced asphaltic core between two asphalt-saturated fiberglass liners. Length of 2440 mm long x widest practical width x 4.8mm thick.

.2 Acceptable Material:

.1 Sopraboard by Soprema.

.2 Protectoboard by IKO.

.3 LEXBASE R+ by Lexcor.

.3 2-1 Soprasmart board by Soprema and ShieldBase 180 by IKO may be used in lieu of substrate overlay and base sheet membrane for field surface.

2.7 MEMBRANES

.1 Base Sheet Membrane for Field Surface

.1 Roofing membrane composed of SBS modified bitumen and a non-woven polyester reinforcement. Both sides are covered with a thermofusible plastic film. The surface must be marked with three (3) chalk lines to ensure proper roll alignment.

.2 In conformance with: CGSB 37.56-M (9th Draft).

.3

Properties	MD
Strain Energy (kN/m)	9
Breaking Strength (kN/m)	17
Ultimate Elongation (%)	60
Tear Resistance (N)	60
Static Puncture Resistance (N)	400
Dimensional Stability (%)	-0.4
Plastic Flow (°C)	105 (greater than or equal)
Cold Bend at -30°C	No Cracking
Lap Joint Strength (kN/m)	Pass >4 kN/m

.4 Acceptable Materials:

.1 Sopralene Flam 180 by Soprema.

.2 Torchflex TP-180-FF by IKO.

.3 VANGUARD 180 FF by Lexcor.

.5 2-1 Soprasmart board by Soprema and ShieldBase 180 by IKO may be used in lieu of substrate overlay and base sheet membrane for field surface.

.2 Base Sheet Membrane for Flashings and Parapets

.1 Membrane composed of SBS modified bitumen and composite heavy duty reinforcement. The surface is covered with a thermofusible plastic film and the underface is covered with a release protection film. The surface shall be marked with three (3) chalk lines to ensure proper roll alignment.

.2 In conformance with: CGSB 37.56-M (9th Draft).

.3 Properties MD

Strain Energy (kN/m)	9
Breaking Strength	17
Ultimate Elongation (%)	60
Tear Resistance (N)	60
Static Puncture Resistance (N)	400
Dimensional Stability (%)	-0.4
Plastic Flow (°C)	105 (greater than or equal)
Cold Bend at -30°C	No Cracking
Lap joint strength (kN/m)	Pass >4 kN/m

.4 Acceptable Materials:

.1 Sopralene Flam Stick by Soprema.

.2 Armourbond Flash by IKO.

.3 VANGUARD FLASH SA by Lexcor.

.3 Roofing Cap Sheet Membrane for Field Surfaces, Flashings and Parapets

.1 Use for 15 Year Warranty.

.2 Roofing membrane composed of SBS modified bitumen with a non-woven polyester reinforcement and elastomeric bitumen . The surface is protected by coloured granules. The underface is covered with a thermofusible plastic film.

.3 In conformance with: CGSB 37.56-M (9th Draft).

.4

Properties	MD
Strain Energy (kN/m)	10
Breaking Strength (kN/m)	18
Ultimate Elongation (%)	60
Tear Resistance (N)	75
Static Puncture Resistance (N)	420
Dimensional Stability (%)	0.8
Plastic Flow (°C)	105 (greater than or equal)
Cold Bend at -30°C	No Cracking
Lap Joint Strength (kN/m)	Pass >4 kN/m

.5 Acceptable Materials:

.1 Sopralene Flam 250 GR by Soprema.

.2 Torchflex TP-250-Cap by IKO.

.3 VAN GUARD 250 TC by Lexcor.

.4 Starter Roll

.1 Waterproofing membranes composed of SBS modified bitumen, covered with granules on surface, with a 100 mm (4 in) selvedge on both sides. The underface is covered with a thermofusible plastic film.

.2 In conformance with: CGSB 37.56-M (9th Draft).

.3

Properties	MD
Strain Energy (kN/m)	13
Breaking Strength (kN/m)	25
Ultimate Elongation (%)	66
Tear Resistance (N)	118
Static Puncture Resistance (N)	432
Dimensional Stability (%)	-0.2
Plastic Flow (°C)	110 (greater than or equal)
Cold Bend at -30°C	No Cracking
Lap Joint Strength (kN/m)	Pass >4 kN/m

.4 Acceptable Materials:

.1 Starter Flam GR by Soprema.

.5 Colour for Roofing Cap Sheet Membrane Granules:
- .1 For field surfaces: light gray.

2.8 ACCESSORIES MEMBRANE

.1 Cover Strip
- .1 Membrane strip made of SBS modified bitumen with a composite reinforcement. Both faces are covered with a plastic thermo fusible film. The strip ensures water-tightness in the end laps.
- .2 In conformance with: ASTM D6162.
- .3 Acceptable Material:
  - .1 Sopralap by Soprema.
  - .2 Torchtape 180-FF by IKO.
  - .3 VANGUARD LAP by Lexcor.

2.9 PRIMER

.1 Primer for Thermofusible Membranes
- .1 Primer made of bitumen, volatile solvents and adhesive resins. Used as primer to improve the adhesion of thermofusible waterproofing membranes.
- .2 Acceptable Material:
  - .1 Elastocol 500 by Soprema.
  - .2 Mod Bit Primter by IKO.
  - .3 MULTIGRIP by Lexcor.

.2 Primer for Self-Adhesive Membranes
- .1 Primer composed of SBS synthetic rubber, adhesive resins and VOC-free solvents. Used as primer to improve the adhesion of self-adhesive membranes.
- .2 Acceptable Materials:
  - .1 Elastocol Stick Zero By Soprema.
  - .2 S.A.M. LVC Adhesive by IKO.
  - .3 MULTIGRIP by Lexcor.

2.10 FLAME-STOP MEMBRANE

.1 Self-adhesive membrane composed of SBS modified bitumen and a glass mat reinforcement, designed to prevent flames from penetrating into voids, cavities and openings before installing heat-welded membranes.

.2 Acceptable Materials:
- .1 Sopraguard tape by Soprema.
- .2 VANGUARD LAP STICK by Lexcor.

2.11 COMPLEMENTARY WATERPROOFING PRODUCTS

.1 Waterproofing Mastic
- .1 Description: Multi-purpose mastic composed of SBS modified bitumen, fibres, mineral fillers and solvents.
- .2 Acceptable Material:
  - .1 Sopramastic by Soprema.
  - .2 Aquabarrier mastic by IKO.
  - .3 LEXBOND C by Lexcor.

.2 Sealing Product
- .1 Bitumen/polyurethane waterproofing mono-component resin and polyester reinforcement.
- .2 Acceptable Material:
  - .1 Alsan Flashing and Alsan Reinforcement by Soprema.

.2 MS detail by IKO.
.3 LEXCOAT FLASH by Lexcor.

2.12 CARPENTRY

.1 Refer to Section 06 10 00 - Rough Carpentry

2.13 FASTENERS

.1 Corrosion resistant, with minimum plate diameter of 50 mm and screw length to suit insulation thickness +38 mm.
.2 Acceptable Material:
.1 Buildex.
.2 Dekfast.
.3 Trufast.
.4 Soprafix.
.5 LEXGRIP by Lexcor.

3 Execution

3.1 SURFACE EXAMINATION AND PREPARATION

.1 Surface examination and preparation must be completed in conformance with instructions in the membrane manufacturer's technical documentation.
.2 Before roofing work begins, the owner's representative and roofing foreman will inspect and approve deck conditions (including slopes and wood grounds) as well as flashings at parapets, roof drains, plumbing vents, ventilation outlets and other construction joints. If necessary, a non-conformity notice will be issued to the contractor so that required corrections can be carried out. The start of roofing work will be considered as acceptance of conditions for work completion.
.3 Do not begin any portion of work before surfaces are clean, smooth, dry, and free of ice and debris. Use of calcium or salt is forbidden for ice or snow removal.
.4 Be sure plumbing, carpentry and all other works have been duly completed.
.5 No materials will be installed during rain or snowfall.

3.2 METHOD OF EXECUTION

.1 Roofing work must be completed in a continuous fashion as surfaces are readied and as weather conditions allows it.
.2 It's preferable to seal all joints that are not covered by a cap sheet membrane the same day. A second cap sheet cannot be installed if any moisture is present in joints.
.3 Ensure waterproofing of roofs at all times, including protection during installation work by other trades and protection as work is completed (e.g. vents, drains, etc.).

3.3 SITE PROTECTION

.1 Protect the exposed surfaces of finished work to avoid damage during roof installation and material transportation. Install walkways made of rigid boards over installed roofing materials to enable passage of people and transport of products. Assume full responsibility for any damage.

3.4 INSTALLATION OF BOARDS WITH FACTORY LAMINATED BASE SHEET

.1 Optional installation (Contractor's option).
.2 Adhere base sheet board using adhesive applied in continuous strips spaced as per CSA-123-21 requirements.
.3 Mechanically fasten boards with screws and plates for membranes spaced as per CSA-123-21 requirements.

3.5 APPLICATION OF PRIMER

.1 Wooden, metallic, concrete and masonry surfaces or gypsum insulation substrate will receive a coat of primer at a rate recommended by the manufacturer. All surfaces to be primed must be free of rust, dust or any residue that may hinder adherence. Primed surfaces must be covered with the roofing membrane as soon as possible (on the same day for self-adhesive membranes).

3.6 INSTALLATION OF BASE SHEET FLASHING

.1 Apply base sheet flashing only, once primer coat is dry.

.2 Install base sheet flashing in one (1) meter widths to cover roofing substrate over 100mm overlap side laps by 75mm. Stagger side laps by at least 100mm from base sheet overlaps on roof to avoid excessive layering.

.3 Apply base sheet flashing directly onto substrate by removing silicone paper cover sheet. Torch roof's base-sheet plastic film on installation zone. Proceed from top to bottom. Once in place, apply pressure manually in a uniform fashion to obtain homogenous adherence over entire surface. Preferably seal seams with rubber roller.

.4 Avoid forming wrinkles, air pockets or fishmouths.

3.7 INSTALLATION OF SUPPORT PANEL AND VAPOUR BARRIER

.1 Because of the nature of this system, for this type of vapour barrier, joints can be aligned (no offset) to facilitate the installation of the reinforcing strip.

.2 Adhere the first 60 mm of the self-adhesive side laps using a membrane roller, then heat weld the last 40 mm self-adhesive, heat-welded side laps.

.3 Seal the end laps by welding a 330-mm wide protection strip centered on the joint

3.8 INSTALLATION OF INSULATION

.1 It is not required to fasten insulation boards, to achieve wind uplift performance, under mechanically fastened board with factory laminated base sheet membranes. However in order to prevent any insulation board movement, they can be fastened at a rate of one fastener per 4 sq/ft.

.2 Mechanically fasten boards with screws and plates for membranes. Mechanical fasteners must be installed in the centre of the membrane side selvedge and on board surface as per CSA A123.21-10 requirements.

.3 Surfaces must be dry and free of oil, grease, dirt and debris. The adhesive must be applied using a battery operated applicator in continuous strips of 13 to 19mm wide at time of application. Beads must be spaced CSA 123.21 requirements.

3.9 INSTALLATION OF SUPPORT PANELS

.1 Install in accordance with Manufacturer's recommendations.

3.10 INSTALLATION OF FLAME-STOP MEMBRANE

.1 Adhere the membrane directly onto an approved substrate by removing the silicone release film. Flame-stop membrane is designed to prevent flames from penetrating into voids, cavities and openings while installing heat-welded membranes.

3.11 INSTALLATION OF BASE SHEET ON THE FIELD SURFACE

.1 Unroll base sheet on the substrate, taking care to align the edge of the first selvedge with drain centre (parallel to roof edge).

.2 Cut off corners at end laps to be covered by the next roll.

.3 Weld the base sheet onto prepared substrate.

.4 Each selvedge will overlap the previous one along lines provided for this purpose, and will overlap the ends by 150 mm. Space end laps by a minimum of 300 mm.

.5 Avoid the formation of wrinkles, swellings or fishmouths.

3.12 INSTALLATION OF SELF-ADHESIVE BASE SHEET ON FLASHING AND PARAPETS

.1 Apply base sheet flashing only after primer coat is dry.

.2 Before applying membranes, always burn the plastic film from the section to be covered if there is an overlap (inside and outside corners and field surface). For sanded base sheet membranes, apply primer for self-adhesive membranes on the area to be covered at the foot of the parapets.

.3 Cut off corners at end laps of areas to be covered by the next roll.

.4 Each selvedge will overlap the previous one along lines provided for this purpose, and by 150 mm at the ends.

.5 Position the pre-cut membrane. Remove 150mm of the silicone release film to hold the membrane in place at the top of the parapet.

.6 Then, gradually peel off the remaining silicone release film, pressing down on the membrane with an aluminium applicator to ensure good adhesion. Use the aluminium applicator to ensure a perfect transition between the flashing and the field surface. Smooth the entire membrane surface with a membrane roller for full adhesion.

.7 Install a reinforcing gusset at all inside and outside corners.

.8 Always seal overlaps at the end of the workday.

.9 Avoid the formation of wrinkles, swellings or fishmouths.

3.13 INSTALLATION OF WELDABLE BASE SHEET ON FLASHINGS AND PARAPETS

.1 Apply base sheet flashing only after primer coat is dry.

.2 Cut off corners at end laps to be covered by the next roll.

.3 Each selvedge will overlap along lines provided for this purpose, and by 150 mm at the ends.

.4 This base sheet membrane must be welded directly to the substrate, proceeding from top to bottom using a propane torch.

.5 Avoid the formation of wrinkles, swellings or fishmouths.

3.14 INSTALLATION OF THERMOFUSIBLE CAP SHEET ON FIELD SURFACE

.1 Begin with double-selvedge starter roll. If starter roll is not used, side laps covered with granules must be de-granulated by embedding granules in torch-heated bitumen over a 75 mm width.

.2 Starting at drain, unroll the membrane on the base sheet, taking care to align the edge of the first selvedge with the edge of the roof.

.3 Cut off corners at end laps at areas to be covered by the next roll.

.4 Each selvedge will overlap the previous one along lines provided for this purpose, and will overlap by 150 mm at the ends. Space end laps a minimum of 300 mm.

.5 Heat-weld cap sheet membrane with a torch on the base sheet to create a bleed out of 3 to 6 mm.

.6 During installation, be careful not to overheat the membrane or its reinforcements.

.7 Avoid the formation of wrinkles, swellings or fishmouths.

.8 Avoid walking over finished surfaces; use rigid protective walkways as needed.

3.15 INSTALLATION OF THERMOFUSIBLE CAP SHEET ON FLASHINGS AND PARAPETS

.1 This cap sheet must be installed in one-metre-wide strips.

.2 Each selvedge will overlap the previous one laterally along lines provided for this purpose, and will overlap by 150 mm the field surface. Membranes for flashings must be spaced at least 100 mm with respect to the cap sheet membranes on the field surface, to avoid areas of excessive membrane thickness.

.3 Cut off corners at end laps on areas to be covered by the next roll.

.4 Use a chalk line to draw a straight line on the field surface, 150 mm from flashings and parapets.

.5 Use a torch and round-nose trowel to embed the surface granules in the layer of hot bitumen, starting from the chalk line on the field surface to the bottom edge of the flashing or parapet, as well as on the granulated vertical surfaces to be overlapped.

.6 This cap sheet will be heat-welded directly to the base sheet membrane, proceeding from bottom to top.

.7 Avoid the formation of wrinkles, swellings or fishmouths.

.8 During installation, be careful not to overheat the membrane and its reinforcements.

3.16 INSTALLATION OF VARIOUS DETAILS

.1 Install waterproofing membranes at various roofing details in conformance with typical details indicated in technical documentation of the manufacturer.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 52 00 - Modified Bituminous Membrane Roofing.

1.2 REFERENCES

.1 The Aluminum Association Inc. (AA)
- .1 Aluminum Sheet Metal Work in Building Construction-2000.
- .2 AA DAF45-97, Designation System for Aluminum Finishes.

.2 American Society for Testing and Materials (ASTM International)
- .1 ASTM A167-99, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 ASTM A240/A240M-02, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .3 ASTM A591/A591M-98, Standard Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
- .4 ASTM A606-01, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
- .5 ASTM A653/A653M-01a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .6 ASTM A792/A792M-02, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- .7 ASTM B32-00, Standard Specification for Solder Metal.
- .8 ASTM B370-98, Standard Specification for Copper Sheet and Strip for Building Construction.
- .9 ASTM D523-89(1999), Standard Test Method for Specular Gloss.
- .10 ASTM D822-01, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.3 Canadian Roofing Contractors Association (CRCA)
- .1 Roofing Specifications Manual 1997.

.4 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.
- .2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
- .3 CAN/CGSB-93.1-M85, Sheet Aluminum Alloy, Prefinished, Residential.

.5 Canadian Standards Association (CSA International)
- .1 CSA A123.3-98, Asphalt Saturated Organic Roofing Felt.
- .2 CSA-A440-00/A440.1-00 - A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows.
- .3 CSA B111-1974(R1998), Wire Nails, Spikes and Staples.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 SHEET METAL MATERIALS

.1 Prepainted Zinc coated steel sheet: 24 ga. thickness, commercial quality to ASTM A653/ A653M, with Z275 designation zinc coating.

2.2 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied polyvinylidene fluoride.

.1 Class F1S.

.2 Two (2) colors selected by Consultant from manufacturer's standard range.

.3 Specular gloss: 30 units +/- in accordance with ASTM D523.

.4 Coating thickness: not less than 22 micrometers.

.5 Resistance to accelerated weathering for chalk rating of 8, color fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:

.1 Outdoor exposure period 2500 hours.

.2 Humidity resistance exposure period 5000 hours.

2.3 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Plastic cement: to CAN/CGSB 37.5.

.3 Underlay for metal flashing: Membrane flashing by Section 07 52 00 - Modified Bitumen Membrane Roofing.

.4 Sealants: to CAN/;CGSB 19.13, one component.
Acceptable Material:

.1 Tremco A Spectrum 2"

.2 Pecora 895 NST.

.5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

.6 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.

.7 Washers: of same material as sheet metal, 1 mm thick with rubber or neoprene packings.

.8 Prefabricated flashing at pipes penetrating roofs: purpose-made, neoprene or spun aluminum to CRCA Specification FL/532, minimum 300mm above top of roof membrane.

.9 Touch-up paint: as recommended by prefinished material manufacturer.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details.

.1 Brake form to profiles indicated and required to suit parapet configurations.

.2 Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints.

.3 Hem exposed edges on underside 12 mm. Miter and seal corners with sealant.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.5 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.5 METAL FLASHINGS

.1 Form flashings, copings and fascias to profiles indicated of 26 ga thick galvanized steel.

2.6 PANS

.1 Form pans to receive roofing plastic from 20 ga thick steel aluminum sheet metal with minimum 75 mm upstand above finished roof and 100 mm continuous flanges with no open corners. Solder joints. Make pans minimum 50 mm wider than member passing

through roof membrane.

2.7 REGLETS AND CAP FLASHINGS

.1 Form recessed reglets from 20 ga thick sheet metal to be built-in concrete work for base flashings as detailed. Provide slotted fixing holes and steel/plastic washer fasteners. Cover face and ends with plastic tape.

2.8 EAVES TROUGHS AND DOWNPIPES

.1 Form eaves troughs / gutters from 20 gauge metal and minimum 150mm wide.
.2 Form downpipes / downspouts from 20 gauge metal and size 75 mm x 75 mm.
.3 Provide goosenecks, outlets, strainer baskets and all necessary fastenings.

2.9 SPLASHPADS

.1 Precast concrete, purpose-made. Provide one at each downspout.
  .1 Acceptable Material:
    .1 Campbell's Concrete Model No. R4-001.

2.10 SCUPPERS

.1 Form scuppers from 20 ga sheet metal.
.2 Sizes and profiles as indicated.
.3 Provide necessary fastenings.

2.11 REMOVABLE CAP FITTED PIPE VENT FLASHING

.1 Sheet aluminum construction.
.2 Pipe dimension sizes available between DN50 and DN250.
.3 Protrudes 300-450mm above roof line.
.4 25mm annular air cap between vent stack and flashing.
.5 Fitted cap rain-cap section to fit inside pipe diameter, and cover annular space, attachment with screws.
.6 Minimum 100mm base flashing plate to roof insulation.
.7 Acceptable Material:
  .1 Thaler Stack-Jack, Lexcor Flash-Tite, or approved equal.

3 Execution

3.1 INSTALLATION

.1 Install sheet metal work as detailed.
.2 Use concealed fastenings except where approved before installation.
.3 Provide underlay under sheet metal. Secure in place and lap joints 100 mm.
.4 Counter flash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock forming tight fit over hook strips, as detailed.
.5 Lock end joints and caulk with sealant.
.6 Install surface mounted reglets true and level, and caulk top of reglet with sealant.
.7 Insert metal flashing into reglets to form weather tight junction.
.8 Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm. Lead wedge flashing securely into joint.
.9 Caulk flashing at reglet with sealant.
.10 Install pans, where shown and around items projecting through roof membrane.

3.2 EAVES TROUGHS AND DOWNPIPES

.1 Install eaves troughs and secure to building at 750 mm on center with eaves trough

spikes through spacer ferrules. Slope eaves troughs to downpipes as indicated. Solder joints watertight.

.2 Install downpipes and provide goosenecks back to wall. Secure downpipes to wall with straps at 1800 mm on center; minimum two straps per downpipe. Connect downpipes to drainage system and seal joint with plastic cement.

.3 Install splash pans as indicated.

3.3 SCUPPERS

.1 Install scuppers as indicated.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 92 00 - Joint Sealants.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM A506-00, Specification for Alloy and Structural Alloy Steel, Sheet and Strip, Hot-Rolled and Cold-Rolled.
- .2 ASTM B370-98, Specification for Copper Sheet and Strip for Building Construction.
- .3 ASTM A653/A653M-03, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .4 ASTM D2369-03, Test Method for Volatile Content of Coatings.
- .5 ASTM D2832-92(R1999), Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-1.105-M91, Quick-Drying Primer.

.3 Canadian Standards Association (CSA International).
- .1 CSA B111-1974(R2005), Wire Nails, Spikes and Staples.

.4 Environmental Choice Program (ECP).
- .1 CCD-045-92, Sealants and Caulking Compounds.
- .2 CCD-047a-98, Surface Coatings.

1.3 SYSTEM DESCRIPTION

.1 Design Requirements:
- .1 Roof hatches to withstand snow load of 200 kN/m² and wind uplift of 100 kNm/m² and temperature range of 500 C without damage to unit or permanent deformation to seals.

1.4 SUBMITTALS

.1 Shop Drawings:
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate size and description of components, materials, attachment devices, description of frame and finish, and construction details.

.2 Manufacturer's Instructions:
- .1 Submit manufacturer's installation instructions.

1.5 PRODUCT HANDLING

.1 Store materials in a dry, protected, well-vented area. The contractor shall thoroughly inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

.2 Remove protective wrapping immediately after installation if applicable.

1.6 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for hardware complete with pertinent details, spare parts lists and warnings against harmful maintenance materials and practices for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.7 WARRANTY

.1 Manufacturer's standard warranty: Materials shall be free of defects in material and

workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge. Electrical motors, special finishes, and other special equipment (if applicable) shall be warranted separately by the manufacturers of those products.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 MATERIALS

.1 Steel sheet: regular quality alloy steel to ASTM A506.

.2 Galvanized steel sheet: commercial quality to ASTM A653, Z275 designation zinc coating.

.3 Aluminum sheet: mill finish plain utility sheet.

.4 Aluminum: extruded sections of AA6063-T5 alloy, all components one piece without splices.

.5 Copper sheet: to ASTM B370 cold rolled.

.6 Gaskets: extruded resilient vinyl, with full recovery after 50% compression.

.7 Fasteners: nails to CSA B111.

.8 Sealants: To Section 07 92 00 - Joint Sealant.

.1 Acceptable materials: CCD-045.

.9 Prime paint for steel: to CAN/CGSB-1.105.

.10 Isolation coating: alkali resistant bituminous paint or epoxy solution.

2.2 ROOF SCUTTLE

.1 Metal Cover:

.1 Preformed, galvanized steel, insulated sandwich construction.

.2 Furnish and install where indicated on plans metal roof scuttle. The roof scuttle shall be single leaf. The roof scuttle shall be pre-assembled from the manufacturer.

.3 Performance characteristics.

.1 Cover shall be reinforced to support a minimum live load of 195kg/m² with a maximum deflection of 1/150th of the span or 20 psf wind uplift.

.2 Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.

.3 Operation of the cover shall not be affected by temperature.

.4 Entire scuttle shall be weathertight with fully welded corner joints on cover and curb.

.4 Cover: Shall be: 14 gauge paint bond G-90 galvanized steel or with a 76mm beaded flange with formed reinforcing members. Cover shall have a heavy extruded thermoplastic rubber gasket fitted into a retainer that is mechanically fastened to the cover interior to assure a continuous seal when compressed to the top surface of the curb.

.5 Cover insulation: Shall be fiberglass of 25.4mm thickness, fully covered and protected by a metal liner: 22 gauge paint bond G-90 galvanized steel.

.6 Curb: Shall be 305mm in height and of: 14 gauge paint bond G-90 galvanized steel. The curb shall be formed with a 89mm flange with 11.1mm holes provided for securing to the

roof deck. The curb shall be equipped with an integral metal cap flashing of the same gauge and material as the curb, fully welded at the corners, that features the Posi-Flash flashing system, including stamped tabs, 153mm on center, to be bent inward to hold single ply roofing membrane securely in place.

.7 Curb insulation: Shall be rigid, high-density fiberboard of 25.4mm thickness on outside of curb.

.8 Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe (for aluminum construction: welded to the curb assembly; for steel construction: through bolted to the curb assembly).

.9 Hardware:

.1 Heavy pintel hinges shall be provided.

.2 Cover shall be equipped with a spring latch with interior and exterior turn handles.

.3 Roof scuttle shall be equipped with interior and exterior padlock hasps, padlock by Owner.

.4 The latch strike shall be a stamped component bolted to the curb assembly.

.5 Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 25.4mm diameter red vinyl grip handle to permit easy release for closing.

.6 Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed. Springs shall have an electrocoated acrylic finish for corrosion resistance.

.7 Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.

.10 Finishes: Factory finish shall be mill finish aluminum.

.1 Acceptable Material:

.1 BILCO.

.2 Acudor RHA.

2.3 FABRICATION

.1 Fabricate components free of twists, bends, or visual distortion and insulated. Weld corners and joints.

.2 Assemble roof hatch components as indicated in shop drawings.

.3 Ensure continuity of weather-tight seal.

.4 Design flashings to collect and lead off accumulated condensation.

.5 Zinc plate hardware and attachments.

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Erect components plumb, level and in proper alignment.

.2 Ensure continuity of building envelope air barrier and vapour retarder systems.

.3 Adjust and seal assembly with provision for expansion and contraction of components.

.4 Secure prefabricated curb assembly to structure.

.5 Coat aluminum and copper in contact with dissimilar materials, with isolation coating.

.6 Secure and seal frame to curb.

3.3 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 60 00 - Flashing and Sheet Metal.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM C 321 - Standard Test Method for Bond Strength of Chemical- Resistant Mortars.
- .2 ASTM C 834 - Standard Specification for Latex Sealants.
- .3 ASTM C 882 - Standard Test Method for Bond Strength of Epoxy-R Systems used with Concrete by Slant Shear.
- .4 ASTM C 919 - Standard Specification for use of Sealants in Acoustical Applications.
- .5 ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- .6 ASTM C 1330 - Standard Specification for Cylindrical Sealant Backing for use with Cold Liquid Applied Sealants.
- .7 Sealants and associated materials must conform with the latest version of standards and specifications referenced.

.2 Transport Canada (TC)
- .1 Transportation of Dangerous Goods Act (TDGA).

.3 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-19.21, Sealing and Bedding Compound Acoustical.

.4 Department of Justice Canada (Jus)
- .1 Canadian Environmental Protection Act, 1999 (CEPA).

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

1.3 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .1 Caulking Compound.
- .2 Primers.
- .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .4 Installation instructions, surface preparation and product limitations.

.2 Manufacturer's Technical Data Guides and application procedures.

.3 Submit cured samples illustrating colors selected.

.4 Submit laboratory tests or data validating product compliance with performance criteria specified. Include SWRI validation certificate where required.

.5 Upon completion of the project the sealant applicator must submit copies of the Manufacturer's Weatherseal and the Warranty Applicator's Workmanship Warranty.

.6 Before proceeding with work or ordering of material submit the following to the Consultant for review and acceptance:
- .1 Manufacturer's product data for sealants to be used.
- .2 Manufacturer's recommended installation procedures.

.7 Material Safety Data Sheets:
- .1 Submit MSDS for inclusion in Operation and Maintenance Manual.

1.4 QUALITY ASSURANCE/MOCK-UP

.1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.

.2 Manufacturer Qualifications: Company regularly engaged in manufacturing and marketing of products specified in this section.

.3 Installer Qualifications: Qualified to perform work specified by reason of experience or training provided by the product manufacturer.

.4 Installer must submit a reference list including a minimum of three projects of similar size and scope.

.5 Mock-ups: Include a minimum of 3m of sealant to show compatibility with substrate, proper adhesion to substrate and chosen color.

.1 Apply mock-up with specified joint filler types and with other components noted. Installer must provide both primed and un-primed mock up to assess whether a primer is required for the project.

.2 Locate where directed by Consultant.

.3 Mock-up may remain as part of the work if acceptable to Consultant.

.4 Allow 24 hours for inspection of mock-up by Consultant before proceeding with sealant work.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for this Work.

.6 Adhesion pull tests: the number of adhesion pull tests is to be determined by the manufacturer's weatherseal warranty. Adhesion pull tests are to be conducted by or in the presence of the manufacturer's representative. The manufacturer is to supply the Consultant / Owner with the results of the adhesion pull tests. The sealant installer is responsible for repairing areas where adhesion pull tests are conducted.

1.5 FIELD ADHESION / COHESION TESTS

.1 Test Frequency:

.1 Perform a field test for each type of sealant and substrate combination, for all interior and exterior sealants associated with the building envelope.

.2 Perform three (3) additional tests for each failed test.

.2 Locate test joints as directed by Owner's Representative. Tests to be performed in the presence of the Owner's Representative and/or manufacturer's representative.

.3 Notify Owner's Representative seven (7) days prior to dates tests are to be performed.

.4 Test joint sealants by hand-pull methods #1 and #2. Record results in Field Adhesion / Cohesion Test Form.

.1 Test Method #1:

.1 Make a knife cut horizontally from one side of the joint to the other.

.2 Make two (2) vertical cuts (from the horizontal cut) approximately 75mm long on each side of the joint.

.3 Pry out flap created from cuts.

.4 Firmly grasp flap and slowing pull at 90 degrees from sealant plane.

.5 Pull flap until adhesive or cohesive failure occurs.

.1 Adhesive failure will be evidenced by the sealant pulling off clean from the substrate.

.2 Cohesion failure will be evidenced by the sealant ripping or failing within itself, leaving well-adhered sealant to the substrate, (cohesive failure is considered a positive result).

.2 Test Method #2:

.1 Follow steps #1 to #4 (inclusive) of Test Method #1 above.

.2 Mark a benchmark on the sealant, 25mm from the plane of the installed sealant.

.3 Firmly grasp the flap and pull slowly, while holding a ruler parallel to the sealant flap. Note the position of the benchmark on the ruler.

.4 Refer to manufacturer's printed literature for each sealant tested for the required extension factor pass criteria; (i.e. if the 25mm benchmark on the sealant can be pulled to 100mm and held with no failure of sealant, 400% elongation is achieved).

.5 If no failure occurs prior to the manufacturer's stated extension factor, the test is successful. Extension factor should be three (3) times the movement capability of the sealant.

.5 Inspect joints for:

.1 Complete fill.

.2 Absence of voids.

.3 Primer.

.4 Proper width / depth ratio.

.5 Backup material.

.6 Repair sealants pulled in test area by applying new sealants following same procedures used to original seal joints.

.7 Contactor shall repair test areas at no additional cost to the Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets (MSDS) for each product.

.3 Store products in location protected from freezing, damage, construction activity, precipitation and direct sunlight in strict accordance with manufacturer's recommendations.

.4 Condition products to approximately 16 to 21 degrees C, for use in accordance with manufacturer's recommendations.

.5 Handle all product with appropriate precautions and care as stated on Material Safety Data Sheet (MSDS).

1.7 PROJECT CONDITIONS

.1 Do not use products under conditions of precipitation or freezing weather. Use appropriate measures for protection and supplementary heating to ensure proper curing conditions in accordance with manufacturer's recommendations if application during inclement weather occurs.

.2 Ensure substrate is dry.

.3 Protect adjacent work from contamination due to mixing, handling and application.

.4 Joint-Width Conditions:

.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.5 Joint-Substrate Conditions:

.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 ENVIRONMENTAL REQUIREMENTS

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

1.9 WARRANTY

.1 Provide manufacturer's five (5) year standard material warranty.
.2 Include coverage for replacement of sealant materials which fail to achieve water tight seal, exhibit loss of adhesion or cohesion, or do not cure.
.3 Warranty Exclusions: Failure resulting from concrete shrinkage, structural cracks or defects, faulty construction, faulty design, faulty materials (other than sealant), misuse of structure, settlement or accident, fire or other casualty, or physical damage.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.
.2 Place in appropriate on-site bins in accordance with Waste Management Plan.
.3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.
.4 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Provincial and Municipal regulations.

2 Products

2.1 MANUFACTURERS

.1 Acceptable material:
  .1 BASF Building Systems.
  .2 Pecora Corporation.
  .3 Tremco Sealant and Waterproofing.
  .4 Sika Canada Inc.
  .5 Dow Corning.
.2 Provide all joint materials of the same type form a single manufacturer.

2.2 MATERIALS

.1 Single Component, Non-Sag Polyurethane Sealant with plus or minus 25 percent movement capability for vertical joints; ASTM C 920, Type S, Grade NS, Class 35, uses NT, M, A, O & I.
  .1 Acceptable Materials:
    .1 MasterSeal NP1 by BASF Building Systems.
    .2 Pecora DynaTrol 1-XL by Pecora Corporation.
    .3 Sikaflex 1a by Sika Canada Inc.
  .2 [Substrates: concrete, masonry, aluminum, wood, copper, stainless steel, galvanized steel and some stone.
    Expected service life: 7 - 12 years.
    Possible uses: Wall joints, window frames, precast joints, parapets etc.]
.2 Single component texturized polyurethane sealant with plus or minus 25 percent joint movement capability for horizontal or vertical joints, ASTM C 920, Type S, Grade NS, Class 25, uses NT, M, A, O.
  .1 Acceptable Materials:
    .1 MasterSeal TX1 by BASF Building Systems.
    .2 Vulkem 116 by Tremco Sealant & Waterproofing.
  .2 [Substrates: concrete, masonry, aluminum, wood, stucco, copper, stainless steel, galvanized steel and some stone.
    Expected service life: 7 - 12 years.
    Possible uses: Wall joints, HVAC, roofing, precast joints, parapets etc.]
.3 Single component low modulus high movement fast-curing silyl terminated polyether sealant with plus 100 and minus 50 percent joint movement capability; ASTM C 920,

Type S, Grade NS, Class 50, uses NT, M, A, G, O; ASTM C 1382.

.1 Acceptable Materials:

.1 MasterSeal NP 150 by BASF Building Systems.

.2 [Substrates: concrete, masonry, aluminum, glass, stone, EIFS, wood.
Expected service life: 20 years.
Possible uses: Wall joints, caulking windows, window & door frames, wet glazing, sanitary applications etc.]

.4 Multi-component field tintable low modulus high movement fast-curing sealant with plus 100 and minus 50 percent joint movement capability; ASTM C 920, Type M, Grade NS, Class 50.

.1 Acceptable Materials:

.1 MasterSeal 150 Tint Base by BASF Building Systems.

.2 Pecora 890FTS by Pecora Corporation.

.2 [Substrates: concrete, masonry, aluminum, glass, stone, EIFS, wood.
Expected service life: 20 years +.
Possible uses: Wall joints, caulking windows, window & door frames, wet glazing, sanitary applications etc.]

.5 Field tintable low modulus high movement fast-curing textured sealant with plus and minus 50 percent joint movement capability; ASTM C 920, Type M, Grade NS, Class 50.

.1 Acceptable Materials:

.1 Pecora 890FTS-TXTR by Pecora Corporation.

.2 [Substrates: concrete, masonry, stone, EIFS.
Expected service life: 20 years +.
Possible uses: Wall joints, mortar joints.]

.6 Multi-component, Polyurethane Sealant with plus or minus 50 percent joint movement capability; ASTM C 920, Type M, Grade NS, Class 25, uses NT, T, M, A, O, G and I; UL classified (fire resistance).

.1 Acceptable Materials:

.1 DynaTrol II by Pecora Corporation.

.2 MasterSeal NP2 by BASF Building Systems.

.3 Dymeric 240 by Tremco Sealant & Waterproofing.

.4 Sikaflex 2C NS by Sika Canada Inc.

.2 [Substrates: concrete, masonry, aluminum, vinyl siding, copper, stainless steel, galvanized steel, marble, granite and limestone.
Expected service life: 7 - 12 years.
Possible uses: Wall joints, window frames, structural components, etc.]

.7 Single component self-leveling polyurethane sealant with plus or minus 25 percent movement capability for horizontal joints; ASTM C 920, Type S, Grade P, Class 25 uses T&M.

.1 Acceptable Materials:

.1 Urexpan NR-201b by Pecora Corporation.

.2 MasterSeal SL1 by BASF Building Systems.

.3 Vulkem 45 by Tremco Sealant & Waterproofing.

.4 Sikaflex 1C SL by Sika Canada Inc.

.2 [Substrates: concrete & metal.
Expected service life: 7 - 12 years.
Possible uses: floor joints, sidewalks, driveways, decks, parking areas, etc.]

.8 Multi-component, Self-Leveling Polyurethane Sealant with plus or minus 25 percent movement capability for horizontal joints, ASTM C 920, Type M, Grade P, Class 25 uses NT. T, A, I & M.

.1 Acceptable Materials:

.1 Urexpan NR-200 by Pecora Corporation.
.2 MasterSeal SL2 by BASF Building Systems.
.3 Vulkem THC 900 by Tremco Sealant & Waterproofing.
.4 Sikaflex 2C SL by Sika Canada Inc.

.2 [Substrates: concrete, and metal.
Expected service life: 7 - 12 years.
Possible uses: floor joints, cantilever decks, driveways, decks, parking ramps, industrial floors, precast double T's, metal expansion joints etc.

.9 Single component neutral cure silicone sealant for non-structural glazing applications with plus / minus 50 percent joint movement capability; ASTM C 920, Type S, Grade NS, Class 50, Use NT, M, G and A.

.1 Acceptable Materials:
.1 Pecora 864NST or 895NST by Pecora Corporation.
.2 Dow Corning 795 by Dow Corning.
.3 Spectrum 2 by Tremco Sealant & Waterproofing.

.2 [Substrates: concrete, masonry, aluminum, glass & plastics.
Expected service life: 20 years +.
Possible uses: conventional glazing, window & door frames, window perimeters, curtain walls, expansion & control joints etc.

.10 Single component neutral cure silicone sealant for non-structural glazing applications with plus 100% minus 50% joint movement capability; ASTM C 920, Type S, Grade NS, Class 100/50, use T, NT, M, G, A and O. SWRI validated.

.1 Acceptable Materials:
.1 Pecora 890NST by Pecora Corporation.
.2 Spectrum 1 by Tremco Sealant & Waterproofing.
.3 Dow Corning 790 by Dow Corning.

.2 [Substrates: concrete, masonry, stone, ceramics, granite, wood, steel, aluminum and plastics.
Expected service life: 20 years +.
Possible uses: precast panels, curtain walls, mullions, expansion joints, EIFS, etc.

.11 Single component mildew resistant silicone sealant plus/minus 25% movement capability; ASTM C 920, Type S, Grade NS, Class 25, Use NT, G and A.

.1 Acceptable Materials:
.1 Pecora 898 by Pecora Corporation.
.2 Tremsil 200 by Tremco Sealant & Waterproofing.
.3 Dow Corning 786.

.2 [Substrates: glass, aluminum, tile and fiberglass.
Possible uses: countertops, kitchen & bath areas, non-structural glazing, etc.

.12 Single component silicone structural adhesive with plus/minus 50% joint movement capability; ASTM C 920, Type S, Grade NS, Class 25, Use NT, G and A.

.1 Acceptable Materials:
.1 Dow Corning 995 by Dow Corning.
.2 Pecora 895NST by Pecora Corporation.

.2 [Substrates: glass, aluminum, anodized aluminum, paints.
Structural glazing applications must be reviewed by Pecora Corp Technical Service Staff. Contact your local manufacturer's representative for more information.
Possible uses: two sided or four sided structural glazing.]

.13 Single component synthetic rubber sealant purpose made for use in acoustical applications.

.1 Acceptable Materials:
.1 Tremco Acoustical Sealant.
.2 Pecora BA-98.

.14 Single component pick resistant sealant with plus/minus 25 percent joint movement capability; ASTM C 920, Type S, Grade NS, Class 25, uses NT, T, M, A, G and I.
.1 Acceptable Materials:
.1 Pecora 896HIS by Pecora Corporation.
.2 MasterSeal CR 195 by BASF Building Systems.
.2 [Substrates: concrete, masonry, granite, marble, brick, aluminum, wood, stainless steel and galvanized steel.
Expected service life: 7 - 12 years.
Possible uses: wall joints, prisons, stadiums, schools, universities, etc.]

.15 Poured flexible 100% solids epoxy joint filler; properties:
.1 Shore A Hardness: greater than 75.
.2 Shore D Hardness: greater than 30.
.3 Elongation: 75 percent.
.4 Tensile Strength: 4.5 MPa.
.5 Acceptable Materials:
.1 MasterSeal CR 190 by BASF Building Systems.
.2 Loadflex by Sika Canada Inc.
.3 Rezi-Weld Flex (W.R. Meadows).

.16 Gunned 100% solids epoxy joint filler. Two component gun-grade pick proof epoxy joint filler for sloped, vertical areas and security applications.
.1 Tensile Strength: 13.8 MPa
.2 Slant Shear Strength: 34.5 MPa.
.3 Bond Strength: 10.3 MPa.
.4 Acceptable Materials:
.1 Dynapoxy EP-1200 by Pecora Corporation.
.2 MasterEmaco ADH 327 by BASF Building Systems.

.17 Two-component self leveling, 100 percent solids Polyurea control joint filler.
.1 Shore A Hardness: 85 to 90.
.2 Tensile Strength: 1183 psi.
.3 Elongation: 240 percent.
.4 Acceptable Materials:
.1 MasterSeal CR 100 by BASF Building Systems.
.2 Sika Loadflex Polyurea by Sika Canada Inc.
.3 PenJoint 3004 (ASTC)

2.3 ACCESSORIES

.1 Primer: Type recommended by the sealant manufacturer and compatible with joint forming materials.

.2 Joint Cleaner: Non-corrosive and non-staining type recommended by sealant manufacturer and compatible with joint forming materials.

.3 Soft Backer Rod: non-gassing, reticulated closed-cell polyethylene rod designed for use with cold-applied joint sealants.
.1 Comply with ASTM C 1330.
.2 Size required for joint design.

.4 Closed-Cell Backer Rod: closed-cell polyethylene rod designed for use with cold-applied joint sealants for on-grade or below-grade applications.
.1 Comply with ASTM C 1330.

.2 Size required for joint design.

.5 Joint Filler: closed-cell polyethylene joint filler, designed for use in cold joints, construction joints or isolation joints wider than 1/4 inch (6mm).

.1 Size required for joint design.

.6 Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

2.4 COLOR

.1 Sealant Colors: Selected by Consultant.

.1 Manufacturer's standard color range.

.2 Custom color matching submittal of job site substrate samples.

3 Execution

3.1 PROTECTION

.1 Protect installed Work of other trades from staining or contamination.

3.2 EXAMINATION

.1 Inspect all areas involved in work to establish extent of work, access and need for protection of surrounding construction.

.2 Conduct pre-application inspection of site verification with an authorized manufacturer's representative.

.3 Occupied areas: where high VOC materials are utilized, investigate occupants to determine the measures to be taken to accommodate them.

3.3 PREPARATION

.1 Remove loose materials and foreign matter which could impair adhesion of the sealant.

.2 Clean joint and saw cuts by grinding, sandblasting or wire brushing to expose a sound surface free of contamination and laitance.

.3 Ensure structurally sound surfaces are dry, clean, free of dirt, moisture, loose particles, oil, grease, asphalt, tar, paint, wax, rust, waterproofing, curing and parting compounds, membrane materials and other foreign matter.

.4 Where the possibility of sealants staining adjacent areas or materials exist, mask joints prior to application.

.1 Do not remove masking tape before joints have been tooled and initial cure of joint filler has taken place.

.2 Work stained due to failure of proper masking precautions will not be accepted.

3.4 INSTALLATION:

.1 Priming:

.1 Prime all surfaces to receive sealant with recommended primer unless the mockup proves otherwise.

.2 Back-Up Material:

.1 Install appropriate size backer rod, larger than joint where necessary according to manufacturer's recommendations.

.2 Install polyethylene joint filler in joints wider than 1/4 inch (6mm) to back-up material per manufacturer's recommendations.

.3 Bond Breaker:

.1 Install bond-breaker strip in joint to be sealed on top of back-up material to prevent adhesion of sealant to back-up material; install per manufacturer's recommendations.

.4 Sealant:

.1 Prepare sealants that require mixing; follow manufacturer's recommended procedures, mixing thoroughly.
.2 Mix only as much material as can be applied within manufacturer's recommended procedures, mixing thoroughly.
.3 Apply materials in accordance with manufacturer's recommendations; take care to produce beads of proper width and depth, tool as recommended by manufacturer and immediately remove surplus sealant.
.4 Apply materials only within manufacturer's specified application life period. Discard sealant after application life is expired or if prescribed application period has elapsed.

3.5 CLEANING

.1 Remove uncured sealant with Reducer 990, xylene, toluene or MEK. Remove cured sealant by razor, scraping or mechanically.
.2 Remove all debris related to application of sealants from job site in accordance with all applicable regulations for hazardous waste disposal.

3.6 APPLICATION

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

END OF SECTION

1 General

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM).
- .1 ASTM A126, Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.

.2 Canadian Standards Association (CSA International).
- .1 CSA-B79, Floor, Area and Shower Drains, and Cleanouts for Residential Construction.

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

1.2 SUBMITTALS

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

.2 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and datasheet for fixtures and equipment.
- .2 Indicate dimensions, construction details and materials for specified items.
- .3 Submit WHMIS MSDS material safety data schools. Indicate VOC's for adhesive and solvents during application and curing.

.3 Instructions: submit manufacturer's installation instructions.

.4 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals, include:
- .1 Description of plumbing specialties and accessories, giving manufacturers name, type, model, year and capacity.

1.3 QUALITY ASSURANCE

.1 Health and Safety:
- .1 Do construction occupational health and safety in accordance with Section 01 35 29 - Health, Safety and Emergency Response Procedures.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper 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 Consultant.

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

2 Products

2.1 ROOF DRAINS

.1 Type 1: Standard coated roof drain with cast iron body 381 mm diameter, with polyethylene dome, under-deck clamp to suit roof construction, flashing clamp ring with integral gravel stop.
- .1 Acceptable Material: OMG Hercules Retro-Drain, or approved equal.

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 data sheet.

3.2 INSTALLATION

.1 Install in accordance with National Plumbing Code of Canada, and.

.2 Install in accordance with manufacturer's instructions and as specified.

3.3 TESTING AND ADJUSTING

.1 Roof drains:

.1 Check location at low points in roof.

.2 Check security, removeability of dome.

.3 Adjust weirs to suit actual roof slopes, meet requirements of design.

.4 Clean out sumps.

.5 Verify provisions for movement of roof systems.

END OF SECTION

APPENDIX 'A'
COVID-19 AFFIDAVIT

Public Works and Planning Division
Transportation and Infrastructure

PO Box 2000
Charlottetown
Prince Edward Island
Canada C1A 7N8

Tel 902 368 5160
Fax 902 569 0590
princeedwardisland.ca

Appendix A

COVID-19 CONTRACTOR AFFIDAVIT

DTI Project: _____

The undersigned ("Contractor") hereby acknowledges the Province's concerns regarding safety at the worksite due to the COVID-19 pandemic. The Contractor agrees that it shall conduct its operations in strict compliance with all applicable regulations, guidelines, and requirements imposed by the Chief Public Health Office (CPHO), Worker's Compensation Board (WCB), and that it will comply with the Construction Association of PEI (CAPEI) "Pandemic Planning For The Construction Industry – A Guide" for all construction sites and workers at all Public Works locations.

The Contractor understands that it is the Contractor's responsibility to develop, maintain, and follow a written Covid-19 Operational Plan specifying how it will meet its obligations. The Contractor is to provide a copy of their Covid-19 Operational Plan upon request by the DTI representative.

The Contractor, if acting as the General, also certifies that each Subcontractor, Sub-subcontractor, and other parties that will perform work on their behalf, will also comply and will satisfy these requirements.

The Contractor acknowledges and agrees that non-compliance with any of the requirements above, including failure to abide by its own COVID-19 Operational Plan, may result in suspension or termination of any or all work in progress.

_____
Contractor/ Company Name (Please Print)

_____
Contractor/Company Email (Please Print)

_____
Contractor/Company Phone

Certification:

By signing below, on behalf of the Contractor/Company, I certify we have COVID-19 Operational Plan, all staff have read and acknowledged the plan and we agree to the foregoing.

_____
Contractor/Company Representative (Please Print)

_____
Contractor/Company Representative (Please Sign)

_____
Signature Date

Please email completed form to adminpwp@gov.pe.ca prior to construction activity.