



**Public Works and  
Government Services Canada**

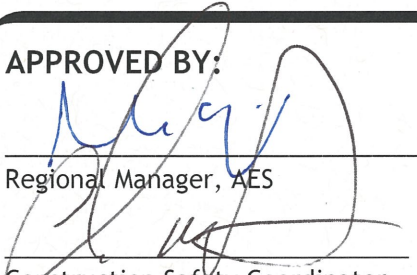
Requisition No. EZ899-170633

DRAWINGS & SPECIFICATIONS  
for

**CSC William Head Institution Roofing Project**

**PWGSC Project No.: R.079715.001, R.079716.001,  
R.079717.001, R.079718.001**

**APPROVED BY:**

  
Regional Manager, AES

2016-06-08

Date

  
Construction Safety Coordinator

2016-05-31

Date

**TENDER:**

  
Project Manager

May 31/16

Date

Project No.: R.079715.001 – Building 102 (Library),  
Project No.: R.079716.001 – Building 104 (Principal Entrance)  
Project No.: R.079717.001 – Building 105 (Vocational Training)  
Project No.: R.079718.001 – Building 108 (Health Segregation)  
CSC William Head Institution Roofing Project, Metchosin, BC

Section 00 01 07  
Seals Page  
Page 1 of 1

**CONSULTANTS – SEAL & SIGNATURE**

Discipline

Seal / Signature / Date

Roofing



**END OF SECTION**

Project No.: R.079715.001 – Building 102 (Library),  
Project No.: R.079716.001 – Building 104 (Principal Entrance)  
Project No.: R.079717.001 – Building 105 (Vocational Training)  
Project No.: R.079718.001 – Building 108 (Health Segregation)  
CSC William Head Institution Roofing Project, Metchosin, BC


Section 00 01 07  
Seals Page  
Page 1 of 1

**CONSULTANTS – SEAL & SIGNATURE**

Discipline

Seal / Signature / Date

Mechanical



A red circular professional seal for T. G. MILLER, a Professional Engineer in the Province of British Columbia. The seal contains the text "PROFESSIONAL PROVINCE BRITISH COLUMBIA ENGINEER" and "T. G. MILLER". A blue ink signature, "T. G. Miller", is written across the seal. Below the seal, the date "June 2/16" is handwritten in blue ink.

**END OF SECTION**

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**List of Drawings (Bound Separately):**

<b>000-0</b>	Project Cover Page
<b>Building 102</b>	
102-0	Cover Page, General Notes, Legends and Assemblies
102-1	Demolition Plan
102-2	Roof Plan
102-3	Roof Details
102-M1	Roof Plan Mechanical Drawings
<b>Building 104</b>	
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104-1	Demolition Plan
104-2	Roof Plan
104-3	Guardrail and Access Ladder Elevations
104-4	Roof Details
104-M1	Roof Plan Mechanical Drawings
<b>Building 105</b>	
105-0	Cover Page, General Notes, Legends and Assemblies
105-1	Demolition Plan
105-2	Roof Plan
105-3	Roof Details
105-M1	Roof Plan Mechanical Drawings

**Project No.: R.079715.001 – Building 102 (Library),**  
**Project No.: R.079716.001 – Building 104 (Principal Entrance)**  
**Project No.: R.079717.001 – Building 105 (Vocational Training)**  
**Project No.: R.079718.001 – Building 108 (Health Segregation)**  
**CSC William Head Institution Roofing Project, Metchosin, BC**

**Section 00 01 10**  
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**Building 108**

108-0      Cover Page, General Notes, Legends and Assemblies  
108-1      Demolition Plan  
108-2      Roof Plan  
108-3      Roof Details  
108-M1     Roof Plan Mechanical Drawings

**END OF SECTION**

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## PART 1 GENERAL

### 1.1 SUMMARY OF WORK

- .1 Work covered by Contract Documents:
  - .1 This Contract covers the following work at the William Head Institution, Metchosin, BC.
    - .1 Building 102 – Removal of the existing roof assembly and replacement with new roof assembly complete with all accessories (e.g., flashings, drains, vents, plumbing stacks), and related equipment removals and reinstatements as indicated on the drawings.
    - .2 Building 104 - Removal of the existing roof assembly and replacement with new roof assembly complete with all accessories (e.g., flashings, drains, vents, plumbing stacks), and related equipment removals and reinstatements as indicated on the drawings. Also included is replacement of existing roof access ladders and roof top guardrails.
    - .3 Building 105 – Removal of the existing roof assembly and replacement with new roof assembly complete with all accessories (e.g., flashings, drains, vents, plumbing stacks), and related equipment removals and reinstatements as indicated on the drawings.
    - .4 Building 108 – Removal of the existing roof assembly and replacement with new roof assembly complete with all accessories (e.g., flashings, drains, vents, plumbing stacks), and related equipment removals and reinstatements as indicated on the drawings. Also included is replacement of existing skylights as indicated on the drawings.
- .2 Work to be performed under this Contract includes, but not limited to, the following items covered further in the Contract documents:
  - .1 Provide a detailed work plan including a project schedule and phasing. This detailed work plan shall be submitted to the Departmental Representative for review to verify that there will be no interruption of service.
  - .2 Do not start work until all essential equipment is delivered to the site and the work can proceed without delays.
  - .3 Provide as-built drawings and closeout submittals.
- .3 Contractor's Use of Premises:
  - .1 Contractor has limited use of site for work of this contract until Substantial Completion:
    - .1 Contractor use of premises for storage and access, as approved by the Departmental representative.
    - .2 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
  - .2 Vehicular access through the Sally Port will be restricted during the inmate "count" at breakfast, lunch and dinner hours. Confirm times with Departmental Representative. Delays may occur when entering and exiting the Institution with vehicles due to security situations and heavy traffic.

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Representative. Delays may occur when entering and exiting the Institution with vehicles due to security situations and heavy traffic.

## 1.2 WORK RESTRICTIONS

- .1 Notify Departmental Representative of intended interruption of power, communication and water services and provide schedule of interruption times.
- .2 Where Work involves breaking into or connecting to existing services, give departmental Representative 48 hours of notice for necessary interruption of services throughout course of work. Keep duration of interruptions to a minimum. Coordinate interruptions with local authority having jurisdiction and local residences and businesses affected by the disruption.
- .3 Provide for access by pedestrian and vehicular traffic on and around site where work is in progress.
- .4 Construct barriers in accordance with Section Temporary Barriers and Enclosures.
- .5 Security Requirements: refer to Section 01 14 10 - Security Requirements.
- .6 Hours of work:
  - .1 Perform work during normal working hours of the Institution 0730 to 1600, Monday through Friday except holidays.
  - .2 When it is necessary, arrange in advance with Departmental Representative to work outside of normal working hours.

## 1.3 CONSTRUCTION WORK SCHEDULE

- .1 Commence work immediately upon official notification of acceptance of offer and complete the work within 24 weeks from the date of such notification.
- .2 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Substantial Certificate and Final Certificate as defined times of completion are of essence of this contract.
- .3 Submittal:
  - .1 Submit to Departmental Representative within 10 working days of Award of Contract, a Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of construction progress.
  - .2 Identify each trade or operation.
  - .3 Show dates for delivery of items requiring long lead time.
  - .4 Departmental Representative will review schedule and return one copy.
  - .5 Re-submit two (2) copies of finalized schedule to Departmental Representative within five (5) working days after return of reviewed preliminary copy.
- .4 Project Scheduling Reporting:
  - .1 Update Project Schedule on bi-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.

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- .1 Discuss Project Schedule at bi-weekly 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.
  - .3 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. After approval by Departmental Representative cost breakdown will be used as basis for progress payments. Only PWGSC paper work is acceptable.

#### 1.4 SUBMITTAL PROCEDURES

- .1 Administrative:
  - .1 Submit to Departmental Representative submittal listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit 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.
  - .2 Work affected by submittal shall not proceed until review is complete.
  - .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
  - .4 Where items or information is not produced in SI Metric units converted values are acceptable.
  - .5 Review submittal prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittal not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.
  - .6 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
  - .7 Verify field measurements and affected adjacent Work are coordinated.
  - .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative review of submittal.
  - .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
  - 10 Keep one reviewed copy of each submission on site.
- .2 Shop Drawings:
  - .1 Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
- .3 Product Data:



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- .1 Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings, provided that the product concerned is clearly identified. Submit in sets, not as individual submissions.
  - .4 Samples:
    - .1 Submit samples in sizes and quantities specified.
    - .2 Where colour is criterion, submit full range of colours.
    - .3 Submit all samples as soon as possible after the contract is awarded, to facilitate production of complete colour scheme by the Departmental Representative.
  - .5 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 location as specified in specific Section.
    - .3 Prepare mock-ups for Departmental Representative' 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 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.
  - .6 Progress Photographs:
    - .1 Provide construction photographs in accordance with procedures and submission requirements specified in this clause.
    - .2 Progress Photographs:
      - .1 Provide digital photographs with images of minimum 3.1 mega pixel resolution and stored in Jpeg format with minimal compression.
      - .2 Number of viewpoints: four (4), locations of viewpoints directed by Departmental Representative.
      - .3 Frequency: monthly, submitted on disk with monthly progress statement, sent via e-mail or as directed by Departmental Representative.
      - .4 Identify photos by location, date and sequential numbering system.
    - .3 Final Photographs:
      - .1 Provide digital photographs with images of minimum 3.1 mega pixel resolution and stored in Jpeg format with minimal compression. Where photos are e-mailed compression can be increased.
      - .2 Number of viewpoints:
        - .1 Each side of building for a total of 4.
        - .2 Interior of rooms and finishes for a total of 8.
        - .3 Locations of viewpoints determined by Departmental Representative.

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- .3 Submit final photographs in digital format on CD, before final acceptance of building.
  - .4 Label disks and identify with name and project number of project. Indicate exposure dates and viewpoints of each photo and photo number.
- .7 Submission Requirements:
- .1 Schedule submissions at least ten days before dates reviewed submissions will be needed.
  - .2 Submit number of copies of product data, shop drawings which Contractor requires for distribution plus four (4) copies which will be retained by Departmental Representative.
  - .3 Accompany submissions with transmittal letter in duplicate.
  - .4 Submit bond copies (hard copy) as directed by Departmental Representative.
- .8 Coordination of Submissions:
- .1 Review shop drawings, product data and samples prior to submission.
  - .2 Coordinate with field construction criteria.
  - .3 Verify catalogue numbers and similar data.
  - .4 Coordinate each submittal with requirements of the work of all trades and contract documents.
  - .5 Responsibility for errors and omissions in submittal is not relieved by Departmental Representative's review of submittal.
  - .6 Responsibility for deviations in submittal from requirements of Contract documents is not relieved by Departmental Representative's review of submittal, unless Departmental Representative gives written acceptance of specified deviations.
  - .7 Notify Departmental Representative, in writing at time of submission, of deviations in submittal from requirements of Contract documents.
  - .8 Make any changes in submissions which Departmental Representative may require consistent with Contract Documents and re-submit as directed by Departmental Representative.
  - .9 After Departmental Representative's review, distribute copies.
- .10 Shop Drawings Review:
- .1 Review of shop drawings by Public Works and Government Services Canada (PWGSC) is for the sole purpose of ascertaining conformance with the general concept.
  - .2 The Departmental Representative's review does not mean that PWGSC approves the detail design inherent in the shop drawings, responsibility remains with the contractor submitting same, and such review will not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and contract documents.
  - .3 Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site,

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for information that pertains solely to fabrication processes or to techniques of construction and installation, and for co-ordination of the work of all subtrades.

## **1.5 HEALTH AND SAFETY**

- .1 Specified in Section 01 35 33.

## **1.6 ENVIRONMENTAL PROCEDURES**

- .1 Fires and burning of rubbish on site not permitted.
- .2 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .3 Do not dispose of waste or volatile materials such as oil, paint thinner or mineral spirits into waterways, storm or sanitary systems.
- .4 Provide temporary drainage and pumping as necessary to keep excavations and site free from water during excavation and grading activities.
- .5 Control disposal of run-off of water containing suspended materials or other harmful substances in accordance with local authority requirements. Construct settlement ponds and silt fences as required by the Provincial Environmental authority.
- .6 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .7 Under no circumstances dispose of rubbish or waste materials on adjoining property.

## **1.7 REGULATORY REQUIREMENTS**

- .1 References and Codes:
  - .1 Perform Work in accordance with National Building Code of Canada (NBCC2010) and where applicable British Columbia Building Code (BCBC2012) including all amendments up to bid 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.

## **1.8 QUALITY CONTROL**

- .1 Inspection:
  - .1 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
  - .2 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.
  - .3 Departmental Representative 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,

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correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

- .2 Procedures:
  - .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
  - .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in 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.
- .3 Rejected Work:
  - .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
  - .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .4 Reports:
  - .1 Submit (4) four copies of inspection and test reports to Departmental Representative.
- .5 Tests and Mix Designs:
  - .1 Furnish test results and mix designs as may be requested.
- .6 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 locations acceptable to Departmental Representative and as specified in specific Section.
  - .3 Prepare mock-ups for Departmental Representative 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, Departmental Representative will assist in preparing a schedule fixing dates for preparation.
  - .6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.
- .7 Mill Tests:
  - .1 Submit mill test certificates as requested and as required of specification Sections.
- .8 Equipment and Systems:

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- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
  - .2 Refer to specific Section for definitive requirements.

## 1.9 TEMPORARY UTILITIES

- .1 Installation and Removal:
  - .1 Provide temporary utilities controls in order to execute work expeditiously.
  - .2 Remove from site all such work after use.
- .2 Dewatering:
  - .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.
- .3 Water Supply:
  - .1 Arrange, pay for and maintain temporary water supply in accordance with local authority, governing regulations and ordinances.
  - .2 Permanent water supply system installed under this contract may be used for construction requirements provided that guarantees are not affected thereby. Replace damaged components.
- .4 Temporary Power and Light:
  - .1 Arrange, pay for and maintain temporary electric power supply in accordance with local power authority governing regulations and ordinances.
  - .2 Electrical power and lighting installed under this contract may be used for construction purposes at no extra cost, provided that guarantees are not affected thereby and electrical components used for temporary power are replaced when damaged.
  - .3 Replace lighting bulbs/tubes and clean reflectors and lenses used for more than three months.
- .5 Temporary Communication Facilities:
  - .1 Provide and pay for temporary telephone and fax hook up, line(s) necessary for own use.
- .6 Fire Protection:
  - .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

## 1.10 CONSTRUCTION FACILITIES

- .1 Installation and Removal:
  - .1 Provide construction facilities in order to execute work expeditiously.
  - .2 Remove from site all such work after use.
- .2 Scaffolding:
  - .1 Design, construct and maintain scaffolding in rigid, secure and safe manner, in accordance with WorkSafeBC regulations and Section 01 35 33.

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- .2 Erect scaffolding independent of walls. Remove promptly when no longer required.
  - .3 Hoisting:
    - .1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.
    - .2 Hoists to be operated by qualified operator.
  - .4 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.
  - .5 Construction Parking:
    - .1 Make good damage to existing roads used for access to project site.
    - .2 Build and maintain temporary access where required and provide snow removal during period of Work.
    - .3 Park vehicles outside perimeter fence in designated parking areas.
  - .6 Contractor's Site Office and enclosure:
    - .1 Provide office of size to accommodate site meetings and Contractor's operations.
    - .2 Provide a clearly marked and fully stocked first-aid case in a readily available location.
    - .3 Provide temporary fenced area to enclose site and operations.
  - .7 Equipment, Tools and Material 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.
  - .8 Sanitary Facilities:
    - .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
    - .2 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures. Permanent facilities may be used on approval of Departmental Representative.

#### **1.11 TEMPORARY BARRIERS AND ENCLOSURES**

- .1 Hoarding:
  - .1 Erect temporary site enclosure using new 1.8 m high temporary construction fencing. Provide lockable truck gate. Maintain fence in good repair.

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- .2 Enclosure of Structure:
    - .1 Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed. Design enclosures to withstand wind pressure. Provide lockable entry as required for moving personnel equipment and materials.
    - .2 Provide temporary enclosures to secure building from entry of unauthorized personnel during construction period.
  - .3 Guardrails and Excavations:
    - .1 Provide secure, rigid guard rails and barricades around deep excavations, open edges of floors and roofs etc.
    - .2 Provide as required by governing authorities.
  - .4 Access to Site:
    - .1 Maintain immediate local access roads in clean condition used during work of this contract.
  - .5 Protection for Off-Site and CSC Property:
    - .1 Protect surrounding CSC property from damage during performance of Work.
    - .2 Be responsible for damage incurred.
  - .6 Protection of Building Finishes:
    - .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
    - .2 Provide necessary screens, covers, and hoardings.
    - .3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.
    - .4 Be responsible for damage incurred due to lack of or improper protection.

## 1.12 COMMON PRODUCT REQUIREMENTS

- .1 Reference Standards:
  - .1 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
  - .2 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-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.
- .2 Quality:
  - .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

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- 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 Departmental Representative 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.
- .3 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, 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 Departmental Representative .
  - .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.
- .4 Transportation:
- .1 Pay costs of transportation of products required in performance of Work.
  - .2 Transportation cost of products supplied by Departmental Representative will be paid for by Departmental Representative. Unload, handle and store such products.
- .5 Manufacturer's Instructions:
- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
  - .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.



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- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.
- .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 Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.
- .7 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.
- 8 Concealment:
- .1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.
- .9 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 neither to damage nor to put at risk any portion of Work.
- .10 Location of Fixtures:
- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.
- .3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.
- .11 Fastenings:
- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

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- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
  - .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
  - .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
  - .12 Fastenings - Equipment:
    - .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
    - .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
    - .3 Bolts may not project more than one diameter beyond nuts.
    - .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.
  - .13 Protection of Work in Progress:
    - .1 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Departmental Representative.
  - .14 Existing Utilities:
    - .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian and vehicular traffic.
    - .2 Before commencing work, establish location and extent of service lines in areas of work and notify Departmental Representative of findings.
    - .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
    - .4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
    - .5 Record locations of maintained, capped and re-routed services lines.
  - .15 Contractors Options for Selection of Products:
    - .1 Products specified by "**Prescriptive**" specifications: select any product meeting or exceeding specifications.
    - .2 Products specified under "**Acceptable Products**" (used for complex Mechanical or Electrical Systems): select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.
    - .3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.
    - .4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Product. Alternative products

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- may be considered provided full technical data is received in writing by Departmental Representative in accordance with "Instructions to Bidders".
- .5 When products are specified by a referenced standard or by Performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent laboratory report showing that the product meets or exceeds the specified requirements.
  - .16 Substitution after award of Contract:
    - .1 No substitutions are permitted without prior written approval of the Departmental Representative.
    - .2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution.
    - .3 Proposals will be considered by the Departmental Representative if:
      - .1 products selected by tenderer from those specified are not available;
      - .2 delivery date of products selected from those specified would unduly delay completion of Contract, or
      - .3 alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.
    - .4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.
    - .5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

### 1.13 EXAMINATION AND PREPARATION

- .1 Existing Services:
  - .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.
  - .2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.
- .2 Location of Equipment and Fixtures:
  - .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
  - .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
  - .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
  - .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

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#### **1.14 EXECUTION REQUIREMENTS**

**.1 Preparation:**

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

**.2 Execution:**

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using purpose made saw or core drill. Pneumatic or impact tools not allowed on brittle materials without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
- .12 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.
- .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

#### **1.15 CLEANING**

**.1 Project Cleanliness:**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

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- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
  - .3 Clear snow and ice from access to building.
  - .4 Provide on-site containers for collection of waste materials and debris.
  - .5 Provide and use clearly marked separate bins for recycling. Refer to Construction/Demolition Waste Management And Disposal.
  - .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 working day.
  - .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
  - .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
  - .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .2 Final Cleaning:
- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
  - .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
  - .3 Prior to final review, remove surplus products, tools, construction machinery and equipment.
  - .4 Remove waste products and 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.
  - .5 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
  - .6 Clean lighting reflectors, lenses, and other lighting surfaces.
  - .7 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
  - .8 Wax, seal, vacuum clean, shampoo or prepare floor finishes, as recommended by manufacturer.
  - .9 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
  - .10 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
  - .11 Remove dirt and other disfiguration from exterior surfaces.
  - .12 Sweep and wash clean paved areas.

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- .13 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.
  - .14 Clean roofs, downspouts, and drainage systems.
  - .15 Remove snow and ice from access to building.

#### **1.16 CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL**

- .1 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials and waste.
  - .1 Separate non-salvageable materials from salvaged items.
  - .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.
  - .3 Transport and deliver non-salvageable items to licensed disposal facility.
- .2 Provide containers to deposit reusable and/or recyclable materials. Locate containers in locations, to facilitate deposit of materials without hindering daily operations. Provide containers to deposit reusable and/or recyclable materials.
- .3 Collect, handle, store on-site and transport off-site, salvaged materials in separate condition. Transport to approved and authorized recycling facility and/or users of material for recycling.
- .4 Locate waste and salvage bins on site as directed by Departmental Representative.

#### **1.17 CLOSEOUT PROCEDURES**

- .1 Inspection and Declaration:
  - .1 Contractor's Inspection: Conduct an inspection of Work with all subcontractors, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .2 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .3 Request Departmental Representative's Inspection.
- .2 Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Substantial 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 balanced and are fully operational.
  - .4 Fire alarm verification report per CAN/ULC-S537, confirmation of proper installation of fire alarm panel to CAN/ULC-S527 signed off by the fire alarm technician and confirmation of fire alarm emergency power capacity. 24-hour battery test as described in CAN/ULC-S537, signed off by fire alarm technician.
  - .5 Confirmation of emergency power lighting, operating on emergency power for the required amount of time as dictated by NBCC, signed off by technician.

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- .6 Certificates required by Authority Having Jurisdictions for fire protection systems.
  - .7 Certificates required by Authority Having Jurisdictions for seismic restraints.
  - .8 Operation of systems have been demonstrated to Departments personnel.
  - .9 Work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

### 1.18 CLOSEOUT SUBMITTAL

- .1 Record Drawings:
  - .1 As work progresses, maintain accurate records to show all deviations from the Contract Drawings. Note on as-built drawings as changes occur. At completion supply:
    - .1 Four (4) sets of CD's in AutoCad file format (version: 2007) with all as-built information on the diskettes.
    - .2 Four (4) sets of as-built plotted reproducible drawings.
    - .3 Four (4) sets of printed as-built drawings.
    - .4 Submit one copy of check plots to Departmental Representative prior to final printing of as-built drawings.
    - .5 Departmental Representative will supply copies of the original AutoCad files.
    - .6 Retain original logo and title block on the as-built drawings. Contractor may place on the upper right-hand title block area a small company logo, the text "AS-BUILT" and the date.
  - .2 Costs for transferring as-built information from marked up working set of drawings to electronic format using ACAD and plotting service is included in the Contract.
- .2 Maintenance manual:
  - .1 On completion of project submit to Departmental Representative four (4) CD R/disk copies and four (4) paper copies (in loose leaf type binder) of Operations and Maintenance Manual, made up as follows:
    - .1 Provide maintenance manual on CDs using pdf, or other approved format for descriptive writing, page size images and page size drawings. Organize manuals into industry standard maintenance manual tabs with links in index to each descriptive section describing the component or maintenance procedure etc.
    - .2 Organize files into CSI Masterformat numbering system or other approved descriptive titles.
    - .3 Label disk "Operation and Maintenance Data", project name, date, names of Contractor, subcontractors, consultants and subconsultants.
    - .4 Include scanned guarantees, diagrams and drawings.

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- .5 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs (navigational buttons).
  - .6 Drawings, diagrams and manufacturer's literature must be legible.
  - .7 Refer to Mechanical and Electrical Divisions for specific details for Mechanical and Electrical data.
- .3 Maintenance Materials, Special Tools and Spare Parts:
- .1 Specific requirements for maintenance materials, tools and spare parts are specified in individual sections.
  - .2 Deliver maintenance materials, special tools and spare parts to Departmental Representative and store in designated area as directed by Departmental Representative.
  - .3 Prepare lists of maintenance materials, special tools and spare parts for inclusion in Manual specified in Clause 18.2.
  - .4 Maintenance materials:
    - .1 Deliver wrapped, identify on carton or package, colour, room number, system or area as applicable where item is used.
  - .5 Special tools:
    - .1 Assemble as specified;
    - .2 Include identifications and instructions on intended use of tools.
  - .6 Spare parts:
    - .1 Assemble parts as specified;
    - .2 Include part number, identification of equipment or system for which parts are applicable;
    - .3 Installation instructions;
    - .4 Name and address of nearest supplier.
- .4 Warranties and Bonds:
- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing in maintenance manual.
  - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
  - .4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Interim Completion is determined.
  - .5 Verify that documents are in proper form, contain full information, and are notarized.
  - .6 Retain warranties and bonds until time specified for submittal.



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**1.19 DEMONSTRATION AND TRAINING**

- .1 Demonstration and Training:
  - .1 Demonstrate operation and maintenance of equipment and systems to maintenance personnel following interim Completion and prior to date of final certificate of completion
  - .2 Departmental Representative will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

**1.20 GENERAL COMMISSIONING**

- .1 Commission installed systems prior to Demonstration and Training.

**END OF SECTION**

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## PART 1 GENERAL

### 1.1 Purpose

- .1 To ensure that both the construction project and the institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.

### 1.2 Purpose

- .1 "Contraband" means:
  - .1 an intoxicant, including alcoholic beverages, drugs and narcotics
  - .2 a weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization,
  - .3 an explosive or a bomb or a component thereof,
  - .4 currency over any applicable prescribed limit, \$25.00, and
  - .5 any item not described in paragraphs (a) to (d) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.
- .2 Unauthorized smoking and related Items@ means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing tobacco, cigarette making machines, matches and lighters.
- .3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.
- .4 "CSC" means Correctional Service Canada.
- .5 "Director" means Director or Warden of the Institution as applicable or their representative.
- .6 "Construction employees" means persons working for the general contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.
- .7 "Departmental Representative" means the Public Works and Government Services Canada representative defined in General Conditions.
- .8 "Perimeter" means the fenced or walled area of the institution that restrains the movement of the inmates.
- .9 "Construction zone" means the area, as indicated in the contract documents, that the contractor will be allowed to work". This area may or may not be isolated from the security area of the institution. Limits to be confirmed at construction start-up meeting.

### 1.3 Preliminary Proceedings

- .1 At construction start-up meeting:
  - .1 Discuss the nature and extent of all activities involved in the Project.

- .2 Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.
- .2 The Contractors' responsibilities:
  - .1 Ensure that all construction employees are aware of the CSC security requirements.
  - .2 Ensure that a copy of the CSC security requirements is always prominently on display at the job site.
  - .3 Co-operate with institutional personnel in ensuring that security requirements are observed by all construction employees.

#### 1.4 Construction Employees

- .1 Submit CPIC form and scanned copy of government issued ID for each employee to the Departmental Representative.
- .2 Allow 10 working days for processing of security clearances. Employees will not be admitted to the Institution without a valid security clearance in place and a recent picture identification such as a provincial driver's license. Security clearances obtained from other CSC institutions are not valid at this institution except as approved otherwise.
- .3 The Director may require that facial photographs may be taken of construction employees and these photographs may be displayed at appropriate locations in the institution or in an electronic database for identification purposes. The Director may require that Photo ID cards be provided for all construction workers. ID cards will then be left at the designated entrance to be picked upon arrival at the institution and shall be displayed prominently on the construction employees clothing at all time while employees are at the institution.
- .4 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.
- .5 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:
  - .1 appear to be under the influence of alcohol, drugs or narcotics.
  - .2 behave in an unusual or disorderly manner.
  - .3 are in possession of contraband.

#### 1.5 Vehicles

- .1 All unattended vehicles on CSC property must have windows closed; fuel caps locked, doors and trunks locked and keys removed. The keys must be securely in the possession of the owner or an employee of the company that owns the vehicle.
- .2 The director may limit at any time the number and type of vehicles allowed within the Institution.
- .3 Drivers of delivery vehicles for material required by the project will require security clearances and must remain with their vehicle the entire time that the vehicle is in the Institution. The director may require that these vehicles be escorted by Institutional staff or PWGSC Construction Escorts while in the Institution.
- .4 If the Director permits trailers to be left inside the secure perimeter of the Institution, the trailer doors must be locked at all times. All windows must be securely locked bars when

left unoccupied. Cover all windows with expanded metal mesh. When not in use lock all storage trailers located inside and outside the perimeter. All storage trailers inside and outside the perimeter must be locked when not in use.

#### **1.6 Parking**

- .1 The parking area(s) to be used by construction employees will be designated by the Director. Parking in other locations will be prohibited and vehicles may be subject to removal.

#### **1.7 Shipments**

- .1 To avoid confusion with the institution's own shipments, address all shipments of project material, equipment and tools in the Contractor's name and have a representative on site to receive any deliveries or shipments. CSC or PWGSC staff will **NOT** accept receipt of deliveries or shipments of any material equipment or tools for the contractor.

#### **1.8 Telephones**

- .1 The installation of telephones, facsimile machines and computers with Internet connections is not permitted within the Institution perimeter unless prior approved by the Director.
- .2 The Director will ensure that approved telephones, facsimile machine and computers with Internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an Internet connection to unauthorized personnel.
- .3 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, Blackberries, PDAs, telephone used as 2-way radios are not permitted within the Institution unless approved by the Director. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.
- .4 The Director may approve but limit the use of 2-way radios.

#### **1.9 Work Hours**

- .1 Work hours within the Institution are: conform to Division.
- .2 Work is not permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven days' advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waved by the Director.

#### **1.10 Overtime Work**

- .1 Conform to Division 1.
- .2 Provide 48 hours advance notice to Director for all work to be performed after normal working hours of the Institution. Notify Director immediately if emergency work is required, such as to complete a concrete pour or make the construction site safe and secure.

#### **1.11 Tools and Equipment**

- .1 Maintain a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required by the Institution.
- .2 Throughout the construction project maintain up-to-date the list of tools and equipment specified above.
- .3 Keep all tools and equipment under constant supervision, particularly power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device.
- .4 Store all tools and equipment in approved secure locations.
- .5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the contractor. Secure and lock scaffolding when not erected and when erected Secure in a manner agreed upon with the Institution designate.
- .6 Report all missing or lost tools or equipment immediately to the Departmental Representative/Director.
- .7 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
  - .1 At the beginning and conclusion of every work day or shift upon entering and exiting the Institution.
  - .2 At any time when contractor is on Institution property.
- .8 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The contractor will be given at the beginning of the day, a quantity that will permit one day's work. Used blades/cartridges will be returned to the Director's representative at the end of each day. Maintain up to date inventory of all used blades/cartridges.
- .9 If propane or natural gas is used for heating the construction, the institution will require that the contractor supervise the construction site during non-working hours.

#### 1.12 Keys

- .1 Security Hardware Keys.
  - .1 Arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).
  - .2 The SMO will provide a receipt to the Contractor for security hardware keys.
  - .3 Provide a copy of the receipt to the Departmental Representative.
- .2 Other Keys
  - .1 Use standard construction cylinders for locks for his use during the construction period.
  - .2 Issue instructions to employees and sub-trades, as necessary, to ensure safe custody of the construction set of keys.
- .3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:
  - .1 Prepare an operational keying schedule

- .2 Accept the operational keys and cylinders directly from the lock manufacturer.
- .3 Arrange for removal and return of the construction cores and install the operational core in all locks.
- .4 Upon putting operational security keys into use, the PWGSC construction escort will obtain these keys as they are required from the SMO and open doors as required by the Contractor. The Contractor shall issue instructions to his employees advising them that all security keys shall always remain with the PWGSC construction escort.

#### **1.13 Security Hardware**

- .1 Turn over all removed security hardware to the Director of the Institution for disposal or for safekeeping until required for re-installation.

#### **1.14 Prescription Drugs**

- .1 Employees of the contractor who are required to take prescription drugs during the workday shall obtain approval of the Director to bring a one day supply only into the Institution.

#### **1.15 Smoking Restrictions**

- .1 Smoking is not permitted inside correctional facilities or outdoors within the perimeter of a correctional facility and persons must not possess unauthorized smoking items within the perimeter of a correctional facility.
- .2 Persons in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist will be directed to leave the Institution.
- .3 Smoking is permitted outside the perimeter of a correctional facility in an area designated by the Director.

#### **1.16 Contraband**

- .1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on institutional property.
- .2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Director.
- .3 Contractors should be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of contraband may result in cancellation of the security clearance of the affected employee. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.
- .4 Presence of arms and ammunition in vehicles of contractors, sub-contractors and suppliers or employees of these will result in the immediate cancellation of security clearances for the driver of the vehicle.

#### **1.17 Searches**

- .1 All vehicles and persons entering institutional property may be subject to search.
- .2 When the Director suspects, on reasonable grounds, that an employee of the Contractor is in possession of contraband, he may order that person to be searched.

- .3 All employees entering the Institution may be subject to screening of personal effects for traces of contraband drug residue.

#### **1.18 Access and Removal from Institution Property**

- .1 Construction personnel and commercial vehicles will not be admitted to the institution after normal working hours, unless approved by the Director.

#### **1.19 Movement Vehicles**

- .1 Construction vehicles are not to leave the Institution until an inmate count is completed. Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:
  - .1 AM: 0745 hrs. to 1100 hrs.
  - .2 PM: 1300hrs. to 1530 hrs.
- .2 The contractor will advise the Director twenty four (24) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.
- .3 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC staff or PWGSC construction escorts working under the authority of the Director.
- .4 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.
- .5 Vehicles will be refused access to institutional property if, in the opinion of the Director, they contain any article which may jeopardize the security of the institution. Arrange with Director for parking of contractor=s vehicles at minimum security Institutions.
- .6 Private vehicles of construction employees will not be allowed within the security wall or fence of medium or maximum security institutions without the authorization of the Director.
- .7 With the approval of the Director, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with the battery removed. The Director may require that the equipment be secured with a chain and padlock to another solid object.

#### **1.20 Movement of Construction Employees on Institutional Property**

- .1 Subject to the requirements of good security, the Director will permit the Contractor and his employees as much freedom of action and movement as is possible.
- .2 However, notwithstanding paragraph above, the Director may:
  - .1 Prohibit or restrict access to any part of the institution.
  - .2 Require that in certain areas of the institution, either during the entire construction project or at certain intervals, construction employees only be allowed access when accompanied by a member of the CSC security staff or PWGSC Construction Escort Officer.

- .3 During the lunch and coffee/health breaks, all construction employees will remain within the construction site. Construction employees are not permitted to eat in the Institution cafeteria and dining room.

#### **1.21 Surveillance and Inspection**

- .1 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspection by CSC security staff members to ensure that established security requirements are met.
- .2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among construction employees and maintained throughout the construction project.

#### **1.22 Stoppage of Work**

- .1 The director may request at any time that the contractor, his employees, sub-contractors and their employees not enter or leave the work site immediately due to a security situation occurring within the Institution. The contractor's site supervisor will note the name of the staff member giving the instruction, the time of the request and obey the order as quickly as possible.
- .2 The contractor shall advise the Departmental Representative of this interruption of the work within 24 hours.

#### **1.23 Contact with Inmates**

- .1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any employee doing any of the above will be removed from the site and his security clearance revoked.
- .2 Digital cameras (or any other type) are not allowed on CSC property.
- .3 Notwithstanding the above paragraph, if the director approves of the use of cameras, it is strictly forbidden to take pictures of inmates, of CSC staff members or of any part of the Institution other than those required as part of this contract.

#### **1.24 Completion of Construction Project**

- .1 Upon completion of the construction project or, when applicable, the takeover of a facility, the Contractor shall remove all remaining construction material, tools and equipment that are not specified to remain in the Institution as part of the construction contract.

**END OF SECTION**



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## PART 1 - GENERAL

### 1.1 References

- .1 Government of Canada.
  - .1 Canada Labour Code - Part II
  - .2 Canada Occupational Health and Safety Regulations.
- .2 National Building Code of Canada (NBC):
  - .1 Part 8, Safety Measures at Construction and Demolition Sites.
- .3 Canadian Standards Association (CSA) as amended:
  - .1 CSA Z797-2009 Code of Practice for Access Scaffold
  - .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes
  - .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
- .4 National Fire Code of Canada:
  - .1 FCC No. 301, Standard for Construction Operations (as amended).
  - .2 FCC No. 302, Standard for Welding and Cutting (as amended).
  - .3 Part 5 – Hazardous Processes and Operations & Division B (as required).
- .5 National Building Code of Canada (NBCC 2005):
  - .1 Part 8, Safety Measures at Construction and Demolition Sites
- .6 American National Standards Institute (ANSI):
  - .1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.
- .7 Province of British Columbia:
  - .1 Workers Compensation Act Part 3-Occupational Health and Safety.
  - .2 Occupational Health and Safety Regulation

### 1.2 Related Sections

- .1 Refer to the following current NMS sections as required:
  - .1 Section 01 01 50 General Requirements

### 1.3 Workers' Compensation Board Coverage

- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
- .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

#### 1.4 Compliance with Regulations

- .1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

#### 1.5 Submittals

- .1 Submit to Departmental Representative submittals listed for review in accordance with Section 01 01 50.
- .2 Work effected by submittal shall not proceed until review is complete.
- .3 Submit the following:
  - .1 Health and Safety Plan.
  - .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
  - .3 Copies of incident and accident reports.
  - .4 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
  - .5 Emergency Procedures.
- .4 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 10 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.
- .5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.
- .6 Submission of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:
  - .1 Be construed to imply approval by the Departmental Representative.
  - .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
  - .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

#### 1.6 Responsibility

- .1 Assume responsibility as the Prime Contractor for work under this contract.
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

- .3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial, Territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

#### **1.7 Health and Safety Coordinator**

- .1 The Health and Safety Coordinator (Registered Occupational Hygienist, Certified Industrial Specified Hygienist) must:
  - .1 Be responsible for completing all health and safety training, and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.
  - .2 Be responsible for implementing, daily enforcing, and monitoring the site specific Health and Safety Plan.
  - .3 Be on site during execution of work.

#### **1.8 General Conditions**

- .1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
  - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
  - .2 Secure site at night time or provide security guard as deemed necessary to protect site against entry.

#### **1.9 Regulatory Requirements**

- .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

#### **1.10 Work Permits**

- .1 Obtain specialty permit related to project before start of work.

#### **1.11 Filing of Notice**

- .1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.
- .2 Provide copies of all notices to the Departmental Representative.

#### **1.12 Health and Safety Plan**

- .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

- 
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
    - .1 Primary requirements:
      - .1 Contractor's safety policy.
      - .2 Identification of applicable compliance obligations.
      - .3 Definition of responsibilities for project safety/organization chart for project.
      - .4 General safety rules for project.
      - .5 Job-specific safe work, procedures.
      - .6 Inspection policy and procedures.
      - .7 Incident reporting and investigation policy and procedures.
      - .8 Occupational Health and Safety Committee/Representative procedures.
      - .9 Occupational Health and Safety meetings.
      - .10 Occupational Health and Safety communications and record keeping procedures.
    - .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
    - .3 List hazardous materials to be brought on site as required by work.
    - .4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
    - .5 Identify personal protective equipment (PPE) to be used by workers.
    - .6 Identify personnel and alternates responsible for site safety and health.
    - .7 Identify personnel training requirements and training plan, including site orientation for new workers.
  - .3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
  - .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
  - .5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

### 1.13 Emergency Procedures

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
  - .1 Designated personnel from own company.
  - .2 Regulatory agencies applicable to work and as per legislated regulations.

- .3 Local emergency resources.
- .4 Departmental Representative.
- .2 Include the following provisions in the emergency procedures:
  - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
  - .2 Evacuate all workers safely.
  - .3 Check and confirm the safe evacuation of all workers.
  - .4 Notify the fire department or other emergency responders.
  - .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
  - .6 Notify Departmental Representative.
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:
  - .1 Work at high angles.
  - .2 Work in confined spaces or where there is a risk of entrapment.
  - .3 Work with hazardous substances.
  - .4 Underground work.
  - .5 Work on, over, under and adjacent to water.
  - .6 Workplaces where there are persons who require physical assistance to be moved.
- .4 Design and mark emergency exit routes to provide quick and unimpeded exit.
- .5 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

#### **1.14 Hazardous Products**

- .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 the Departmental Representative and in accordance with the Canada Labour Code.
- .2 Where use of hazardous and toxic products cannot be avoided:
  - .1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 01 50.
  - .2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.

#### **1.15 Electrical Safety Requirements**

- .1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.
  - .1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.

- .2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

#### **1.16 Electrical Lockout**

- .1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.
- .2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.
- .3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

#### **1.17 Overloading**

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

#### **1.18 Falsework**

- .1 Design and construct falsework in accordance with CSA S269.1.

#### **1.19 Scaffolding**

- .1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 Code of Practice for Access Scaffold and BC Occupational Health and Safety Regulations.

#### **1.20 Confined Spaces**

- .1 Carry out work in confined spaces in compliance with Provincial regulations.

#### **1.21 Power-Actuated Devices**

- .1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

#### **1.22 Fire Safety and Hot Work**

- .1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.
- .2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

#### **1.23 Fire Safety Requirements**

- .1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

#### 1.24 Fire Protection and Alarm System

- .1 Do not obstruct, shut-off or leave inactive at the end of a working day or shift, the fire protection and alarm systems.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.
- .3 Be responsible/liable for costs incurred from the fire department, and Departmental Representatives, resulting from false alarms.

#### 1.25 Unforeseen Hazards

- .1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

#### 1.26 Posted Documents

- .1 Post legible versions of the following documents on site:
  - .1 Health and Safety Plan.
  - .2 Sequence of work.
  - .3 Emergency procedures.
  - .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
  - .5 Notice of Project.
  - .6 Floor plans or site plans. Must be posted in a non-inmate access area and locked up when not being used.
  - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
  - .8 Workplace Hazardous Materials Information System (WHMIS) documents.
  - .9 Material Safety Data Sheets (MSDS).
  - .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

#### 1.27 Meetings

- .1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

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**1.28 Correction of Non-Compliance**

- .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
- .3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

**END OF SECTION**



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## **PART 1 GENERAL**

### **1.1 Description of Work**

- .1 Includes general requirements for commissioning facilities and facility systems.
- .2 Refer to sections of Mechanical, Electrical and Communications disciplines.

### **1.2 Definitions**

- .1 Acronyms:
  - AFD - Alternate Forms of Delivery, service provider.
  - BMM - Building Management Manual.
  - Cx - Commissioning.
  - EMCS - Energy Monitoring and Control Systems.
  - O&M - Operation and Maintenance.
  - PI - Product Information.
  - PV - Performance Verification.
  - TAB - Testing, Adjusting and Balancing.
- .2 Cx - a required program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved.

### **1.3 Quality Assurance**

- .1 Testing organization: current member in good standing of AABC certified to perform specified services.
- .2 Comply with applicable procedures and standards of the certification sponsoring association.
- .3 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

### **1.4 References**

- .1 Associated Air Balance Council (AABC): National Standards for Field Measurement and Instrumentation, Total Systems Balance, Air Distribution-Hydrionics Systems.

### **1.5 Submittals**

- .1 Prior to start of Work, submit name of organization proposed to perform services. Designate who has managerial responsibilities for coordination of entire testing, adjusting and balancing.
  - .1 Submit documentation to confirm organization compliance with quality assurance provision.
- .2 Submit 3 preliminary specimen copies of each of report forms proposed for use.
- .3 Ten (10) days prior to Substantial Performance, submit 3 copies of final reports on applicable forms.

- .4 Submit reports of testing, adjusting and balancing postponed due to seasonal, climatic, occupancy, or other reasons beyond Contractor's control, promptly after execution of those services.

#### **1.6 Procedures**

- .1 Comply with procedural standards of certifying association under whose standard services will be performed.
- .2 Notify Departmental Representative 3 days prior to beginning of operations.
- .3 Accurately record data for each step.
- .4 Report to Departmental Representative any deficiencies or defects noted during performance of services.

#### **1.7 Contractor's Responsibilities**

- .1 Prepare each system for testing and balancing.
- .2 Cooperate with testing organization and provide access to equipment and systems.
- .3 Provide personnel and operate systems at designated times, and under conditions required for proper testing, adjusting, and balancing.
- .4 Notify testing organization 7 days prior to time project will be ready for testing, adjusting, and balancing.
- .5 Commission cost to be borne by Contractor.

#### **1.8 Preparation**

- .1 Provide instruments required for testing, adjusting, and balancing operations.
- .2 Make instruments available to Departmental Representative to facilitate spot checks during testing.
- .3 Retain possession of instruments and remove at completion of services.
- .4 Verify systems installation is complete and in continuous operation.
- .5 Verify lighting is turned on when lighting is included in cooling load.
- .6 Verify equipment such as computers, laboratory and electronic equipment are in full operation.

#### **1.9 Final Reports**

- .1 Organization having managerial responsibility shall make reports.
- .2 Ensure each form bears signature of recorder, and that of supervisor of reporting organization.
- .3 Identify each instrument used, and latest date of calibration of each.

#### **1.10 Completion of Commissioning**

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx deliverables have been submitted and accepted by Departmental Representative.

**END OF SECTION**

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## PART 1 GENERAL

### 1.1 DESCRIPTION

- .1 The work in this section includes but is not limited to:
  - .1 General, applies to all buildings:
    - .1 Removal and recycling of metal flashings, stack flashing, drain components and related components to allow the installation of the new roof assembly as indicated on the drawings.
    - .2 Removal and disposal of existing scuppers and roof drains to accommodate replacement.
    - .3 Removal and temporary storage of roof top equipment to accommodate the installation of roofing at the concrete curbs.
  - .2 Building 102:
    - .1 Removal and disposal of existing gravel ballast, filter fabric, rigid insulation.
  - .3 Building 104:
    - .1 Removal and disposal of existing 2-ply SBS membrane assembly and fiber board.
    - .2 Removal and recycling of the existing steel ladders and guardrails.
  - .4 Building 105:
    - .3 Removal and disposal of existing 2-ply SBS membrane assembly and fiber board from all roof areas of the main building.
    - .4 Removal and disposal of existing fully adhered single ply (EPDM) roofing membrane from the small lower roof over welding shop on the east side of the main building.
  - .5 Building 108:
    - .5 Removal and disposal of existing gravel ballast and single ply (EPDM) roofing membrane.
    - .6 Removal and disposal of existing skylights.

### 1.2 REFERENCES

- .1 CSA-S350 “Code of Practice for Safety in Demolition of Structures”.
- .2 National Building Code of Canada 2010 (NBCC 2010)
- .3 National Energy Code of Canada for Buildings 2011 (NECB 2011)
- .4 Canadian Environmental Assessment Act (CEAA) 2012, c.37
- .5 Canadian Environmental Protection Act (CEPA) 1999, c. 33
- .6 Transportation of Dangerous Goods Act (TDGA) 1992, c. 34

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### 1.3 EXISTING CONDITIONS

- .1 Take over structures to be demolished based on their condition on the date that tender is accepted.
- .2 Items to be salvaged are to be carefully protected.
- .3 If hazardous material is encountered in the course of demolition work, stop work, take preventative measures, and notify the Consultant and/or the Departmental Representative immediately. Do not proceed until written instructions have been received from the Consultant and/or the Departmental Representative.
- .4 Unidentified hazardous material removal is additional work and will be paid either as an extra to the Contract Price in accordance with the General Conditions, or removed under a separate contract by the Consultant or Departmental Representative.
- .5 Verify site conditions prior to commencing the Work. Investigate site and building to determine removal work, processing and storage logistics required. Inspect work areas to verify extent and location of items designated for removal and disposal, or to remain. Locate and protect building systems, and preserve active systems.

### 1.4 DEMOLITION DRAWINGS

- .1 Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details showing sequence of disassembly work and supporting structures.
- .2 Submissions to bear stamp of qualified professional engineer registered in Province of British Columbia.

### 1.5 PROTECTION

- .1 Provide bracing and shoring as required to prevent movement, settlement or damage to the adjacent buildings and/or the adjacent parts of the existing buildings which are to remain.
- .2 Take all precautions to support affected structures and equipment. In the event that the safety of any structure appears to be endangered, cease operations and immediately notify the Consultant.
- .3 Prevent debris from blocking drainage system or from work activities affecting mechanical and electrical systems which must remain in operation. Provide Departmental Representative with sufficient notice should systems be affected or must cease operation or be de-energized.
- .4 Post adequate warnings and barricades around the holes caused by demolition or removal of materials.
- .5 Make good all damages caused by demolition.
- .6 The existing building will be occupied and operational be the Institution during work of this Contract. Maintain building access around the protected work areas.

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**PART 2 PRODUCTS (NOT APPLICABLE)**

**PART 3 EXECUTION**

**2.1 WORK**

- .1 Undertake an onsite Waste Audit and develop a Waste Reduction Work plan to indicate required actions for diverting solid waste from landfills for reuse and recycling.
- .2 Dispose of demolished materials, except where noted otherwise, in accordance with authorities having jurisdiction.

**2.2 SAFETY CODE**

- .1 Unless otherwise specified, carry out demolition work in accordance with Section 01001 - General Requirements and CSA-S350 “Code of Practice for Safety in Demolition of Structures”.
- .2 Comply with WCB Industrial Health and Safety regulations and Canada Labour Code of Canada Occupational Safety and Health Regulations.

**2.3 PREPARATION**

- .1 Disconnect and re-route electrical and telephone service lines in accordance with authorities having jurisdiction as indicated on the drawings. Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
- .2 Disconnect and cap designated mechanical services in accordance with authorities having jurisdiction. If disconnection of wire and/or gas line is required, the disconnected is to be made by qualified tradesman.
- .3 Do not disrupt active or energized utilities intended to remain undisturbed.
- .4 Notify Consultant when deteriorated materials are encountered in existing construction.

**2.4 DEMOLITION**

- .1 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
- .2 Where directed by the Consultant, remove the existing materials and replace with new matching materials.
- .3 At end of each day's work, leave work site in a safe condition so that no part is in danger of toppling or falling. Protect the interior areas not to be demolished from exterior elements at all times. Clean up and remove debris and materials not being reinstalled.

**END OF SECTION**

**Project No.: R.079715.001 – Building 102 (Library),**  
**Project No.: R.079716.001 – Building 104 (Principal Entrance)**  
**Project No.: R.079717.001 – Building 105 (Vocational Training)**  
**Project No.: R.079718.001 – Building 108 (Health Segregation)**  
**CSC William Head Institution Roofing Project, Metchosin, BC**

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**Section 02 41 13**  
**Selective Site Demolition**  
**Page 4 of 4**

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## **PART 1 GENERAL**

### **1.1 DESCRIPTION**

- .1 The work in this section includes but is not limited to:
  - .1 Replacement of wood blocking at roof parapets and curbs at buildings as indicated on the drawings.

### **1.2 REFERENCES**

- .1 ANSI-B18.6.4 “Screws, Tapping and Metallic Drive, Inch Series, Thread Forming and Cutting”.
- .2 CSA-B111 “Wire Nails, Spikes and Staples”.
- .3 CAN/CSA-G164 “Hot Dip Galvanizing of Irregularly Shaped Articles”.
- .4 CSA-O86.1 “Engineering Design in Wood”.
- .5 CSA-O86.1S1 “Supplement to CSA-O86.1”
- .6 CSA-O121 “Douglas Fir Plywood”.
- .7 CAN/CSA-O141 “Softwood Lumber”.
- .8 CSA-O151 “Canadian Softwood Plywood”.
- .9 CAN/CGSB-71.26 “Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems”.
- .10 ASTM-A153 “Zinc Coating (Hot Dip) on Iron and Steel Hardware”.
- .11 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.
- .12 National Building Code of Canada 2010 (NBCC 2010)
- .13 National Energy Code of Canada for Buildings 2011 (NECB 2011)

### **1.3 QUALITY ASSURANCE**

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.

## **PART 2 PRODUCTS**

### **2.1 LUMBER MATERIAL**

- .1 Lumber: unless specified otherwise, S4S, moisture content 19% or less in accordance with the following standards:
  - .1 CAN/CSA-O141 “Softwood Lumber”.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.

- .2 Lumber size and grade: as indicated on the drawings to suit configurations shown and in accordance with requirements of applicable codes.
  - .1 Dimensional lumber: D. Fir. or Hem-Fir No. 2 or better grade.
  - .2 Wood deck roof edge fascia: 2.0E LVL lumber 45mm x 356mm.
  - .2 Report any discrepancies in type and/or grading of existing lumber to Consultant.
- .3 Furring, blocking, nailing strips, cants, curbs, fascia backing and sleepers:
  - .1 Borated treated in accordance with Section 06070 - Wood Treatment.
  - .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 ACCESSORIES

- .1 Nails, spikes and staples: to CSA-B111 "Wire Nails, Spikes and Staples".
  - .1 Framing and sheathing nails: galvanized common nails to comply with wood frame construction requirements of applicable codes.
- .2 Screws: to ANSI-B18.6.4 "Screws, Tapping and Metallic Drive, Inch Series, Tread Forming and Cutting". All screws for wood to wood attachment to be #12 in lengths indicated on the drawings
- .3 Expansion Anchor Bolts for attachment of roof parapet and curb blocking to building concrete: 10 mm diameter, length as required to provide minimum 3" embedment into concrete; complete with nuts and washers.
- .4 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws, explosive actuated fastening devices - in accordance with purpose and instruction recommended by Manufacturer.
- .5 All fasteners shall be galvanized steel to CAN/CSA-G164 "Hot Dip Galvanizing or Irregular Shaped Articles" with a minimum zinc coating thickness of 45  $\mu\text{m}$  (320  $\text{g}/\text{m}^2$ ) - except fasteners for, or in ACQ treated wood, which shall be stainless steel.

## PART 3 EXECUTION

### 3.1 PREPARATION

- .1 All preservative treated dimension lumber including blocking, furring and cants are to be treated at an approved facility.
- .2 Where directed by Consultant, treat existing lumber and plywood which is exposed during the course of work but is not replaced with surface-applied wood preservative.
- .3 All new installation to meet current code requirements.

### 3.2 INSTALLATION OF NEW LUMBER

- .1 Install new lumber to suit configuration shown in drawings.



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- .2 Comply with wood frame construction requirements of applicable codes.
  - .3 All new members to be installed in longest length possible, stock to be minimum 4572mm lengths.
  - .4 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity. Fasten new lumber to existing or new as indicated in the drawings.
  - .5 Countersink bolts where necessary to provide clearance for other work maintaining minimum 20mm thickness of wood remaining in member.

### 3.3 INSTALLATION OF STRAPPING, FURRING AND BLOCKING

- .1 Wood blocking into concrete substrate: Install roof parapet blocking with expansion anchor bolts at 600mm centers. Countersink nut and washer maintaining a minimum 20mm of blocking thickness remaining.
- .2 Wood blocking into steel framing: Install roof parapet blocking with 6mm x 50mm screws @ 12"oc, stagger from side to side.
- .3 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .4 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.
- .5 Install sleepers as required to obtain necessary slope and/or venting requirements.

**END OF SECTION**

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## **PART 1 GENERAL**

### **1.1 DESCRIPTION**

- .1 The work in this section includes but is not limited to:
  - .1 Installation of rigid insulation package as indicated on the drawings.
  - .2 Installation of mineral wool fill at detail locations identified on drawings.
  - .3 Installation of batt insulation to steel framed roof curbs and parapets as identified on the drawings.
  - .3 Installation of spray foam insulation at detail locations identified on drawings.

### **1.2 REFERENCES**

- .1 CAN/CGSB-51.20 “Thermal Insulation, Polystyrene, Boards and Pipe Covering”.
- .2 CAN/CGSB-71.24 “Adhesive, Flexible, for Bonding Cellular Polystyrene Insulation”.
- .3 ASTM-C578 “Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation”.
- .4 ASTM-C1320 “Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction”.
- .5 ASTM-C167 “Standard Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations”.
- .6 National Building Code of Canada 2010 (NBCC 2010)
- .7 National Energy Code of Canada for Buildings 2011 (NECB 2011)

### **1.3 QUALITY ASSURANCE**

- .1 Only competent, qualified tradesmen experienced with insulation installation shall execute the work of this section.
- .2 Unless otherwise specified, comply with Manufacturer’s latest printed instructions for material usage, storage and installation method.
- .3 Notify Consultant in writing of any conflict between these specifications and Manufacturer’s instructions. Consultant will designate which document is to be followed.
- .4 Meet RCABC guarantee requirements.
- .5 Approved by the membrane manufacturers for full assembly warranty.

## **PART 2 PRODUCTS**

### **2.1 BATT INSULATION**

- .1 Non-combustible, lightweight, semi-rigid stone wool batt insulation to CAN/ULC-S702, Type 1. Material size to fit steel stud spacing and wall thickness. Performance criteria:
  - .1 Non-combustibility to meet CAN/ULC S114.

- .2 Surface Burning Characteristics to meet CAN/ULC S102 with Flame Spread = 0, Smoke developed =0.
- .3 RSI value / 25.4mm at 24°C = > 0.70 m<sup>2</sup> K/W

## 2.2 RIGID INSULATION

- .1 Conventional roof insulation: Closed-cell, polyisocyanurate foam core insulation bonded on each side to fiberglass facers during the manufacturing process, meeting CAN/ULC-S704 Type 2 or 3, Class 3 and ASTM C1289 Type II, Class 2, Grade 2. Board thicknesses as specified on the drawings. Performance Criteria as follows:
  - .1 Compressive Strength: To ASTM D1621, 138kPa minimum.
  - .2 Density: To ASTM D1622, not less than 32.0 kg/m<sup>3</sup>
  - .3 Dimensional stability: To ASTM D2126, < 0.5%
  - .4 Tensile Strength: To ASTM D1623, >35kPa
  - .5 Water Vapour Transmission: To ASTM E96, 225 ng/ Pa.s.m<sup>2</sup>.
  - .6 Moisture Resistance: To ASTM C1104, moisture sorption of 0.15 %.
  - .7 Non-organic facing material to meet ASTM D 3273 standards for mold resistance.

## 2.3 SEMI-RIGID INSULATION

- .2 Inorganic stone wool fiber with thermosetting resin binder formed into flexible semi-rigid insulating board for low slope roofing to ASTM C726 standard. Board thickness as specified on drawings. Performance Criteria as follows
  - .1 Fire Performance:
    - .1 Rated roof insulation: To FM Approval 4450/4470, Class 1-NCC (non-combustible core), Class 1-90.
    - .2 Non-combustibility: To CAN/ULC S114.
    - .3 External spread of flame on roof surface: To CAN/ULC S107, Class A.
    - .4 Thermal degradation and charring: To CAN/ULC S126.
    - .5 Surface Burning Characteristics: To CAN/ULC S102.
      - .1 Flame spread: 0.
      - .2 Smoke developed: 5.
  - .2 Water Vapour Transmission: To ASTM E96, 2330 ng Pa.s.m<sup>2</sup>.
  - .3 Moisture Resistance: To ASTM C1104, moisture sorption of 0.15 %.
  - .4 Water absorption less than 1.2 %: To ASTM C209.
  - .5 Thermal resistance: To ASTM C518,
    - .1 RSI 0.74 m<sup>2</sup>K/W at -4 °C.
    - .2 RSI 0.72 m<sup>2</sup>K/W at 4 °C.
    - .3 RSI 0.68 m<sup>2</sup>K/W at 24 °C.

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- .4 RSI 0.64 m<sup>2</sup>K/W at 43 °C.
  - .6 Hail damage resistance: To FM 4470, Class 1-SH.
  - .7 Impact resistance: To FM 4473, Class 4 and UL 2218, Class 4.
  - .8 Corrosive resistance: To ASTM C665, Corrosive to steel - Pass.
  - .9 Stainless steel stress corrosion: To ASTM C871 and ASTM C692.
  - .10 Compressive strength of entire board: To ASTM C165, at 10 %: 75 kPa.
  - .11 Density: To ASTM C612.
    - .1 Top layer: 220 kg/m<sup>3</sup>.
    - .2 Bottom layer: 160 kg/m<sup>3</sup>.
  - .12 Recycled content: [40] % minimum.
  - .13 Thickness: 3"
  - .3 Mineral wool insulation fill in gaps: Mineral wool fiber non-combustible insulation, no specific density.

#### 2.4 SPRAY FOAM INSULATION FOR GAP FILLER

- .1 Single or Two component quick cure polyurethane foam insulation / sealant to fill cavities, gaps and penetrations for air seal and insulation as indicated on the drawings. Performance criteria:
  - .1 Foam plastic density shall be between 1.0 - 2.0 pcf.
  - .2 Flame spread index less equal or less than 25 with smoke developed index of 450 or less when tested according to ASTM E84.

#### 2.5 ACCESSORIES

- .1 Mechanical fastener: Galvanized steel as specified by Manufacturer.
- .2 Adhesive for Insulation boards and coverboards: Low-rise two component polyurethane adhesive for bonding roof panels. To CAN/CGSB-71.24 "Adhesive, Flexible, for Bonding Cellular Polystyrene Insulation". Adhesive to be compatible with the materials which it is in contact with. Provide material from single manufacturer of the membrane system.

### PART 3 EXECUTION

#### 3.1 SURFACE PREPARATION

- .1 Examine substrates prior to commencement of Work. Surfaces to receive insulation shall be smooth, level, dry, clean, free from dust, dirt and other debris. Notify Consultant in writing of any defects.
- .2 Prepare all surfaces in strict accordance with Manufacturer's written instructions.

#### 3.2 BATT INSULATION INSTALLATION

- .1 Install insulation in strict accordance with Manufacturer's written instructions.

- .2 Install insulation in cavities as they are built.
- .3 Cut and fit insulation to provide a continuous thermal barrier. Fit insulation neatly around all penetrations.
- .4 Replace any damaged insulation.

### **3.3 RIGID INSULATION INSTALLATION**

- .1 Install polystyrene insulation boards on top of moisture barrier to maintain continuity of thermal protection to building elements and spaces.
- .2 Cut and trim insulation neatly to fit spaces. Butt joints tightly. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .3 Fit insulation tight around electrical boxes, pipes and ducts, around exterior doors and windows and other penetrations.
- .4 Keep insulation minimum 3” from heat emitting devices such as recessed light fixtures, and minimum 2” from sidewalls of chimneys and vents.
- .5 Stagger joints of the insulation boards where possible.
- .6 Fasten the insulation boards in place in accordance with Manufacturer’s written instructions.
- .7 Leave insulation board joints unbonded over line of expansion and control joints.

### **3.4 SEMI-RIGID INSULATION INSTALLATION**

- .1 Install semi-rigid insulation boards on top of existing EPS insulation to provide new continuous layer of thermal protection to building elements and spaces as indicated on the drawings.
- .2 Cut and trim insulation neatly to fit spaces. Butt joints tightly. Use only insulation boards free from damages. Use largest possible dimensions to reduce number of joints.
- .3 Fit insulation tight around electrical boxes, pipes and ducts, around exterior doors and windows and other penetrations.
- .4 Keep insulation away from heat emitting surfaces and devices in accordance with Manufacturer’s written instructions.
- .5 Adhesively fasten the insulation boards in place in accordance with Manufacturer’s installation recommendations.

### **3.5 SPRAY FOAM INSULATION INSTALLATION**

- .1 Remove loose or foreign matter which might impair adhesion of materials.
- .2 Install insulation in accordance with Manufacturer’s written instructions at locations indicated on drawings.
- .3 Apply insulation within recommended application temperature ranges.

**END OF SECTION**

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## **PART 1      GENERAL**

### **1.1      DESCRIPTION**

- .1      The work in this section includes but is not limited to:
  - .1      Installation of 2-ply modified bitumen membrane to all roof, upturn, curbs and roof parapet as indicated on the drawings and identified at each building as Roof Type R1 or R2.
  - .2      Installation of drains and scuppers.
  - .3      Provide the RCABC Ten (10) Year Warranty.
  - .4      Provide 20 year Manufacturers Warranty.

### **1.2      REFERENCES**

- .1      CSA-A123.4 “Asphalt for Use in Construction of Built-Up Roof Coverings and Waterproofing Systems.”
- .2      CGSB-37-GP-56M “Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.”
- .3      CGSB-37-GP-15M “Application of Asphalt Primer for Asphalt Roofing, Damproofing and Waterproofing.”
- .4      Roofing Contractors’ Association of B.C. (RCABC), Roofing Practices Manual. Where the word “should” is used, it shall read as “shall.”
- .5      National Building Code of Canada 2010 (NBCC 2010)
- .6      National Energy Code of Canada for Buildings 2011 (NECB 2011).

### **1.3      QUALIFICATIONS**

- .1      The Contractor shall have successfully completed similar work over a period of not less than five years and when required shall submit supporting documentation.
- .2      The Contractor must be officially recognized as an authorized contractor by the roofing materials manufacturer.
- .3      The Contractor is to be a member in good standing of the Roofing Contractors Association of British Columbia (RCABC).

### **1.4      QUALITY ASSURANCE**

- .4      Installer Qualifications: Only competent, qualified tradesmen experienced with membranes shall execute the work of this section.
- .5      Conform to the latest guarantee standards of the Roofing Contractors Association of British Columbia (RCABC) Roofing Practice Manual for a 10 (ten) year guarantee.
- .6      For the work, obtain primary materials from a single manufacturer which has produced that type of product and system successfully for not less than five years. Submit job references

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at the request of the owner. All accessory materials shall be only as recommended or accepted by the primary manufacturer.

- .7 Contractor's Field Supervision and Crew Qualifications: Contractor must maintain full-time supervisor/foreman on the job during times roofing work is in progress. Supervisor must have roofing trade certification and have minimum five years' experience in roofing work similar in nature and scope of specified roofing. Roofing crew makeup shall be trade qualified journeyman roofers and register apprentices in the ratio of no more than one to one (at least one journeyman to one apprentice). Qualifications may be reviewed prior to award of contract or on site by the inspector.
- .8 Contractor Certification: Provide written certification from the membrane manufacturer certifying that the roofing contractor is approved by the manufacturer for installation of the specified system and can supply the required guarantee documents for as long as 20 years. Roofing installers shall be experienced in the application of the materials and shall supply job references to show modified bitumen installation experience of similar size and scope of this project.
- .9 Confirm that surfaces to which modified membrane is to be applied are in a condition suitable for this application. The commencement of roofing or flashing will imply unconditional acceptance of the surfaces to receive work of this section.
- .10 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .11 Notify Consultant in writing of any conflict between these specifications and manufacturers instructions. Consultant will designate which document is to be followed.

## **1.5 LABORATORY TESTING**

- .1 If required by Consultant, Manufacturers is to provide, at no cost, the results of tests and chemical analysis on the materials supplied.
- .2 Tests are conducted to verify conformance to CGSB 37-GP-56M "Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing."

## **1.6 JOB MOCK-UP**

- .1 If required by Consultant, prepare mock-up in accordance with Section 01001 - General Requirements. The mock-up sample shall be a minimum of 3 meters by 3 meters in size and shall include all associated metal flashing.

## **1.7 ENVIRONMENTAL REQUIREMENTS**

- .1 No work to be carried out under conditions of rain or snow.
- .2 Before commencing work, Contractor to ensure that forecasted meteorological conditions shall permit work to be carried out without interruption during the course of the day.
- .3 Do not install membrane when temperature remains below +5°C for torch application, or an equivalent temperature allowing for wind chill factor.
- .4 Minimum temperature for solvent-based adhesive is -5°C.

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- .5 Install membrane on dry substrates, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into waterproofing system.
  - .6 Protect all work at the end of each working day or during any interruption of work.
  - .7 If water penetrates through the assembly due to inadequate protection, Contractor to cut and inspect damages, remove, replace and re-install all materials at his own cost, to eliminate water in the assembly.
  - .8 Entire roof must be watertight at end of each work shift.

#### **1.8 PROTECTION**

- .1 A minimum of one 4A40BC fire extinguisher with current charge tags intact is required for each torch on the roof. The extinguisher at all times, shall be within 6m of the worker using the torch. The worker shall be able to demonstrate verbal competence in the use of the extinguisher upon the request of the consultant. Be advised the project may be delayed or shut down for non-compliance.
- .2 Do not store any roofing or equipment within 100 feet of the building when the roofing crew is not on site.
- .3 Maintain fire watch for two hours after each day's waterproofing operations cease.

#### **1.9 WARRANTY**

- .1 Provide the Owners, through the Membrane Manufacturer a material guaranty stating this roofing system shall provide a waterproof surface for twenty (20) years after installation. The warranty shall cover both material and workmanship and shall not exclude random areas of ponding from coverage.
- .2 Provide the Owners the Ten (10) Year RCABC Warranty. Include for all related fees in the bid price (the Administration and Re-inspection costs and the construction inspection costs are to be included). The Owners have assigned the construction inspection services to MH.

#### **1.10 COMPATABILITY**

- .1 Compatibility between components of the roofing system is essential. When required by Consultant, provide written declaration from Manufacturer to the Consultant stating that materials and components, as assembled in system, meet this requirement.

#### **1.11 MANUFACTURER'S REPRESENTATIVE**

- .1 At the request of the Consultant, the Manufacturer's representative will visit the site and provide in writing to the Consultant a report of their observations noted.
- .2 Contractor to permit and facilitate access to site, at all times, for the above-mentioned Manufacturer's representative.



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### 1.12 PRE-INSTALLATION STARTUP MEETING AT WILLIAM HEAD INSTITUTION

- .1 Prior to commencing work on the roof, convene a pre-installation meeting with the Departmental Representative, the Consultant, roofing project manager and foreperson, roofing system manufacturer's representative and facility operators. Contractor to provide minutes for the meeting.
- .2 Review and confirm all requirements for security, access, vehicle use for materials, storage on site, methods and procedures relating to the roofing installation including the manufacturer's written instructions.
- .3 Review construction schedule and confirm availability and delivery of materials, trades and installers, equipment to provide continuous service and progress.
- .4 Review quality control procedures and technical representative's schedule for review of the work.
- .5 Review installation procedures and examine existing roof and notify any conditions that may affect the progress of the work.
- .6 Review and confirm structural loading limitations of the roof deck during and after the roofing.
- .7 Review drainage, base of wall penetrations, curbs, mechanical and electrical work and other conditions that affects the new roofing installation.
- .8 Review temporary protection requirements for finished work and for the building necessary during the replacement process.

### 1.13 JOB MOCK-UP

- .1 Prior to the pre-installation meeting provide the Consultant with lists of all materials to be installed.
- .2 Provide samples of each material including color samples of cap sheets, flashings and walkways.

## PART 2 PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- .1 General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
  - .1 Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
  - .2 Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

- .2 Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- .3 Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures:
  - .1 Corner Uplift Pressure: -2.8 kPa/sq. m. (-59 lbf/sq. ft.)
  - .2 Perimeter Uplift Pressure: -1.4 kPa/sq. m. (-30 lbf/sq. ft.)
  - .3 Field-of-Roof Uplift Pressure: -1.1 kPa/sq. m. (-23 lbf/sq. ft.)
  - .4 FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system, and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
  - .5 Fire/Windstorm Classification: Class 1A-90
  - .6 Hail-Resistance Rating: MH.
  - .7 Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - .8 Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

## 2.2 WATERPROOFING MEMBRANE

- .1 Torch applied or Self-adhered base sheet: high performance semi-adhered modified bitumen base ply designed for use in homogeneous multi-layer modified bitumen composite roof membrane systems that consists of a lightweight random fibrous glass mat or composite reinforcement coated with elastomeric Styrene-Butadiene-Styrene (SBS) modified bitumen. Self adhesive base sheet to include a back surface with factory applied heat-activated adhesive strips. Base sheet stripping to consist of fully adhered modified bitumen base ply. Top surface consists of thermofusible polyolefin film. Conforms to ASTM D 6163, Grade S, Type I or II, SBS-modified asphalt sheet. Tested according to CGSB 37.56-M or ASTM D 5147:
  - .1 Membrane thickness: Not less than 2.5mm.
  - .2 Low temperature flexibility: pass to less than -25°C.
  - .3 Ultimate elongation @ 23°C: greater than 50%
  - .4 Dimensional Stability (max): 0.1%
- .2 Cap sheet and cap sheet stripping: high performance modified bitumen finish ply designed for use in multi-layer modified bitumen roof membrane systems that consists of fiberglass scrim/polyester composite mat coated with high quality Styrene-Butadiene-Styrene (SBS) modified bitumen and surfaced with ceramic granules. Top surface consists of thermofusible polyolefin film. Conforms to ASTM D 6162, Grade G, Type I or II, SBS-

modified asphalt sheet (reinforced with a combination of polyester fabric and glass fibers).  
Testing according to CGSB 37.56-M or ASTM D 5147:

- .1 Membrane thickness: Not less than 3.5mm.
  - .2 Membrane thickness at selvage edge: not less than 3.0mm.
  - .3 Low temperature flexibility: pass to less than -25°C.
  - .4 Ultimate elongation @ 23°C: greater than 50%
  - .5 Dimensional Stability (max): 0.1%
  - .6 Granule Embedment (maximum individual loss): 2.0 grams per sample
- .3 Liquid Membrane: Liquid applied membrane consisting minimum two coats of two component PMMA liquid coating encapsulating a layer of polyester fleece. Testing according to ASTM D 5147:
- .1 Membrane thickness: Not less than 2.9 mm.
  - .2 Peak load @ 23°C: greater than 10kN/M
  - .3 Low temperature flexibility: pass to less than -25°C.
  - .4 Elongation @ peak load: greater than 40%
  - .5 Dimensional Stability (max): 0.1%
- .4 Accessories: All waterproofing accessories to be provided by same manufacturer and approved by them for full system warranty.

### 2.3 ROOFING ACCESSORIES

- .1 All accessories are to be proprietary or purpose fabricated by the manufacturer for specific roof penetrations. These flashings are to be a single continuous metal piece or if multiple piece, shall have fully soldered hot weld seams for torch on roofing continuing up to higher than 8" above roof level. Manufacturer to provide a warranty the product will be free of any manufacturing defects for 10 Years.
- .2 Commercial spun copper or aluminum (non-ferrous) drain with minimum 18" flange conforming to CSA-B79-08. Drain to include:
  - .1 Removable cast aluminum strainer
  - .2 Removable aluminum clamping and mounting ring.
  - .3 Stainless steel fasteners
  - .4 Proprietary U-flow connection to existing rainwater leader or drainpipe.
- .3 Plumbing Stack Flashing: One piece heavy gauge spun aluminum Plumbing Vent Flashing complete with vandleproof spun aluminum caps and minimum 4" flange adhesion surface conforming to CSA-G272-93. To suit existing vent stack and be a minimum 8" above the finished roof system.
- .4 Wall Scuppers: According to RCABC Roofing Practices Manual with adequate length to penetrate parapet wall and fabricated from minimum 0.820mm thick copper sheet.

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- .5 Walkway surface: Roof membrane Manufacturers purpose fabricated protective course for roof applications.
    - .1 Minimum 0.75m wide
    - .2 Granular surface with minimum 5mm thickness.
    - .3 Polyester fabric reinforcing
  
  - .6 Gypsum fiber roof board: to provide an acceptable bonding surface and support over steel roof decks and over the rigid insulation package. To be adhesively fastened to insulation per manufacturer's requirements in locations as required by the roofing manufacturer's representative and the Consultant. Impact resistant, non-structural non-organic fiber reinforced moisture and mold resistance gypsum panels with non-asphaltic coating to conform to ASTM C1278.
    - .1 Size: Nominal 4'x8'x1/2" thick square edge.
    - .2 Compressive strength: >500psi.
    - .3 Linear variation with Change in Temperature or Moisture:  $< 5.0 \times 10^{-5} \text{ mm/mm/C}^\circ$
  
  - .7 Liquid coating for roof edge hazard warning: Provide yellow line with single coat PMMA liquid coating.
  
  - .8 Air / Vapour sheet membrane: self-adhesive SBS modified bitumen membrane with polyethylene facer complete system with primer and sealants:
    - .1 Thickness: not less than 0.8mm
    - .2 Water vapour permeance: ASTM E96 (Procedure B), less than 50.0 ng/Pa.s.m<sup>2</sup>
    - .3 Air permeability: ASTM E2178, < 0.001L/sm<sup>2</sup>
    - .4 Water absorption: ASTM5147, 0.1% max

### **PART 3 EXECUTION**

#### **3.1 WORKMANSHIP**

- .1 Do waterproofing work in accordance with applicable standard in Roofing Contractors' Association of B.C., Roofing Practices Manual.
- .2 Do priming for asphalt waterproofing in accordance with CGSB-37-GP-15M "Application of Asphalt Primer for Asphalt Roofing, Damproofing and Waterproofing."
- .3 Install waterproofing elements on clean dry substrate in accordance with the Manufacturer's written instructions.
- .4 Waterproofing work shall be scheduled and performed in a sequence such that no component of the assembly is left unprotected when operations are interrupted.
- .5 Install all roofing accessories and components according to manufacturer's written instructions.

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### 3.2 PLANT AND EQUIPMENT

- .1 Maintain all equipment and tools in good working order.
- .2 Use torch type recommended by the manufacturer of the elastomeric asphalt membranes.

### 3.3 REMOVALS

- .1 Remove all existing materials required to install new waterproofing as shown on the drawings including all existing stone ballast, metal flashings, fiberboard, membrane flashing and membrane, and vapour retarder layer down to the existing steel or concrete roof deck.
- .2 Sweep deck completely clean of loose debris just before commencing waterproofing work.
- .3 Maintain waterproofing in a watertight condition. Ensure membrane is watertight at end of each shift.

### 3.4 PREPARATION OF CURBS AND PARAPETS

- .1 Remove all existing membrane flashing and blocking. Install new blocking as detailed and raise existing curbs to minimum profiles and slope as indicated on drawings.

### 3.5 EXAMINATION OF WATERPROOFING ELEMENTS

- .1 Prior to commencement of work ensure:
  - .1 Decks have vapour retarder layer removed and are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris.
  - .2 Curbs have been built and decks have been constructed in accordance with the drawings.
  - .3 Plywood and lumber nailer plates have been installed to deck, walls, curbs and parapets as indicated.

### 3.6 PRIMER

- .1 Install Primer to all substrates where membrane is to be applied at a rate in accordance with Manufacturer's instructions.

### 3.7 MEMBRANE

- .1 Installation of base sheet:
  - .1 Base sheet membrane shall be unrolled dry on deck for alignment.
  - .2 Base sheet shall be unrolled starting from the low point of the roof. Base sheet shall be re-rolled from both ends. Care must be taken to ensure good alignment of the first roll (parallel with the edge of the roof).
  - .3 Where the base sheet is being tied into an existing membrane the existing membrane is to be degranulated 16" back from termination.

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- .4 Base sheet shall be adhered in accordance with recommendations of the membrane manufacturer. During this application, under surfaces shall be melted, forming an asphalt bead that shall be pushed out in front of the base sheet.
  - .5 Care must be taken not to burn the membrane.
  - .6 Base sheet shall have side laps of 75 mm and end laps 150 mm.
  - .7 Heat seal all joints and overlaps
  - .8 Application shall provide a smooth surface without air pockets, wrinkles, fish-mouths or tears.
  - .9 After installation of the base sheet, check all lap seams on the base sheet.
- .2 Installation of base sheet stripping:
    - .1 Primer coating must be dry before application of the base sheet stripping.
    - .2 Base sheet stripping shall be laid in strips one meter wide to vertical surfaces, extending on to the flat surface of the roof a minimum of 100mm. Side laps shall be 75mm and shall be staggered a minimum of 100mm with the laps of the base sheet.
    - .3 Base sheet stripping shall be torch welded or adhered directly on its support from bottom to top. Torch welding shall soften the underside of the base sheet without overheating, resulting in a uniform adhesion over the entire surface. When allowed by the support, the base sheet top edge shall be nailed on 300mm centers.
- .3 Installation of cap sheet:
    - .1 Once the base sheet and stripping has been applied and does not show any defects, the cap sheet can then be laid.
    - .2 Cap sheet shall be unrolled starting from the low point on the roof. Cap sheet shall be re-rolled from both ends prior to torching. Care must be taken to ensure alignment of the first roll (parallel with the edge of the roof).
    - .3 Cap sheet shall be torch welded in accordance with the recommendations of the membrane manufacturer, to the base sheet membrane. During this application, both surfaces shall be simultaneously melted, forming an asphalt bead that shall be pushed out in front of the cap sheet.
    - .4 Care must be taken not to burn the membranes, and their respective reinforcements.
    - .5 Base and cap sheet seams shall be staggered a minimum of 300 mm.
    - .6 Cap sheet shall have side laps of 75 mm and end laps of 150 mm.
    - .7 Make sure the two membranes are properly welded, without air pockets, wrinkles, fish-mouths or tears.
    - .8 After installation of the cap sheet, check all lap seams on the cap sheet.
    - .9 During installation, care must be taken to avoid asphalt seepage greater than 5 mm at seam.

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- .4 Installation of cap sheet stripping:
    - .1 Cap sheet stripping shall be laid in strips one meter wide. Side laps shall be 75mm, and shall be staggered a minimum of 100mm from cap sheet laps in order to avoid excessive thickness.
    - .2 Using a chalk line, lay-out a straight line on the cap sheet surface, parallel to roof edge, 200mm inside roof, from base of wall.
    - .3 Cap sheet stripping shall be torch welded directly on its base sheet proceeding from bottom to top. Torching shall soften the two membranes and ensure a uniform weld.
    - .4 Cap sheet stripping shall be applied to extend down outside face of exterior edge, across top of parapet, down interior vertical surface and on to flat roof a distance of 150mm. Cut roll into required lengths and use width of roll (1 meter) down length of roof, maintaining specified 75mm side laps.
  - .5 Installation of Protective Walkway:
    - .1 Provide panels sections and layout as indicated in the drawings.
    - .2 Allow 50mm gaps between sections to allow for drainage.
    - .3 Adhere to roof membrane according to the manufacturers directions.

### 3.8 SEALING

- .1 Apply sealant where shown and/or required by common roofing practice.
- .2 Perform sealing in compliance with the workmanship, preparation and application requirements specified.

### 3.9 FIELD QUALITY CONTROL

- .1 The roofing contractor is responsible to notify manufacturer at commencement of roofing.
- .2 Manufacturer will provide periodic inspections during roofing applications, as required.
- .3 Inspection of completed base sheet is mandatory.
- .4 The roofing contractor is required to notify manufacturer at the base sheet stage of application and is not to proceed with application of cap sheet until base sheet application has been approved by manufacturer in writing.
- .5 Manufacturer is to be notified upon completion of the roofing and will provide final inspection before the guarantee is issued.
- .6 Deficiencies apparent upon final inspection must be corrected to the satisfaction of manufacturer prior to the guarantee being issued.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 DESCRIPTION**

- .1 The work in this section includes but is not limited to the fabrication and installation of:
  - .1 Metal flashings as indicated on the drawings.

### **1.2 REFERENCES**

- .1 CSSBI-S8 “Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products”.
- .2 ASTM-A924/A924M “Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process”.
- .3 ASTM-B32 “Standard Specification for Solder Metal”.
- .4 ASTM-B69 “Standard Specification for Rolled Zinc”.
- .5 ASTM-B370 Standard Specification for Copper Sheet and Strip for Building Construction
- .6 ASTM-D822 “Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings”
- .7 CSA-B111 “Wire Nails, Spikes and Staples”.
- .8 CAN/CGSB-93.1M “Sheet Aluminum Alloy, Prefinished, Residential”
- .9 CAN/CGSB-1.171 “Inorganic Zinc Coating”.
- .10 ASTM-A653/A653M “Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process”.
- .11 Aluminum Association Designation System for Aluminum Finishes.
- .12 Aluminum Association Aluminum Sheet Metal Work in Building Construction.
- .13 CSSBI-20M “Standard for Sheet Steel Cladding for Architectural Industrial and Commercial Building Application”.
- .14 Roofing Practices Manual, Roofing Contractors Association of British Columbia (RCABC).
- .15 National Building Code of Canada 2010 (NBCC 2010)
- .16 National Energy Code of Canada for Buildings 2011 (NECB 2011)

### **1.3 SUBMITTALS**

- .1 Submit 200mm length samples of each type of sheet metal flashing, colour, finish and profile specified as well as samples of all related accessories and fasteners in accordance with Section 01001 - General Requirements.

### **1.4 MOCK-UPS**



- .1 Prepare mock-up of each type of profile specified in accordance with Section 01001 - General Requirements as part of the actual wall. The sample shall contain trim, stops and closures. The mock-up shall be a minimum of 300mm in length.

## **PART 2 PRODUCTS**

### **2.1 SHEET METAL COMPONENTS**

- .1 Zinc coated steel sheet: Quality to ASTM-A924/A924M “Standard Specification for General Requirements for Steel Sheet, Metallic Coated by Hot-Dip Process”, 24 gauge thickness with Z275 designation zinc coating.
- .2 Aluminum-Zinc alloy coated steel sheet: Quality to ASTM-A924/A924M “Standard Specification for General Requirements for Steel Sheet, Metallic Coated by Hot-Dip Process”, 24 gauge thickness with AZM150 designation coating.
- .3 Aluminum sheet: Quality to CAN/CGSB-93.1 “Sheet, Aluminum Alloy, Prefinished, Residential”, 20 gauge thickness unless noted otherwise.
- .4 Copper sheet: Quality to ASTM-B370 “Standard Specification for Copper Sheet and Strip for Building Construction”, 0.56mm thick, H00 temper designation with minimum mass of 5.4 kg/m<sup>2</sup>.

### **2.2 PRE-FINISHED SHEET STEEL COMPONENTS**

- .1 Pre-finished steel with factory applied 70% flouropolymer (Kynar or equal) based coating.
  - .1 Class F1S.
  - .2 Colour to be selected by Owner from Manufacturer's standard range.
  - .3 Specular gloss: 30 units +/- 5 in accordance with ASTM-D523 “Standard Test Method for Specular Gloss”.
  - .4 Coating thickness: not less than 200 micrometres.
  - .5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 “Standard Practice for Conducting Tests on Paint and Related Coatings and Materials Using Filtered Open Flame Carbon-Arc Exposure Apparatus” as follows:
    - .1 Outdoor exposure period 5000 hours.
    - .2 Humidity resistance exposure period 5000 hours.

### **2.3 ACCESSORIES**

- .1 Isolation coating: Alkali resistant bituminous paint.
- .2 Pop-rivets: Of same material as sheet metal, of length and thickness suitable for metal flashing application.
- .3 Fasteners: Of same material as sheet metal, to CSA-B111 “Wire Nails, Spikes and Staples”, ring thread flat head roofing nails of length and thickness suitable for metal flashing application. Covered fasteners to be hot dipped galvanized or equal; exposed fasteners to be stainless steel Type 316.

- .4 Washers: Of same material as sheet metal, 1mm thick with rubber packings.
- .5 Solder: To ASTM-B32 “Standard Specification for Solder Metal”.
- .6 Flux: Rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.
- .7 Touch-up paint: As recommended by prefinished material Manufacturer.

#### **2.4 GENERAL FABRICATION**

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable RCABC details and as indicated on drawings.
- .2 Form pieces in 3.04 M maximum lengths. Make allowance for expansion at joints.
- .3 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .4 Hem exposed edges on underside 12mm.
- .5 Mechanically fasten minimum 3” flanges where cap flashings intersect walls.

#### **2.5 METAL FLASHING**

- .6 Form all flashing and copings from 24 gauge pre-finished steel to profiles as indicated on drawings.

#### **2.6 DOWNSPOUTS**

- .1 Form downspouts from zinc or pre-finished aluminum sheet metal.
- .2 Downspouts size: rectangular 50mm by 75mm
- .3 Provide goosenecks, elbows, outlets, drop outlets, strainer baskets and all necessary fasteners.

#### **2.7 SCUPPERS**

- .1 Form scuppers from copper sheet metal to profiles indicated. Contractor is to confirm the compatibility of scupper with waterproofing membrane.
- .2 Solder all joints in scupper construction.

### **PART 3 EXECUTION**

#### **3.1 GENERAL INSTALLATION**

- .1 Install sheet metal work in accordance with RCABC details, and Aluminum Sheet Metal Work in Building Construction as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal. Secure in place and lap joints 100mm.

### 3.2 FLASHING

- .1 Connect flashing joints with S-locks or standing seams forming tight fits over hook strips.
- .2 Install sealant at all joints not installed over a self-adhesive membrane counter flashing.
- .3 Lock end joints and caulk with sealant.
- .4 Provide flashing with soldered or continuously folded end-dams. Folded end-dams must be done in a fashion to eliminate pin hole penetrations after fold.
- .5 Provide folded end-dams at window/door head and sill flashing terminations.
- .6 Install vent hood with adapter in accordance with drawings at existing pipe and duct outlets.

### 3.3 DOWNSPOUTS

- .1 Install downpipes and provide goosenecks back to wall. Secure downpipes to wall with straps at 1800mm oc; minimum two straps per downspout.
- .2 Provide concrete splash blocks at locations where downspouts are not connected to drains.

### 3.4 SCUPPERS

- .1 Install scuppers as indicated on drawings with slope to drain.
- .2 Lap deck membrane and seal to scupper.
- .3 Connect scupper to downspout.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 DESCRIPTION**

- .1 The work in this section includes but is not limited to:
  - .1 Installation of sealant on all aspects of the project and as indicated in the drawings.

### **1.2 REFERENCES**

- .1 CAN/CGSB-19.24 “Multi-component, Chemical Curing Sealing Compound”.
- .2 CAN/CGSB-19.18, “Sealing Compound, One-Component, Silicone Base, Solvent Cure”.
- .3 Manufacturer’s installation instructions.
- .4 ASTM Specification C1184 for structural silicone sealants
- .5 National Building Code of Canada 2010 (NBCC 2010)

### **1.3 SAMPLES**

- .1 Submit samples of each type of material and color in accordance with Section 010150 – General Instructions.

### **1.4 MOCK-UP**

- .1 Construct mock-up in accordance with Section 010150 - General Instructions to show location, size, shape and depth of joints complete with back-up material, primer and sealant.

### **1.5 ENVIRONMENTAL AND SAFETY REQUIREMENTS**

- .1 Construct mock-up in accordance with Section 010150 - General Instructions to show location, size, shape and depth of joints complete with back-up material, primer and sealant.
- .2 Conform to all Manufacturer's recommendations regarding installation, temperature, relative humidity, substrate moisture content for application and curing, and other special conditions governing use.

### **1.6 COMPATIBILITY**

- .1 Compatibility between components is essential. When required, provide written declaration from Manufacturer to the Consultant stating that materials and components, as assembled in system, meet this requirement.
- .2 Contractor to confirm compatibility of sealant with adjacent materials prior to application.

### **1.7 MANUFACTURER’S REPRESENTATIVE**

- .1 At the request of the Consultant, the Manufacturer’s representative will visit the site and provide in writing to the Consultant a report of their observations noted.

- .2 Contractor to permit and facilitate access to site, at all times, for above mentioned Manufacturer's representative.

## **PART 2 PRODUCTS**

### **2.1 SEALANT MATERIAL QUALIFICATION**

- .1 Sealant acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with the installation of primers, the proper primers are to be used.

### **2.2 SEALANT MATERIALS**

- .1 Sealant Type 1: Silicone, one part, non-sag.
  - .1 Comply with ASTM C 920, Type S, Grade NS, Class 50 and ASTM C 1184.
  - .2 Movement capability: +/- 50%.
  - .3 Non-staining testing per ASTM C 1248.
- .2 Sealant Type 1: Silicone, single component, neutral cure for high temperature application. Acceptable material:
  - .1 Comply with ASTM E814, ASTM E84, ASTM E1966 and CAN4-S115M.
  - .1 Movement capability: minimum +/- 30%.
- .3 Primers: As recommended by each sealant Manufacturer
- .4 Backing Material: Pre-formed compressible and non-compressible, polyethylene, urethane, neoprene or vinyl foam.
  - .1 Extruded closed cell foam backer rod.
  - .2 Size: oversize 30 to 50%.
- .5 Bond Breaker Tape: Polyethylene bond breaker tape which will not bond to sealant or bond breaker as recommended by the sealant manufacturer (in writing, if requested by the Consultant).

### **2.3 SEALANT SELECTION**

- .1 Exterior sealant joints with joint widths greater than ¾": Sealant Type 1.
- .2 Exterior sealant joints with joint widths less than ¾": Sealant Type 1.
- .3 Sealant joints at locations where high temperature sealant application is required: Sealant Type 2.

### **2.4 JOINT CLEANER**

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

## **PART 3 EXECUTION**

### **3.1 PREPARATION OF JOINT SURFACES**

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful substances including dust, rust, oil, grease, and other matters which may impair the work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with Manufacturer's recommendations.

### **3.2 PRIMING**

- .1 Mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant Manufacturer's instructions immediately prior to caulking.

### **3.3 BACKUP MATERIAL**

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

### **3.4 MIXING**

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

### **3.5 APPLICATION**

- .1 Sealant Application.
  - .1 Apply sealant in accordance with Manufacturer's written instructions respecting maximum and minimum joint dimensions.
  - .2 Mask edges of joint to provide neat joint.
  - .3 Apply sealant using gun with proper nozzle size.
  - .4 Apply by pushing the sealant ahead of the application nozzle using adequate pressure to fill the entire joint.
  - .5 Apply sealant in continuous beads.
  - .6 Use sufficient pressure to fill voids and joints completely.
  - .7 Form surface of sealant joint with a smooth and full bead of sealant. It is to be free from ridges, wrinkles, sags, air pockets and embedded impurities.

- .8 Tool exposed surfaces before skinning begins to give proper concave shape.
- .9 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
  - .1 Allow sealant to cure in accordance with sealant Manufacturer's instructions.
  - .2 Do not cover up sealant 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 Halocarbons

- .1 Comply with all of:
  - .1 Federal Halocarbon Regulations, 2003;
  - .2 *Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems* (the Environment Canada “Refrigeration Code of Practice”) Cat. No.: En14-207/2015E-PDF. April, 2015.
- .2 Work on Halocarbon Systems includes installation, servicing, leak testing, charging and/or decommissioning of a refrigeration system or an air-conditioning system or doing any other work on the system that may result in the release of a halocarbon.
- .3 All work on Halocarbon Systems shall be carried out only by a “Certified Person” as defined by the Federal Halocarbon Regulations 2003.
  - .1 Provide copies of all technicians’ certificates to the Departmental Representative.
- .4 Halocarbons listed under Item 1 through 10 of Schedule 1 of Federal Halocarbon Regulations, 2003 (SOR/2003-289) are not acceptable refrigerants for any new installations.
- .5 Document **all** work on Halocarbon Systems using CSCs halocarbon form “**Information Required for Refrigeration Systems at Federal Correctional Facilities**”. Obtain the latest form from Departmental Representative. Affix the completed form to equipment, and submit a copy of the form to Departmental Representative.
- .6 Comply with the following timelines:
  - .1 Upon delivery of halocarbon-containing equipment to site, submit the following information to Departmental Representative within 24 hours of service;
    - .1 Equipment Location
    - .2 Make
    - .3 Model #
    - .4 Serial #
    - .5 Type of halocarbon
    - .6 Halocarbon charging capacity of system (kg or lbs)
    - .7 Factory Halocarbon Charge (kg or lbs)



- .8 Cooling capacity (kW, Btuh, or Tons)
- .2 Leak-test factory-charged halocarbon-containing equipment containing over 10kg of refrigerant in accordance with the Refrigeration Code of Practice within one week of equipment delivery to site.
- .3 Leak-test field-charged halocarbon-containing equipment in accordance with Section 4.4 of the Refrigeration Code of Practice at the time of field charging of system.
- .4 For all work on Halocarbon Systems, submit forms to Departmental Representative within 48 hours of work.
- .5 For release of halocarbons >10 kg and <100 kg, submit forms to Departmental Representative within 24 hours of discovery of release.
- .6 For release or potential release of halocarbons > 100 kg, submit forms to Departmental Representative **immediately**.
- .7 Conduct annual leak tests of halocarbon-containing equipment with 19kW (5.4 tons) or greater cooling capacity in accordance with the *Federal Halocarbon Regulations, 2003* until such time as Interim Certificate of Completion is issued.

**END OF SECTION**