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END OF SECTION



## GENERAL REQUIREMENTS

### 1.0 GENERAL

#### 1.1 DEFINITIONS

- .1 For clarity and consistency, the following definitions and conventions will be used throughout these Specifications:
  - .1 **Provide** means to supply new and install complete and ready for use.
  - .2 **Reinstall** means to reinstall materials previously removed.
  - .3 **Shop Drawings** are drawings, diagrams, illustrations, schedules, performance charts, brochures, Product data and other data that the Contractor provides to illustrate details of portions of the Work.
  - .4 **As required** means “as required to suitably complete the Work”.
  - .5 **Indicated** means “where reasonably implied and necessary in conformance with work specified, drawn, or required for completion by words or drawings”.
  - .6 These Specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words “shall be” are included by inference where a colon (:) is used within sentences or phrases.

#### 1.2 CONFIDENTIALITY

- .1 At all times, maintain as confidential the information provided during tendering and performance of the Project. Do not enter into discussion of the Work with any persons or agencies without prior written consent of Parks Canada Agency.
- .2 The obligation for confidentiality of Project information survives termination of the Contract.

#### 1.3 REFERENCE STANDARDS

- .1 Referenced standards form part of Contract Documents and have same force and effect as if bound within these Specifications.
- .2 Where copies of standards are required to ensure conformance of a construction activity, obtain copies of industry standards directly from publisher.
- .3 The titles of industry-standard organizations are commonly abbreviated. Full titles may be found in the Encyclopedia of Associations or may be requested of Parks Canada Agency.
- .4 Where conflicts arise between one document or authority and another, the more stringent regulation or requirement shall apply.

#### 1.4 PROJECT/SITE CONDITIONS

- .1 Surveys and reports of existing conditions, including locations of utilities, are provided by Owner without warranty as to accuracy or completeness and are intended as general reference to probable conditions.
- .2 Field-verify site conditions prior to conducting Work.
- .3 Weather conditions permissible for conducting Work are subject to discretion of Contractor and Parks Canada Agency representative.



## GENERAL REQUIREMENTS

- .4 Only conduct work where substrates and conditions are appropriately prepared and ready to receive Work. Starting work of each section will be interpreted as acceptance by Contractor of existing substrates and conditions.

### 1.5 CONTRACT MODIFICATIONS

- .1 Requests for Interpretation (RFI) are used to request direction from Parks Canada Agency or clarification about information insufficiently described or detailed in Contract Documents, and which will not require a change to contract sum or time. Submit Requests for Interpretation on form provided in Section 00 62 13.
- .2 Contemplated Change Orders: Upon receipt of Contemplated Change Order, submit estimate sheets describing cost of change(s) in the Work and impact on project timeline to Parks Canada Agency representative.
- .3 Contractor Requests for Modification: Submit estimate sheets for Work that Contractor wishes Parks Canada Agency to consider for a Change Order to the Contract. Include reason(s) for requested change(s), cost of change(s) in the Work and impact on project timeline.
- .4 Include the following information in estimate sheets:
  - .1 Exact location of change(s).
  - .2 Required materials.
  - .3 Required labour, in manhours of each labour charge-out rate.
  - .4 Total additional days required to complete the Contract.
- .5 Do not proceed with proposed change(s) in Work until estimate sheet has been reviewed and approved by both Parks Canada Agency.
- .6 Approved estimate sheets must be signed and dated by Parks Canada Agency representative before being incorporated into a Change Order

### 1.6 CLEANLINESS & PROTECTION OF WORK

- .1 Promptly as work proceeds and at completion, clean up and remove from premises all rubbish and surplus materials resulting from Work.
- .2 Remove waste material and debris from site and deposit in a waste container at end of each working day.
- .3 Failure to remove debris and maintain site in a tidy condition daily is cause for Owner to have premises cleaned and deduct cost of cleaning from Contract price.
- .4 Immediately clean up spilled and excess primers and mastic sealants that will not be completely covered by subsequent work. Make good appearance of exposed areas.
- .5 Clean and make good exterior areas and interior areas as required as a result of Work to satisfaction of Parks Canada Agency. Complete final cleaning as required by Project documents.

## 2.0 PRODUCTS

**Not Used.**



## **GENERAL REQUIREMENTS**

### **3.0 EXECUTION**

**Not Used.**

END OF SECTION



## SUMMARY OF WORK

### 1.0 GENERAL

#### 1.1 RELATED SECTIONS:

- .1 01 00 00 General Requirements
- .2 01 31 00 Project Management and Coordination
- .3 01 40 00 Quality Requirements
- .4 01 50 00 Temporary Facilities and Controls
- .5 01 54 23 Temporary Scaffolding and Platforms
- .6 01 73 29 Cutting and Patching
- .7 01 77 00 Closeout Procedures
- .8 01 78 36 Warranties
- .9 02 41 00 Demolition

#### 1.2 WORK INCLUDED IN CONTRACT

- .1 Work of this Contract comprises roof reconstruction to the plaza, canopy, and other associated assemblies located at 5420 Highway 93 – Radium Hot Springs, BC, and further identified as “Radium Hot Springs Aquacourt”.

#### 1.3 CONTRACT METHOD

- .2 Parks Canada Agency standard contract.

#### 1.4 CONTRACTOR USE OF PREMISES

- .1 Coordinate use of premises under direction of Parks Canada Agency Representative.
- .2 Assume full responsibility for protection and safekeeping of products under this Contract.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

#### 1.5 OWNER OCCUPANCY

- .1 Fully Occupied. Conduct all work with minimal disturbance of or inconvenience to building occupants.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.
- .3 Occupancy and use of premises by the Owner does not constitute acceptance of the Work

#### 1.6 WORK SEQUENCE

- .1 Construct Work in stages to accommodate continued occupant use of premises during construction.
- .2 Undertake the Work in a manner that allows for completion of Work of a reasonably-sized area before proceeding with the next area, according to the approved schedules.
- .3 Coordinate the Work with Parks Canada Agency and execute the Work to accommodate existing conditions and dimensions.



## SUMMARY OF WORK

### 1.7 SCOPE OF WORK

#### .1 DEMOLITION PHASE

##### .1 Landscaping and Vegetation at Bases of Walls and Slab Areas

- .1 With Parks Canada Agency Representative, review and identify/confirm any shrubs, trees or other vegetation that will require removal to facilitate the Work; mark with orange coloured fluorescent marking tape.
- .2 Determine with Parks Canada Agency Representative which shrubs or trees and other vegetation is to be removed and set aside for reuse. Identify vegetation slated for reuse with yellow-coloured fluorescent marking tape while in the presence of the Parks Canada Agency Representative. All landscaping of vegetation slated for reuse to be cared for by a landscaper retained by the Parks Canada Agency.
- .3 As required to complete the work, remove existing fencing and other landscape elements for eventual reuse.

##### .2 Parapet Wall Assemblies (refers to masonry walls bounding the upper Plaza areas)

- .1 Remove, carefully document, and store all guard railings in a location to be determined with the Owner for later reinstatement by others.
- .2 Remove, and carefully document masonry stone in terms of pattern and composition, and store for later reuse during reconstruction of parapet walls.
- .3 Remove and dispose of mortar in parapet walls
- .4 Remove and dispose of curb under south parapet wall
- .5 Remove and dispose of existing conduit

##### .3 Waterproofing and Landscaping of Suspended Concrete Slabs

- .1 Remove and dispose of existing concrete topping, insulation, and waterproofing membrane, and all other covering elements as necessary to expose the suspended concrete slabs and perimeter areas to facilitate the application of a new waterproofing membrane.
- .2 Remove any existing membranes and membrane accessories from the surface of the existing suspended concrete slab to provide a smooth clean substrate to facilitate the installation of new waterproofing membranes.

##### .4 Fixtures

- .1 Remove and dispose of the following existing components:
  - .1 Wall fixtures, lights, receptacles etc. within scope of cladding replacement.
  - .2 Duct/vent flashings and other mechanical vent flashings.
  - .3 Existing light pole fixtures (5) on west roof terrace.
- .2 Ensure the decommissioning of any utilities necessary to complete the Work. Remove and dispose of utility conduits within the field of the Work.

##### .5 Sheet Metal Flashings

- .1 Remove and dispose of existing sheet metal flashing and materials within the scope of work, including but not limited to:
  - .1 Base-of-wall flashings.



## SUMMARY OF WORK

- .2 Window and door flashings
- .3 Hood vents
- .4 Downspouts and gutters
- .6 Cladding Removal (within the scope of membrane replacement)
  - .1 In preparation for new membranes, remove rundle stone cladding as required to accommodate waterproofing installation up to a height of 200 mm above plaza or parapet finishes as described on the Drawings at all locations where waterproofing installation is required adjacent to buildings.
  - .2 Retain existing rundle stone cladding at remaining areas and buildings as indicated on the Drawings.
  - .3 Remove stucco at base of columns to affect membrane transition from plaza deck as per project Drawings.
  - .4 Remove and store the doors and frames at the bathroom entrances for reinstatement.
  - .5 Remove and dispose of spandrel section of curtain wall at the base of north and east elevations of the southeast building on the main floor plaza.
- .2 RECONSTRUCTION PHASE
  - .1 Landscaping and Vegetation
    - .1 Replace all removed landscaping as required by Parks Canada Agency.
    - .2 Replace all set aside landscaping done during demolition phase as required by Parks Canada Agency.
    - .3 Replace all removed or set aside fencing or landscaping elements done during demolition phase as required by Parks Canada Agency.
  - .2 Parapet Walls
    - .1 Replace south curb under parapet wall with new concrete curb
    - .2 Insert curb blockouts in parapet walls other than south wall, as indicated in the Drawings.
    - .3 Supply and install new 10 mm drainage mat, and asphalt protection board over existing curb as indicated in the Drawings.
    - .4 Supply and embed new 10M galvanized rebar into existing curb to provide structure for reconstruction of rundle stone wall. Waterproof rebar-to-curb transition with compatible liquid applied membrane.
    - .5 Supply horizontal 10M galvanized rebar along length of parapet walls as indicated in Drawings.
    - .6 Supply and install rundle stone wall assemblies. Re-use rundle stone wherever possible and supply additional as required.
    - .7 Install new conduit and electrical boxes in parapet walls as directed by Parks Canada Agency representative.
    - .8 Supply and install new pre-cast concrete caps. Caps to be pinned to new structural parapet wall as indicated in the Drawings.
  - .3 Suspended Concrete Slab and Canopy



## **SUMMARY OF WORK**

- .1 Drains:
    - .1 Flush out drain pipes and drain tiles and make them free of clogging.
    - .2 Chip away concrete to make room for installation of new drains. Pour new concrete to accommodate new drains.
    - .3 Supply and install new drains to replace existing drains at concrete slab.
    - .4 Coordinate with Parks Canada Agency representative for installation of drains on canopies.
  - .2 Once slab is exposed contact Parks Canada Agency representative for review. Perform one ASTM D4263 test for indicating moisture in concrete per 300 square feet of plaza area. Identify any areas where re-sloping, or concrete repairs may be required. Do not include re-sloping or concrete repairs in the base bid.
  - .3 Supply and install polymer modified mortars on canopy surfaces to achieve adequate slope at all locations.
  - .4 Supply and install new waterproof membrane roofing and all accessories to the surface of the cleaned and prepared suspended concrete slab, parapet curbs, canopies, and vertical walls, as required by the Work.
  - .5 Extend waterproofing past canopy terminations to satisfaction of Parks Canada Agency representative to adequately tie-in to existing waterproofing on walls.
  - .6 Supply and install new wood blocking on canopy edge as per Drawings.
  - .7 Supply polymer modified mortar at two percent slope on canopy according to Drawings.
  - .8 Supply and install new drainage mat, rigid insulation, filter fabric, and concrete pavers on pedestals on plaza deck as indicated on the Drawings. Pattern and colour dye of pavers to be confirmed with Owner prior to installation.
  - .9 Supply and install new granulated capping sheet on canopies as indicated on the drawings.
  - .10 Supply and install new expansion joint at transition from plaza deck to northwest pedway as indicated in the drawings.
- .4 Cladding and Door Replacement
- .1 Prepare doorway rough openings and sill with tie-in for membrane as per Drawings.
  - .2 Prepare curtain wall rough openings from removal of spandrel with new self-adhered membrane transitioned from plaza waterproofing and continuing to interior as per Drawings.
  - .3 Provide and install new spandrel, custom backpan assembly, and lower mullion as per Drawings.
  - .4 Re-instate removed doors and frames.
  - .5 Re-instate removed rundle stone at base of walls.
  - .6 Replace removed stucco from base of columns – ensure application of primer and mesh reinforcing.
- .5 Sheet Metal Flashings



## **SUMMARY OF WORK**

- .1 Supply and install new sheet metal flashings in all locations, including but not necessarily limited to:
  - .1 Window, door flashings, and base of wall flashings;
  - .2 canopy edge flashings, and
  - .3 all other sheet metal flashings as required by the Work.
- .2 Supply and install new aluminium downpipes and splash pans to match existing profile and configuration, as well as additional downpipe and accessories to match in appearance where existing configuration has been modified or changed.
- .3 Aluminium pipes to be discharged into storm drainage where previously discharged to same. Include K-style funnel inlets and cleanouts.
- .6 Sealant
  - .1 Supply and install sealant as required by the Work.
- .7 Interiors
  - .1 Repair damage that results to the interior of the suites as a direct result of the Work, but which is beyond the control of the Contractor, as directed by Parks Canada Agency representative. Do not include this work in the base bid; Contractor to fill out Schedule of Unit Prices to determine extended amount.

## **2.0 PRODUCTS**

**Not Used.**

## **3.0 EXECUTION**

**Not Used.**

END OF SECTION



## PROJECT MANAGEMENT & COORDINATION

### 1.0 GENERAL

#### 1.1 COORDINATION

- .1 Coordinate progress of Work, progress schedules, submittals, use of site, temporary utilities, and construction facilities and controls.
- .2 Coordinate and supervise Work of trades and sub-trades.

#### 1.2 EMERGENCY CONTACT

- .1 Provide 24-hour emergency contact telephone number for use in event of emergency arising from Work being undertaken.
- .2 Ensure that emergency service has a maximum response time of 3 hours and can accommodate all conditions that may arise from the Work, including water damage, hoarding, security, electrical failure, gas service interruption, utility interruption, broken glass and any other related failure.
- .3 Failure to respond adequately will be cause for Owner to retain other Contractors to address this work and to deduct resultant costs from Contract price.

#### 1.3 ACCESS AND NOTIFICATION

- .1 Coordinate unit access for required interior work with Parks Canada Agency representative prior to submitting notices or scheduling work.
- .2 Provide working schedule directly to each occupant not less than 1 week in advance of required work:
  - .1 where suite access is required, or
  - .2 when work is to be conducted on exterior walls of suite.
- .3 Provide written notice directly to occupant and Parks Canada Agency Representative of each affected unit not less than 2 days in advance of required work.
- .4 Clearly indicate on working schedule and on notice when access to suite will be required or when work will take place, expected duration, and contact number for questions and further information.
- .5 If notice has been given and then work is not to be conducted as outlined therein, provide written notice to that effect no less than 24 hours prior to originally-scheduled time.
- .6 If required working schedule and notice have both been issued and access is not provided, a stand-by charge may be issued to Owner, derived from tendered hourly rates for affected workers to a cumulative maximum of 4 hours per unit per occurrence.

#### 1.4 CONSTRUCTION PROGRESS DOCUMENTATION

- .1 Schedules Required.
  - .1 Construction Progress Schedule.
  - .2 Schedule of Values of the Work
  - .3 Submittal Schedule for Shop Drawings and Samples.
- .2 Format
  - .1 Horizontal bar chart (Gantt chart), showing:
    - .1 Separate task bar for each trade or operation.



## PROJECT MANAGEMENT & COORDINATION

- .2 Critical path with tasks in chronological order.
- .3 Horizontal timescale identifying first work day of each week.
- .3 Submission
  - .1 Submit 1 copy of initial schedules to Parks Canada Agency representative within 7 days after award of Contract.
  - .2 Parks Canada Agency representative will review schedule and return reviewed copy within 5 days after receipt.
  - .3 Resubmit finalized schedule within 5 days after return of reviewed copy.
- .4 Working Schedules
  - .1 During progress of Work, revise and resubmit working schedules in accordance with GC 3.5.
  - .2 Submit revised working schedules on regular and ongoing basis in order to notify occupants of approximate date(s) when work may be undertaken within occupied suites or when exterior work may significantly affect interior of suite.
  - .3 Immediately notify Parks Canada Agency representative if scheduled or anticipated access dates are changed for any reason.

### 1.5 ON-SITE DOCUMENTS

- .5 Maintain one copy each of the following at job site and make available for review upon request by Parks Canada Agency representative:
  - .1 Contract Documents, including Specifications and Drawings.
  - .2 Applicable building codes and building by-laws.
  - .3 Addenda, Change Orders, Change Directives, and other modifications to Contract.
  - .4 Field test reports and site visit reports.
  - .5 Copy of approved up-to-date work schedule.
  - .6 Manufacturers' installation and application instructions.
  - .7 Material Safety Data Sheets (MSDS) for Products on site in accordance with "Workplace Hazardous Materials Information System" (WHMIS).
  - .8 Approved Shop Drawings.
  - .9 Up-to-date daily record of work performed.
  - .10 Daily timesheets of Contractor's personnel.

### 1.6 PROJECT RECORD DOCUMENTS

- .1 Accurately and neatly record deviations from Contract Documents caused by site conditions and changes ordered by Parks Canada Agency.
- .2 Maintain project record documents in as-new condition; keep clean, dry, and legible.
- .3 Provide files, racks, and secure storage for record documents and samples in field office and keep apart from documents used for construction.
- .4 Label record documents and file in accordance with Section number listings in Section 00 01 10 Table of Contents. Label each document "PROJECT RECORD" in neat, large, printed letters.



## PROJECT MANAGEMENT & COORDINATION

- .5 Do not use record documents for construction purposes.
- .6 Keep record documents and samples available for inspection by Parks Canada Agency representative.
- .7 Provide felt-tip marking pens for recording information; use separate colours for each major system.
- .8 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .9 Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:
  - .1 Record locations of concealed components of mechanical and electrical services. Record all locations of rot and structural repairs.
  - .2 Keep permanent records of repairs to gas vents or vent terminations in area of Work. These records are to be noted at bottom of letter provided by Homeowner Protection Office (HPO). Forward records of these repairs to gas safety program, as well as to Owner and Consultant.
  - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .4 Field changes of dimension and detail.
  - .5 Changes made by Change Order.
  - .6 Details not on original Drawings.
  - .7 References to related Shop Drawings and modifications.
- .10 Specifications: Legibly mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addendum and by Change Order.
- .11 Other Documents: Maintain manufacturer's certifications, inspection certifications, and field test records as required by individual Specifications sections.

### 1.7 MEETINGS

- .1 Construction Organization and Start-up:
  - .1 Within 15 days after award of Contract, request meeting of parties to Contract to discuss and resolve administrative procedures and responsibilities.
  - .2 Senior representatives of Parks Canada Agency, Consultant, Contractor, major subcontractors, field inspectors and supervisors must be in attendance.
  - .3 Establish time and location of meeting and notify parties concerned a minimum of 5 days before meeting.
  - .4 Incorporate mutually-agreed-upon variations to Contract Documents into Contract prior to signing.
  - .5 Agenda to include the following as required herein and as stated elsewhere in Specifications and Contract Documents:
    - .1 Appointment of official representative of participants in the Work.
    - .2 Schedule of Work (progress scheduling).



## **PROJECT MANAGEMENT & COORDINATION**

- .3 Schedule for submission of shop drawings, samples and colour chips.
  - .4 Requirements for temporary facilities, site signage, offices, storage sheds, utilities and fences.
  - .5 Delivery schedule of specified equipment, materials and products.
  - .6 Site security.
  - .7 Proposed changes, Change Orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements (GC).
  - .8 Owner-provided Products.
  - .9 Record drawings.
  - .10 Maintenance information.
  - .11 Take-over procedures, acceptance, and warranties.
  - .12 Progress claims, administrative procedures, photographs, and holdbacks (GC).
  - .13 Appointment of inspection and testing agencies or firms, if required.
  - .14 Insurances and transcript of policies (GC).
  - .6 Comply with Parks Canada Agency allocation of mobilization areas of site; for field offices and sheds, access, traffic, and parking facilities.
  - .7 During construction, coordinate use of site and facilities through Parks Canada Agency's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
  - .2 Project Meetings
    - .1 Hold and preside at bi-weekly project meetings during progress of Work.
    - .2 Record minutes, including significant proceedings and decisions and identifying action by parties.
    - .3 Agenda to include the following:
      - .1 Review and approval of previous meeting minutes.
      - .2 Review of Work progress since previous meeting.
      - .3 Field observations, problems, conflicts.
      - .4 Problems that may impede construction schedule.
      - .5 Review of off-site fabrication delivery schedules.
      - .6 Corrective measures and procedures to regain projected schedule.
    - .4 Produce copies of minutes within 3 days after each meeting and distribute to meeting participants, affected parties not in attendance, Consultant and Parks Canada Agency representative..
- 1.8 SUBMITTALS
- .1 Provide submittals in accordance with requirements of GC 3.10 SHOP DRAWINGS.
  - .2 Accompany submittals with filled-out Submittal Transmittal Form as included in Section 00 62 11.



## **PROJECT MANAGEMENT & COORDINATION**

- .3 Do not proceed with work affected by submittal until review is completed and Parks Canada Agency's approval has been received in writing.
- .4 Shop Drawings: Submit 2 copies of Shop Drawings as required and as Parks Canada Agency representative may reasonably request.
- .5 Samples
  - .1 Submit samples to Parks Canada Agency representative for review as requested in respective specifications sections.
  - .2 Keep samples available at the project site office and make available for Parks Canada Agency representative review.

## **2.0 PRODUCTS**

**Not Used.**

## **3.0 EXECUTION**

**Not Used.**

END OF SECTION



## QUALITY REQUIREMENTS

### 1.0 GENERAL

#### 1.1 GENERAL

- .1 Immediately notify Parks Canada Agency representative if required Work is such as to make it impractical to produce required results.
- .2 Decisions as to quality or fitness of workmanship in cases of dispute rest solely with Parks Canada Agency, whose decision is final.
- .3 Remove and make good defective work at own expense and be responsible for delays and expenses resulting from rejection of work.

#### 1.2 REGULATORY REQUIREMENTS

- .1 Conduct Work in accordance with the most recent edition of applicable building codes / building by-laws, and with the requirements of authorities having jurisdiction (AHJs).
- .2 Comply with Workers' Compensation Board / WorkSafe BC requirements and applicable regulations.
- .3 Except where indicated otherwise, where reference is made to a specification, code or standard, comply with the latest edition of the specification, code, or standard (as amended) in effect as of the date of the Contract.

#### 1.3 QUALITY ASSURANCE

##### 1.1 Labour and Supervision

- .1 Maintain person responsible for coordination and supervision on site at all times during the Work.
- .2 Only skilled tradespersons specialized in the work of the applicable section, officially employed by a contractor, and operating adequate and necessary equipment will be authorized to perform Work.
- .3 Do not employ any unfit person or anyone unskilled in their required duties.

##### 1.2 Products and Materials

- .1 Provide only Products that are not damaged or defective, that comply with specified requirements, and that are suitable for the purpose(s) intended. If requested, furnish evidence as to type, source and quality of Products provided.
- .2 Defective Products will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error.
- .3 If dispute should arise as to quality or fitness of Products, decision rests strictly with Parks Canada Agency, based upon requirements of Contract Documents.
- .4 Delivery, Storage and Handling of Products
  - .1 Handle and store products in accordance with manufacturer's instructions, taking care to prevent damage, deterioration, or soiling.
  - .2 Deliver, handle and store products in original wrappings and containers, with manufacturer's seals and labels intact.
  - .3 For products that have a defined shelf life, use prior to manufacturer's "use by" date, as marked on product packaging.



## QUALITY REQUIREMENTS

- .4 Store products susceptible to weather damage in weatherproof enclosures.
- .5 Avoid prolonged exposure of light- and heat-sensitive materials to sunlight.
- .6 Store combustible materials away from heat and open flame.
- .7 Consult manufacturer's material safety data sheets (MSDS) to determine special considerations applicable to appropriate and safe handling of each Product.

### .5 Manufacturer's Instructions

- .1 Unless otherwise specified, install products in accordance with manufacturer's instructions.
- .2 Do not rely on labels or enclosed literature provided with products. Obtain written instructions directly from manufacturer.
- .3 Notify Parks Canada Agency representative in writing of conflicts between Specifications and manufacturer's instructions so Parks Canada Agency may determine appropriate course of action.
- .4 Improper installation or erection of Products resulting from failure to comply with these requirements authorizes Parks Canada Agency to require removal and reinstallation at no increase in Contract price.

### .3 Contractor's Equipment

- .1 Equipment, tools and supplies brought on site and assigned to Work are to be thoroughly cleaned, free of defects, and suitable for purpose(s) for which they are intended.

### .4 Mock-Ups

- .1 Mock-ups are used to judge workmanship and substrate preparation against standard of quality required. Completed mock-ups of sufficient workmanship may be included in finished Work.
- .2 Provide mock-ups for all aspects of Work for review by Parks Canada Agency representative prior to full installation of a Product or material.
- .3 Undertake Work of each section in a small, representative area and call Parks Canada Agency representative for review before proceeding with Work on a larger scale.
- .4 Upon review, Parks Canada Agency representative will promptly forward written confirmation accepting or rejecting reviewed Work, noting reasons for acceptance or rejection.
- .5 Do not proceed with Work on a larger scale without approval in writing from Parks Canada Agency.

## 1.4 QUALITY CONTROL

### .5 Field Review and Inspection of Work:

- .1 Defective Work shall be rejected, regardless of previous inspections. Inspection does not relieve Contractor of responsibility, but is precaution against oversight or error.

## 2.0 PRODUCTS

**Not Used.**



## QUALITY REQUIREMENTS

### 3.0 EXECUTION

**Not Used.**

END OF SECTION



## TEMPORARY FACILITIES & CONTROLS

### 1.0 GENERAL

#### 1.1 INSTALLATION AND REMOVAL

- .1 Provide construction facilities and temporary controls required in order to execute the Work described in the Contract Documents.
- .2 Remove from site all such work after use and make good all areas.

#### 1.2 TEMPORARY UTILITIES

##### .1 Temporary Power

- .1 Provide for temporary power for temporary lighting and operating of power tools during construction to a maximum supply of 230 volts 30 amps.
- .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .3 Owner will pay utility charge at prevailing rates.

##### .2 Water Supply

- .1 Owner will provide a continuous supply of potable water for construction use.
- .2 If required, arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.

#### 1.3 CONSTRUCTION FACILITIES

##### .1 Project Site Office

- .1 There will not be sufficient space for a site office. All necessary project documentation shall be retained on site either in hard-copy or electronic format.

##### .2 Sanitary Facilities

- .1 Provide sufficient sanitary facilities for workers in accordance with requirements of local health authorities.
- .2 Maintain sanitary facilities in clean condition.
- .3 Locate portable toilets in suitable location away from suites to protect occupants from unpleasant odours. Obtain Owner approval before locating toilets.

##### .3 Site Storage / Loading

- .1 Confine Work and operations of employees to area(s) of Work indicated by Contract Documents. Do not unreasonably encumber premises with Products, materials, facilities or workers.
- .2 Do not load or permit to be loaded any part of the Work with weight or force that will endanger the Work.
- .3 Equipment / Tool / Materials Storage
  - .1 Provide secure, lockable weatherproof storage for tools, equipment and materials. Maintain in clean and orderly condition.



## TEMPORARY FACILITIES & CONTROLS

- .2 Locate materials that do not require weatherproof storage in a manner that will cause least amount of interference with work activities.
- .3 Site storage and lay-down areas will be identified during pre-bid site meeting.
- .4 Do not unnecessarily store materials tools or equipment on roof areas.

### 1.4 CONSTRUCTION AIDS

#### .1 Scaffolding

- .1 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, temporary stairs, hoists and other related items required to access and execute Work. Refer to Section 01 54 23 Temporary Scaffolding and Platforms.

#### .2 Electrical Equipment

- .1 Electrical equipment used on this project must be protected with ground fault interrupters.

### 1.5 ACCESS AND PARKING

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as required for access to Work.
- .2 Provide and maintain signal flag operators, traffic signals, barricades and flares, and lights or lanterns as required to perform Work and to protect public.
- .3 If authorized to use existing roads and parking areas for access to project site, maintain such areas for duration of Contract and make good damage resulting from such use.
- .4 Maintain access to property, including overhead clearances for use by emergency response vehicles.
- .5 Parking: Limited space is available for parking on site. Available parking will be identified during pre-bid site meeting.
- .6 Clean areas where used by Contractor's equipment.

### 1.6 PROTECTION

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Protect adjacent work, materials and surfaces from splash, spray, spillage and water ingress. Provide protection for finished and partially finished building assemblies, finishes and equipment during performance of Work.
- .3 Ensure Work is adequately protected at the end of each working day and during any interruption of work.
- .4 At all times, protect interiors from weather and exterior elements. Have on site all necessary tarpaulins, polyethylene or other suitable waterproofing materials to provide required protection.
- .5 Provide appropriate protection to building and ground areas through or over which materials are being transported.
- .6 Provide necessary screens, covers, and hoardings.
- .7 Be responsible for damage incurred due to lack of or improper protection.
- .8 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.



## **TEMPORARY FACILITIES & CONTROLS**

- .9 Provide secure, rigid guardrails and barricades around open shafts, open stair wells, open edges of floors and roofs, and elsewhere as required to protect public and workers and as required by local regulations.
- .10 Hoarding and Weather Enclosures
  - .1 Erect hoarding to protect public, workers, and public or private property from injury or damage in accordance with Section 01 54 23 Temporary Scaffolding and Platforms.
  - .2 Erect weather enclosures to protect Work from weather in accordance with Section 01 54 23 Temporary Scaffolding and Platforms.

### **1.7 SECURITY**

- .1 Provide security fencing as required to reasonably ensure safety and security of occupants during working and non-working hours.
- .2 Provide exterior motion lighting for areas affected by Work. Position motion lighting in suitable number of locations to provide adequate security coverage of all areas.
- .3 Take reasonable precaution to prevent unauthorized access to work areas and interior of building at all times when on site and when off site.

## **2.0 PRODUCTS**

**Not Used.**

## **3.0 EXECUTION**

**Not Used.**

END OF SECTION



## TEMPORARY SCAFFOLDING & PLATFORMS

### 1.0 GENERAL

#### 1.1 REFERENCES

- .1 Applicable Building Codes / Building By-Laws, most recent edition.
- .2 CAN/CSA-S269.2 *Access Scaffolding for Construction Purposes*.
- .3 CAN/CSA-Z271 *Safety Code for Suspended Elevating Platforms*.
- .4 *Workers' Compensation Act* [RSBC 1996] and *Workers' Compensation Amendment Act (2002)*.
- .5 *Occupational Health and Safety Regulation of British Columbia*.

#### 1.2 DEFINITIONS

- .1 The term **scaffolding**, when used by itself, generically refers to both stationary and suspended (swing stage) scaffolding systems.

#### 1.3 DESIGN REQUIREMENTS

- .1 Scaffolding to be designed in compliance with requirements of referenced standards and codes.
- .2 Structural Support:
  - .1 Verify bearing condition of soil and supporting structure.
  - .2 Where existing structure is to be used for structural support of scaffolding, verify that existing structure can safely support resultant imposed loads. Should existing structure require strengthening for support of scaffolding, provide details from professional engineer for shoring or strengthening requirements.
  - .3 When relying on structural integrity of existing exterior building walls for lateral support of scaffolding, establish whether existing wall components can adequately support additional lateral loads. Provide adequate anchorage of lateral supports for scaffolding and restore existing wall to original condition after removal of scaffolding anchorage.
- .3 Enclosure
  - .1 When required, equip scaffolding with enclosure capable of providing protection to pedestrians and adjacent property from dust, dirt, debris, water spray, falling tools and materials, and any other related workplace hazards.
  - .2 Design and construct enclosed scaffolding and weather enclosures to withstand wind pressure / wind loads and snow loads.
- .4 Access to Stationary Scaffolding
  - .1 Provide stairs or fixed vertical ladders to access all working levels of stationary scaffolding.
  - .2 Equip stairs and landings with handrails/railings such that if a worker trips and falls while descending stairs, it will not be possible for worker to fall through railing system.
  - .3 Surround stair openings on planked working areas of stationary scaffolding by railings to prevent workers from walking into back or sides of open stair.
- .5 Working Platforms



## TEMPORARY SCAFFOLDING & PLATFORMS

- .1 Ensure that levels of scaffolding designated for work are fully planked. Do not remove isolated areas of planking on fully-planked working platforms. Replace damaged planks immediately.
- .2 If fully-planked working platforms are not required or a partially-planked platform is required to facilitate lowering or raising material, install guardrails to prevent workers from falling off partially-planked platform.
- .3 With exception of front of stair openings, ensure all openings in working platforms are equipped with railings to prevent workers from accidentally walking into openings.

### 1.4 SUBMITTALS

- .1 Prior to erecting scaffolding, prepare and submit erection drawing and connection details for review by Parks Canada Agency representative. Drawings are to be stamped by professional engineer (with experience in the structural design of scaffolding) registered in the Province of British Columbia. Parks Canada Agency review does not relieve Contractor from any contractual requirement or responsibility.
- .2 Erection drawings are to include:
  - .1 Reference specifications, materials and sizes for structural members.
  - .2 Main dimensions of scaffolding.
  - .3 Locations of tiebacks and bracing.
  - .4 Guardrails.
  - .5 Planking.
  - .6 Stairs.
  - .7 Ladders.
  - .8 Where necessary, shoring or strengthening of existing structures.
  - .9 Connection details.
  - .10 Support details for suspended scaffolding.
  - .11 Tieback arrangement for suspended scaffolding.
  - .12 Counterweight arrangement and outrigger design for suspended scaffolding.
- .3 Submit copies of WorkSafe BC inspection reports, orders to comply, or other instructions/correspondence to Parks Canada Agency and professional engineer responsible for certifying scaffolding erection drawings and confirming that scaffolding is erected in accordance with reviewed erection drawings. Immediately follow any WorkSafe BC life safety instructions/work orders prior to continuing with Work.

### 1.5 CERTIFICATIONS

- .1 After scaffolding is erected, provide written certification from professional engineer that scaffolding is erected in accordance with reviewed erection drawings.
- .2 Report revisions to lateral and gravity support arrangements for suspended scaffolding to professional engineer who certified erection drawings. In addition, obtain certification from professional engineer that revisions have been reviewed and are acceptable.



## TEMPORARY SCAFFOLDING & PLATFORMS

### 2.0 PRODUCTS

#### 2.1 SCAFFOLDING COMPONENTS

- .1 Obtain metal scaffolding components from a single source (supplier) for metal scaffolding components.
- .2 Obtain test data and test information from supplier; submit to Parks Canada Agency representative upon request.

#### 2.2 HOARDING AND ENCLOSURES

- .1 Provide posts, rafters, planking and plywood sheathing as required.
- .2 Construct roof structure of hoarding with wood framing capable of withstanding impact load from falling debris, materials, or tools in order to provide overhead protection to persons accessing building during construction. Ensure roof of hoarding is waterproof.
- .3 Use white-coloured tarps where enclosures will block daylight to occupied units.

### 3.0 EXECUTION

#### 3.1 PREPARATION

- .1 Prepare surfaces in accordance with manufacturer's directions.

#### 3.2 ERECTION

- .1 Erect scaffolding in accordance with erection drawings and in compliance with requirements of referenced standards and codes.
- .2 Position scaffold tiebacks in line with through-wall flashing, if possible. Install self-adhesive membrane on top of sheathing paper at locations where there are scaffold tiebacks penetrating sheathing paper. Seal membrane penetrations with mastic at time of tieback removal.

#### 3.3 HOARDING

- .1 Make all effort to reduce impact of hoarding on occupants and to minimize duration of hoarding in any one location any longer than is necessary to complete work.
- .2 Provide hoarding in accordance with rules and regulations set forth in referenced standards.
- .3 Provide hoarding protection at areas identified as being in scope of work.
- .4 If necessary, provide sufficient lighting for evening building entry and exit throughout covered walkways to ensure public safety and security. No dark corners are allowed.
- .5 Maintain hoarding in good condition at all times.
- .6 Repair damaged hoarding to satisfaction of Parks Canada Agency representative and other applicable authorities.
- .7 Maintain environmental conditions, including temperature, within hoarding to allow for continuous work.
- .8 Keep hoarding clean at all times.
- .9 Remove hoarding from site only when authorized by Parks Canada Agency.



## **TEMPORARY SCAFFOLDING & PLATFORMS**

### **3.4 INSPECTION**

- .1 Perform daily safety inspection of scaffolding throughout construction. Repair or replace components as necessary to ensure continued safety of workers and public.

### **3.5 REPAIR / RESTORATION**

- .1 Make good all damage to existing building caused by erection and dismantling of scaffolding and by loads imposed by scaffolding.

END OF SECTION



## **CUTTING & PATCHING**

### **1.0 GENERAL**

#### 1.1 RELATED SECTIONS

- .1 01 00 00 General Requirements.
- .2 01 10 00 Summary of Work.
- .3 01 31 00 Project Management and Coordination

#### 1.2 SUBMITTALS

- .1 Submit written request in advance of cutting or alteration that affects:
  - .1 Structural integrity of any element of Project.
  - .2 Integrity of weather-exposed or moisture-resistant elements.
  - .3 Efficiency, maintenance, or safety of any operational element.
  - .4 Visual qualities of sight-exposed elements.
  - .5 Work of Owner or separate contractor.
- .2 Include in request:
  - .1 Identification of Project.
  - .2 Location and description of affected Work.
  - .3 Statement on necessity for cutting or alteration.
  - .4 Description of proposed Work and Products to be used.
  - .5 Alternatives to cutting and patching.
  - .6 Effect on Work of Owner or separate contractor.
  - .7 Written permission of affected separate contractor.
  - .8 Date and time work will be executed.

### **2.0 PRODUCTS**

**Not used.**

### **3.0 EXECUTION**

#### 3.1 EXAMINATION

- .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 cutting or patching means acceptance of existing conditions.



## **CUTTING & PATCHING**

### **3.2 PREPARATION**

- .1 Provide supports to ensure structural integrity of surroundings; provide devices and methods to protect other portions of Project from damage.
- .2 Provide protection from elements for areas that may be exposed by uncovering work; maintain excavations free of water.

### **3.3 EXECUTION**

- .1 Execute cutting, fitting, and patching 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 Perform cutting and patching for weather-exposed and moisture-resistant elements and for sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools are not allowed.
- .9 Restore Work with new Products in accordance with requirements of Contract Documents.
- .10 Fit Work air- and water-tight 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(s) of thickness and composition appropriate to maintaining fire rating.
- .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.

END OF SECTION



## **CLOSEOUT PROCEDURES**

### **1.0 GENERAL**

#### **1.1 INSPECTION**

##### **.1 Contractor's Inspection**

- .1 Contractor and all Subcontractors shall conduct an inspection of Work, and prepare and submit a valued list of deficiencies and defects to the Parks Canada representative.
- .2 Notify Parks Canada Agency in writing of satisfactory completion of Contractor's Inspection and request Parks Canada Agency's inspection to establish Substantial Performance of the Work.

##### **.2 Parks Canada Agency's Inspection**

- .1 Parks Canada Agency representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies.
- .2 When it appears requirements of Contract have been substantially performed, Parks Canada Agency will establish date of Substantial Performance of Work.
- .3 Warranty periods to commence as of date stated on submitted Certificate of Substantial Performance.

##### **.3 Completion: Submit written certificate confirming that:**

- .1 Work has been completed and inspected for compliance with Contract Documents.
- .2 Defects have been corrected and deficiencies have been completed.
- .3 Any Certificates required by authorities having jurisdiction have been submitted.
- .4 Work is complete and ready for Final Inspection.

##### **.4 Final Inspection: When items noted above are completed, request final inspection of Work by Parks Canada Agency representative. If work is deemed incomplete by representative, complete outstanding items and request reinspection.**

#### **1.2 PAYMENT OF HOLDBACK**

- .1 After issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with Contract.

#### **1.3 CLOSE-OUT SUBMITTALS**

- .1 On completion of Work and prior to final inspection, submit closeout submittals to Parks Canada Agency as follows:

##### **.1 Project Record Documents**

- .1 Submit 3 final comb-bound copies as outlined in Section 01 31 00 Project Management and Coordination.
- .2 Separate each record set with index tab sheets keyed to Table of Contents listing.
- .3 Bind Drawings in with Specifications; fold larger drawings to size of specifications pages.

##### **.2 Operation, Maintenance and Warranty Information**



## **CLOSEOUT PROCEDURES**

- .1 Submit 3 final comb-bound copies.
- .2 Format:
  - .1 Include “Operation, Maintenance and Warranty Information” title page listing:
    - .1 Project Title and Address
    - .2 Contractor Name and Address
    - .3 Date of issue
  - .2 Include Table of Contents naming project and identifying all sections.
  - .3 Organize with tabbed pages dividing sections.
- .3 Contents:
  - .1 Contact Information
  - .2 Date of submission; names, addresses, and telephone numbers of Parks Canada Agency representative(s) and Contractor with names of responsible parties;
  - .3 For each product or system, list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .4 Products / Materials / Systems Information:
  - .1 Include inventory list of maintenance materials.
  - .2 Separate each product, material and system with index tab sheets keyed to Table of Contents listing.
  - .3 Manufacturer's printed data, including information on technical specifications, care, maintenance, and cleaning.
  - .4 Product Data: mark each sheet to clearly identify specific products and component parts and data applicable to installation. Delete inapplicable information.
  - .5 Add typewritten text as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
  - .6 Building Products, Materials, and Finishes: include product data with catalogue numbers, sizes, composition, and colour and texture designations. Provide re-ordering information for Products and materials.
  - .7 Cleaning Instructions: cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
  - .8 Additional Requirements: as specified in individual Specifications sections.
- .5 Warranties and Bonds
  - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
  - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - .3 Warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers.



## **CLOSEOUT PROCEDURES**

- .4 Except for items put into use with Owner's permission, leave warranty start date until Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co execute submittals when required.
- .7 Additional information and requirements outlined in Section 01 78 36 Warranties.

### **.6 Maintenance Materials**

- .1 Provide maintenance and extra materials in quantities specified in individual Specifications sections.
- .2 Ensure maintenance materials provided are new, undamaged or defective, and of same quality and manufacture as Products provided as part of Work.
- .3 If requested, furnish evidence as to type, source and quality of Products provided.
- .4 Deliver to site; place and store.
- .5 Receive and catalogue items. Submit inventory listing to Parks Canada Agency. Include approved listings with Maintenance Information.

### **1.4 FINAL CLEANING**

- .1 Refer to GC 3.14.
- .2 Prior to final review, remove surplus Products, tools, construction machinery and equipment.
- .3 Remove waste materials from site at regularly scheduled times or dispose of as directed by Parks Canada Agency. Do not burn waste materials on site unless approved by Parks Canada Agency.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Clean all glass in areas of Work.

### **1.5 FINAL PAYMENT**

- .1 When Owner or Parks Canada Agency representative considers final deficiencies and defects to have been corrected and it appears that all requirements of Contract have been totally performed, make application for final payment. Refer to Contract for specifics to application.

## **2.0 PRODUCTS**

**Not used.**

## **3.0 EXECUTION**

**Not used.**

END OF SECTION



## **WARRANTIES**

### **1.0 GENERAL**

#### **1.1 ROOFING SYSTEMS WARRANTIES**

##### **.1 Roofing Manufacturer Warranty**

- .1 **Manufacturer Warranty:** Upon completion of the Contract, provide a 10-Year Materials, Labour, and Workmanship warranty furnished by the Manufacturer, stating that the roofing system is free of manufacturing defects, the roofing system has been installed per installation requirements, and will remain leak-proof for a 10-year period, starting from the date of Substantial Performance, and that all deficient roofing system components will be replaced at no cost to the Owner. This warranty is subject to the conditions and limitations of the manufacturer's standard exclusions. Include any cost attached to placing the Warranty in the Contract Price. Submit a sample of Warranty to the Owner for the system proposed upon notification of award of Contract.

##### **.2 Roofing Contractor Warranty**

###### **.1 Materials and Labour Warranty**

- .1 Provide, for the benefit of the Owner, a Contractor warranty covering defects in materials and labour used in roofing systems.
- .2 The limit on claims under the Contractor's materials and labour warranty shall not be less than 100% of the total cost of the replaced roof area covered by the warranty.
- .3 Roofing materials and labour warranty coverage shall remain in effect for a period of 5 years after the date on which the building envelope renovation was substantially complete.
- .4 Include all costs, including any re-inspection, fees associated with this warranty

#### **1.2 CONTRACTOR WARRANTY**

##### **.1 Materials and Labour Warranty**

- .1 Provide for benefit of Owner a Contractor warranty covering defects in materials and labour used on Project.
- .2 Materials and labour warranty coverage to remain in effect for a period of 2 years after date of Substantial Performance of the Work.
- .3 Provide materials and labour warranty coverage for Work performed under this Contract.
- .4 Pay costs associated with this warranty, including re-inspection fees.

##### **.2 Water Penetration Warranty**

- .1 Issue a Contractor warranty to benefit of Owner, covering defects in building envelope that cause or permit water penetration and damage caused by unintended water penetration.
- .2 Water penetration warranty insurance to take effect immediately upon date of Substantial Performance of the Work and remain in effect for a period of 5 years.
- .3 Provide water penetration warranty coverage for Work performed under this Contract.
- .4 Pay costs associated with this warranty, including re-inspection fees.



## **WARRANTIES**

### **1.3 PRODUCT AND SUBCONTRACTOR WARRANTIES**

- .1 Secure such warranties or guarantees as may be available from subcontractors, Product manufacturers and suppliers, and which may extend past termination of other specified warranty periods.
- .2 Warranties to be fully transferable and to benefit of Owner.
- .3 Deliver originals plus 2 copies of such warranties or guarantees to Parks Canada Agency representative.
- .4 Submittals to accompany request for Substantial Performance of the Work.
- .5 Secure warranties as specified within Contract Documents and individual Specifications sections.

### **1.4 DISPUTE RESOLUTION**

- .1 Disputes arising out of claims on warranties specified in Contract Documents, or as required by authority having jurisdiction, are to be resolved as per terms and conditions outlined between Contractor and warranty insurance provider, whichever is more advantageous to Owner.

## **2.0 PRODUCTS**

**Not used.**

## **3.0 EXECUTION**

**Not used.**

END OF SECTION



## **DEMOLITION**

### **1.0 GENERAL**

#### 1.1 REFERENCES

- .1 CSA-S350 Code of Practice for Safety in Demolition of Structures.

#### 1.2 DELIVERY, STORAGE AND HANDLING

- .1 Carefully set aside and protect items to be reused.
- .2 Safety:
  - .1 Comply with safety requirements of applicable building code / building by-law, most recent edition.
  - .2 At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.
- .3 Waste Management and Disposal: Dispose of demolished materials in accordance with requirements of authorities having jurisdiction. Recycle waste wherever possible.

#### 1.3 EXISTING CONDITIONS

- .1 Take over structures to be demolished based on their condition at time construction Contract is signed.

#### 1.4 PROTECTION

- .1 Prevent movement, settlement, or other damage to adjacent structures, utilities, walks, paving, trees, landscaping adjacent grades, and parts of building to remain in place. Provide bracing and shoring as required.
- .2 Prevent blockage of surface drainage, elevators, and mechanical and electrical systems that must remain in operation.

### **2.0 PRODUCTS**

**Not Used.**

### **3.0 EXECUTION**

#### 3.1 EXAMINATION

- .1 Examine area and report existing damage in writing to the Parks Canada Agency representative prior to commencing demolition work. Commencement of demolition indicates acceptance of condition. Unreported damage is the responsibility of the Contractor to repair or make good.

#### 3.2 PREPARATION

- .1 Do not disrupt active or energized utilities designated to remain undisturbed.
- .2 Prior to demolition, become familiar with the locations of wiring and plumbing hidden from view.
- .3 Remove existing equipment, services and obstacles as necessary to conduct the work, and reinstate as the work progresses.



## **DEMOLITION**

### 3.3 DEMOLITION

- .1 Demolish items as indicated on Drawings and in Section 00 10 00 Summary of Work.
- .2 Remove and demolish materials by saw cutting, except as noted. Pneumatic or impact tools are not to be used for demolition unless stated otherwise. Minimize hammering and pounding.
- .3 Examine interior cavities and affected surfaces for deterioration, damage, or rot. Notify Parks Canada Agency representative of locations and extent of damage.
- .4 Remove and dispose of deteriorated building components, including wet insulation, sheathing, structural members, interior drywall, vapour barrier, and any other component as directed by the Parks Canada Agency representative.
- .5 Demolish to minimize production of dust. Keep dusty materials wetted.

END OF SECTION



## CONCRETE REPAIR

### 1.0 GENERAL

#### 1.1 REFERENCES

- .1 Applicable Building Code / Building By-Law, most recent edition.

#### 1.2 QUALITY ASSURANCE

- .1 Obtain primary products from single manufacturer. Use only accessories as recommended or accepted by manufacturer.
- .2 Mock-Ups: Complete mock-up in accordance with Section 01 40 00 requirements.

#### 1.3 DELIVERY, STORAGE AND HANDLING

- .1 Protect from freezing, moisture, water and damage.
- .2 Protect adjacent work from contamination from mixing, handling, and application of concrete repair products.

#### 1.4 PROJECT/SITE CONDITIONS

- .1 Only apply concrete repair products when weather, surface temperature and ambient temperature fall within manufacturer's prescribed limits.
- .2 If application is necessary during inclement weather, use appropriate measures for protection and supplementary heating to ensure proper drying and curing in accordance with manufacturer's recommendations.
- .3 Do not repair concrete when surface is exposed to conditions that may cause premature moisture evaporation.

### 2.0 PRODUCTS

#### 2.1 CONCRETE PATCHING MORTAR

- .1 Pre-Approved Products:
  - .1 Horizontal Concrete Patching Mortar
    - .1 Emaco T430 by BASF
    - .2 Emaco T415 by BASF
    - .3 10-60 Rapid Mortar by BASF
    - .4 Concessive Liquid LPL by BASF
  - .2 Vertical Concrete Patching Mortar
    - .1 Gel Patch by BASF
    - .2 HB2 Repair Mortar by ThoRock
    - .3 Sika Top 122 Plus by Sika Canada
    - .4 Sika Top 123 Plus by Sika Canada
- .3 Bonding Agent: Formulated for bonding new concrete to cured concrete.



## CONCRETE REPAIR

- .1K-710 Krystobond by Kryton International Inc.
- .2Polymer Bonding Agent by Target Products Ltd.
- .3710 Flex-Con by Elstro Construction Products
- .4 Rust Neutralizer
  - .1Vika Oxy-Off by Kryton International Inc.

### 3.0 EXECUTION

#### 3.1 EXAMINATION

- .1 Inspect areas to receive the work of this section for signs of deterioration. Establish access requirements and need for protection of surrounding construction.
- .2 Sound surfaces to determine condition and identify approximate extent of required work.
- .3 Mark locations and approximate boundaries of deterioration to assist with quantification and verification by Parks Canada Agency representative.
- .4 In representative locations, determine approximate depth of required repair to assist with quantification and verification by Parks Canada Agency representative.

#### 3.2 SURFACE PREPARATION

- .1 Prepare surfaces in accordance with manufacturer's written instructions.
- .2 Remove loose, spalled, delaminated and unbonded concrete by hand or mechanically until sound concrete substrate is reached.
- .3 Grout open cracks and joints to width and depth defined in manufacturer's written instructions or as directed by Parks Canada Agency representative. Minimum depth of crack repair material to be as per manufacturer's written instructions.
- .4 Ensure surfaces to receive concrete repair are clean, sound, free of standing water, coatings, curing compounds, foreign particles, oil, dust, grease, laitance or other matter that may adversely affect bond or durability of applied materials.
- .5 Ensure that surfaces to receive concrete repair have a fractured aggregate profile to ensure proper adhesion.
- .6 Saturate concrete within repair area prior to application. Ensure area is in a saturated surface dry (SSD) condition at time of application.

#### 3.3 REINFORCING STEEL PREPARATION

- .1 Clean exposed reinforcing steel of rust and bonded concrete.
- .2 Replace or supplement severely corroded reinforcing steel with new, as directed by the Parks Canada Agency representative.
- .3 Use ties to secure new reinforcing steel firmly in place.
- .4 Where corroded reinforcing bars exist, remove surrounding concrete around entire circumference of bar. Leave a gap of not less than 3/4 inch between concrete and bar, exposing a minimum of 2 inches of non-corroded bar at each end.
- .5 Completely remove surface scale, rust and contaminants by wire brushing and power tool cleaning.



## **CONCRETE REPAIR**

.6 Treat entire exposed surface of cleaned reinforcing bar with generous application of rust neutralizer.

### **3.4 CONCRETE REPAIR MORTAR MIXING**

.1 Mix concrete repair mortar in accordance with manufacturer's written instructions.

### **3.5 APPLICATION**

- .1 Ensure concrete repair area is in a saturated surface dry (SSD) condition.
- .2 Patch and repair concrete in conformance with CSA-A23.1-94, *Concrete Materials and Methods of Concrete Construction*.
- .3 Apply concrete repair mortar in strict accordance with and at rate defined in manufacturer's written instructions.
- .4 Application of repair mortar, once started, must be completed same day. Cold joints are not permitted without written instruction by Parks Canada Agency.
- .5 Match surface elevation and texture of patch to surrounding concrete.

### **3.6 CLEANING AND PROTECTION**

- .1 Protect patched concrete from damage and from contamination by dust, debris or other foreign matter before and after patch has cured.
- .2 Clean adjacent surfaces immediately and leave work neat and clean.
- .3 Remove excess and dripped product immediately as work progresses in accordance with manufacturer's instructions.
- .4 Remove sealer products from tools and equipment per manufacturer's instructions.

END OF SECTION



## UNIT MASONRY

### 1.0 GENERAL

#### 1.1 DESCRIPTION

- .1 All materials, equipment, labour, and services necessary for the supply and installation of structural and non-structural stone masonry units as indicated on the drawings and as specified herein.
- .2 The work shall also include, but not necessarily be limited to, the supply and installation of the following:
  - .1 Removal and replacement of stones where membrane upturn details require such.
  - .2 Reinstating the demolished stone wall in the same size and pattern, while accommodating the required waterproofing changes.
  - .3 New stones of same type as extant where required to reinstate stones damage by demolition.
  - .4 Steel reinforcement within masonry joints, and cores, excluding dowels from other work.
  - .5 Concrete grout in masonry.
  - .6 Site mixed or pre-mixed mortar.
  - .7 Cleaning of exposed masonry surfaces.
  - .8 Coordination with work of other sections.
  - .9 Scaffolding and planks for masonry work only.
  - .10 Provision of a masonry maintenance guide.
- .3 Related Work Specified Elsewhere: shall include, but not necessarily be limited to, building in products supplied by others, including the following
  - .1 01 54 23 Temporary Scaffolding and Platforms
  - .2 01 73 29 Cutting and Patching
  - .3 02 41 00 Demolition
  - .4 03 30 51 Concrete Repair
  - .5 05 52 00 Metal Railings
  - .6 07 13 13 Mod-Bit Membrane Waterproofing
  - .7 07 13 26 Self-Adhering Bituminous Membrane
  - .8 07 14 13 Hot Liquid-Applied Rubberized Asphalt WP
  - .9 07 21 13 Rigid Insulation
  - .10 07 60 00 Flashing and Sheet Metal
  - .11 07 92 00 Sealant
  - .12 32 14 13 Pre-cast Concrete Unit Paving
- .4 Work and materials specified herein supplement requirements noted on Project Drawings. Where conflicts occur notify the Parks Canada Agency representative, and unless noted otherwise, this specification shall govern.



## UNIT MASONRY

- .5 This Section along with the Drawings forms part of the Contract and is to be read, interpreted, and coordinated with all other parts.
- .6 Division 00 – Procurement and Contracting Requirements and Division 01 - General Requirements form an integral part of this Section of Work.

### 1.2 REFERENCES

- .1 The latest applicable edition of following reference standards and codes shall govern all work specified herein as appropriate:
  - .1 CAN/CSA A23.1-00, Concrete Materials and Methods of Concrete Construction.
  - .2 CAN/CSA A23.2-00, Methods of Test for Concrete (including grout).
  - .3 CAN/CSA A23.4-00, Precast Concrete - Materials and Construction (for precast concrete headers and sills, etc.).
  - .4 CSA A179-04, Mortar and Grout for Unit Masonry.
  - .5 CSA A370-04, Connectors for Masonry.
  - .6 CSA A371-04, Masonry Construction for Buildings.
  - .7 CSA G30.3-M1983 (R1998), Cold-Drawn Steel Wire for Concrete Reinforcement.
  - .8 CAN/CSA G30.18-M92 (R2002), Billet-Steel Bars for Concrete Reinforcement.
  - .9 CSA-S304.1-04, Masonry Design for Buildings (Limit States Design).
  - .10 CSA-A3000-03 Cementitious Material Compendium.

### 1.3 QUALITY ASSURANCE

- .1 The masonry contractor shall be a member in good standing of the Masonry Institute of BC, and be qualified under the Technical Masonry Certification (TMC) program.
- .2 The masonry contractor shall have experience on a minimum of three projects of similar size and magnitude, and shall provide continuous active supervision while masonry work is in progress.
- .3 Unless otherwise specified, do all masonry work in accordance with CSA A371.
- .4 Grout specimens shall be sampled and tested for compressive strength and slump.
- .5 Cooperate and assist Parks Canada Agency and inspection agency with inspections and testing by providing access and samples as required.

### 1.4 DESIGN CRITERIA

- .1 Design masonry connectors in accordance with requirements of CSA-A370.

### 1.5 SUBMITTALS

- .1 All submittals shall be in accordance with the requirements of Section 01 30 00.
- .2 Submit product literature indicating unit masonry types, shapes, sizes, textures, (e.g., smooth, split face, ground face, etc.), and colours for review and selection.
- .3 Submit product literature, testing data, and samples of each type of masonry accessory for review and selection.
- .4 Submit colour samples of pre-mixed mortar when used for review and selection.



## UNIT MASONRY

- .5 If requested, submit letter of certification from manufacturer for each concrete masonry unit type, ready-mix mortar, and ready-mix grout verifying compliance with design requirements and stating strength and composition.
- .6 At completion of work, submit maintenance guide for masonry types installed (eg. MIBC Maintenance Guide).

### 1.6 MOCK-UPS

- .1 Prior to commencement of work, construct a minimum 1200 mm (48") square sample panel of each type and colour of specialty masonry units from job run showing, jointing, coursing, mortar, colour, texture and workmanship for Parks Canada Agency representative's review on site at a location designated by the representative.
- .2 Approved sample panels on site shall become the standard for all work of similar construction and finish, and may become part of the work if built on site as part of the assembly. Mock-up panel not approved shall be removed. Do not commence work on site until panel has been approved by the Parks Canada Agency representative.

### 1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Stack masonry units on pallets to avoid chipping, shrink wrap, and deliver to site in dry condition. Store off the ground under waterproof cover and protect from the elements.
- .2 Deliver cement, lime, and mortar in dry condition with manufacturer's labels intact, and store under waterproof cover and protect from the elements. Protect pre-mixed mortar as well.
- .3 Store cementitious materials in accordance with CSA A5 and aggregate in accordance with CSA A23.1.

### 1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Unless otherwise pre-approved, conform to requirements of CSA-A371 during hot and cold weather.

### 1.9 PROTECTION

- .1 Coordinate with the installation of bracing by General Contractor.
- .2 Coordinate with the General Contractor to provide suitable enclosures and heating for masonry work as required during construction.
- .3 Protect masonry and work of other sections during masonry work from marking, mortar droppings and damage resulting from work of this section by use of non-staining coverings and/or other means as required.
- .4 Until completed and protected by flashings or other permanent construction, keep recently constructed masonry dry using waterproof, non-staining coverings that extend over walls and down sides enough to protect from wind driven rain. Cover top of all work with polyethylene tarpaulin when work is discontinued.

## 2.0 PRODUCTS

### 2.1 MASONRY UNITS

- .1 Provide stone masonry units of sizes and types as specified herein and as noted on project drawings to match extant stones. The completed work must be of the same construction as the original work. See FHBRO Review of Intervention Report.



## UNIT MASONRY

- .2 Provide special units where indicated on drawings or as required to maintain bonds and even face without any exposed cut faces or cavities.

### 2.2 MORTAR AND GROUT MATERIALS

- .1 Cement: normal Portland Type GU cement to CSA-A3001.
- .2 Masonry or Mortar Cement: to CSA-A3002.
- .3 Hydrated Lime: Type S to ASTM-C-207.
- .4 Mortar Pigments: (for coloured mortar) inorganic mineral oxide, colour as selected by Parks Canada Agency.
- .5 Mortar Aggregate: to CSA A82.56, washed, clean, sharp and free of organic materials.
- .6 Grout Aggregate: to CAN3-A23.1, clean, uncoated grains of sound material with coarse aggregates passing a 10 mm sieve.
- .7 Water: potable and free of deleterious matter and acids and alkalis.
- .8 Mortar Admixtures: as pre-approved by Parks Canada Agency.

### 2.3 MORTAR MIXES

- .1 Use brands of products and materials from the same source for the entire project.
- .2 Site Mixed Mortar: Type S mortar by proportion specification in accordance with CSA A179 requirements.
- .3 Pre-Manufactured Mortar: quality-controlled, plant batched and mixed Type S mortar by property specification to CSA A179 complete with admixtures and colour additives as required with colour as selected by Parks Canada Agency. Mortar to be either delivered to job site for ready use as wet mortar or site mixed in a portable powered and controlled silo/mixer or as pre-bagged dry mortar manufactured off-site.
- .4 When pre-approved, incorporate admixtures into mixes in strict accordance with manufacturer's instructions.
- .5 Use all site mixed mortar within 2½ hours of mixing at temperatures under 25°C and within 1½ hours for temperatures over 25°C. Mortar may be re-tempered within 2 hours of mixing to replace water lost by evaporation by using minimum amounts of water.

### 2.4 REINFORCING

- .1 See Project Drawings.

### 2.5 ANCHORAGE

- .1 Refer to Project Drawings for Anchorage requirements.

### 2.6 ACCESSORIES

- .1 Caulking and Sealants: in accordance with the requirements of Section 07 90 00, with colour of caulking to be same colour as or to match masonry units for vertical joints, and same colour as mortar for horizontal joints.



## UNIT MASONRY

### 2.7 MASONRY CLEANING COMPOUNDS

- .1 Masonry Cleaners: in accordance with masonry manufacturer's recommendations for type of units supplied. Note that muriatic acid is not permitted.

## 3.0 EXECUTION

### 3.1 EXAMINATION

- .1 Examine all drawings and coordinate installation of masonry with related sections so that this work can be performed with a minimum of cutting and patching during masonry work.
- .2 Examine all site conditions and surfaces affecting the installation of masonry including concrete and reinforcement, structural steel, heating, plumbing and electrical work and report deficiencies to the Parks Canada Agency representative in writing. Commencement of installation constitutes acceptance of existing conditions.

### 3.2 PREPARATION

- .1 Establish all coursing lines and plumb levels for masonry work and protect from disturbance. All other lines and levels shall be established and maintained by the General Contractor.
- .2 Coordinate all work of this section with other related sections, such as location of dowels in concrete, field welding of anchors to steel work, etc.
- .3 Prior to laying up of concrete masonry confirm locations of walls which will be "fair faced" construction with Parks Canada Agency representative.
- .4 Protect adjacent finished materials from damage due to masonry work.

### 3.3 INSTALLATION

- .1 Construct masonry work in accordance with requirements and tolerances of CSA-A371, including variation from mean plane, plumb, level and position as well as variation of wall opening sizes.
- .2 Lay masonry units in according to the same patterns as the extant wall assemblies, with accurately spaced courses, true to lines and levels and plumb throughout with exterior and interior corners and intersections masonry bonded, or bonded with equivalent masonry reinforcement. Maintain bond pattern below and above openings.
- .3 Tamp units firmly into place.
- .4 After mortar has initially "set up", tool all joints, wipe wall surfaces with a suitable brush or burlap to remove mortar protrusions and re-tool the joints.
- .5 Fill all holes and cracks, remove loose mortar, and repair defective work.
- .6 Exposed joints shall be firmly pointed and compacted with a tooling bar. Use raked joints according to the same size and pattern of extant wall assemblies.
- .7 Do not reset masonry units after laying. Where resetting of masonry is required, remove and clean units and reset in new mortar.
- .8 Do not wet masonry units at any time during installation.



## UNIT MASONRY

### 3.4 BUILT-IN WORK

- .1 Cooperate with all other trades for materials to be built into masonry and the exact location of openings which will be required. Provide cutting and fitting of masonry required for incorporation of such items during the progress of masonry work only.
- .2 Built in miscellaneous items such as bearing plates, loose angles, bolts, anchors, inserts, sleeves and conduits. Supply and lay-out of these items to be done by others.
- .3 Fit masonry closely against electrical and plumbing outlets so that collars, plates, and covers will overlap and conceal all cuts.
- .4 Build around door frames supplied by others. Do not distort frames. Bed anchors of frames in mortar and fill frame voids.

### 3.5 REINFORCING AND GROUTING (SEE DRAWINGS)

### 3.6 MASONRY ANCHORS (SEE DRAWINGS)

### 3.7 EXPANSION AND CONTROL JOINTS

- .1 Form movement joints as noted on drawings. Keep joint free of mortar, ready to receive backer rod and sealant.
- .2 For reinforcement details at movement joints, see Drawings.

### 3.8 CUTTING AND PATCHING

- .1 Do all cutting, fitting, drilling, patching, and making good of masonry veneer work for other trades during progress of masonry work. All exposed work shall be clean, true and free from spalls, chips, and similar defects. Patched areas shall use brick and mortar matching in colour, texture, and plane. Such work after completion of masonry work shall be at additional cost.

### 3.9 CLEANING

- .1 Keep adjacent surfaces clean, dry, and free of mortar droppings and stains during laying using suitable protection.
- .2 Prior to full scale cleaning, confirm suitability of materials and methods by cleaning an inconspicuous test area.
- .3 Unless otherwise required by cleaning agent manufacturer, wet wall with clean water and flush off all loose dirt and mortar prior to cleaning.
- .4 Clean masonry using specified cleaning agents in strict accordance with cleaning agent and masonry manufacturer's requirements.
- .5 When pressure washing, do not leave wand streaks.
- .6 Protect adjacent surfaces and work from damage and staining during cleaning process.
- .7 Unless otherwise required by cleaning agent manufacturer, rinse all areas thoroughly with clean water to remove all cleaning solutions and residue.

END OF SECTION



## **MODIFIED BITUMOUS MEMBRANE WATERPROOFING**

### **1.0 GENERAL**

#### 1.1 REFERENCES

- .1 Perform waterproofing membrane work in accordance with applicable standard in Roofing Contractors Association of British Columbia (RCABC) *Roofing Practices Manual*.
- .2 CGSB 37-GP-56M, *Membrane, Modified, Bituminous, Prefabricated and Reinforced Roofing*.
- .3 ASTM D5147/D5147M, 11a *Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material*.
- .4 ASTM D5849-07, *Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement)*.
- .5 CSA A123.21-10, *Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane-Roofing Systems*.

#### 1.2 SYSTEM DESCRIPTION

- .1 Waterproof membrane applied over entire rooftop plaza and canopy sections as indicated in the drawings.
- .2 Alternates: Membrane manufacturers and suppliers are invited to submit applications and test data for approval of alternate systems for use on this project. To be accepted, proposed alternates must meet membrane requirements as specified herein. Submit applications to Parks Canada Agency representative.
- .3 Performance Requirements:
  - .1 Design and installation of new roof assembly to meet minimum performance levels of CSA A123.21-10.

#### 1.3 SUBMITTALS

- .1 Before commencing Work, provide Parks Canada Agency with the following:
  - .1 Test report showing that manufacturer's products meet required design pressures. Test report must be from approved CSA A123.21 testing laboratory.
  - .2 Material Safety Data Sheets (MSDS) for review and posting on job site.
  - .3 Product literature, including specification sheets and installation instructions.
  - .4 Samples of relevant materials for colour selection.
- .2 At project completion, provide Owner with warranty certificates and guarantee information, as well as Maintenance Guide for completed roofing system.

#### 1.4 QUALITY ASSURANCE

- .1 Use only components supplied or accepted by a single membrane manufacturer.
- .2 Conform to latest Roofing Contractors Association of British Columbia (RCABC) Guarantee Standards, as published in RCABC's *Roofing Practices Manual*.
- .3 Do not use curable or perishable materials past their printed expiry dates.
- .4 Contractor Qualification



## **MODIFIED BITUMOUS MEMBRANE WATERPROOFING**

- .1 Roofing Contractor and subcontractors, throughout bidding and installation, must hold current business licenses and be officially approved contractors by waterproofing product manufacturer.
- .2 Only skilled trade persons officially employed by a roofing Contractor and operating adequate and necessary equipment will be authorized to perform roofing Work.
- .3 Membrane application is to be conducted by tradesman with the following qualifications in the following crew ratios: 1 journeyman with valid Provincial Trade Qualification certificate to 2 indentured apprentices to 2 labourers.
- .5 Maintain a full-time supervisor on site during execution of the Work. Supervisor to have roofing trade qualification and experience with waterproofing work of similar nature and scope.
- .6 Manufacturer Representative
  - .1 Enable and facilitate access to the work site by product manufacturer's designated representative.
  - .2 Manufacturer's representative must be present for pre-installation meeting.
  - .3 Proof of Technical Competence: Prior to commencing project, submit to JRS proof that manufacturer's representative is certified by a relevant third-party association.
- .7 Pre-Installation Conference
  - .1 Hold a pre-installation meeting prior to start of waterproofing work with waterproofing contractor's representative, and Parks Canada Agency representative in attendance. Purpose of this meeting is to review installation conditions particular to each project. Produce and distribute meeting minutes/report to attendees and other stakeholders as identified by Parks Canada Agency.

### **1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- .1 Consult manufacturers' MSDS for materials handling procedures.
- .2 Deliver and store materials in original containers with manufacturer's labels and seals intact.
- .3 Store materials elevated from contact with ground and moisture and protected from weather.
- .4 Store membrane rolls straight up on end, one pallet high and selvage edge up; do not lean rolls.
- .5 Where climatic conditions and installation procedures warrant, store membrane rolls in heated enclosures prior to use, as recommended by manufacturer. Bring only enough rolls to working area as can be used immediately.
- .6 Avoid prolonged exposure of light- and heat-sensitive materials to sunlight.
- .7 Store combustible materials away from heat and open flame.

### **1.6 ENVIRONMENTAL CONDITIONS**

- .1 Weather conditions permissible for roofing are subject to the discretion of the waterproofing contractor and the Parks Canada Agency representative, except that in no case shall roofing work be carried out under the following conditions:
  - .1 When temperature of the substrate or air is lower than or is forecast to drop below 2 degrees C during the course of the Work.
  - .2 During wet weather, forecasted imminent wet weather, or when site conditions have been adversely affected by recent wet weather.



## MODIFIED BITUMOUS MEMBRANE WATERPROOFING

### 1.7 WARRANTY

- .1 Provide in accordance with Section 01 78 36 Warranties.

## 2.0 PRODUCTS

### 2.1 ROOFING MATERIALS

- .1 Standards: conform to RCABC Guarantee Standards and appropriate CSA, CGSB, and ASTM standards for materials used in specified roofing system; use materials listed in RCABC Accepted Materials List of RCABC's *Roofing Practices Manual*.
- .2 Use winter-grade or summer-grade materials correctly in accordance with manufacturer's specified temperature parameters for such applications.
- .3 Membrane Accessories: Only use primers, adhesives; sealants/mastics supplied or approved by membrane manufacturer.

### 2.2 WATERPROOF MEMBRANE

- .1 SBS Modified Bituminous Membrane: Meet performance criteria outlined in table below:

Product Characteristics	Base Field	Base Flashing	Base Flashing(SA)	Cap Field	Cap Flashing
Average Total Thickness (at selvage) (mm)	2.5	2.5	2.9	2.9	2.9
Low Temp. Flexibility (°C)	-25	-25	-25	-25	-25
Ultimate Elongation @ 23°C	50%	50%	50%	55%	55%
Dimensional Stability	0.2%	0.2%	0.2%	0.2%	0.2%
Tear Resistance (N)	180	180	125	180	180
High Temperature Stability (°C)	105	105	105	105	105
Carrier Reinforcement	Composite*	Composite*	Composite*	Composite*	Composite*

\*Composite reinforcing is defined as being a non-woven polyester mat with fiberglass strands in both the machine and cross-directionality.

- .2 Base and Cap Ply Field where granular surfacing is not required: Thermo fusible SBS modified bituminous membrane

- .1 Approved Products:

- .1 Paradiene 20 HT TG by Siplast
- .2 Sopraply 520 by Soprema (only if substrate passes ASTM D4263 Plastic Sheet Test and pre-approval by Parks Canada Agency representative)

- .3 Base and Cap Ply Flashing where granular surfacing is not required (Torchable Surfaces): Thermo fusible SBS modified bituminous membrane

- .1 Approved Products:

- .1 Paradiene 20 HT TG by Siplast
- .2 Sopraply 520 by Soprema (upon pre-approval by Parks Canada Agency representative)



## **MODIFIED BITUMOUS MEMBRANE WATERPROOFING**

- .4 Base Ply Flashing (SA Membrane): Thermo fusible SBS modified bituminous membrane
  - .1 Approved Products
    - .1 Paradiene 20 EG SA by Siplast
    - .2 Sopralene Flam Stick by Soprema (upon pre-approval by Parks Canada Agency representative)
  - .5 Cap Ply: Thermo fusible SBS modified bituminous membrane with granular surfacing at canopy roof
    - .1 Approved Products:
      - .1 Parafor 30 TG by Siplast
      - .2 Sopraply Traffic Cap 560 by Soprema (upon pre-approval by Parks Canada Agency representative)
  - .6 Cap Ply Flashing: Thermo fusible SBS modified bituminous membrane with granular surfacing at canopy roof
    - .1 Approved Products:
      - .1 Parafor 30 TG by Siplast
      - .2 Sopraply Traffic Cap 560 by Soprema (upon pre-approval by Parks Canada Agency representative)

### **2.3 ACCESSORIES**

- .1 Asphalt Core Overlay Board
  - .1 Minimum 1/4-inch [6.4 mm] thick multi-ply, semi-rigid asphaltic roofing overlay board composed of mineral-fortified asphaltic core formed between two asphaltic saturated fibreglass liners.
    - .1 Approved Products:
      - .1 Sopraboard 1/4 inch by Soprema Inc.
      - .2 Protectoboard 1/4 inch by IKO Manufacturing Inc.
- .2 Liquid-Applied Flashing Membrane: High Performance two-part rapid curing polymethyl methacrylate membrane (PMMA)
  - .1 Approved Products:
    - .1 Alsan RS 230 Flash by Soprema
    - .2 Parapro 123 by Siplast
- .3 Primers: Single-component adhesive enhancing primers to enhance adhesion of torch-applied waterproofing membranes. Product as approved by membrane manufacturer for specific application.
- .4 Fire Guard Tape: Self-adhesive fire-stop membrane composed of glass-fleece reinforcement and SBS modified bitumen. Product as approved by membrane manufacturer.
- .5 Mastic: Refined asphalt and petroleum based roofing mastics designed for all-weather applications.
  - .1 Approved Products:
    - .1 PA-1021 Plastic Cement by Siplast
    - .2 Mammoth Sopramastic by Soprema



## **MODIFIED BITUMOUS MEMBRANE WATERPROOFING**

- .6 Air/Vapour Barrier (SA Membrane): SBS modified bituminous self adhesive air/vapour barrier membrane.
  - .1 Approved Products:
    - .1 Paradiene 20 SA by Siplast
    - .2 Sopraflash Flam Stick by Soprema
- .7 Air/Vapour Barrier (Torchable Substrates): SBS modified bituminous thermofusible air/vapour barrier membrane.
  - .1 Approved Products:
    - .1 Paradiene 20 TG by Siplast
    - .2 Sopralene Flam 180 by Soprema

### **2.4 PROTECTION AND DRAINAGE**

- .1 Drainage Mat: RCABC-approved dimpled high-density polyethylene (HDPE) sheet barrier with non-woven polyester geo-textile fabric fully adhered to core, providing minimum continuous air gap of 12 mm between substrate and insulation.
  - .1 Drainage Mat Accessories:
    - .1 Termination bars: 1/4 by 3/4 inch HDPE strip to secure drainage filter fabric to substrate at flanges.
    - .2 Moulding Strip: 3-1/2 inch wide Z-strip used at cut edges.
    - .3 Sealant: As recommended by drainage mat manufacturer.

### **2.5 FLASHINGS**

- .1 Watertight Conduit Flashing (Single Penetration): Spun aluminum conduit flashing with EPDM gaskets and insulation.
  - .1 Approved Products:
    - .1 MEF-2A to MEF-2A2 Liquid Tight Flexible Conduit Flashing as manufactured by Thaler Metal Industries Ltd.
    - .2 Conduit Flashings as manufactured by Lexcor
- .2 Insulated Gooseneck Penetration Flashings: Spun aluminum conduit flashing with integral aluminum gooseneck
  - .1 Pre-approved Products:
    - .1 Gooseneck Wire and Cable Flashing as manufactured by Lexcor
    - .2 MEF-2A as manufactured by Thaler Metal Industries Ltd.
- .3 Plumbing Stack Flashing: Spun aluminum plumbing stack flashing with integral spun aluminum locking vandal-proof cap
  - .1 Pre-approved Products:
    - .1 Vent Stack Covers with vandal-proof cap as manufactured by Lexcor.
    - .2 Spun Aluminum Pipe Flashing with vandal-proof cap as manufactured by Menzies Metal Products



## **MODIFIED BITUMOUS MEMBRANE WATERPROOFING**

- .3 MEF-1 with vandal-proof cap as manufactured by Thaler Metal Industries Ltd.
- .4 B & C Sheet Metal Vent Penetrations: 3/4-inch treated plywood box curbs to all penetrations.
- .5 Strip-In Sheet Metal Flashings and Accessories: In accordance with Section 07 60 00 Flashing and Sheet Metal.

### **2.6 TERMINATION AND CLAMPING BARS**

## **3.0 EXECUTION**

### **3.1 EXAMINATION**

- .1 Carefully examine substrates to receive Work of this section. Report observed deficiencies that may not be corrected after Work is completed or that may adversely affect performance or appearance of Work of this section.
- .2 Remove existing membrane to provide clean, smooth substrate free of sharp objects and suitable to receive new membrane.
- .3 Complete surface examination and preparation in conformance with recommendations in membrane manufacturer's specifications manual, particularly for fire safety precautions.

### **3.2 ASPHALT PRIMER**

- .1 Surface where membrane is applied (other than horizontal substrate) shall receive an asphalt primer coating at rate of 0.25 litres per square metre. Primer must be completely dry before application of membrane. Membrane will be torch-welded directly on its support.
- .2 Surfaces to be primed must be free of rust, dust or any residue that may hinder adherence. Cover primed surfaces with roofing membrane as soon as possible (same-day coverage for self-adhesive membranes).

### **3.3 MEMBRANE WATERPROOFING**

- .1 Apply membrane waterproofing in accordance with current RCABC standards manual and manufacturer's printed instructions, including:
  - .1 Base Sheet
  - .2 Self-Adhered Base Ply Flashing (Fire Protection)
  - .3 Thermofusible Membrane Base Ply Flashing
  - .4 Cap Sheet
  - .5 Cap Sheet Flashing
  - .6 Curbs
  - .7 Drains
  - .8 Work in easily manageable sections and as quickly as possible to minimize exposure of roof deck.

### **3.4 FLASHINGS**

- .1 Conduit Flashing: Install conduit flashing and accessories in conformance with manufacturer's details and printed application instructions.



## **MODIFIED BITUMOUS MEMBRANE WATERPROOFING**

- .2 Install strip-in flashings and accessories in conformance with manufacturer's details and printed instructions.
  - .1 Prime flange on strip-in metal flashings.
  - .2 Set strip-in flashings in mastic.

### **3.5 FIRE PROTECTION**

- .1 Respect safety measures described in product manufacturer's specifications manual, as well as most recent published Roofing Contractors Association of BC standards, including but not limited to:
  - .1 Torching directly to wood or other combustible substrates or surfaces is absolutely not permitted.
  - .2 Use specified fireguard tapes to seal any open gaps or joints to completely prevent flame penetration.
  - .3 At end of each work day, use heat detector gun to spot smouldering or concealed fires.
  - .4 Throughout waterproofing installation, maintain a clean site and have approved fire extinguishers for each roof torch.
  - .5 Respect all safety measures described in technical data sheets.
  - .6 Never place torches near combustible or flammable products.
  - .7 Maintain a minimum 2-hour fire watch from time last torch has been extinguished at end of each day.

### **3.6 CLEANING AND PROTECTION**

- .1 Where work must continue over finished membrane, protect surface with minimum 1/2-inch thick plywood sheets.
- .2 Clear work site routinely of rubbish and other materials that may hinder roof installation or performance or that may present a fire hazard.
- .3 Immediately clean up spilled and excess primers and mastic sealants that will not be completely covered by subsequent work. Make good appearance of exposed areas.

END OF SECTION



## **SELF-ADHERING BITUMINOUS MEMBRANE**

### **1.0 GENERAL**

#### 1.1 APPLICATION

##### .1 Locations:

- .1 Self-adhered bituminous membrane tie-ins and flashing for drained-cavity wall cladding assembly.
- .2 Self-adhered bituminous membrane beneath other areas as required, including but not limited to:
  - .1 Window and door flanges
  - .2 Window sills
  - .3 Protrusions
  - .4 Horizontal surfaces
  - .5 Parapets
  - .6 Transition areas between substrate components
  - .7 Inside and outside corners

#### 1.2 REFERENCES

- .1 Applicable Building Code / Building By-Law, most recent edition.
- .2 Association of Wall and Ceiling Contractors of BC (AWCC) *Specifications Standards Manual*.

#### 1.3 DELIVERY, STORAGE AND HANDLING

- .1 Protect from moisture, water, UV exposure and damage. Provide and maintain dry, off-ground weatherproof storage.
- .2 Store rolls in upright position.
- .3 Do not allow membrane to remain exposed to direct sunlight for longer than 4 weeks.

#### 1.4 PROJECT/SITE CONDITIONS

- .1 Do not install self-adhered bituminous membrane or primer when ambient temperature is at or below 5 degrees C. Alternately, where temperatures fall outside this range, use Products intended for use at or below 5 degrees C.

### **2.0 PRODUCTS**

#### 2.1 SELF-ADHERING BITUMINOUS MEMBRANE

- .1 Minimum 40 mil (1.02 mm) self-adhering SBS modified bituminous composite sheet of appropriate grade for ambient temperature.
- .2 Accepted Products:
  - .1 PW 11-40 XL as manufactured by Protecto-Wrap.
  - .2 CCW-705 TDS as manufactured by Carlisle Coatings and Waterproofing



## **SELF-ADHERING BITUMINOUS MEMBRANE**

- .3 SopraSEAL Stick 1100T by Soprema, Inc.
- .4 Aquabarrier AVB by IKO Industries, Inc.

### **2.2 ACCESSORIES**

- .1 Primer as recommended and approved by membrane manufacturer. Use primer that will have no deleterious effects on substrate.
- .2 Mastic sealant as recommended and approved by membrane manufacturer.

## **3.0 EXECUTION**

### **3.1 EXAMINATION**

- .1 Carefully examine substrates to receive work of this section. Report or correct observed deficiencies that may not be corrected after work or that may adversely affect performance or appearance of work of this section.
- .2 Starting work of this section indicates acceptance of all conditions affecting the work.

### **3.2 PREPARATION**

- .1 Clean and prime all surfaces to receive self-adhered bituminous membrane. Prime only areas to be membraned in one working day. Re-apply primer to areas not membraned within 24 hours.

### **3.3 SELF-ADHERING BITUMINOUS MEMBRANE**

- .1 Apply membrane to primed substrate in accordance with manufacturer's application instructions. Minimize wrinkles and bubbles.
- .2 Apply heavy pressure with roller or by other suitable means while applying membrane to ensure continuous and positive seal.
- .3 Lap horizontal and vertical joints a minimum of 3 inches.
- .4 Seal exposed edges of membrane on horizontal surfaces with tooled bead of mastic sealant.
- .5 Seal penetrations through self-adhered bituminous membrane with additional pieces of membrane and mastic sealant.
- .6 Ensure proper lapping and sequencing of self-adhered bituminous membrane with work of this and other sections.
- .7 Apply sealant to upper exposed edges where membrane is installed vertically.
- .8 Do not install membrane continuously between non-breathable envelope components. Report these areas to Parks Canada Agency representative.

### **3.4 CLEANING AND PROTECTION**

- .1 Immediately clean up spilled and excess primers and mastic sealants that will not be completely covered by subsequent work. Make good appearance of any exposed areas.

END OF SECTION



## **HOT FLUID APPLIED ASPHALT WATERPROOFING**

### **1.0 GENERAL**

#### 1.1 REFERENCES

- .1 CAN/CGSB-37.9M, *Primer, Asphalt, Unfilled for Asphalt Roofing, Dampproofing and Waterproofing*
- .2 CGSB-37-GP-50M, *Asphalt, Rubberized, Hot Applied, for Roofing and Waterproofing*

#### 1.2 QUALITY ASSURANCE

- .1 Do not overheat rubberised asphalt. Application temperature 180 to 200 degrees C. Do not heat above 215 degrees C.
- .2 Obtain primary Products from one manufacturer. Accessory Products and materials as recommended or accepted by primary Products manufacturer.
- .3 Roofing contractor and his subcontractors, throughout bid and installation, must possess business licenses and be an officially-recognised contractor approved by roofing product manufacturer. Upon request, submit proof of manufacturer's approval.

#### 1.3 DELIVERY, STORAGE AND HANDLING

- .1 Store Products in closed containers outdoors in clean, protected area away from water and direct sunlight.
- .2 Store primer at temperatures of 5 degrees C or above to facilitate handling. Keep primer and other solvents away from open flames or heat.
- .3 Store rolled materials on end.

#### 1.4 PROJECT/SITE CONDITIONS

- .1 Do not perform installation work during periods of rain or inclement weather, or on frosty or wet surfaces.

#### 1.5 WARRANTY

- .1 See Section 01 78 36 Warranties

### **2.0 PRODUCTS**

#### 2.1 MEMBRANE SYSTEM

- .1 Accepted Products:
  - .1 790-11 system as manufactured by Bakor Inc.
  - .2 CCW 500R system as manufactured by Carlisle Coatings & Waterproofing
  - .3 MM6125 system as manufactured by Hydrotech Membranes Corp.
- .2 Primer, reinforcing fabric, and flashing membrane as recommended by membrane system manufacturer.



## **HOT FLUID APPLIED ASPHALT WATERPROOFING**

### **2.2 ACCESSORIES**

- .1 Melting Equipment: Indirect fired kettle with double shell containing high flash-point heat transfer oil or hot-air type with mechanical agitator.
- .2 Protection Course: As recommended by membrane system manufacturer.
- .3 Drainage Mat: Dimpled high-density polyethylene (HDPE) sheet barrier with a non-woven polyester geo-textile fabric fully adhered to core, providing approximate 12 mm continuous air gap between substrate and backfill.
- .4 Drainage Mat Accessories:
  - .1 Termination Bars: HDPE 1/4 x 3/4 inch strip intended to secure drainage filter fabric to substrate at flanges.
  - .2 Moulding Strip: 3-1/2 inch wide Z- strip used at cut edges.
  - .3 Sealant: Sealant compatible with HDPE and approved by manufacturer.

## **3.0 EXECUTION**

### **3.1 EXAMINATION**

- .1 Examine substrate and confirm suitability for membrane application. Applying membrane implies installer's acceptance of substrate and its condition.

### **3.2 PREPARATION**

- .1 Removals: Remove existing overburden, including any soil, concrete, ballast, landscaping or other materials required to undertake the work. Set aside any materials for reuse as indicated on the drawings. Dispose of materials not being reused.
- .2 Surface Preparation
  - .1 Prepare surfaces in accordance with manufacturer's written instructions.
  - .2 Remove existing membrane to concrete substrate.
  - .3 Abrasive blast off any concrete scaling or laitance. Repair voids, cracks, holes, honeycombs and other concrete surface damage prior to installing membrane.
  - .4 Prepare cracks, joints and transitions in accordance with manufacturers written instructions and as shown on Drawings.
  - .5 Abrasive blast or wire brush metal surfaces to bright metal and paint with zinc-rich primer before applying membrane.
  - .6 Ensure surfaces are clean, dry and free of debris or other contamination.
  - .7 Apply primer to substrate surfaces receiving membrane at rate recommended by manufacturer. Ensure primer is compatible to substrates.

### **3.3 PRE-STRIPPING**

- .1 Pre-strip and install flashings prior to applying field waterproofing membrane.
- .2 Seal cracks and joints between 1/8 and 1/2 inch wide with 1/8-inch thick coat of hot applied rubberized asphalt membrane and 6-inch wide strip of flashing membrane centred on joint. Extend



## **HOT FLUID APPLIED ASPHALT WATERPROOFING**

membrane 3 inches beyond sheet edges. Treat cracks between 1/16 and 1/8 with 6-inch wide strip of polyester fabric set in 1/8 inch membrane.

### **.3 Base of Wall**

- .1 Apply hot rubberized asphalt membrane to thickness of approximately 1/8 inch on vertical faces and minimum of 8 inches out onto horizontal surface.
- .2 Embed flashing membrane in hot-applied rubberized asphalt membrane, avoiding any wrinkles or fishmouths, extending minimum of 3 inches out onto horizontal surface and 3 inches up vertical. Lap ends of flashing membrane by minimum 3 inches.

### **.4 Drains**

- .1 Coat area around drains with hot liquid-applied rubberized asphalt membrane to a thickness of 1/8 inch.
- .2 Place flashing sheet over coated drain flange, extending 6 inches beyond flange.
- .3 Apply second coat of hot liquid-applied rubberized asphalt membrane over flashing sheet to a thickness of 1/8 inch.
- .4 Apply clamping ring, exerting sufficient pressure to affect a seal between clamping ring and membrane.
- .5 Temporarily block all drains during application of ballast or other materials that might block the drains. Remove blocking when work is not in progress and upon completion.

## **3.4 FIELD MEMBRANE APPLICATION**

- .1 Ensure substrate is ready and approved to receive hot liquid-applied rubberized asphalt membrane.
- .2 Apply membrane smooth and free of air pockets, wrinkles, or tears, in accordance with manufacturer's instructions and ensuring full bond of membrane to substrate.
- .3 Apply first layer evenly to a minimum 2 millimetre thickness to form continuous monolithic coating over horizontal and vertical surfaces.
- .4 Apply fabric reinforcing sheet and firmly press into first layer of hot membrane. Overlap fabric by approximately 1/4 inch, ensuring that a layer of membrane is present between overlaps. Apply second layer of membrane over the fabric to a minimum thickness of 3 mm, for a total minimum thickness of 5 mm (215 mils).

## **3.5 MEMBRANE PROTECTION COURSE**

- .1 Place protection course directly onto hot membrane.
- .2 Lap protection course joints by 25 mm, staggering joints.
- .3 Protect from construction activities and permanent exposure to UV.

## **3.6 CLEANING AND PROTECTION**

- .1 Provide temporary protection of the membrane to prevent damage from construction activities until permanent protection is installed.

END OF SECTION



## **LIQUID APPLIED PMMA PEDESTRIAN TRAFFIC WATERPROOFING**

### **1.0 GENERAL**

#### **1.1 SUBMITTALS**

- .1 Prior to Contract Award: Submit letter from primary system manufacturer confirming that Bidder is an acceptable Contractor authorized to install specified system.
- .2 Before Construction:
  - .1 Product Data:
    - .1 List of materials proposed to be provided under this section;
    - .2 Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
    - .3 Shop drawings or catalog illustrations in sufficient detail to show installation and interface of the work of this section with the work of adjacent trades;
    - .4 Manufacturer's current recommended installation procedures.
  - .2 Written documentation of applicator's qualifications, including reference projects of similar scope and complexity, with current telephone contact information for references.
  - .3 Samples: Submit representative samples of relevant materials for colour selection.

#### **1.2 QUALITY ASSURANCE**

- .1 Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the work of this section.
- .2 Applicator Qualifications:
  - .1 Applicator shall have experience in installing specified types of materials and shall have successfully completed at least 3 projects of similar scope and complexity.
  - .2 Applicator shall designate a single individual as project foreman who is to be on site at all times during installation.
- .3 Hold pre-installation meeting on site 1 week prior to commencing work of this section. Secure attendance by Parks Canada Agency representative, Contractor, applicator, manufacturer's representative, and interfacing trades.
- .4 Examine Drawings and Specifications affecting work of this section; verify conditions, review installation procedures, and coordinate scheduling with interfacing portions of the Work.
- .5 Regulatory Requirements:
  - .1 Permits: Obtain permits required by local agencies at own cost
  - .2 Safety: Ensure application crew understands and complies with OSHA requirements and local, provincial and federal safety regulations.

#### **1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Store closed containers in a cool, dry, well ventilated area away from heat, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Keep products away from open fire, flame or any ignition



## **LIQUID APPLIED PMMA PEDESTRIAN TRAFFIC WATERPROOFING**

source. Store temperature sensitive products at temperatures recommended by the manufacturer. Quartz silica (sand) must be kept dry during storage and handling.

- .2 Damaged or improperly stored materials will be automatically rejected, removed and replaced at the Contractor's expense.
- .3 Handle materials to protect from damage and contamination with moisture or foreign matter.
- .4 Keep away from open fire, flame, or any ignition source. Vapors may form explosive mixtures with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink, or smoke in application area.
- .5 Workers shall wear long sleeve shirts, long pants and work boots. Workers shall wear butyl rubber or nitrile gloves when mixing or applying this product. Safety glasses with side shields shall be used for eye protection. Use local exhaust ventilation to maintain worker exposure below TLV as listed on MSDS for respective products. If airborne concentration poses a health hazard, becomes irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. Specific type of respirator will depend on airborne concentration. Do not use a filtering face piece or dust mask with this product if TLV filtering levels have been exceeded.

### **1.4 PROJECT/SITE CONDITIONS**

- .1 Do not apply materials during precipitation or when there is a probability of precipitation within the 24 hours before, during, and after application. Protect materials, applied membrane, and building interiors from possible moisture damage or contamination.
- .2 Do not apply catalyzed resin materials if there is a threat of inclement weather. Follow resin manufacturer's specifications for minimum and maximum ambient, material and substrate temperatures. Do not apply catalyzed resin materials unless temperatures fall within the resin manufacturer's published acceptable range.

### **1.5 SCHEDULING**

- .1 Notification: Give minimum 5 days' notice to Owner and manufacturer prior to commencing work; notify both parties on a daily basis of any change in work.

### **1.6 WARRANTY**

- .1 Guarantee – Reinforced Systems: Upon successful completion of project, and after post-installation procedures are completed, furnish Owner with manufacturer's 10-year guarantee covering labour, materials, and workmanship.
- .2 Issuance of Guarantee. When work of this section is finished, complete post-installation procedures and obtain manufacturer's final endorsement for issuance of guarantee.

## **2.0 PRODUCTS**

### **2.1 LIQUID-APPLIED PMMA PEDESTRIAN TRAFFIC WATERPROOFING SYSTEM**

- .1 Provide un-reinforced fluid-applied, self-levelling polymethyl methacrylate (PMMA) resin-based waterproofing system with aggregate surfacing or coloured, abrasion-resistant topcoat as selected by Architect from manufacturer's standard colour range.

#### **.1 Approved Systems:**

- .1 Siplast Terapro Reinforced Pedestrian Traffic Waterproofing System;



## **LIQUID APPLIED PMMA PEDESTRIAN TRAFFIC WATERPROOFING**

- .2 Alsan RS 230 by Soprema; or
- .3 Comparable product acceptable to the Consultant.

### **2.2 MEMBRANE/FLASHING WATERPROOFING**

- .1 Primer: A PMMA-based primer for use in vertical applications over concrete, concrete repair materials and masonry and for both wood and plywood substrates.
  - .1 Approved Product: Pro Primer W by Siplast; Irving, TX; or
  - .2 Approved comparable Soprema product.
- .2 Primer: A PMMA-based primer for use over horizontal concrete substrates.
  - .1 Approved Product: Pro Primer T by Siplast; Irving, TX
  - .2 Approved comparable Soprema product.
- .3 Flashing Resin: A thixotropic, flexible, acrylic, PMMA-based resin for use in combination with a fleece fabric to form a monolithic, reinforced flashing membrane used in conjunction with a reinforced or un-reinforced PMMA waterproofing system.
  - .1 Approved Product: Terapro Flashing Resin by Siplast; Irving, TX
  - .2 Approved comparable Soprema product.
- .4 Base Resin: A flexible, acrylic PMMA-based resin for use as waterproofing in a reinforced or un-reinforced PMMA waterproofing system.
  - .1 Approved Product: Terapro Base Resin by Siplast; Irving, TX
  - .2 Approved comparable Soprema product.
- .5 Fleece: Non-woven, needle-punched polyester fabric used as a reinforcement in catalyzed resin flashing and field membrane systems.
  - .1 Nominal Thickness: 40 mils (1 mm)
  - .2 Weight: 110 grams per square meter
  - .3 Approved Product: Pro Fleece by Siplast; Irving, TX, or approved comparable Soprema product.
- .6 Wearing Layer Resin: A flexible, acrylic, PMMA-based resin for use as a wearing layer in a reinforced or un-reinforced PMMA waterproofing system.
  - .1 Approved Product: Terapro Wearing Layer by Siplast; Irving, TX, or approved comparable Soprema product.
- .7 Colour Finish Resin: A pigmented, acrylic, PMMA-based resin for use as a wearing coat over the field of the finished roof/flashing membrane.
  - .1 Approved Product: Pro Color Finish by Siplast; Irving, TX, or approved comparable Soprema product.
- .8 Clear Finish: Clear, acrylic, PMMA-based finish layer for resin based waterproofing and flashing systems.
  - .1 Approved Product: Pro Clear Finish by Siplast; Irving, TX, or approved comparable Soprema product.



## **LIQUID APPLIED PMMA PEDESTRIAN TRAFFIC WATERPROOFING**

- .9 Thixotropic Agent: Liquid additive used to increase the viscosity of the PMMA-based resin products, allowing resins to be applied over vertical or sloped substrates.
  - .1 Approved Product: Pro Thixo by Siplast; Irving, TX, or approved comparable Soprema product.

### **2.3 ACCESSORIES**

- .1 Cleaning Solution/Solvent: Clear solvent for cleaning and preparing transition areas of in-place catalyzed resin to receive subsequent coats of resin and for cleaning substrate materials to receive resin.
  - .1 Pro Prep by Siplast; Irving, TX, or approved comparable Soprema product.
- .2 Paste: PMMA-based paste to fill depressions in substrate surfaces prior to application of waterproofing system or used as levelling layer at fleece overlaps of reinforced waterproofing systems.
  - .1 Approved Product: Pro Paste by Siplast; Irving, TX, or approved comparable Soprema product.
- .3 Repair Mortar: Two-component, PMMA-based aggregate filled mortar for patching concrete substrates.
  - .1 Approved Product: Pro Repair Mortar by Siplast; Irving, TX, or approved comparable Soprema product.
- .4 Catalyst: Peroxide-based reactive agent used to induce curing of acrylic resins.
  - .1 Approved Product: Pro Catalyst Powder by Siplast; Irving, TX, or approved comparable Soprema product.
- .5 Coloured Quartz: Pigment-coated, kiln-dried, silica aggregate suitable for broadcast into wearing layer of waterproofing system and subsequently coated with clear finish.
  - .1 Approved Product: Pro Colored Quartz by Siplast; Irving, TX, or approved comparable Soprema product.
- .6 Natural Quartz: Natural-coloured, kiln-dried, silica aggregate suitable for broadcast into wearing layer of waterproofing system and subsequently coated with colour finish.
  - .1 Approved Product: Pro Natural Quartz by Siplast; Irving, TX, or approved comparable Soprema product.
- .7 Decorative Chips: Flat, angular, pigmented polymer flakes suitable for broadcast into colour finish layer of waterproofing.
  - .1 Approved Product: Pro Chips by Siplast; Irving, TX, or approved comparable Soprema product.

### **2.4 MIXES**

- .1 Mixing and Catalyzing of Primer, Resin, Colour Coat and Clear Coat: Thoroughly mix entire drum of un-catalyzed resins for 2 to 3 minutes before each use if pouring the resin into second container when batch mixing. Only catalyze the amount of material that can be used within pot life. Add pre-measured catalyst powder to resin component and stir for 2 minutes with slow-speed mechanical agitator or by hand with stir stick. Amount of catalyst added is based on weight of resin used. Refer to waterproofing system manufacturer's literature for mixing ratios.



## LIQUID APPLIED PMMA PEDESTRIAN TRAFFIC WATERPROOFING

### 3.0 EXECUTION

#### 3.1 EXAMINATION

- .1 Examine areas and conditions under which work of this section will be performed; verify conformance with manufacturer's requirements.
- .2 Verify suitability of substrate to receive work. Notify Consultant in writing of conditions detrimental to proper and timely completion of work. Correct deficiencies in substrate prior to commencing work.
- .3 Do not use substrate curing compounds containing waxes, oils, silicones or other resins that may inhibit adhesion of waterproofing system.
- .4 Moisture Content: High moisture content may result in inadequate adhesion of waterproofing system. Evaluate substrate moisture level to determine that moisture content is acceptable for application of waterproofing system.
  - .1 Maximum acceptable moisture content: 6 percent by weight
  - .2 Maximum acceptable internal relative humidity: 75 percent.
- .5 Plywood Substrate Requirements: A/C or better exterior-grade sheathing, minimum thickness of 3/4 inch. Install plywood "A" side up. Support plywood edges on blocking or primary framing. Fasten with non-corrosive screws at 6 inches on centre along panel edges and 12 inches on centre over intermediate supports.
- .6 Ensure surfaces are clean, dry, sound and free of dust, debris, voids, ridges, sharp projections, excessive roughness, foreign matter, frost, ice and other contaminants that could affect bond or surface appearance of waterproofing system.

#### 3.2 SURFACE PREPARATION

- .1 Protect surface from accumulation of dust and debris, spillage and resin overruns.
- .2 Remove oil and grease with commercial-grade cleaner; thoroughly rinse and dry. Sweep, blow, or vacuum loose surface debris in areas to receive resin.
- .3 Taping: Use masking tape at perimeters and joints to provide neat terminations.
- .4 Masonry Walls: Shot-blast, scarify, or grind wall surfaces to provide sound substrate free from laitance and residue from bitumen, coal tar, primer, coatings, adhesives, sealer or other material that may inhibit adhesion. After priming (if required) and before applying waterproofing flashing system, fill joints, cracks, voids, fractures, depressions, small indentations, and low areas in substrate with specified paste. Do not apply waterproofing materials over soft or scaling brick or masonry, faulty mortar joints, or walls with broken, damaged or leaking coping components.
- .5 Newly Placed Concrete: Ensure newly placed concrete has cured a minimum of 28 days in accordance with ACI-308, and is of minimum 3,500 psi (24 N/mm<sup>2</sup>) hardness. Shot-blast or scarify surface to provide sound substrate free from laitance and to generate concrete surface profile of CSP-2 to CSP-4 as defined by the International Concrete Repair Institute (ICRI). Repair spalls and voids on vertical and horizontal surfaces using specified primer and paste.
- .6 Adhesion Testing: Test concrete substrate with device conforming to ASTM D 4541 using 50 mm dolly adhered with specified catalyzed primer. Use same concrete preparation methods as will be used for main field waterproofing. Ensure minimum adhesion value of 220 psi is obtained before applying waterproofing system. If multiple areas or substrates are involved in the scope of work, evaluate each to determine suitability. Maintain testing/evaluation records.



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- .7 Concrete surface profile of CSP-2 to CSP-4 is necessary to provide adequate adhesion of waterproofing system while maintaining an aesthetically pleasing surface appearance. Adhesion may be compromised with a CSP of less than 2. Concrete surface profile greater than 4 may result in increased resin consumption and uneven surface finish.
- .8 Existing Concrete/Masonry Substrates: Ensure existing concrete substrates have a minimum hardness of 3,500 psi (24 N/mm<sup>2</sup>). Scarify or shot-blast surfaces to provide sound substrate free from laitance and residue from bitumen, coal tar, primer, coatings, adhesives, sealer or material that may inhibit adhesion. Prepare concrete surface to generate surface profile of CSP-2 to CSP-4 as defined by the ICRI. Repair spalls and voids in vertical or horizontal surfaces using specified primer and paste.
- .9 Repair and Level Concrete Substrate: After priming and before applying waterproofing membrane, fill and level joints, cracks, voids, fractures, depressions, small indentations, and low areas in substrate using specified paste.
- .11 Plywood Substrates: Prime plywood surfaces with specified primer prior to applying waterproofing membrane. Fill joints with specified paste and reinforce with 6 inch (15 cm) wide strip of resin/fleece/resin.
- .12 Rigid Plastic Flashing Substrates: Evaluate plastic for compatibility with resin materials. Clean plastic substrates with specified cleaner/solvent and let dry. Lightly abrade surface to receive flashing system. Extend preparation area a minimum of 1/2 inch (13 mm) beyond termination of flashing system.
- .13 Steel/Aluminum Substrates: Grind to generate a "white metal" surface and remove loose particles. Extend preparation area a minimum of 1/2-inch (13 mm) beyond termination of waterproofing/flashing system. Do not use cleaner or solvent after grinding. Notch steel surfaces where detailed to provide a rust-stop. Use primer and paint to treat prepared area not covered with resin to prevent corrosion of ferrous surfaces.

#### **3.3 LIQUID-APPLIED PEDESTRIAN TRAFFIC WATERPROOFING INSTALLATION**

- .1 Priming: Apply specified primer to masonry, concrete and plywood surfaces to receive waterproofing membrane or flashing. Apply with a roller at minimum rate specified by primer manufacturer and let cure for a minimum of 45 minutes. Increase application rates over other absorbent substrates. Do not let resin pool or pond. Do not over-apply primers, as this may interfere with catalyzing process. When calculating application rates and primer quantities, allow for saturation of roller covers and application equipment.
- .2 Flashing Membrane: Complete flashing application prior to applying waterproofing membrane in field of roof area. Using masking tape, mask perimeter of area to receive flashing system. Pre-cut fleece to ensure proper fit at transitions and corners prior to flashing membrane application. Apply base coat of catalyzed flashing resin to substrate with roller or brush at minimum rate specified by resin manufacturer. Extend catalyzed flashing resin to 1/4 inch beyond where fleece reinforcement will be placed. Embed fleece reinforcement into wet, catalyzed flashing resin base coat; use roller brush to remove trapped air. Overlap fleece by minimum of 2 inches (51 mm). Apply additional coat of catalyzed flashing resin between layers of overlapping fleece. Immediately following embedment of fleece, apply finish coat of catalyzed flashing resin with roller or brush at minimum rate specified by resin manufacturer, ensuring full saturation of fleece reinforcement. Remove tape before catalyzed resin sets. Allow for saturation of roller covers and application equipment when calculating resin quantities. Let cure for a minimum of 45 minutes.
- .4 Application of Reinforced Waterproofing System with Coloured or Natural Quartz:
  - .1 Using cleaner/solvent, wipe flashing membrane surfaces to be lapped with field membrane. Let surface dry for minimum 20 minutes before continuing work.



## **LIQUID APPLIED PMMA PEDESTRIAN TRAFFIC WATERPROOFING**

- .2 Roller-apply one layer of catalyzed base resin over primed substrate at minimum rate specified by resin manufacturer.
  - .3 Embed fleece reinforcement into wet, catalyzed base resin waterproofing layer; use roller to remove trapped air. Overlap side and end laps of fleece by minimum of 2 inches (51 mm). Apply additional coat of catalyzed base resin between layers of overlapping fleece.
  - .4 Immediately following embedment of fleece, apply second coat of catalyzed resin with roller or brush at minimum rate specified by resin manufacturer; fully saturate fleece reinforcement. Let cure for minimum 45 minutes before applying resin wearing layer.
  - .5 If work is interrupted for more than 12 hours or if catalyzed resin layer surface becomes dirty or contaminated from exposure to the elements, thoroughly clean area with cleaner/solvent. Allow minimum 20 minutes for solvent to evaporate before continuing work. Complete next application procedure within 60 minutes following evaporation of cleaner/solvent.
  - .6 Apply catalyzed paste with trowel to smooth fleece lap transitions. Let cure for minimum 60 minutes before installing wearing layer.
  - .7 Using cleaner/solvent, wipe surface of paste to receive wearing layer and let dry. Roller-apply wearing layer of resin at minimum rate specified by resin manufacturer.
  - .8 Immediately embed full covering of specified quartz into wearing layer of base resin at minimum rate specified by resin manufacturer. Let cure for 2 hours.
  - .9 Sweep excess quartz from surface.
  - .10 Install one layer of clear or colour finish with squeegee/roller over quartz surface at minimum rate specified by resin manufacturer.
  - .11 Allow for saturation of roller covers and application equipment when calculating resin quantities.
- .5 Application of Reinforced Waterproofing System with Colour Finish and Decorative Chips:
- .1 Using cleaner/solvent, wipe flashing membrane surfaces to be lapped with field membrane. Let surface dry for minimum 20 minutes before continuing work.
  - .2 Roller-apply one layer of catalyzed base resin over primed substrate at minimum rate specified by resin manufacturer.
  - .3 Embed fleece reinforcement into wet, catalyzed base resin waterproofing layer; use roller to remove trapped air. Overlap side and end laps of fleece by minimum of 2 inches (51 mm). Apply additional coat of catalyzed base resin between layers of overlapping fleece.
  - .4 Immediately following embedment of fleece, apply second coat of catalyzed resin with roller or brush at minimum rate specified by resin manufacturer; fully saturate fleece reinforcement. Let cure for minimum 45 minutes before applying resin wearing layer.
  - .5 If work is interrupted for more than 12 hours or if catalyzed resin layer surface becomes dirty or contaminated from exposure to the elements, thoroughly clean area with cleaner/solvent. Allow minimum 20 minutes for solvent to evaporate before continuing work. Complete next application procedure within 60 minutes following evaporation of cleaner/solvent.
  - .6 Apply catalyzed paste with trowel to smooth fleece lap transitions. Let cure for minimum 60 minutes before installing wearing layer.
  - .7 Using cleaner/solvent, wipe surface of paste to receive wearing layer and let dry. Roller-apply wearing layer of resin at minimum rate specified by resin manufacturer.



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- .8 Apply one layer of colour finish with roller at minimum rate specified by resin manufacturer.
- .9 Immediately broadcast decorative chips into wet colour finish by hand or hopper spray gun at minimum rate specified by resin manufacturer. Let cure and sweep away excess chips.
- .10 Allow for saturation of roller covers and application equipment when calculating resin quantities.

#### **3.4 FIELD QUALITY CONTROL AND INSPECTION**

- .1 Notify manufacturer of project completion by means of manufacturer's printed Notification of Completion form in order to schedule a final inspection date.
- .2 Final Inspection: At completion of membrane application, hold a meeting attended by all parties who were present at pre-application conference. Together with manufacturer's representative, compile punch list of items required for completion. Complete, sign, and mail punch list form to manufacturer's headquarters.

#### **3.5 CLEANING AND PROTECTION**

- .1 Protect applied waterproofing and adjacent surfaces from staining and mechanical damage throughout this project.
- .2 Prevent public access to materials, tools, and equipment during course of project.
- .3 Clean up and remove debris daily from project site. Dispose of waste in accordance with local regulations.

END OF SECTION



## **RIGID INSULATION**

### **1.0 GENERAL**

#### 1.1 REFERENCES

- .1 Applicable Building Code / Building By-Law, most recent edition.
- .2 Roofing Contractors Association of BC (RCABC) *Roofing Manual*.
- .3 ASTM E 108 *Standard Test Methods for Fire Tests of Roof Coverings*.
- .4 ASTM E 119 *Standard Test methods for Fire Tests of Building Constructions and Materials*.
- .5 FM 4470 *Approval Standard – Class I Roof Covers*.
- .6 CAN/ULC S770 *LTTR – Long-Term Thermal Resistance*, based on ASTM C1303

#### 1.2 SUBMITTALS

- .1 Before commencement of the work provide to Parks Canada Agency the following:
  - .1 Material Safety Data Sheets (MSDS) for review and posting on job site.
  - .2 Product literature, including specification sheets and installation instructions.
  - .3 Samples of relevant materials for selection.
  - .4 Written assurance from manufacturer that long-term resistance of insulation will not vary from manufacturer's published values.

#### 1.3 QUALITY ASSURANCE

- .1 Conform to latest guarantee standards of the Roofing Contractors Association of British Columbia (RCABC) as published in *RCABC Roofing Practices Manual* for 5-year guarantee, unless modified by the Contract documents to exceed those minimums.
- .2 Employ only skilled applicators approved by insulation manufacturer.
- .3 Maintain a full-time supervisor on site during execution of the Work. Supervisor to have roofing trade qualifications or equivalent and experience in roofing work of a similar nature and scope as specified herein.

#### 1.4 DELIVERY, STORAGE AND HANDLING

- .1 Store materials elevated from contact with ground and moisture and protected from weather.
- .2 Avoid prolonged exposure of light- and heat-sensitive materials to sunlight.
- .3 Store combustible materials away from heat and open flame.
- .4 Consult manufacturer's MSDS for information on materials safety and handling.
- .5 Waste Management and Disposal
  - .1 Dispose of waste insulation daily in accordance with local regulations and insulation manufacturer's instructions.
  - .2 Do not dispose of any materials through the interior of the building; dispose all materials externally via chutes, lifts, etc.



## **RIGID INSULATION**

### **1.5 PROJECT/SITE CONDITIONS**

- .1 Weather conditions permissible for roofing are subject to the discretion of the roofing contractor and the Parks Canada Agency representative, except that in no case shall roofing work be carried out under the following conditions:
  - .1 When temperature of substrate or air is lower than or forecast to drop below 2 degrees C during course of work.
  - .2 During wet weather, forecast imminent wet weather, or when site conditions have been adversely affected by recent wet weather.
- .2 Maintain roof in weather-tight condition when not performing roofing work.

## **2.0 PRODUCTS**

### **2.1 POLYSTYRENE TYPE 4 INSULATION**

- .1 Polystyrene conforming to CAN/ULC-S701-97, Type 4, extruded, expanded polystyrene foam board, smooth, high density skins, closed cellular foam structure, shiplap edges on 4-sides. Thickness as indicated.
- .2 Products:
  - .1 “Styrofoam Highload 40” as manufactured by Dow Chemical Canada Inc., Construction Materials.
  - .2 “Foamular 400 Rigid Insulation” as manufactured by Owens Corning Celfortec Inc.

## **3.0 EXECUTION**

### **3.1 EXAMINATION**

- .1 Carefully examine substrates to receive work of this section. Report observed deficiencies that may not be corrected after the work or that may adversely affect performance or appearance of work of this section.

### **3.2 PREPARATION**

- .1 Ensure surfaces to receive insulation are clean, dry and free of frost, dirt, and loose or foreign matter.
- .2 Protection
  - .1 Have on site necessary tarpaulins, polyethylene, or other suitable materials to provide required protection in the event of rain.
  - .2 Protect adjacent work, materials and surfaces from splash, spray, or spillage. Provide appropriate protection to building and ground areas where materials are being transported to roof.

### **3.3 APPLICATION**

- .1 Rigid Polystyrene
  - .1 Loose-lay insulation boards. Do not adhere in place.
  - .2 Install insulation boards parallel and in line, with end joints staggered; butt together in moderate contact.



## **RIGID INSULATION**

- .3 Ensure no voids occur between substrate and insulation or between pieces of insulation. Trim insulation to profile where insulation abuts a sloping surface.

### **3.4 CLEANING AND PROTECTION**

- .1 Protect installed insulation from damage during the course of Work.
- .2 Immediately clean up spilled and excess primers and mastic sealants that will not be completely covered by subsequent work. Make good the appearance of any exposed areas.

END OF SECTION



## FLASHING & SHEET METAL

### 1.0 GENERAL

#### 1.1 REFERENCES

- .1 Applicable Building Code / Building By-Law, most recent edition.
- .2 Roofing Contractors Association of British Columbia (RCABC) *Roofing Practices Manual*.
- .3 Canada Mortgage and Housing Corporation (CMHC) *Best Practice Guide: Flashings*.
- .4 Sheet Metal and Air Conditioning Contractors National Association (SMACNA) *Sheet Metal Work Architectural Manual and Architectural Specification for Sheet Metal Work*.
- .5 ASTM A755 / A755M-11, *Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products*.
- .6 ASTM A792 / A792M-05, *Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process*.
- .7 ASTM B117-11, *Standard Practice for Operating Salt Spray (Fog) Apparatus*.
- .8 ASTM D523-08, *Standard Test Method for Specular Gloss*.
- .9 ASTM D2244, *Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates*.
- .10 ASTM D2247-11, *Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity*.
- .11 ASTM D3363-05(2011)e2, *Standard Test Method for Film Hardness by Pencil Test*.
- .12 ASTM D3964-10, *Standard Practice for Selection of Coating Specimens for Appearance Measurements*
- .13 ASTM D4138-07a, *Standard Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means*.
- .14 ASTM D4145-10, *Standard Test Method for Coating Flexibility of Prepainted Sheet*.
- .15 ASTM D4214-07, *Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films*.
- .16 ASTM D5402-06(2011), *Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs*.

#### 1.2 SYSTEM DESCRIPTION

- .1 Fabricate and install flashings to provide waterproof and weather-resistant performance by directing water away from other building elements susceptible to deterioration when exposed to excessive wetting. Use flashings for intended purpose only.

#### 1.3 SUBMITTALS

- .1 Submit 12-inch-long sample of each type and profile of sheet metal part, gauge and paint finish as specified.

#### 1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store materials in protective wrappings and containers.



**FLASHING & SHEET METAL**

**2.0 PRODUCTS**

2.1 MATERIALS

- .1 Galvalume Sheet: Thickness as noted below to ASTM A792 / A792M, 55 percent AL-ZN, Grade: CS, Type A, SS 33, AZ50 / AZM 150 nominal coating weight of 0.5 oz per square foot (total both sides), except as noted below. Finish: To meet the performance Criteria as noted in the following Table:

Property	Test Method	PVDF: 70% Fluoropolymer Polyvinylidene Fluoride (PVDF) Resin
Dry Film Thickness	ASTM D 4138	25µm ± 5µm
Specular Gloss	ASTM D523	Typical 3 – 45 @ 60°C
Humidity Resistance	ASTM D 2247	1000 Hours; 100% Relative Humidity @ 38°C A few blisters no larger than #8
Salt Spray	ASTM B 117	1000 Hours; 5% Salt Spray @ 95°C Less than 3mm creep from scribe line. No Blisters
Chalk Resistance	ASTM D 4214	Method A; 40 Years Exposure Vertical: Rating no less than 8 Non Vertical: Rating no less than 6
Colour Retention	ASTM D 2244 (Clean Surfaces per ASTM D3964)	40 Years Exposure Able to withstand 100 Double MEK Rubs Vertical: Less than 5Δ Hunter Units Non
Pencil Hardness	ASTM 3363	Minimum F
T Bend	ASTM D 4145	No loss of adhesion when subjected to 1T 180° Bend and Tape pull test
Cure Test	ASTM D 5402	Able to withstand 100 Double MEK Rubs

.2 Copper Flashing / Roofing

- .1 Size copper roofing/ flashing and components according to the following table.

COPPER THICKNESSES	
ITEM	
Hold-downs	32 oz. Soft temper
Continuous cleats	32 oz. Cold Rolled (C.R.)
Metal coping:	20 oz. C.R.
Counterflashing	16 oz. C.R.
Conductor head	20 oz. C.R.

- .2 All clips, fasteners and associated metal accessories shall be electrolytically compatible to material being secured. It is the Contractor's responsibility to refer questions of electrolytic incompatibility to the Architect for resolution.
- .3 Sheet metal to be minimum 26 gauge (0.217) thickness unless otherwise noted



## **FLASHING & SHEET METAL**

- .1 Cap Flashings and Through-wall Flashings: 24 gauge (0.0276 inch).
- .4 Gutters and Downpipes
  - .1 Roll-formed pre-finished aluminium 0.032 inches thick. Colour from manufacturer's standard range, to be selected by Owner.
    - .1 Funnel Outlet: K-Style Funnel Outlet, as manufactured by Precision Gutters Ltd.
    - .2 Clean Out: Leaf Catcher, as manufactured by Precision Gutters Ltd.

### **2.2 ACCESSORIES**

- .1 Touch-up paint as recommended by factory applying prefinished paint to sheet metal.
- .2 Solder to ASTM B32. Flux shall be rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.
- .3 Clips to be shop formed from minimum 22 gauge (0.0336 inch) galvalume or one gauge heavier than base material.
- .4 Isolation Coating: alkali resistant bituminous paint.
- .5 Fasteners: 300 Series stainless steel.

### **2.3 FABRICATION**

- .1 Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA Standards Manual, RCABC Roofing Practices Manual and other recognized industry best practices.
- .2 Provide end dams in accordance with applicable Building Code / Building By-Law.
- .3 Fabricate metal flashing and other sheet metal work in accordance with applicable RCABC guarantee standards.
- .4 Form pieces in 10-foot maximum lengths. Make allowance for expansion at joints. Fabricate flashing in continuous consistent length pieces (under 10 feet) to avoid unnecessary joints.
- .5 Hem exposed edges on underside 1/2 inch. Mitre and seal corners with sealant.
- .6 Form sections square, true and accurate to size, free from distortion, crude edges and other defects detrimental to appearance or performance.
- .7 Sheet metal greater than 12 inches in depth to be fabricated from minimum 24 gauge (0.0276 inch) cross-broken sheets.
- .8 Form exposed sheet metal work free from buckling, tool marks and any other distortion or marks affecting performance or appearance.
- .9 Form inside corners by folding or continuous soldering.
- .10 Cap flashings shall be formed to slope to the interior, through-wall and sill pan flashings shall be formed to slope to the exterior.
- .11 Soldered joints are required at end flange terminations, including: saddle points, flashing terminations, hood vent flanges, and other custom flashing. Solder in accordance with good practice.
- .12 Fabricate flashings covering roof membranes, pitched roofing, deck membranes, slab waterproofing, and others as a two-piece design that permits easy removal of lower flashing to provide full access to membrane terminations protected by flashing.



## **FLASHING & SHEET METAL**

### **3.0 EXECUTION**

#### **3.1 EXAMINATION**

- .1 Take all necessary precautions to ensure that all plumbing, gas, and electrical lines will not be damaged prior to nailing through plywood substrates.
- .2 In areas where sheathing has been removed to expose the insulation, note position of plumbing, gas and electrical lines so as not to create damage when nailing or attaching covering material.
- .3 Assume responsibility for damage to said items as a result of nailing or attaching covering material, or failure to properly document location of these items when exposed.

#### **3.2 INSTALLATION**

##### **.1 General**

- .1 Prevent contact between dissimilar metals to avoid galvanic corrosion.
- .2 Erect work straight, sharp, plumb, and level in true plain, free of bulges and waves, and in a consistent fashion. Verify all dimensions on site.
- .3 Use concealed fastener system for cap flashings; exposed fasteners are not acceptable. Install sill pan flashings using gasketed fasteners in locations to be fully covered by subsequent work.
- .4 Install continuous concealed on interior and exterior of vertical drip sections of cap flashing, fascia and other types of flashing.
- .5 Fabricate joints with “standing” or “S-lock” seams. Lap seams are not acceptable.
- .6 Provide minimum 5/8-inch high watertight end dams, formed using bread-pan method, at openings as required to prevent water from flowing into adjacent assemblies. Extend flashings beyond jamb openings.
- .7 Where soldering on pre-finished metal flashings:
  - .1 Remove factory enamel finish to expose raw metal in affected areas with neutralizing chemical. Wash surface with water and dry.
  - .2 Prime and finish affected area in accordance with Section 09 91 00 Painting
- .8 Where window head flashings require two separate pieces, locate flashing segment joints at the mid-point of the window.
- .9 Locate seams and joints to provide uniform and consistent appearance.
- .10 Fabricate and install pieces for cap flashings and through-wall flashings in maximum 10-foot lengths. Allow for expansion and contraction at joints.
- .11 Install sill pan flashings to fit snugly into existing or reconstructed openings. Ensure vertical returns are tight to building wall and pan drains to exterior.
- .12 Apply sealant to corners and joints to ensure permanent waterproof connections and assembly.
- .13 Apply isolation coating to metal surfaces to be embedded or in direct contact with concrete, mortar or cementitious materials.

##### **.2 Gutters**

- .1 Apply caulking and polyester reinforcing mesh to interior joints and penetrations. Clean and dry joints and penetrations prior to caulking application.



## **FLASHING & SHEET METAL**

- .2 Install gutters at deck drip locations with sufficient slope to downspouts.
- .3 Install gutters to wooden fascias so that fascia-mounted aluminium railings can be fastened above.
- .3 Downpipes
  - .1 Install downpipes at existing active drain locations and extend to ground level or existing storm drain location.
  - .2 Minimize number of separate downpipes. Tie-in drains to single vertical line in any one location.
  - .3 Positively lap individual lengths by minimum of 3 inches.
  - .4 Secure downpipes to building at through-system flashing and drains using specified fasteners. Do not secure through cladding assembly.
  - .5 Provide concrete splash-pans at discharge locations where downpipes do not tie in to existing storm drains.

END OF SECTION



## **SEALANT**

### **1.0 GENERAL**

#### 1.1 REFERENCES

- .1 Applicable Building Codes / Building By-laws, most recent edition.
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C834 Standard Specification for Latex Sealants
  - .2 ASTM C919 Standard Practice for Use of Sealants in Acoustical Applications.
  - .3 ASTM C920 Standard Specification for Elastomeric Joint Sealants.
  - .4 ASTM C1184 Standard Specification for Structural Silicone Sealants
  - .5 ASTM C1193-05a Standard Guide for Use of Joint Sealants

#### 1.2 SUBMITTALS

- .1 Samples: submit samples of each type of sealant material and colour.
- .2 Submit manufacturer's product data for all sealants and accessories, including:
  - .1 Materials compatibility information.
  - .2 Product Material Safety Data Sheets (MSDS).
  - .3 Manufacturer's installation instructions, surface preparation and product limitations.

#### 1.3 QUALITY ASSURANCE

- .1 Ensure sealant is properly adhered to substrate, whether primer is used or is not used.
- .2 Mock-Ups:
  - .1 Prepare mock-ups in accordance with Section 01 40 00, Quality Requirements.
  - .2 Show location, size, shape and depth of joint(s), complete with backup material and primer, if used. Mock-ups may be included as part of the finished work.
  - .3 Repair sealant where Parks Canada Agency representative has performed pull testing to confirm adhesion.

#### 1.4 ENVIRONMENTAL AND SAFETY REQUIREMENTS

- .1 Comply with Workplace Hazardous Materials Information System (WHMIS) requirements for use, handling, storage and disposal of hazardous materials, and with labelling and provision of material safety data sheets in accordance with Canada Labour Code requirements.

#### 1.5 PROJECT/SITE CONDITIONS

- .1 Do not proceed with the installation of joint sealants under the following conditions:
  - .1 When ambient and substrate temperature conditions are outside limits permitted by the joint sealant manufacturer or are below 4.4 degrees C.
  - .2 When joint substrates are wet or frost-laden.



## SEALANT

### 2.0 PRODUCTS

#### 2.1 MATERIALS

- .1 Only sealants listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants are acceptable for use on this project. Where sealants are qualified with primers, use only these primers.
- .2 Compatibility of materials is essential. Ensure compatibility of sealant with adjacent materials and components prior to application.
- .3 Sealant colour to closely match adjacent finishes unless otherwise specified.
- .4 Sealants:
  - .1 Sealant Type 1: Polyurethanes, single-component, non-sag. Acceptable materials:
    - .1 Tremco Dymonic FC
    - .2 Sikaflex 1a
  - .2 Sealant Type 2: Polyurethanes, multi-component, non-sag. Acceptable materials:
    - .1 Tremco Dymeric 240
    - .2 Sikaflex 2c NS
  - .3 Sealant Type 3: Silicone, single-component, non-sag. Acceptable materials:
    - .1 Tremco Spectrem 1
    - .2 Tremco Spectrem 2
    - .3 Tremco Tremsil 600
    - .4 Dow Corning 790
    - .5 Dow Corning 795
    - .6 Dow Corning Contractors Weatherproofing Sealant
  - .4 Sealant Type 4: Silicone, single-component, neutral cure for high-temperature application. Acceptable material:
    - .1 Dow Corning Hi-Temp
    - .2 TVM High Temperature Silicone
    - .3 NuFlex 302
  - .5 Sealant Type 5: Thermoplastic synthetic rubber, single-component. Acceptable materials:
    - .1 Sealant Type 5a:
      - .1 Guertin GS1010
      - .2 Tremco 830
    - .2 Sealant Type 5b:
      - .1 OSI Pro-Series QUAD
  - .6 Sealant Type 6: Flexible synthetic rubber, single-component, non-skinning, non-hardening. Acceptable materials:
    - .1 Tremco Acoustical Sealant



## **SEALANT**

.7 Sealant Type 7: Paintable latex sealant. Acceptable materials:

- .1 DAP DYNAFLEX 230
- .2 Tremco Tremflex 834

### **2.2 COMPONENTS**

.1 Exterior Sealant Joints:

- .1 Widths less than 1/2": Sealant Type 1 or Type 3.
- .2 Widths greater than 1/2": Sealant Type 2 or Type 3.
- .2 Window and door frame exterior perimeters: Sealant Type 1 or Type 3.
- .3 Sealant locations where high-temperature sealants are required: Sealant Type 4.
- .4 Window and door frame interior perimeters: Sealant Type 5a.
- .5 Exterior SA membrane to breathable air barrier membrane interfaces: Sealant Type 5a.
- .6 Exterior air barrier membrane to air barrier membrane interfaces: Sealant Type 5b.
- .7 Interior polyethylene air/vapour barrier sealant: Sealant Type 6.
- .8 Acoustical sealing of drywall partitions, corridors and party walls: Sealant Type 6.
- .9 Interior finish sealant: Sealant Type 7.
- .10 All control joints in the concrete topping slab: Sealant Type 2.

### **2.3 ACCESSORIES**

- .1 Primer: As recommended by sealant manufacturer and as required to achieve adhesion.
- .2 Backup Material: Foam backer rod as recommended by sealant manufacturer, compatible with sealant and sized to achieve correct joint depth and shape with approximately 30 percent compression.
- .3 Bond Breaker Tape: Polyethylene bond breaker tape to which sealant will not bond.
- .4 Joint Cleaner: Non-corrosive and non-staining type compatible with joint forming materials and sealant, as recommended by sealant manufacturer.

## **3.0 EXECUTION**

### **3.1 PROTECTION**

- .1 Protect installed work and adjacent surfaces from staining or contamination by the work of this section.

### **3.2 EXAMINATION**

- .1 Examine joint surfaces to ensure that they are sound, clean, dry, and free from old sealant, dirt, dust, rust, oil, grease and other contaminants that may impair adhesion.
- .2 Examine joint sizes and conditions to establish correct depth-to-width ratio for installation of backup materials and sealants.

### **3.3 PREPARATION**

- .1 Prepare surfaces in accordance with sealant manufacturer's instructions.



## **SEALANT**

- .2 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .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.

### **3.4 PRIMING**

- .1 Prime joint surfaces in accordance with sealant manufacturer's instructions immediately prior to applying sealant.

### **3.5 BACKUP MATERIAL**

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

### **3.6 SEALANT**

- .1 **Mixing:** Mix materials in strict accordance with sealant manufacturer's instructions.
- .2 **Application:**
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant as recommended by sealant manufacturer, using gun with proper-size nozzle.
  - .5 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities.
  - .6 Tool exposed surfaces in accordance with sealant manufacturer's instructions, with sufficient pressure to fill voids and joints solid, before skinning begins to give slightly concave shape.
  - .7 Promptly remove excess sealant as work progresses and upon completion.
- .3 **Curing:**
  - .1 Cure sealants in accordance with manufacturer's instructions.
  - .2 Do not cover up sealant before it is fully cured.

### **3.7 CLEANING**

- .1 Clean adjacent surfaces immediately and leave work neat and clean.
- .2 Remove excess and droppings, using manufacturer-recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

END OF SECTION



## GLAZED ALUMINUM CURTAIN WALLS

### 1.0 GENERAL

#### 1.1 CURTAIN WALL COMPONENTS

- .1 Supply and installation of aluminum curtain wall system components at the south east corner of the upper plaza area, include:
  - .1 Extruded aluminum framing components
  - .2 Aluminum infill spandrel panels
  - .3 Flashings, trims, sills and extruded aluminum panning.
  - .4 Anchors, fasteners and accessories as needed to attach curtain wall system to building finishes and structure and provide a complete system.

#### 1.2 REFERENCES

- .1 Applicable Building Code / Building By-Law, most recent edition.
- .2 CAN/CSA-A440-00, *Windows*.
- .3 ASTM Standards
  - .1 ASTM E283-04, *Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen*.
  - .2 ASTM E331-00, *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*.
  - .3 ASTM E330-02, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*.
  - .4 ASTM E1105-00, *Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference*.

#### 1.3 SYSTEM DESCRIPTION

- .1 The cafe area at the south west upper floor plaza area is clad with a conventional curtain wall assembly, installed in approximately 1968. The lower spandrel panels are comprised of a wood frame assembly.
- .2 New mullions, pressure plates, spandrel panels are required at the base of wall as per the contract drawings, baffled to prevent water entry.
- .3 Provide necessary air seals to minimize the passage from the system cavities into the building and vice-versa, to ensure adequate pressure equalization of the system cavities with the exterior.
- .4 Design Requirements
  - .1 Design curtain wall frames, reinforcing and glass in accordance with applicable Building Code / Building By-law.



## **GLAZED ALUMINUM CURTAIN WALLS**

- .2 Design to support, in addition to its own weight, wind loads as calculated in accordance with applicable Building Code / Building By-law.
- .3 Allow for deflection as noted on drawings. Maximum Allowable Deflection:  $L / 200$ , apply maximum loads as set out in applicable Building Code / Building By-Law.
- .4 New mullions must closely match extant system in finishes and dimensions.
- .5 Allow for expansion and contraction of components within ambient temperature range of -18 degrees C to 70 degrees C and surface temperature variance of components without causing distortion or failure of joint and air barrier seals under stress or other defects detrimental to appearance or performance.
- .6 Performance Requirements
  - .1 Minimum performance requirements for work of this section to CAN/CSA-A440-00.
  - .2 No water infiltration under design wind load to ASTM E 1105-96 standard (or equivalent). Satisfy requirements of AAMA 501 for testing of curtain wall assemblies.

### 1.4 QUALITY ASSURANCE

- .1 Be responsible for complete installation of work under this section; cooperate with other trades having a bearing on this work.
- .2 Installer Qualifications: Use only manufacturer-authorized installers with 2 years minimum experience in work similar to work of this Section.
- .3 Use only high-quality, compatible materials and components manufactured by nationally recognized manufacturer and of the type indicated on the Drawings and in these specifications.
- .4 Conform to performance criteria set out in CAN/CSA-A440-00 for windows and CAN/CGSB-82.1-M89 for design, materials, glazing, performance tests, marking, fabrication and installation. Test for air leakage, water penetration and wind load resistance in accordance with standards noted and provide results to Consultant.
- .5 Storefronts: To ASTM test standards E-283-04 for air infiltration, E-331-00 for water penetration and E 330-02 for structural performance with  $L/175$  or 0.75 inch (19mm) (whichever is less) deflection limitations.
- .6 Curtain wall: To ASTM E1105-00 for test pressure differential of 150 Pa.

### 1.5 SUBMITTALS

- .1 Show all components and installation details for review, test data confirming that units confirm to specified requirements, and independent testing data for all window types used on this project. Shop drawings shall be in imperial units. Completely detail items indicating all dimensions and methods of fixing. Confirm all dimensions on site. Show coordination with related work.
- .2 Submit one 12-inch (300 mm) sample of each of the following:
  - .1 Each type of insulated aluminum infill panel
  - .2 Horizontal mullion component in specified finish
- .3 Submit cleaning and servicing instructions for Owner's later use in maintenance.



## **GLAZED ALUMINUM CURTAIN WALLS**

### **1.6 WARRANTY**

- .1 Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

### **1.7 PRODUCT DELIVERY, STORAGE AND HANDLING**

- .1 Deliver and store materials undamaged and, where applicable, in their original wrapping or containers with the manufacturer's labels and seals intact. Store materials on a dry floor in a weatherproof enclosure.

## **2.0 PRODUCTS**

### **2.1 MANUFACTURER**

- .1 Alumicor Limited.
- .2 Kawneer; a subsidiary of Alcoa Inc.,
- .3 Approved alternate.

### **2.2 ALUMINUM MEMBERS**

- .1 Extruded from 6063 alloy with T5 temper free from defects impairing strength, appearance, and durability.
- .2 Fasteners: Stainless steel, aluminum or other corrosion-resistant material.
- .3 Metal Flashings: Cladding (head, Mullion, Sill): Matching 22 ga aluminum flashings, cladding and infill panels as required for complete installation. All fastenings concealed.
- .4 Aluminum Finish: Anodized aluminum unless otherwise noted.

### **2.3 CURTAIN WALL COMPONENTS**

- .1 Aluminum Infill Spandrel Panels: Aluminum face panels to be glazed into window system, 16 gauge aluminum, finished to match adjacent mullions and with insulation and back pan. Spandrel panel face to align with face of adjacent glazing; complete assembly shall be full depth of mullion with face of back pan to align with inside face of mullions and in same finish as mullions.
- .2 Curtain wall back pan insulation: Type 1VB fibreboard.
  - .1 Minimum Density: 64 kg/m<sup>3</sup> (4 lbs per cu.ft.)
  - .2 Minimum Thickness: 100 mm (4 inches)
  - .3 Thermal Resistance: R-16.8
  - .4 Acceptable Product: Roxul Inc., CurtainRock
- .3 Thermal Break: Glass fibre reinforced polyamide porthole extrusion.



## **GLAZED ALUMINUM CURTAIN WALLS**

- .4 Air barrier liner: Reinforce panels to maintain flat surface.
- .5 Anchors: Ensure anchors have three-way adjustment.

### 2.4 GLAZING ACCESSORIES

- .1 Glazing Compounds:
  - .1 Modified Oil (Type GC-A): non-hardening, knife grade consistency; Grey colour.
  - .2 Butyl Sealant (Type GC-B): single Component; Shore A hardness of 10 to 20; black colour; non-skinning.
  - .3 Acrylic Sealant (Type GC-C): single component, solvent curing, non-bleeding; cured Shore A hardness of 40 to 50; as selected from manufacturer's standard range.
  - .4 Polysulfide Sealant (Type GC-D): CAN/CGSB 19.24, two component; chemical curing, no sagging type; cured Shore A hardness of 15 to 25; colour as selected.
  - .5 Polyurethane Sealant (Type GC-E): single component, chemical curing, non-staining, non-bleeding, Shore A Hardness Range 25 to 35; selected from manufacturer's standard range.
  - .6 Silicone Sealant (Type GC-F): single component; moisture curing; capable of water immersion without loss of properties; non-bleeding, non-staining, cured Shore A hardness of 15 to 25; as selected from manufacturer's standard range.
- .2 Lock Strip Gaskets: Ozone-resistant neoprene compound, with lock-strip (zipper) component that friction-fits into position to retain glass pane/unit, H-shape tensile strength of 14 MPa (2000 psi) tested to ASTM D412, Durometer hardness of 75 tested to ASTM D1149, sized to accommodate glass thickness.
- .3 Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, length of 25 mm for each square metre of glazing or minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height to suit glazing method and pane weight and area.
- .4 Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, minimum 75 mm long x one half the height of the glazing stop x thickness to suit application.
- .5 Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; 9 x 9 mm size; black colour.
- .6 Glazing Clips: Manufacturer's standard type
- .7 Liquid Foam Insulation: Single component, moisture cure, low expansion rate spray-in-place polyurethane liquid foam insulation to ULC-S710.1 and in accordance with manufacturer's written recommendations.
- .8 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.
- .9 Miscellaneous Components: Covers, copings, special flashings, filler pieces, termination pieces, cap closures, expansion joint covers, and metal bellows to match curtain wall system as indicated.



## **GLAZED ALUMINUM CURTAIN WALLS**

### **2.5 CURTAIN WALL FABRICATION**

- .1 Fabricate aluminum curtain wall of sizes, configurations and profiles as indicated on the drawings. Allow for adequate clearances and shim spacing around full perimeter of assemblies to enable proper installation. Allow for thermal movement within curtain wall construction.
  - .1 Ensure vertical and horizontal members are tubular extrusions designed for shear block corner construction.
  - .2 Mullion depth sizes as indicated.
  - .3 Cap depth sizes: 19 mm (3/4 inch).
  - .4 Structural silicone joints where indicated.
  - .5 Ensure caps for mullion assemblies are constructed with gap.
- .2 Site glazing is permitted.
- .3 Construct units square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance. Ensure curtain wall is fabricated with separate, integrated support for insulating glass unit.
- .4 Accurately and rigidly fit together all joints and corners. Match components carefully, ensuring continuity of line and design. Ensure all joints and connections are flush, hairline, and weatherproof.
- .5 Fabricate curtain wall with minimum clearances and shim spacing around panel perimeter and ensure installation and dynamic movement of perimeter seal is enabled.
- .6 Infill Spandrel Panels:
  - .1 Fabricate infill panels with metal covered edge seals around perimeter of panel assembly, enabling installation and minor movement of perimeter seal.
  - .2 Reinforce interior surface of exterior infill panel sheet from deflection caused by wind and suction loads.
  - .3 Place insulation within infill panel adhered to exterior face of interior panel sheet over entire area of sheet using impale fasteners with integral discs.
- .7 Provide expansion joints where indicated; where not indicated provide expansion joints at maximum of 6 metres on centre.
- .8 Provide internal reinforcing as required to maintain rigidity.
- .9 All metal-to-metal joints between mullions and horizontal members that require sealing to maintain weather tightness or air seal shall be designed and assembled with a ribbon of butyl tape joint seal.
- .10 Apply a coat of bituminous paint on concealed surfaces that are or will be in contact with cementitious and/or dissimilar materials.
- .11 Anchoring: Provide sufficient corrosion resistant anchorage devices to securely and rigidly fit curtain wall in place.



## **GLAZED ALUMINUM CURTAIN WALLS**

- .12 Use only concealed fasteners
  - .1 Ensure fasteners do not penetrate thermal break.
  - .2 Where fasteners cannot be concealed, countersunk screws finished to match adjacent material may be used upon receipt of written approval from Consultant.
- .13 Reinforce framing members for exterior imposed loads where required.
- .14 **VISIBLE MANUFACTURER'S LABELS OR NAME PLATES ON THE FINISHED WORK ARE NOT PERMITTED.**

### **2.6 FINISHES**

- .1 Interior and exterior exposed aluminum surfaces: anodized to clear colour; 18 µm (0.0007 inches) minimum thickness.

## **3.0 PRODUCTS**

### **3.1 EXAMINATION**

- .1 Examine surfaces to which work of this section will be applied; ensure conditions are suitable for complete and satisfactory installation.
- .2 Commencement of work indicates acceptance by Contractor of surfaces and conditions.
- .3 Immediately report any unsatisfactory surfaces or conditions to the Consultant. Do not proceed with Work of this Section until surfaces and conditions are satisfactory.

### **3.2 CURTAIN WALL INSTALLATION**

- .1 Install work of this section in accordance with details, reviewed shop drawings, and manufacturer's instructions.
- .2 Attach curtain wall assemblies to structure plumb and level, free from warp, and allow for sufficient adjustment to accommodate construction tolerances and other irregularities.
  - .1 Maintain dimensional tolerances and align with adjacent work.
  - .2 Use alignment attachments and shims to permanently fasten elements to building structure.
  - .3 Clean welded surfaces and apply protective primer to field welds and adjacent surfaces.
- .3 Install thermal isolation where components penetrate or disrupt building insulation.
- .4 Install sill flashings.
- .5 Coordinate installation of fire stop insulation at each floor slab edge and intersection with vertical construction where indicated. Install smoke sealing where indicated.
- .6 Co-ordinate attachment and seal of perimeter air barrier and vapour retarder.
- .7 Install liquid foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.



## **GLAZED ALUMINUM CURTAIN WALLS**

- .8 Install insulating glass units and infill panels in accordance with manufacturer's written installation instructions.
- .9 Install perimeter sealant as required to achieve performance criteria and meet system installation criteria.

### **3.3 FIELD QUALITY CONTROL**

- .1 Field Review: Coordinate field review by Consultant in accordance with Section 01 40 00 – Quality Requirements.

### **3.4 CLEANING AND PROTECTION**

- .1 Protect adjacent work from damage, staining, and disfigurement caused by the work of this section.
- .2 Be responsible for all glass breakage during the progress of the work; replace broken glass at no additional cost to the Owner.
- .3 All work shall be intact at final takeover.
- .4 All glass shall be clearly marked after installation. Materials for protection markings on glass, and also adhesive for manufacturer's label, shall be either neutral or slightly acidic. In no case shall such materials be alkaline. Any staining of glass or other surfaces by alkaline materials will be cause for rejection.
- .5 All glass shall be left clean. Remove excess glazing tape, stains, rubbish, and any other surplus materials from the site resulting from the work of this section.
- .6 Remove protection and clean all aluminum using mild soap powders of a type that will not harm aluminum.
- .7 Protective plastic coverings on glass to remain in place for the duration of construction; remove upon completion.

END OF SECTION



## PAINTING

### 1.0 GENERAL

#### 1.1 REFERENCES

- .1 Master Painters and Decorators Association (MPDA) *Specifications Standards Manual*.
- .2 CAN/CGSB 1.100-99 *Interior Flat Latex Paint*.
- .3 CAN/CGSB 1.119-2000 *Interior Latex Primer-Sealer*.
- .4 CAN/CGSB 1.138-97 *Exterior Latex Flat Paint*.
- .5 CAN/CGSB 1.153-M90 *High Build, Gloss Epoxy Coating*.
- .6 CAN/CGSB 1.177-M91 *Two-Component Polyurethane Coating, Resistant to Chalking and Yellowing*.
- .7 CAN/CGSB 1.183-99 *Zinc-Rich Epoxy Coating*.
- .8 CAN/CGSB 1.189-2000 *Exterior Alkyd Primer for Wood*.
- .9 CAN/CGSB 1.195-99 *Interior Latex Semigloss Paint*.
- .10 CAN/CGSB 1.209-2003 *Interior Latex Low Gloss Paint*.
- .11 CAN/CGSB 1.213-2004 *Etch Primer (Pretreatment Coating or Tie Coat) for Steel and Aluminum*.
- .12 CAN/CGSB 19.13-M87 *Sealing Compound, One Component, Elastomeric, Chemical Curing*.
- .13 MPI #154, *Light Industrial Coating, Interior, Water Based, Gloss (MPI Gloss Level 6)*.

#### 1.2 SUBMITTALS

- .1 Submit colour samples in accordance with Section 01 31 00 Project Management and Coordination.
- .2 Provide additional sample of interior paint to be used directly to suite owner and obtain written approval before proceeding with the work.
- .3 Apply test patch of approved colour sample before proceeding with the work.

#### 1.3 QUALITY ASSURANCE

- .1 Installer/tradesmen involved in the work of this section must have documented experience having regularly undertaken the type of work as outlined herein.
- .2 Mock-Ups: Provide mock-ups in accordance with Section 01 40 00 Quality Requirements. Provide 48 hours' notification to Parks Canada Agency representative prior to application of mock-up for review.

#### 1.4 DELIVERY, STORAGE AND HANDLING

- .1 Protect from freezing, moisture, water, UV exposure and damage.

#### 1.5 PROJECT/SITE CONDITIONS

- .1 Do not apply paint finishes in areas where dust is being generated.



## **PAINTING**

### **2.0 PRODUCTS**

#### 2.1 MATERIALS

- .1 Qualified Products: only paint materials listed on the CGSB Qualified Products List are acceptable for use on this project.
- .2 Paint materials: to CGSB Standards listed in finishing formulae.
- .3 Paint materials for each coating formula to be products of a single manufacturer.
- .4 Paint type and reflectance to match existing in areas to be repaired.
- .5 Finish colours to be determined by Owner(s) from manufacturer's standard colour range.

#### 2.2 EXTERIOR FINISHES

- .1 Existing Wood Fascias
  - .1 Exterior oil wood primer to CAN/CGSB 1.189-2000 (MPI # 7).
  - .2 Exterior latex, flat, to CAN/CGSB 1.138-97 (MPI # 10).
- .2 Metal Doors and Interfacing Metal Railings
  - .1 Low-VOC direct-to-metal acrylic semi-gloss enamel for high-traffic interior-exterior use, to MPI #154.
  - .2 Approved Product: DEVFLEX 4216HP by Devoe High Performance Coatings.
- .3 Soldered Joints and Galvanized Sheet Metal Flashings
  - .1 Epoxy zinc rich primer to CAN/CGSB 1.183-99 (MPI # 20)
  - .2 High-build epoxy coating to CAN/CGSB 1.153-M90 (MPI # 98)
  - .3 2-component polyurethane coating to CAN/CGSB 1.177-M91 (MPI # 72)
- .4 Exposed Concrete Surfaces (Vertical)
  - .1 Concrete Patching Material: Fabripatch V by Fabrikem
  - .2 Primer: Fabriflex 100 Primer by Fabrikem
  - .3 Elastomeric Paint Finish (MPI # 113): Fabriflex by Fabrikem

#### 2.3 INTERIOR SURFACES

- .1 Spray textured surfaces and plaster and gypsum board, gloss to match existing
- .2 Interior latex primer sealer to CAN/CGSB 1.119-2000 (MPI # 50)
- .3 Interior Latex:
  - .1 Eggshell to CAN/CGSB 1.209-2003 (MPI # 52)
  - .2 Flat to CAN/CGSB 1.100-99 (MPI # 53)
  - .3 Semigloss to CAN/CGSB 1.195-99 (MPI # 54)



## **PAINTING**

### **3.0 EXECUTION**

#### **3.1 EXAMINATION**

- .1 Carefully examine areas to be painted. Ensure surfaces are sound, dry, clean and free of oil, grease, wax, polish, dirt, mildew, form release agents, curing compounds, efflorescence, loose and flaking paint and other foreign substances.

#### **3.2 PREPARATION**

##### **.1 Protection**

- .1 Place drop cloths beneath all areas where the work will be executed.
- .2 Mask off all adjoining areas and sections where paint is not to be applied.

##### **.2 Existing Wood Fascias**

- .1 Spot prime all exposed wood surfaces with an approved primer and let dry fully, unless manufacturer's instructions state otherwise.
- .2 Clean and seal any cracks, joints, or knots with paintable single component urethane sealant.
- .3 Test moisture content of wood with an electronic moisture meter prior to painting. Do not apply paint if moisture content of wood exceeds 12 percent.

##### **.3 Metal Doors and Interfacing Metal Railings**

- .1 Prepare surface in accordance with paint manufacturer's instructions.
- .2 Sand to remove existing gloss surface. Solvent-wipe clean with paint thinner.

##### **.4 Soldered Joints and Galvanized Sheet Metal Flashings**

- .1 Mask galvanized sheet metal flashings 4 inches from solder joints in all directions. Apply preparation to galvanized sheet metal flashings within masked area around solder joints only.
- .2 Clean and remove mill scale by hand or power wire brush.
- .3 Apply solvent wash followed by water wash and let dry.
- .4 Apply preparation to surfaces of soldered joints.

##### **.5 Interior Finishes**

- .1 Prepare plaster and wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound.

##### **.6 Vertical Exposed Concrete Surfaces**

- .1 Remove loose, spalled, delaminated and un-bonded concrete by hand or mechanically with chipping hammer or other suitable means until sound concrete substrate is reached.
- .2 Remove loose particles present or resulting from preparation work by sweeping, vacuuming, compressed air, or other suitable means.
- .3 Clean surface with minimum 2000 psi clean water pressure wash.
- .4 Patch large areas of spalled and delaminated concrete with concrete patching materials.
- .5 Pre-treat hairline cracks with 1 stripping coat of Fabriflex. Pre-treat cracks from 1/16 inch to 1/8 inch in size with 2 stripping coats of Fabriflex.



## **PAINTING**

- .6 Rout cracks larger than 1/8 inch to a minimum 1/2 inch width and seal with compatible polyurethane sealant.

### **3.3 APPLICATION**

#### **.1 General**

- .1 Do not paint unless substrates and environmental conditions are acceptable for product application.
  - .2 Minimum painting standards shall be in accordance with *MPDA Specifications Manual*.
  - .3 Apply one complete coat prior to subsequent coat(s). Let each coat dry fully prior to applying subsequent coat, unless manufacturer's directions state otherwise.
  - .4 Sand and dust between each coat to remove defects visible from a distance of 3 feet.
  - .5 Apply paint with proper consistency to achieve smooth, uniform finish and to avoid material build-up, sags, and runs.
- .2 Existing Wood Fascias: Apply 2 full coats of finish paint to visible surfaces.

#### **.3 Metal Doors and Interfacing Metal Railings**

- .1 Paint in accordance with manufacturer's instructions and MPI #154.

#### **.4 Soldered Joints and Galvanized Sheet Metal Flashings**

- .1 Apply the following:
  - .1 1 coat epoxy zinc-rich coating (primer) to CAN/CGSB 1.183-99.
  - .2 1 coat high-build epoxy coating to CAN/CGSB 1.153-M90
  - .3 2 coats 2-component polyurethane coating to CAN/CGSB 1.177-M91.
- .2 Apply primers and finish coats to surfaces of solder joints and masked areas of galvanized sheet metal flashings.

#### **.5 Vertical Exposed Concrete Surfaces**

- .1 Apply the following:
  - .1 1 coat primer.
  - .2 1 coat elastomeric finish.

#### **.6 Interior Finishes**

- .1 Formula 8 – for plaster and gypsum board walls, apply:
  - .1 1 coat interior latex primer-sealer to CAN/CGSB-1.119-2000.
  - .2 2 coats flat paint to CAN/CGSB-1.100-99.
- .2 Formula 9 – for plaster and gypsum board ceilings, apply:
  - .1 1 coat interior latex primer-sealer to CAN/CGSB-1.119-2000.
  - .2 2 coats flat paint to CAN/CGSB-1.100-99.
- .3 Formula 10 – for plaster and gypsum board ceilings, apply:
  - .1 1 coat interior latex primer-sealer to CAN/CGSB-1.119-2000.
  - .2 1 coat semigloss paint to CAN/CGSB-1.195-99.



**PAINTING**

END OF SECTION



**PLUMBING**

**1.0 GENERAL**

1.1 DESCRIPTION

- .1 The principal items of work are related to installation of new drains, removal and repair of concrete at new drain installation, work called for by the Drawings, and performing other work necessitated by these operations.

1.2 UNIT PRICES

- .1 All items of work shown on the drawings are included within the Scope of Work and project bid amount to the extents shown UNLESS OTHERWISE NOTED BELOW. Unit prices are for those items of work for which quantities are currently unknown and include those items shown on the drawings.

1.3 SUBMITTALS

- .1 Submit list of all materials proposed for use. Submit technical data sheet for each manufactured product.

1.4 QUALITY ASSURANCE

- .1 All work shall be performed by journeymen skilled in the particular task being performed. Where licensing is required such journeymen shall hold valid licenses.

1.5 REFERENCE STANDARDS

- .1 Drains to be installed in accordance with B.C. Building Code.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Handle products carefully to avoid damage to hubs, ends or roof drain components.

**2.0 PRODUCTS**

2.1 PIPES AND FITTINGS

- .1 Pipe and fittings shall be Service Class, gray cast iron.
  - .1 Replacement pipe shall match existing.
- .2 Jointings:
  - .1 Lead/Oakum caulked joints shall comply with governing regulations for use in the service required.
  - .2 Hubless jointings, complying with CISPI 310-90: No-Hub Coupling Assembly, manufactured by Tyler Pipe/Soil Pipe Division, sized to fit the application, or
  - .3 Threaded jointing shall comply with B.C. Building Code

2.2 HANGER AND FASTENERS

- .1 Fasteners and hangers shall have an allowable capacity in excess of that required by actual loading. All fasteners and hangers shall be corrosion resistant.



**PLUMBING**

2.3 DECK DRAINS

.1 Roof Drains Insert as required:

.1 Approved Manufacturer:

.1 Menzies Enterprises Limited, Menzies Metal Products

.2 Approved alternate

.2 Approved products:

.1 Copper drain

.1 Clamp-Tite Spun Copper Drain: CSA-B79 and ASME A112.6.4, spun copper bowl and flange with hub, removable cast aluminum strainer, aluminum clamping ring and compression fit mounting ring

.2 Size: To fit drain size

.3 Extension pipe length 12 inches

.2 Accessories

.1 Blue Drain Seal™: Proprietary seal between male and female connection pipes, size to fit extant drain

.2 Blue Drain Seal Screwdriver: 600 mm (24 inch) long

.3 Or equivalent

2.4 REPAIR MORTAR

.1 See Section 03 53 00 Concrete Restoration.

**3.0 EXECUTION**

3.1 GENERAL

.1 Perform removal of existing and installation of new drains from above and below the deck to complete the required operations.

.2 Verify dimensions, tolerances, and method of attachment to membrane materials.

3.2 INSTALLATION

.1 Set new drain in place at correct elevation and connect to existing leaders.

3.3 PIPING DRAIN – NO-HUB COUPLING

.1 Clean the external surface of the ends of the pipe and/or fitting to be joined so they are free of foreign material.

.2 Install the no-hub coupling in accordance with manufacturer's instructions, summarized below.

.1 Place the gasket on the end of one pipe or fitting and the stainless steel clamp assembly on the end of the other pipe or fitting.

.2 Firmly seat the pipe or fitting ends against the integrally molded shoulder inside the rubber gasket.



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### PLUMBING

- .3 Slide the clamp assembly into position over the gasket and tighten the bands as described below.
- .4 Torquing Bands: Use a properly calibrated torque wrench, set at the torque recommended by the coupling manufacturer.

#### 3.4 CLEANING

- .1 Keep the roof clean of rubbish and unused materials. At the end of each day's work remove all rubbish, debris and surplus materials caused by the work in this Section.

END OF SECTION



## **ELECTRICAL**

### **1.0 GENERAL**

#### 1.1 REFERENCES

- .1 Applicable Building Code / Building By-Law, most recent edition.

#### 1.2 SUBMITTALS

- .1 Submit to Parks Canada Agency the following:
  - .1 Copy of electrician's license.
  - .2 Letter signed by electrician confirming that he/she has been retained by Contractor to oversee and inspect electrical system repairs and modifications.

#### 1.3 QUALITY ASSURANCE

- .1 Conform to local, provincial and federal laws, by-laws and electrical codes.
- .2 Retain and pay for the services of a licensed journeyman electrician, licensed to practice in British Columbia, to oversee and inspect repairs and modifications to electrical components.

### **2.0 PRODUCTS**

#### 2.1 COMPONENTS

- .1 Balcony Soffit-Mounted Light Units.
- .2 Exterior receptacles: GFCI-rated, quantities and locations to match existing.

### **3.0 EXECUTION**

#### 3.1 GENERAL

- .1 Do not interrupt electrical power from any circuit longer than is necessary to complete repairs and modifications to electrical components. Provide Owner with 24 hours' notice prior to interrupting power from any circuit.
- .2 Restore electrical power to all circuits prior to the end of each working day.
- .3 Remove existing conduit
- .4 Conduit install and pull wire
- .5 Remaining to be completed by others.

END OF SECTION