

PROJECT TECHNICAL SPECIFICATION MANUAL

CRESTON & DISTRICT COMMUNITY COMPLEX  
AIR BARRIER REPAIRS

312 19<sup>TH</sup> AVENUE NORTH  
CRESTON, BC

Issued for Tender

Owner: Craig Stanley and Project Team

In care of: Regional District of Central Kootenay  
Community Services  
Creston, BC

Consultant: Evoke Buildings Engineering Inc.  
250 - 997 Seymour Street  
Vancouver, BC V6B 3M1  
Attention: Al Martin, RRO

Evoke Project No. 23-00035  
RDCK Project:

Date: July 14, 2023

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**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Refer to RDCK Invitation For Tenders document.

**1.2                WORK COVERED BY CONTRACT DOCUMENTS**

- .1            Work of this Contract comprises as detailed in the contract documents includes but is not restricted to, the supply of all labour, materials, services and incidentals necessary to perform the Air Barrier Repairs at the Creston & District Community Complex, located at 312 19<sup>th</sup> Avenue North, Creston, BC.
- .2            Except where specified otherwise, all requirements of this section shall apply to the Work of all other sections of the specifications.

**1.3                CONTRACT METHOD**

- .1            Construct Work under the CCDDC 2 stipulated price contract.
- .2            The Contractor cannot wholly sub-contract the work.
- .3            Employ suppliers and sub-contractors with approved quotation accepted by RDCK to perform applicable sections of the Work.
- .4            Relations and responsibilities between Contractor and sub-contractors assigned by Owner are as defined in Conditions of Contract. Assigned sub-contractors shall, in addition:
  - .1            Furnish to Contractor, bonds covering faithful performance of subcontracted work and payment of obligations thereunder when Contractor is required to furnish such bonds to Consultant and Owner.
  - .2            Purchase and maintain liability insurance to protect the Owner from claims for not less than limits of liability which Contractor is required to provide to Consultant.

**1.4                DOCUMENTS REQUIRED AT JOB SITE**

- .1            Maintain at job site, on copy of each of the following:
  - .1            Drawings and Specifications
  - .2            Addenda
  - .3            Change Orders
  - .4            Other modifications to the Contract
  - .5            Field review reports

- .6 Test reports
- .7 Copy of approved, up to date work schedule
- .8 Manufacturers' installation and application instructions
- .9 Submit site-specific and Work Plan Health and Safety Plan in accordance with Section 01 35 29 - Health and Safety Requirements.
- .10 Copy of the "Material Safety Data Sheet" (MSDS) for all materials and products on site as required by the "Workplace Hazardous Materials Information System" (WHMIS).
- .11 A day-to-day record of all work performed,
- .12 Shop Drawings

## 1.5 SUBMITTALS

- .1 Administrative
  - .1 Submit to the Consultant submittals listed for review with reasonable promptness and in an orderly sequence as to not cause delay in the Work.
  - .2 Work affected by submittal shall not proceed until review is complete.
  - .3 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of the Work and Contract Documents.
  - .4 Verify field measurements and affected adjacent Work are coordinated.
- .2 Shop Drawings and Product Data
  - .1 "Shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of the Work.
  - .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes and other information necessary for completion of the Work.
  - .3 Mark-ups done by the Consultant are not intended to change Contract Price. Alert the Consultant of any mark-ups that would affect the Contract Price, prior to proceeding.
  - .4 Make changes in shop drawings as consultant may require.

- .5 Submit electronic copies of shop drawings for each component requested in specification Sections and as Consultant may request.
- .6 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as Consultant may request where shop drawings will not be prepared due to standardized manufacture of product.
- .3 Samples
  - .1 Submit material samples for review, provide samples in duplicate as requested in respective specification Sections.
  - .2 Deliver samples prepaid to Consultant's business address.
- .4 Operating Maintenance Manuals
  - .1 Two weeks prior to Substantial Performance of the Work, submit to Consultant, 2 copies of operating and maintenance manual/documentation upon project completion.
  - .2 Manuals to contain operational information on maintenance.
  - .3 Provide digital copies of manual only. Organize contents into applicable categories of work, parallel to specifications Sections.
- .5 Record Drawings
  - .1 After award of Contract, Consultant will provide a set of drawings for purpose of maintaining record drawings. Accurately and neatly record deviations from Contract Documents caused by site conditions and changes ordered by Consultant.
  - .2 Record locations of concealed components of mechanical and electrical services.
  - .3 Identify drawings as "Project Record Copy". Maintain in new condition and make available for review on site by Consultant.
  - .4 On completion of Work and prior to final review, submit record documents to Consultant.
  - .5 Record drawings not submitted on completion of Work will be cause for the Consultant to withhold a retainage amount.
- .6 Progress Reports

- .1 Supply for distribution a minimum of every 2 weeks a written description of the project status and specific information about the work that will affect the building occupants. Increase the frequency of the submission as necessary to keep the Owners informed. Liaise with Owner's Representative and Consultant with respect to all issues impacting the building occupants' use of the site and building.

## 1.6 WORK SCHEDULES

- .1 Submit the following schedules:
  - .1 Project construction progress schedule
  - .2 Schedule of Values of the Work
  - .3 Schedule for processing shop drawings, product data and samples
  - .4 Schedule for mock-up reviews of key building components
- .2 Provide a schedule accordance with General Conditions showing anticipated progress stages and final completion of Work within time period quoted in the contract. Schedule to include dates for the following:
  - .1 Submission of shop drawings, material lists and samples
  - .2 Start and completion of all major elements of Work including access set up, removals, and new installation by area of Work
  - .3 Substantial Completion and Total Completion
- .3 Submit an updated and revised schedule with each claim for payment.
- .4 Format:
  - .1 Prepare schedules in form of horizontal bar chart
  - .2 Provide separate bar for each trade or operation
  - .3 Provide horizontal time scale identifying first work day of each week
  - .4 Format for listings: Chronological order of start of each item of work

## 1.7 WORK BY OTHERS

- .1 Cooperate with other Contractors in carrying out their respective works and carry out instructions from the Consultant.
- .2 Coordinate work with other contractors. If any part of work under this Contract depends for its proper execution or result upon work of another contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.

## 1.8 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Owner's continued use of premises during construction.
- .2 Coordinate Progress Schedule with Owner Occupancy during construction.
- .3 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .4 Maintain fire access/control.
- .5 Protect workers and public safety.

#### **1.9 OWNERS OCCUPANCY**

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

#### **1.10 CONTRACTOR USE OF PREMISES**

- .1 Limit use of premises for Work, for storage, and for access, to allow:
  - .1 Owner occupancy.
  - .2 Work by other contractors.
  - .3 Public usage.
- .2 Coordinate use of premises under direction of RDCK. Areas of work, storage, and disposal bin location on site will be designated by RDCK before commencement of Work. The boundaries established thereby shall be strictly observed. Do not unreasonably encumber site with materials or equipment which interfere with the Owner.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 When required for Contractor to conduct the Work, close off access to site by placing barricades or posting guards to prevent access to unauthorized personnel. Unauthorized personnel shall mean the public and anyone not directly concerned with the execution, supervision or inspection of the Work.
- .5 Existing or new roofs areas must be protected with plywood or suitable sheet material if they are to be used for the transportation of materials or equipment or excessive traffic. Coordinate use with the Owner.

- .6 RDCK will provide two parking passes for Contractor use. All other company or trade parking to be paid by car owner at student parking lots.
- .7 Contractor to provide their own office space and install at the acceptable location approved by RDCK.
- .8 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .9 No advertisements or company signs, other than safety or warning signs, are permitted on the building or site.
- .10 The Contractor shall be responsible for care and cleaning of areas within the building that are affected by the Work.
- .11 Washroom Facilities: Contractor to provide and maintain washroom facilities for all workers and subtrades. Washrooms inside the building are not to be used by the contractor.
- .12 Emergency Contact:
  - .1 Provide a 24 hour emergency contact telephone number in the event that an emergency arises as a result of the 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, mechanical failure, electrical failure, gas service interruption, utility interruption, broken glass and any other related failure.
- .13 Access to Interior:
  - .1 Coordinate interior access with the Owners' Representative with a written notice a minimum of 72 hours prior to commencing work for anywhere work affects the interior public space.
  - .2 All effort must be made to complete all interior work as quickly and efficiently as possible with a minimum amount of disruption to the occupants.
- .14 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
- .15 Ensure that operations conditions of exiting work at completion are still the same, equal to or better than that which existed before new work started.

**1.12 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**



- .1 Provide construction facilities and temporary controls to execute work efficiently. Remove from site all such work after use.
- .2 Erect hoarding to protect public, workers, public and private property from injury or damage.
- .3 Provide sufficient sanitary facilities for workers in accordance with local health authorities. Maintain in clean condition. Existing facilities, if designated for the Contractor's use, are to be maintained throughout the construction period.
- .4 The Owner will provide potable water for construction use.
- .5 The Owner will pay for power required during construction for the operating of power tools, to a maximum supply of 120 volts 20 amps. Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal. Temporary power in excess of that provided by the Owner is the responsibility of the Contractor.
- .6 Provide and pay for temporary telephone necessary for own use at no additional charge to the Owner.
- .7 Prevent overloading of any part of the building. Do not store or stockpile material or equipment on floors or roofs. Do not cut, drill or sleeve any load-bearing structural member. Contractor responsible to retain structural engineer for any determination of loading.
- .8 Protect existing Work or Work of other trades from damage. Damaged Work shall be made good by appropriate trades at the expense of the Contractor.
- .9 Provide weathertight enclosures to unfinished areas or openings, and all openings in roofs. Take precautions to protect openings made in the building from entry of elements and of persons during the Work and to protect existing structure and finishes from damage as a result of the Work. Work damaged or defaced, due to a failure in providing such protection, is to be removed and replaced, or repaired, as directed by the Consultant at no additional cost to the Owner.
- .10 The Contractor shall provide tarpaulins and/or other coverings for the protection of interior finishes and exterior surfaces adjacent to work areas.
- .11 Drips or smears of bitumen, adhesives, caulking or sealing compounds on adjacent Work, interior finishes, carpet or furniture, shall be removed completely without damage to the building.
- .12 Suitable platforms, wheeling stages and/or plywood shall be provided to protect the roof system from possible damage caused by material and equipment being moved, mounted or stored on the roof system.

- .13 Where security to contractor space is required, provide double locks (RDCK and contractor) to provide temporary means to maintain security.
- .14 Provide temporary dust screens, barriers and warning signs in locations where renovation and alteration work is adjacent to occupied areas.
- .15 Execution of Work within occupied premises shall cause a minimum interference with the use of the building. Maintain maximum safety to occupants during Work. Take reasonable measures for control of noise and dust. Dust protection measures will be judged by their effectiveness. Any clean-up required is to be completed by the Contractor at no cost to the Owner.
- .16 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .17 Do not operate any equipment or machinery, or undertake any dust generating operations, near or adjacent to air intakes. Review and coordinate protection to air intakes with RDCK as required to prevent the entry of dust or other contaminants into the building or building mechanical systems or those of the surrounding buildings.
- .18 Dispose of rainwater off roofs and away from the buildings until the roof drains, scuppers, eaves troughs and downspouts are installed and connected properly.
- .19 Protect existing building, curbs, roads and lanes. If, during work, any portion of the building, curbs, roads or lanes are damaged, the damage shall be repaired at no extra expense to the Owner.
- .20 At commencement of work protect all fences, trees, shrubs, and landscape elements from incidental damage as required.
- .21 Interior Protection (if required):
  - .1 Undertake a pre-construction survey of interior prior to undertaking any work. Record all observations in writing or by photographic or video record and notify the Consultant in writing of any pre-existing conditions prior to commencing work.
  - .2 Repair any interior damage caused by the work.

### **1.13 PROJECT MEETINGS**

- .1 A start-up meeting will be held prior to commencement of Work and at a suitable time and location, as approved by RDCK and Consultant.

- .2 The Contractor will schedule and administer project progress meetings at least every two weeks. The Contractor shall assume responsibility for recording and distributing minutes within 3 working days following the meeting. The minutes shall indicate actions to be taken, and by which party.

#### **1.14 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to, building operations, occupants, public and normal use of premises. Arrange with Owners and Consultant to facilitate execution of work.
- .2 No use of building elevators will be provided. All work access and movement of materials to be from the exterior.

#### **1.15 EXISTING SERVICES**

- .1 Notify Owners and Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Owners and Consultant 72 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to public and occupants.
- .3 Provide alternative routes for pedestrian and vehicular traffic if disrupted.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Owner and Consultant of findings.
- .5 Submit schedule for approval by Owner and Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Consultant to maintain critical building and tenant services.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise [Consultant] and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.

- .11 Construct barriers, as required, to separate work activities from the public and occupants.

#### 1.16 **CODES AND STANDARDS**

- .1 The Specifications are not intended as a detailed description of installation methods, but do indicate particular requirements in the completed Work.
- .2 Conform to the British Columbia Building Code (BCBC), together with all its related supplements, hereinafter referred to as the "Code" or "BCBC". Where Drawings and Specifications exceed the requirements of the code requirements, provide such additional requirements.
- .3 Where a material is designated on Drawings or in the Specifications for a certain application, unless otherwise specified, that material shall conform to standards designated in the applicable Code. Similarly, unless otherwise specified, installation methods and standards of workmanship shall also conform to standards invoked by the aforementioned code.
- .4 Where reference is made to a specification/code/standard, conform to the latest edition of the specification/code/standard, as amended, as of the date of the Contract.

#### 1.17 **QUALITY CONTROL**

- .1 Work will be reviewed by the Consultant to evaluate general conformance with the contract documents. The Contractor is responsible to maintain quality control over all aspects of the Work.
- .2 Review and testing are specified as precautions against oversight or errors in the performance of the Contract. These precautions do not in any way relieve the Contractor of his responsibility to perform the Work in conformance with the Contract Documents.
- .3 The Owner and the Consultant shall have unlimited access to all Work at any time requested. If parts of the Work are in preparation at locations other than the Place of the Work, access shall be given to such Work whenever it is in progress.
- .4 Give forty-eight (48) hours notice requesting review if Work is designated for review or approvals by the Consultant.
- .5 If the Contractor covers or permits to be covered Work that has been designated for special tests, review, or approvals before such is made, the Contractor must, at its own expense, uncover the Work, have the Work reviewed or tests satisfactorily completed and make good all Work.

- .6 The Consultant may order any part of the Work to be reviewed if such Work is suspected to be not in accordance with the Contract Documents. The Contractor shall be responsible for the cost of examination, replacement or repair.
- .7 Remove defective Work, whether the result of poor workmanship, use of defective products or damage and whether incorporated in the Work or not, which has been rejected by the Consultant as failing to conform to the Contract Documents. Replace or re-execute in accordance with the Contract Documents.
- .8 Make good other Contractor's Work damaged by such removals or replacements promptly.

#### **1.18 SETTING OUT OF THE WORK**

- .1 Line and levels are generally as shown on drawings.
- .2 Verify lines, levels and dimensions and report errors or inconsistencies in the drawings to the Consultant prior to commencing.
- .3 Examine the Work of others upon which the new Work depends. Report to the Consultant in writing any defects in such Work or issues that will affect the performance of the work of this project.
- .4 Assume full responsibility for and execute complete layout of Work to locations, lines and elevations indicated.
- .5 Provide devices and equipment required to lay out and construct Work.
- .6 Drawings are, in part, diagrammatic and are provided to convey the design intent and scope of Work, as well as indicate the general and approximate location, arrangement and size of fixtures and equipment. Obtain more accurate information about locations, arrangements and sizes at the site and become familiar with conditions and spaces affecting these matters before proceeding with Work. Where job conditions require reasonable changes in indicated locations and arrangements, make changes at no additional cost owner. Similarly, where existing conditions interfere with new installations and require relocation, include such relocation in the Work of this Contract.

#### **1.19 MOCK-UPS**

- .1 Prepare mock-ups where required by the specifications and request by the Consultant.
- .2 Construct in locations as directed by the Consultant.

- .3 Prepare mock-ups for Consultant review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the Work. Provide 72 hours notice for Consultant review.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 The approved mock-up may form part of the completed contract Work at the discretion of the Consultant. Remove mock-up where not part of the work.

#### **1.20 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Consultant of impending installation and obtain his approval for actual location.
- .4 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .5 Where electrical work and mechanical work is required to perform the work of the contract, work to be completed by Qualified Trades with required trade permits to perform the work in the City of Vancouver.

#### **1.21 ADDITIONAL DRAWINGS**

- .1 Consultant may furnish additional drawings to assist proper execution of Work. These drawings will be issued for clarification only. Such drawings shall have same meaning and intent as if they were included in Contract documents.

#### **1.22 CUTTING AND PATCHING**

- .1 Submit written request in advance of cutting or alteration which affects the integrity of structural elements, weather-exposed or moisture resistant elements, visual qualities of sight-exposed elements, or Work of the Owner or separate Contractors.
- .2 Inspect existing conditions, including elements subject to damage or movement during cutting and patching. After uncovering, inspect conditions affecting performance of the Work. Beginning of cutting or patching means acceptance of existing conditions.

- .3 Perform cutting, fitting, and patching as necessary to complete the Work. Provide openings in non-structural elements for penetrations of mechanical and electrical Work. Prepare proper surfaces to receive patching and finishing. Restore Work with new products in accordance with the Contract Documents or to match existing.
- .4 At penetration of fire-rated wall, ceiling, or floor construction, completely seal voids with fire rated material for full thickness of construction element.
- .5 Cut rigid materials using power saw or core drill. Pneumatic or impact tools not allowed.
- .6 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .7 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

### **1.23 MATERIAL AND EQUIPMENT**

- .1 Products, materials, equipment and articles incorporated into the Work shall be new, not damaged or defective and of the best quality for the purpose intended. If requested, supply evidence as to type, source and quality of products provided. Should any dispute arise as to quality or fitness of items incorporated in the Work, decision rests strictly with the Consultant based upon requirements of the Contract Documents.
- .2 Defective products will be rejected, regardless of previous inspections and/or reviews. Inspections and reviews do not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Provide and maintain, in a clean and orderly condition, dry and covered storage for tools, equipment and materials.
- .4 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause the least interference with work activities.
- .5 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .6 Notify the Consultant in writing of any conflict between these specifications and the manufacturer's instructions. The Consultant will designate which document is to be followed.

- .7 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact. Store material and equipment in accordance with supplier's instructions.
- .8 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site.
- .9 Touch-up damaged factory finished surfaces to the Consultant's satisfaction. Use primer or enamel to match original. Do not paint over name plates.
- .10 Store products subject to damage from weather in dry, off-ground, weatherproof enclosures. Remove only in quantities required for same day use.

#### **1.24 REMOVED MATERIALS**

- .1 Except as expressly stated otherwise, material indicated for removal becomes the property of the Contractor and shall be taken from the site. Material removed from the site shall be disposed of in accordance with all Federal, Provincial and Municipal regulations.

#### **1.25 WORKMANSHIP**

- .1 Workmanship shall be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ any unfit person or anyone unskilled in their required duties. The Owner and the Consultant, reserve the right to require the dismissal from the site any worker(s) deemed incompetent, careless or insubordinate.

Decisions as to the quality or fitness of workmanship in cases of dispute rest solely with the Consultant, whose decision is final.

- .3 Furnish all labour, materials and equipment to complete the Work as described. "Work as described" includes all incidental items that by implication, good trade practice, or customary usage, are required to complete the Work, even though they may not be specifically mentioned or shown.

#### **1.26 CLEANING**

- .1 When the Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for the performance of the remaining Work.



- .2 At least once per day, remove accumulations of waste material and debris. Provide a waste container and remove waste materials and debris from the site at regularly scheduled times or dispose of as directed by the Consultant. Cost for removal and disposal of waste material shall be included in the Contract Price.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Remove dirt and dust, clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, mechanical, electrical fixtures and interior and exterior surfaces. Vacuum carpets. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer. As directed by the Consultant, replace or repair broken, scratched, stained or disfigured building elements.
- .5 Clean roofs, gutters, downspouts, and drainage systems upon completion of the Work.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly repaired surfaces nor contaminate building systems.
- .9 Broom clean paved surfaces, rake clean other surfaces of grounds as directed by the Owner or the Consultant.
- .10 Make good any damage to the landscaping, sodding and flower beds outside the area of Work damaged by the Contractor's equipment, materials or his work force.
- .11 Clean interior areas prior to start of the interior finishing work, maintain areas free of dust and other contaminants during finishing operations.

#### **1.27 DOCUMENTS UPON SUBSTANTIAL COMPLETION**

- .1 Prior to applying for Substantial Completion, carefully inspect the Work and ensure it is substantially complete. Notify Consultant for review for determination.

- .2 Following the date of Substantial Completion, the Contractor is to provide all warranties fully executed and notarized.
- .3 Submit a final statement of accounting, giving total adjusted Contract Price, previous payments, and monies remaining due.
- .4 Provide a statutory declaration that all sub trades and suppliers have been compensated for materials and labour.
- .5 Submit certificate of good standing from WorkSafe BC.
- .6 Comply with the requirements of the Builders Lien Act, British Columbia. The 55 day lien period shall commence upon the date of Substantial Completion as certified by the Consultant.

**1.28 TAKE OVER PROCEDURES**

- .1 Notify the Consultant, in writing, of satisfactory completion of the Work and request the final review.
- .2 During the final review by the Consultant and the Owner, a list of deficiencies and defects will be tabulated. Correct all items.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Refer to RDCK front end.

**1.2                WORK COVERED BY CONTRACT DOCUMENTS**

- .1            Work of this Contract comprises as detailed in the contract documents includes but is not restricted to, the supply of all labour, materials, services and incidentals necessary to perform the renewals of the UBC stores Road Annex Building, located at 6368 Stores Road, Vancouver, BC.
- .2            Except where specified otherwise, all requirements of this section shall apply to the Work of all other sections of the specifications.

**1.3                CONTRACT METHOD**

- .1            Construct Work under stipulated price CCDC 2 2020 contract.
- .2            The Contractor cannot wholly subcontract the work.
- .3            Employ suppliers and subcontractors with approved quotation accepted by UBC to perform applicable sections of the Work.
- .4            Relations and responsibilities between Contractor and subcontractors assigned by Owner are as defined in Conditions of Contract. Assigned Subcontractors shall, in addition:
  - .1            Furnish to Contractor, bonds covering faithful performance of subcontracted work and payment of obligations thereunder when Contractor is required to furnish such bonds to Consultant and Owner.
  - .2            Purchase and maintain liability insurance to protect the Owner from claims for not less than limits of liability which Contractor is required to provide to Consultant.

**1.4                DOCUMENTS REQUIRED AT JOB SITE**

- .1            Maintain at job site, on copy of each of the following:
  - .1            Drawings and Specifications
  - .2            Addenda
  - .3            Change Orders
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- .7 Copy of approved, up to date work schedule
- .8 Manufacturers' installation and application instructions
- .9 Submit site-specific and Work Plan Health and Safety Plan in accordance with Section 01 35 29 - Health and Safety Requirements.
- .10 Copy of the "Material Safety Data Sheet" (MSDS) for all materials and products on site as required by the "Workplace Hazardous Materials Information System" (WHMIS).
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## 1.5 SUBMITTALS

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  - .1 Submit to the Consultant submittals listed for review with reasonable promptness and in an orderly sequence as to not cause delay in the Work.
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  - .4 Verify field measurements and affected adjacent Work are coordinated.
- .2 Shop Drawings and Product Data
  - .1 "Shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of the Work.
  - .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes and other information necessary for completion of the Work.
  - .3 Mark-ups done by the Consultant are not intended to change Contract Price. Alert the Consultant of any mark-ups that would affect the Contract Price, prior to proceeding.
  - .4 Make changes in shop drawings as consultant may require.

- .5 Submit electronic copies of shop drawings for each component requested in specification Sections and as Consultant may request.
- .6 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as Consultant may request where shop drawings will not be prepared due to standardized manufacture of product.
- .3 Samples
  - .1 Submit material samples for review, provide samples in duplicate as requested in respective specification Sections.
  - .2 Deliver samples prepaid to Consultant's business address.
- .4 Operating Maintenance Manuals
  - .1 Two weeks prior to Substantial Performance of the Work, submit to Consultant, 2 copies of operating and maintenance manual/documentation upon project completion.
  - .2 Manuals to contain operational information on maintenance.
  - .3 Provide digital copies of manual only. Organize contents into applicable categories of work, parallel to specifications Sections.
- .5 Record Drawings
  - .1 After award of Contract, Consultant will provide a set of drawings for purpose of maintaining record drawings. Accurately and neatly record deviations from Contract Documents caused by site conditions and changes ordered by Consultant.
  - .2 Record locations of concealed components of mechanical and electrical services.
  - .3 Identify drawings as "Project Record Copy". Maintain in new condition and make available for review on site by Consultant.
  - .4 On completion of Work and prior to final review, submit record documents to Consultant.
  - .5 Record drawings not submitted on completion of Work will be cause for the Consultant to withhold a retainage amount.
- .6 Progress Reports

- .1 Supply for distribution a minimum of every 2 weeks a written description of the project status and specific information about the work that will affect the building occupants. Increase the frequency of the submission as necessary to keep the Owners informed. Liaise with Owner's Representative and Consultant with respect to all issues impacting the building occupants' use of the site and building.

## 1.6 WORK SCHEDULES

- .1 Submit the following schedules:
  - .1 Project construction progress schedule
  - .2 Schedule of Values of the Work
  - .3 Schedule for processing shop drawings, product data and samples
  - .4 Schedule for mock-up reviews of key building components
- .2 Provide a schedule accordance with General Conditions showing anticipated progress stages and final completion of Work within time period quoted in the contract. Schedule to include dates for the following:
  - .1 Submission of shop drawings, material lists and samples
  - .2 Start and completion of all major elements of Work including access set up, removals, and new installation by area of Work
  - .3 Substantial Completion and Total Completion
- .3 Submit an updated and revised schedule with each claim for payment.
- .4 Format:
  - .1 Prepare schedules in form of horizontal bar chart
  - .2 Provide separate bar for each trade or operation
  - .3 Provide horizontal time scale identifying first work day of each week
  - .4 Format for listings: Chronological order of start of each item of work

## 1.7 WORK BY OTHERS

- .1 Cooperate with other Contractors in carrying out their respective works and carry out instructions from the Consultant.
- .2 Coordinate work with other contractors. If any part of work under this Contract depends for its proper execution or result upon work of another contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.

## 1.8 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Owner's continued use of premises during construction.
- .2 Coordinate Progress Schedule with Owner Occupancy during construction.
- .3 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .4 Maintain fire access/control.
- .5 Protect workers and public safety.

#### **1.9 OWNERS OCCUPANCY**

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

#### **1.10 CONTRACTOR USE OF PREMISES**

- .1 Limit use of premises for Work, for storage, and for access, to allow:
  - .1 Owner occupancy.
  - .2 Work by other contractors.
  - .3 Public usage.
- .2 Coordinate use of premises under direction of UBC. Areas of work, storage, and disposal bin location on site will be designated by UBC before commencement of Work. The boundaries established thereby shall be strictly observed. Do not unreasonably encumber site with materials or equipment which interfere with the Owner.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 When required for Contractor to conduct the Work, close off access to site by placing barricades or posting guards to prevent access to unauthorized personnel. Unauthorized personnel shall mean the public and anyone not directly concerned with the execution, supervision or inspection of the Work.
- .5 Existing or new roofs areas must be protected with plywood or suitable sheet material if they are to be used for the transportation of materials or equipment or excessive traffic. Coordinate use with the Owner.

- .6 UBC will provide two parking passes for Contractor use. All other company or trade parking to be paid by car owner at student parking lots.
- .7 Contractor to provide their own office space and install at the acceptable location approved by UBC.
- .8 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .9 No advertisements or company signs, other than safety or warning signs, are permitted on the building or site.
- .10 The Contractor shall be responsible for care and cleaning of areas within the building that are affected by the Work.
- .11 Washroom Facilities: Contractor to provide and maintain washroom facilities for all workers and subtrades. Washrooms inside the building are not to be used by the contractor.
- .12 Emergency Contact:
  - .1 Provide a 24 hour emergency contact telephone number in the event that an emergency arises as a result of the 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, mechanical failure, electrical failure, gas service interruption, utility interruption, broken glass and any other related failure.
- .13 Access to Interior:
  - .1 Coordinate interior access with the Owners' Representative with a written notice a minimum of 72 hours prior to commencing work for anywhere work affects the interior public space.
  - .2 All effort must be made to complete all interior work as quickly and efficiently as possible with a minimum amount of disruption to the occupants.
- .14 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
- .15 Ensure that operations conditions of exiting work at completion are still the same, equal to or better than that which existed before new work started.**CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**
  - .1 Provide construction facilities and temporary controls to execute work efficiently. Remove from site all such work after use.



- .2 Erect hoarding to protect public, workers, public and private property from injury or damage.
- .3 Provide sufficient sanitary facilities for workers in accordance with local health authorities. Maintain in clean condition. Existing facilities, if designated for the Contractor's use, are to be maintained throughout the construction period.
- .4 The Owner will provide potable water for construction use.
- .5 The Owner will pay for power required during construction for the operating of power tools, to a maximum supply of 120 volts 20 amps. Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal. Temporary power in excess of that provided by the Owner is the responsibility of the Contractor.
- .6 Provide and pay for temporary telephone necessary for own use at no additional charge to the Owner.
- .7 Prevent overloading of any part of the building. Do not store or stockpile material or equipment on floors or roofs. Do not cut, drill or sleeve any load-bearing structural member. Contractor responsible to retain structural engineer for any determination of loading.
- .8 Protect existing Work or Work of other trades from damage. Damaged Work shall be made good by appropriate trades at the expense of the Contractor.
- .9 Provide weathertight enclosures to unfinished areas or openings, and all openings in roofs. Take precautions to protect openings made in the building from entry of elements and of persons during the Work and to protect existing structure and finishes from damage as a result of the Work. Work damaged or defaced, due to a failure in providing such protection, is to be removed and replaced, or repaired, as directed by the Consultant at no additional cost to the Owner.
- .10 The Contractor shall provide tarpaulins and/or other coverings for the protection of interior finishes and exterior surfaces adjacent to work areas.
- .11 Drips or smears of bitumen, adhesives, caulking or sealing compounds on adjacent Work, interior finishes, carpet or furniture, shall be removed completely without damage to the building.
- .12 Suitable platforms, wheeling stages and/or plywood shall be provided to protect the roof system from possible damage caused by material and equipment being moved, mounted or stored on the roof system.
- .13 Where security to contractor space is required, provide double locks (UBC and contractor) to provide temporary means to maintain security.

- .14 Provide temporary dust screens, barriers and warning signs in locations where renovation and alteration work is adjacent to occupied areas.
- .15 Execution of Work within occupied premises shall cause a minimum interference with the use of the building. Maintain maximum safety to occupants during Work. Take reasonable measures for control of noise and dust. Dust protection measures will be judged by their effectiveness. Any clean-up required is to be completed by the Contractor at no cost to the Owner.
- .16 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .17 Do not operate any equipment or machinery, or undertake any dust generating operations, near or adjacent to air intakes. Review and coordinate protection to air intakes with UBC as required to prevent the entry of dust or other contaminants into the building or building mechanical systems or those of the surrounding buildings.
- .18 Dispose of rainwater off roofs and away from the buildings until the roof drains, scuppers, eaves troughs and downspouts are installed and connected properly.
- .19 Protect existing building, curbs, roads and lanes. If, during work, any portion of the building, curbs, roads or lanes are damaged, the damage shall be repaired at no extra expense to the Owner.
- .20 At commencement of work protect all fences, trees, shrubs, and landscape elements from incidental damage as required.
- .21 Interior Protection (if required):
  - .1 Undertake a pre-construction survey of interior prior to undertaking any work. Record all observations in writing or by photographic or video record and notify the Consultant in writing of any pre-existing conditions prior to commencing work.
  - .2 Repair any interior damage caused by the work.

## **1.12 PROJECT MEETINGS**

- .1 A start-up meeting will be held prior to commencement of Work and at a suitable time and location, as approved by UBC and Consultant.
- .2 The Contractor will schedule and administer project progress meetings at least every two weeks. The Contractor shall assume responsibility for recording and distributing minutes within 3 working days following the meeting. The minutes shall indicate actions to be taken, and by which party.

**1.13 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to, building operations, occupants, public and normal use of premises. Arrange with Owners and Consultant to facilitate execution of work.
- .2 No use of building elevators will be provided. All work access and movement of materials to be from the exterior.

**1.14 EXISTING SERVICES**

- .1 Notify Owners and Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Owners and Consultant 72 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to public and occupants.
- .3 Provide alternative routes for pedestrian and vehicular traffic if disrupted.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Owner and Consultant of findings.
- .5 Submit schedule for approval by Owner and Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Consultant to maintain critical building and tenant services.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise [Consultant] and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .10 Record locations of maintained, re-routed and abandoned service lines.
- .11 Construct barriers, as required, to separate work activities from the public and occupants.

**1.15 CODES AND STANDARDS**

- .1 The Specifications are not intended as a detailed description of installation methods, but do indicate particular requirements in the completed Work.
- .2 Conform to the British Columbia Building Code (BCBC), together with all its related supplements, hereinafter referred to as the "Code" or "BCBC". Where Drawings and Specifications exceed the requirements of the code requirements, provide such additional requirements.
- .3 Where a material is designated on Drawings or in the Specifications for a certain application, unless otherwise specified, that material shall conform to standards designated in the applicable Code. Similarly, unless otherwise specified, installation methods and standards of workmanship shall also conform to standards invoked by the aforementioned code.
- .4 Where reference is made to a specification/code/standard, conform to the latest edition of the specification/code/standard, as amended, as of the date of the Contract.

#### **1.16 QUALITY CONTROL**

- .1 Work will be reviewed by the Consultant to evaluate general conformance with the contract documents. The Contractor is responsible to maintain quality control over all aspects of the Work.
- .2 Review and testing are specified as precautions against oversight or errors in the performance of the Contract. These precautions do not in any way relieve the Contractor of his responsibility to perform the Work in conformance with the Contract Documents.
- .3 The Owner and the Consultant shall have unlimited access to all Work at any time requested. If parts of the Work are in preparation at locations other than the Place of the Work, access shall be given to such Work whenever it is in progress.
- .4 Give forty-eight (48) hours notice requesting review if Work is designated for review or approvals by the Consultant.
- .5 If the Contractor covers or permits to be covered Work that has been designated for special tests, review, or approvals before such is made, the Contractor must, at its own expense, uncover the Work, have the Work reviewed or tests satisfactorily completed and make good all Work.
- .6 The Consultant may order any part of the Work to be reviewed if such Work is suspected to be not in accordance with the Contract Documents. The Contractor shall be responsible for the cost of examination, replacement or repair.

- .7 Remove defective Work, whether the result of poor workmanship, use of defective products or damage and whether incorporated in the Work or not, which has been rejected by the Consultant as failing to conform to the Contract Documents. Replace or re-execute in accordance with the Contract Documents.
- .8 Make good other Contractor's Work damaged by such removals or replacements promptly.

#### **1.17 SETTING OUT OF THE WORK**

- .1 Line and levels are generally as shown on drawings.
- .2 Verify lines, levels and dimensions and report errors or inconsistencies in the drawings to the Consultant prior to commencing.
- .3 Examine the Work of others upon which the new Work depends. Report to the Consultant in writing any defects in such Work or issues that will affect the performance of the work of this project.
- .4 Assume full responsibility for and execute complete layout of Work to locations, lines and elevations indicated.
- .5 Provide devices and equipment required to lay out and construct Work.
- .6 Drawings are, in part, diagrammatic and are provided to convey the design intent and scope of Work, as well as indicate the general and approximate location, arrangement and size of fixtures and equipment. Obtain more accurate information about locations, arrangements and sizes at the site and become familiar with conditions and spaces affecting these matters before proceeding with Work. Where job conditions require reasonable changes in indicated locations and arrangements, make changes at no additional cost owner. Similarly, where existing conditions interfere with new installations and require relocation, include such relocation in the Work of this Contract.

#### **1.18 MOCK-UPS**

- .1 Prepare mock-ups where required by the specifications and request by the Consultant.
- .2 Construct in locations as directed by the Consultant.
- .3 Prepare mock-ups for Consultant review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the Work. Provide 72 hours notice for Consultant review.

- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 The approved mock-up may form part of the completed contract Work at the discretion of the Consultant. Remove mock-up where not part of the work.

#### **1.19 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Consultant of impending installation and obtain his approval for actual location.
- .4 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .5 Where electrical work and mechanical work is required to perform the work of the contract, work to be completed by Qualified Trades with required trade permits to perform the work in the City of Vancouver.

#### **1.20 ADDITIONAL DRAWINGS**

- .1 Consultant may furnish additional drawings to assist proper execution of Work. These drawings will be issued for clarification only. Such drawings shall have same meaning and intent as if they were included in Contract documents.

#### **1.21 CUTTING AND PATCHING**

- .1 Submit written request in advance of cutting or alteration which affects the integrity of structural elements, weather-exposed or moisture resistant elements, visual qualities of sight-exposed elements, or Work of the Owner or separate Contractors.
- .2 Inspect existing conditions, including elements subject to damage or movement during cutting and patching. After uncovering, inspect conditions affecting performance of the Work. Beginning of cutting or patching means acceptance of existing conditions.

- .3 Perform cutting, fitting, and patching as necessary to complete the Work. Provide openings in non-structural elements for penetrations of mechanical and electrical Work. Prepare proper surfaces to receive patching and finishing. Restore Work with new products in accordance with the Contract Documents or to match existing.
- .4 At penetration of fire-rated wall, ceiling, or floor construction, completely seal voids with fire rated material for full thickness of construction element.
- .5 Cut rigid materials using power saw or core drill. Pneumatic or impact tools not allowed.
- .6 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .7 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

## **1.22 MATERIAL AND EQUIPMENT**

- .1 Products, materials, equipment and articles incorporated into the Work shall be new, not damaged or defective and of the best quality for the purpose intended. If requested, supply evidence as to type, source and quality of products provided. Should any dispute arise as to quality or fitness of items incorporated in the Work, decision rests strictly with the Consultant based upon requirements of the Contract Documents.
- .2 Defective products will be rejected, regardless of previous inspections and/or reviews. Inspections and reviews do not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Provide and maintain, in a clean and orderly condition, dry and covered storage for tools, equipment and materials.
- .4 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause the least interference with work activities.
- .5 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .6 Notify the Consultant in writing of any conflict between these specifications and the manufacturer's instructions. The Consultant will designate which document is to be followed.

- .7 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact. Store material and equipment in accordance with supplier's instructions.
- .8 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site.
- .9 Touch-up damaged factory finished surfaces to the Consultant's satisfaction. Use primer or enamel to match original. Do not paint over name plates.
- .10 Store products subject to damage from weather in dry, off-ground, weatherproof enclosures. Remove only in quantities required for same day use.

### **1.23 REMOVED MATERIALS**

- .1 Except as expressly stated otherwise, material indicated for removal becomes the property of the Contractor and shall be taken from the site. Material removed from the site shall be disposed of in accordance with all Federal, Provincial and Municipal regulations.

### **1.24 WORKMANSHIP**

- .1 Workmanship shall be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ any unfit person or anyone unskilled in their required duties. The Owner and the Consultant, reserve the right to require the dismissal from the site any worker(s) deemed incompetent, careless or insubordinate.  
  
Decisions as to the quality or fitness of workmanship in cases of dispute rest solely with the Consultant, whose decision is final.
- .3 Furnish all labour, materials and equipment to complete the Work as described. "Work as described" includes all incidental items that by implication, good trade practice, or customary usage, are required to complete the Work, even though they may not be specifically mentioned or shown.

### **1.25 CLEANING**

- .1 When the Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for the performance of the remaining Work.



- .2 At least once per day, remove accumulations of waste material and debris. Provide a waste container and remove waste materials and debris from the site at regularly scheduled times or dispose of as directed by the Consultant. Cost for removal and disposal of waste material shall be included in the Contract Price.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Remove dirt and dust, clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, mechanical, electrical fixtures and interior and exterior surfaces. Vacuum carpets. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer. As directed by the Consultant, replace or repair broken, scratched, stained or disfigured building elements.
- .5 Clean roofs, gutters, downspouts, and drainage systems upon completion of the Work.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly repaired surfaces nor contaminate building systems.
- .9 Broom clean paved surfaces, rake clean other surfaces of grounds as directed by the Owner or the Consultant.
- .10 Make good any damage to the landscaping, sodding and flower beds outside the area of Work damaged by the Contractor's equipment, materials or his work force.
- .11 Clean interior areas prior to start of the interior finishing work, maintain areas free of dust and other contaminants during finishing operations.

#### **1.26 DOCUMENTS UPON SUBSTANTIAL COMPLETION**

- .1 Prior to applying for Substantial Completion, carefully inspect the Work and ensure it is substantially complete. Notify Consultant for review for determination.

- .2 Following the date of Substantial Completion, the Contractor is to provide all warranties fully executed and notarized.
- .3 Submit a final statement of accounting, giving total adjusted Contract Price, previous payments, and monies remaining due.
- .4 Provide a statutory declaration that all sub trades and suppliers have been compensated for materials and labour.
- .5 Submit certificate of good standing from WorkSafe BC.
- .6 Comply with the requirements of the Builders Lien Act, British Columbia. The 55 day lien period shall commence upon the date of Substantial Completion as certified by the Consultant.

**1.27 TAKE OVER PROCEDURES**

- .1 Notify the Consultant, in writing, of satisfactory completion of the Work and request the final review.
- .2 During the final review by the Consultant and the Owner, a list of deficiencies and defects will be tabulated. Correct all items.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                INFORMATION FOR TENDERERS**

- .1            This addendum shall form part of the Contract Documents and is to be read, interpreted and coordinated with all other parts. The following information is provided to answer questions, clarifications and changes to the contract documents for the above named project, to the extent referenced and shall become a part thereof. No consideration will be allowed for extras due to the Tenderer or any sub-tenderer not being familiar with this addendum.

**1.2                CLARIFICATIONS**

- .1            Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2            Province of British Columbia
  - .1            Workers Compensation Act, RSBC 1996 - Updated [2012].

**1.3                SPECIFICATIONS**

- .1            Submit in accordance with General Requirements.
- .2            Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1            Results of site specific safety hazard assessment.
  - .2            Results of safety and health risk or hazard analysis for site tasks and operation [found in work plan].
- .3            RDCK and Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 30 days after receipt of plan. Revise plan as appropriate and resubmit plan to RDCK and project team within 10 working days after receipt of comments from the Project Team.
- .4            Project Teams review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .5            Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to RDCK.

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

#### **1.4 FILING OF NOTICE**

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award.
- .3 Work zone locations include:
  - .1 Main Roof area.
  - .2 Areas contained by contractor security fences.
  - .3 Temporary areas, including interiors, coordinated for work activities.
- .4 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

#### **1.5 SAFETY ASSESSMENT**

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

#### **1.6 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Construction Team prior to commencement of Work.

#### **1.7 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with RDCK project requirements.

#### **1.8 PROJECT/SITE CONDITIONS**

- .1 Work at site will involve contact with:
  - .1 ?
  - .2 ?

#### **1.9 GENERAL REQUIREMENTS**

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

- .2 RDCK or Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

#### **1.10 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

#### **1.11 COMPLIANCE REQUIREMENTS**

- .1 Comply with Workers Compensation Act, B.C.[RSBC 2019].
- .2 Comply with latest Occupational Health and Safety Regulation of BC.
- .3 Comply with Occupational Health and Safety Act, General Safety Regulations, O.I.C. 2013-65 (effective June 12, 2013).
- .4 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

#### **1.12 UNFORSEEN HAZARDS**

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of BC having jurisdiction and advise Owner and Consultant verbally and in writing.

#### **1.13 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
  - .1 Have site-related working experience specific to activities associated with roofing work.
  - .2 Have working knowledge of occupational safety and health regulations.
  - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

- .5 Be on site during execution of Work and report directly to and be under direction of the site supervisor].

**1.14 POSTING OF DOCUMENTS**

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

**1.15 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by RDCK.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 RDCK or the Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

**1.16 POWDER ACTUATED DEVICES**

- .1 Use powder actuated devices only after receipt of written permission from RDCK.

**1.17 WORK STOPPAGE**

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

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1            General**

**1.1                SUMMARY OF WORK**

- .1            Install, maintain and remove access scaffolding, hoisting, cranes, barriers, offices, sanitary facilities, barriers and related construction controls and signage.

**1.2                RELATED REQUIREMENTS**

- .1            Section 01 35 29 Health and Safety Requirements.

**1.3                REFERENCE STANDARDS**

- .1            Canadian Construction Documents Committee (CCDC)
  - .1            CCDC 2-2020, Stipulated Price Contract.
- .2            CSA Group (CSA)
  - .1            CAN/CSA-Z797-18 Code of practice for access scaffold
  - .2            CAN/CSA-S269.2-[M1987(R2003)], Access Scaffolding for Construction Purposes.
  - .3            CAN/CSA-Z321-[96(R2001)], Signs and Symbols for the Occupational Environment.

**1.4                ACTION AND INFORMATIONAL SUBMITTALS**

- .1            Provide submittals in accordance with General Requirements.

**1.5                INSTALLATION AND REMOVAL**

- .1            Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2            Identify areas which have to be gravelled to prevent tracking of mud.
- .3            Indicate use of supplemental or other staging area.
- .4            Provide construction facilities in order to execute work expeditiously.
- .5            Remove from site all such work after use.

**1.6                SCAFFOLDING**

- .1            Scaffolding in accordance with CAN/CSA-S269.2.
- .2            Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, temporary stairs and stair towers.

**1.7 HOISTING**

- .1 Provide, operate and maintain hoists or cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists or cranes to be operated by qualified operator.

**1.8 SITE STORAGE/LOADING**

- .1 Co-ordinate site storage areas and loading and unloading sites with Owner.
- .2 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .3 Do not load or permit to load any part of Work with weight or force that will endanger Work.

**1.9 CONSTRUCTION PARKING**

- .1 Parking will not be permitted on site.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways and taxi areas where used by Contractor's equipment.

**1.10 SECURITY**

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

**1.11 OFFICES**

- .1 If required, provide office heated to of sufficient size to accommodate site activities and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.

**1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

**1.13 SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.



**1.14 CONSTRUCTION SIGNAGE**

- .1 Provide and erect project sign, within [three] weeks of signing Contract, in a location designated by the Owner and Consultant.
- .2 Construction sign, of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.
- .3 Indicate on sign, name of Owner, Consultant and Contractor. Provide proof of design prior to fabrication.
- .4 No other signs or advertisements, other than warning signs, are permitted on site.
- .5 Direct requests for approval to erect Consultant/Contractor signboard to Consultant. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign.
- .6 Signs and notices for safety and instruction and Graphic symbols to CAN/CSA-Z321.
- .7 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

**1.15 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period. .
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads.  
Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .8 Dust control: adequate to ensure safe operation at all times.

**1.16 CLEAN-UP**

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

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

- .1 Not Used.

END OF SECTION

**Part 1            General**

**1.1                DESCRIPTION**

1. At roof level, remove, recycle and dispose of the existing roof assembly from the perimeter area as indicated on the Demolition Plan, including roofing membrane, roof board, rigid insulation panels, sheet vapour membrane and related roof accessories down to the existing steel deck as indicated on the drawings.
2. At the perimeter roof parapet, remove, recycle and dispose of the existing roofing membrane, exterior gypsum wall board, batt insulation, flashings, plywood blocking, cleats and related materials down to the steel framing.
3. Remove, recycle or dispose of the existing C-Channel structural member and related bolts providing the horizontal parapet support from post to post.
4. Removal and disposal of the existing wood and concrete paver walkways.
5. Removal and disposal of the existing drains and scuppers.

**1.2                RELATED SECTIONS**

1. Section 01 35 29 – Health & Safety Requirements
2. Section 07 13 52 – Modified Bituminous Sheet Roofing

**1.3                REFERENCE STANDARDS**

1. CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
2. Occupational Health and Safety Regulations and Provisions
3. Occupational Health and Safety Guidelines

**1.4                EXISTING CONDITIONS**

1. Accept building areas that require demolition based on their condition on the date of tender award.
2. Items and fixtures to be retained or salvages are to be protected

3. Verify site conditions prior to commencing the demolish. Review the site, building and area of work to determine extent, removals, sequence and logistics required. Protect building systems and preserve active systems.
4. Refer to Hazardous Materials report and specification sections for hazardous materials identified and requirements. If unknown hazardous materials are uncovered during the course of demolition work, stop work and notify the Consultant immediately. Do not proceed written directions are received from the consultant.

### **1.5 DEMOLITION DRAWINGS**

1. Where required by the authority having jurisdiction, submit written directions and drawings providing support of the existing structure required and sequence of the demolish work.
2. Submission to bear stamp of qualified professional engineer registered in the Province of BC

### **Part 2 Products – NOT APPLICABLE**

### **Part 3 Execution**

#### **3.1 PROTECTION**

1. Provide bracing and shoring as required to prevent movement, settlement or damage to the adjacent buildings and/or the adjacent parts of the existing buildings which are to remain.
2. Take all precautions to support affected structures. In the event that the safety of any structure appears to be endangered, cease operations and immediately notify the Consultant.
3. Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.
4. Post adequate warnings and barricades around the holes caused by demolition or removal of materials.
5. Make good all damages caused by demolition

6. The existing building and institution will be occupied and operational during work of this Contract. Maintain building access around the protected work areas.

### **3.2 WORK**

1. Dispose of demolished materials, except where noted otherwise, in accordance with authorities having jurisdiction.
2. Remove existing conduits, fixtures and related boxes where necessary for installation of new materials and reinstall after.
3. Notify Consultant when deteriorated existing framing, decking or concrete are encountered where expected to be retained.

### **3.3 CLEANING**

1. At end of each day's work, clean and remove all debris and leave work site in a safe condition so that no part is in danger of toppling or falling. Protect the interior areas not to be demolished from exterior elements at all times.

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1            Supply and installation of plywood and blocking at roof parapet areas as indicated in the drawings.

**1.2                RELATED SECTIONS**

- .1            Section 07 13 52 – Modified Bitumen
- .2            Section 07 62 00 – Sheet Metal Flashing and Trim

**1.3                REFERENCE STANDARDS**

- .1            ASME International (ASME):
  - .1            ASME B18.6.1- [1981], Wood Screws (Inch Series)
- .2            ASTM International (ASTM):
  - .1            ASTM A307- [21], Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
  - .2            ASTM C954 [18], Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
  - .3            ASTM D7612- [21], Standard Practice for Categorizing Wood and Wood-Based Products According to their Fiber Sources
  - .4            ASTM F1667- [13], Standard Specification for Driven Fasteners: Nails, Spikes and Staples
- .3            CSA Group (CSA)
  - .1            CSA O86 Consolidation- [14], Engineering Design in Wood
  - .2            CSA O121- [08], Douglas Fir Plywood
  - .3            CSA O141- [05], Softwood Lumber.
  - .4            CSA O151- [09], Canadian Softwood Plywood
  - .5            CSA-O325- [07], Construction Sheathing
  - .6            CSA O437 Series- [93], Standards on OSB and Waferboard
  - .7            CSA T530- [99], Commercial Building Standard for Telecommunications Pathways and Spaces (Adopted ANSI/TIA/EIA 569-A)
  - .8            CAN/CSA-Z809- [16], Sustainable Forest Management
- .4            National Lumber Grades Authority (NLGA):

- .1 NLGA Standard Grading Rules for Canadian Lumber [2017]
- .5 Telecommunications Industry Association (TIA):
  - .1 ANSI/TIA/EIA 569 B, Commercial Building Standard for Telecommunications Pathways and Spaces

#### **1.4 SUBMITTALS**

- .1 Submit in accordance with Section General Requirements.
- .2 Action Submittals (to be submitted before starting any work of this Section):
  - .1 Product Data:
    - .1 submit manufacturer's instructions, printed product literature and data sheets for [rough carpentry work] and include product characteristics, performance criteria, physical size, finish and limitations.
  - .3 Informational Submittals (to be provided during the course of Work):
    - .1 Material Certificates:
      - .1 submit certificates for machine-graded [and finger-jointed] dimensional lumber indicating species and grade selected for each use and design values approved by the NLGA.

#### **1.5 QUALITY ASSURANCE**

- .1 Regulatory Approvals: Wood products used for sheathing and framing must clearly indicate on the face or edge the manufacturer of material, standard to which it was produced, grade of material including whether grade is visually graded or machine-stress rated, and exterior use where applicable, in accordance with listed reference standard.
- .2 Lumber Identification: Identified by grade with a stamp of an agency certified by the Canadian Lumber Standards Accreditation Board.
- .3 Plywood Identification: Identified by grade mark in accordance with applicable CSA standards.
- .4 Plywood, OSB and Wood-Based Composite Panel Construction Sheathing Identification: Identified by grade mark in accordance with applicable CSA standards.
- .5 Sustainable Standards Certification:
  - .1 Certified Wood: Submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- .1 Delivery and Acceptance Requirements: Protect materials from weather while in transit and on the jobsite.
- .2 Storage and Handling Requirements:
  - .1 Store materials at least 150 mm above the ground on pallets or blocks
  - .2 Cover with protective waterproof sheets allowing for air circulation and ventilation under the covering
  - .3 Protect edges and corners of sheet materials from damage during handling and storage
  - .4 Protect kiln dried and seasoned wood materials under conditions that will not cause an increase to moisture content
  - .5 Stack, lift, brace, cut and notch engineered lumber products in accordance with manufacturer's instructions and recommendations
  - .6 Store separated reusable wood waste convenient to cutting station and work areas

## Part 2 Products

### 2.1 DESCRIPTION

- .1 Regulatory Requirements:
  - .1 Lumber Grades: Provide lumber products that are all sides finished (S4S) in nominal dimensions required for the project, grade-marked by accredited agencies of the Canadian Lumber Standards Accreditation Board, that conform to National Grading Rules published by the National Lumber Grades Authority, and that have the following characteristics:
    - .1 Grading: Machine Grading, Visual Grading, or Both
    - .2 Moisture Content: Kiln Dry or Air Dry, 19% or less
    - .3 Structural Design Properties: Strength and related properties in accordance with CSA O86
    - .4 Sizes: Nominal dressed dimensions described in CSA O141 for surfaced dry conditions and wood species
  - .2 Panel Grades: Provide panel products that are grade-marked by agencies recognized by CSA O325 and the National Institute of Standards and Technology, Voluntary Product Standard PS 2 04 Performance Standard for Wood-Based Structural-Use Panels as modified by other listed CSA panel standards.

### 2.2 PERFORMANCE CRITERIA



- .1 Lumber Grades: Provide lumber products as described in Paragraph 2.3 in accordance with Regulatory Requirements.
- .2 Panel Grades: Provide panel products as described in Paragraph 2.4 in accordance with Regulatory Requirements.

## **2.3 MATERIALS**

- .1 Light Framing – No. 2 and better with the following minimum properties:
  - .1 Sizes: Maximum 38 mm width by depth noted in drawings
  - .2 Finger-Jointed Materials: Not allowed
  - .3 Species Group: Spruce-Pine-Fir (SPF) or Douglas Fir (DF)
- .2 Miscellaneous Framing, Blocking and Strapping – standard grade or better with the following minimum properties:
  - .1 Sizes: Maximum 38 mm width by depth noted in drawings
  - .2 Finger-Jointed Materials: Not allowed
  - .3 Species Group: Spruce-Pine-Fir (SPF) or Douglas Fir (DF).
- .3 If Required: DF and Canadian Softwood Plywood (CSP) using exterior grade adhesives meeting requirements of CSA O121 or CSA O151
  - .1 Kiln dry plywood to moisture content of 15% or less
  - .2 Concealed Blocking: Select Grade (SEL) CSP
  - .3 Exposed Panels and Panel Boards: Good One Side (G1S) Douglas Fir Plywood
- .4 Thickness as required by span rating and meeting requirements of CSA O325
  - .1 Plywood: Exterior rated, sheathing grade square-edged DF or CSP meeting requirements of CSA O121 or CSA O151

## **2.4 ACCESSORIES**

- .1 Driven Fasteners – steel nails, spikes, brads and staples meeting requirements of ASTM F1667 :
  - .1 Ensure length is sufficient to penetrate connecting solid wood materials
  - .2 Exterior work: hot-dipped galvanized
  - .3 Interior high humidity work: hot-dipped galvanized
  - .4 Interior work: electroplated zinc plated, or cadmium plated
- .2 Rough Hardware: manufacturer recommended fastening devices and anchors, including bolts, nuts, and washers meeting requirements of ASTM A307 :
  - .1 Ground contact materials: stainless steel

- .2 Exterior work: hot-dipped galvanized
- .3 Interior high humidity work: hot-dipped galvanized
- .4 Interior work: electroplated zinc plated, or cadmium plated
- .3 Wood Screws For Attachment of Wood Blocking to wood- use steel screws meeting requirements of ASME B18.6.1 :
  - .1 Exterior work: HDG (hot dipped galvanized), corrosion resistant coated or stainless steel
  - .2 Acceptable product: GRK RSS Rugged Structural Screw, minimum 5/16" diameter and length with full embedment into wood.
- .4 Screw Fasteners for Attachment of plywood to C-channel use steel screws meeting requirements of ASME B18.6.1 :
  - .1 Exterior work: HDG (hot dipped galvanized), corrosion resistant coated or stainless steel
  - .2 Acceptable product: SFS #1/4-20 Flex5 SD4, 2" length.
- .5 Screws for Fastening to Cold-Formed Metal Framing: Steel screws meeting requirements of ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- .6 Prefabricated Metal Anchoring Systems, Framing Connectors and Hangers: Prefabricated stainless steel products tested or designed in accordance with CSA O86 ; types and configurations as indicated on drawings.
- .7 Proprietary Fasteners: Toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.
- .8 Shims to provide slope to roof parapet: Nelson Wood Shims, 8" Lined Composite Shims.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate.
  - .2 Inform Consultant of unacceptable conditions immediately upon discovery

- .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant

### 3.2 INSTALLATION

- .1 Blocking, Furring and Grounds:
  - .1 Set miscellaneous rough carpentry to required levels and lines with members plumb, true-to-line, cut, and fitted
  - .2 Fit miscellaneous rough carpentry to other construction
  - .3 Scribe and cope as needed for accurate fit
  - .4 Locate furring, nailers, blocking, grounds, and similar supports as required and attach to other construction
- .2 Roof Parapets Plywood and Blocking:
  - .1 Provide continuous wood backing for cap flashings
  - .2 Provide solid wood or plywood sheathing and backing to receive membrane and metal flashings, conforming to Roofing Contractors Association of British Columbia (RCABC) Manual
    - .1 Fasten wood blocking securely to C-channel using mechanical fasteners (nails are not acceptable), spacing at 12"o.c. staggered.

### 3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with General Requirements.
  - .1 Leave Work area clean at end of each day
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with General Requirements.
- .3 Waste Management: Separate and or dispose of waste materials in accordance with local municipal regulations.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility

END OF SECTION

**Part 1            General**

**1.1                DESCRIPTION**

- .1            The work in this section includes:
  - .1            Supply and installation of new 2-ply modified bitumen roofing membranes complete with all related primers and accessories.
  - .2            Supply and installation of roof deck coverboard.
  - .3            Supply and installation of new drains and overflow scuppers.
  - .4            Supply and installation of liquid flashing at existing to new transition.

**1.2                RELATED SECTIONS**

- .1            Section 07 21 13 Board Insulation.
- .2            Section 07 62 00 Sheet Metal Flashing

**1.3                REFERENCES**

- .1            CSA-A123.4 Asphalt for Use in Construction of Built-Up Roof Coverings and Waterproofing Systems.
- .2            CSA A123.23-15, Product Specification for Polymer-Modified Bitumen Sheet, Prefabricated and Reinforced.
- .3            CGSB-37-GP-15M Application of Asphalt Primer for Asphalt Roofing, Damproofing and Waterproofing.
- .4            Roofing Contractors Association of BC (RCABC), Roofing Practices Manual.
- .5            CSA A123.21 (R2019) Standard test method for the dynamic wind uplift resistance of membrane-roofing systems.
- .6            ASTM D 6162, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.
- .7            ASTM D 6163, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcement.
- .8            ASTM D 6164, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- .9            CAN/ULC-S107-10, Methods of Fire Tests of Roof Coverings.

**1.4                ADMINISTRATIVE REQUIREMENTS**

- .1 Convene pre-installation meeting one week prior to beginning waterproofing Work, with waterproofing contractor's representative Consultant to:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.
  - .3 Co-ordination with other building subtrades.
  - .4 Review installation instructions and warranty requirements.

## 1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with the Project Documents.
- .2 Product Data:
  - .1 Provide one electronic copy of most recent technical waterproofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Provide one electronic copy of WHMIS SDS in accordance with the Project Documents and indicate VOC content for:
    - .1 Primers.
    - .2 Asphalt.
    - .3 Sealers.
- .3 Samples: submit samples of finished roofing membrane for approval by the Consultant prior to installation.
- .4 Manufacturer's Certificate: certify that products meet or exceed specified requirements. If required by Consultant, Manufacturers is to provide, at no cost, the results of tests and chemical analysis on the materials supplied.
- .5 Submit reports attesting the conventional section of the roofing system was tested in accordance with CSA A123.21-14 – *Standard Test Method for the Dynamic Wind Uplift Resistance of Roofing Systems*.
- .6 Test and Evaluation Reports: submit laboratory test reports certifying compliance of membrane with specification requirements and was tested to conform to CSA A123.23-15, *Product Specification for Polymer Modified Bitumen Sheet, Prefabricated and Reinforced*.
- .7 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.
- .8 Manufacturer's field report: provide periodic manufacturer's review and reports in accordance with installation and warranty requirements or as requested by the Consultant.

## 1.6 QUALITY ASSURANCE

- .1 Installer Qualifications: Only competent, qualified tradesmen experienced with membranes shall execute the work of this section.
- .2 For the work, obtain primary materials from a single manufacturer which has produced that type of product and system successfully for not less than five years. Submit job references at the request of the owner. All accessory materials shall be only as recommended or accepted by the primary manufacturer.
- .3 Compatibility between components of the roofing system is essential. When requested by the Consultant, provide written declaration from the Manufacturer to the Consultant stating that materials and components, as assembled in the system, meet this requirement.
- .4 Contractor's Field Supervision and Crew Qualifications: Contractor must maintain full-time supervisor/foreman on the job during times roofing work is in progress. Supervisor must have roofing trade certification and have minimum five years experience in roofing work similar in nature and scope of specified roofing. Roofing crew makeup shall be trade qualified journeyman roofers and register apprentices in the ratio of no more than one to one (at least one journeyman to one apprentice). Qualifications may be reviewed prior to award of contract or on site by the inspector.
- .5 Contractor Certification: Provide written certification from the membrane manufacturer certifying that the roofing contractor is approved by the manufacturer for installation of the specified system and supply of the required guarantee documents. Roofing installers shall be experienced in the application of the materials and shall supply job references to show modified bitumen installation experience of similar size and scope of this project.
- .6 Confirm that surfaces to which modified membrane is to be applied are in a condition suitable for this application. The commencement of roofing or flashing will imply unconditional acceptance of the surfaces to receive work of this section.
- .7 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .8 Notify Consultant in writing of any conflict between these specifications and manufacturer's instructions. For tender, the more stringent will be considered correct. Consultant will designate which document is to be followed after award of project.
- .9 Provide testing if requested, that have been conducted to verify conformance to CSA A123.23-15, Product Specification for Polymer-Modified Bitumen Sheet, Prefabricated and Reinforced.

- .10 Roofing system must meet or exceed requirements of Exterior Fire-Test Exposure: CAN/ULC-S107-10 , Class C; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- .11 All components of the roof assembly (vapour barrier, insulation, cover board, fasteners / adhesives and accessories) to be approved by the membrane manufacturer.

**1.7 FIRE PROTECTION**

- .1 Maintain minimum one (1) 4A40BC fire extinguisher with current charge tags is required on site during waterproofing installation. The extinguisher must be at all times within 6m (20ft) of the worker using the torch.
- .2 Maintain fire watch for one (1) hour after each day's waterproofing operations cease when torch-application is used.

**1.8 DELIVERY, STORAGE, AND HANDLING**

- .1 Provide and maintain dry, off-ground weatherproof storage.
- .2 Store rolls of felt and membrane in upright position.
  - .1 Store membrane rolls with salvage edge up.
- .3 Remove only in quantities required for same day use.
- .4 Place plywood runways over completed Work to enable movement of material and other traffic.
- .5 Store sealants at +5 degrees C minimum.
- .6 Store insulation protected from daylight, weather and deleterious materials.
- .7 Handle waterproofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.
- .8 Packaging Waste Management: remove for reuse and/or return by manufacturer of pallets, crates, padding and packaging materials as much as feasible.
  - .1 Collect and separate plastic, paper packaging and corrugated cardboard.
  - .2 Fold up metal banding, flatten and place in designated area for recycling.

**1.9 SITE CONDITIONS**

- .1 Ambient Conditions
  - .1 Do not install waterproofing when temperature remains below -18 degrees C for torch application, or to manufacturers' recommendations for self-adhered application.
  - .2 Minimum temperature for solvent-based adhesive is -5 degrees C.
  - .3 No work is to be carried out under conditions of rain or snow.
  - .4 Before commencing work, Contractor to ensure that the forecasted meteorological conditions shall permit work to be carried out without interruption during the course of the day.



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

## 1.10 WARRANTY

- .1 Provide the Owners, through the Membrane Manufacturer a material guarantee stating this roofing system shall provide waterproof surface for ten (10) years after installation. The warranty shall cover both material and workmanship and shall not exclude random areas of ponding from coverage.

## Part 2 PRODUCTS

### 2.1 WATERPROOFING MEMBRANE

- .1 Polymer-modified bitumen sheet for roofing tested according to CAD A123.23-15 to meet:
  - .1 Base sheet, Type A or Type C, Grade 3. Minimum thickness: 2.5mm.
  - .2 Cap sheet, Type C, Grade 1. Minimum thickness 3.9mm.
- .2 **Torch Applied Option**, Base sheet and base sheet stripping: high performance torch (cap stripping) and adhesively adhered (base stripping) modified bitumen base ply designed for use in homogeneous multi-layer modified bitumen roof membrane systems that consists of a lightweight random fibrous glass mat or composite reinforcement coated with high quality Styrene-Butadiene-Styrene (SBS) modified bitumen and a back surface coated with high performance modified asphalt adhesive layer specifically formulated for adhered and torched applications.
  - .1 Acceptable products:
    - .1 Soprema: Field: Sopraply Base Plus P/P 3.0, Stripping: - Sopraply Flam Stick.
- .3 **Flameless Application Option**, Base sheet and base sheet stripping: high performance adhesively adhered or cold applied (field) and adhesively adhered or cold applied (base stripping) modified bitumen base ply designed for use in homogeneous multi-layer modified bitumen roof membrane systems that consists of a lightweight random fibrous glass mat or composite

reinforcement coated with high quality Styrene-Butadiene-Styrene (SBS) modified bitumen and a back surface coated with high performance modified asphalt adhesive layer specifically formulated for adhered applications.

- .1 Acceptable products:
  - .1 Soprema: Field: Sopraply Stick Duo, Stripping: Sopraply Flam Stick
- .4 Torch Applied Option: Cap sheet and cap sheet stripping: high performance modified bitumen finish ply designed for use in multi-layer modified bitumen roof membrane systems that consists of fiberglass scrim/polyester mat composite coated with high quality Styrene-Butadiene-Styrene (SBS) modified bitumen and surfaced with ceramic granules.
  - .1 Acceptable products:
    - .1 Soprema- Sopraply Traffic Cap Plus G/P 4.0
- .5 Flameless Application Option: Cap sheet and cap sheet stripping: high performance self-adhesive or cold applied modified bitumen finish ply designed for use in multi-layer modified bitumen roof membrane systems that consists of fiberglass scrim/polyester mat composite coated with high quality Styrene-Butadiene-Styrene (SBS) modified bitumen and surfaced with ceramic granules and suitable for flameless application.
  - .1 Acceptable products:
    - .1 Soprema- Sopraply Stick Traffic Cap 550 or Colply Traffic Cap
- .6 Membrane Adhesive
  - .1 Acceptable Products:
    - .1 Soprema: Stripping- Colply Flashing
- .7 Liquid Membrane: Liquid applied membrane consisting of minimum two coats of PMMA Resin encapsulating a layer of polyester fleece. Acceptable products:
  - .1 Acceptable Products:
    - .1 Soprema Alsan RS 230 Liquid Flashing
- .8 Membrane Primer:
  - .1 Acceptable Products:
    - .1 Soprema Elastocol 500 or Elastocol Stick
- .9 Insulation Adhesive:
  - .1 Acceptable Products:
    - .1 Soprema Duotack
- .10 Mastics:
  - .1 Acceptable Products:

.1 Soprema Sopramastic

.11 High Temperature Sealant: Silicone, single component, neutral cure.

.1 Acceptable Products:

.1 Fyre Sil

## 2.2 VAPOUR RETARDER

.1 Air / Vapour Retarder Membrane: Self adhered membrane over new gypsum cover board to act as new air and vapour barrier in assembly.

.1 Acceptable Products:

.1 Soprema Sopravap'r

## 2.3 OVERLAY BOARD

.1 Gypsum Coverboard: Roof deck cover board, 6 mm thickness for horizontal applications direct to steel deck and over rigid insulation. ½" thickness for steel framing at roof parapet. To be adhered to steel deck and roof insulation. Screw fastened to steel framed roof parapets.

.1 Acceptable Products:

.1 Georgia Pacific- Densdeck Prime

.2 CGC Securock Brand Coated Glass-mat Roof board .

## 2.4 DRAINS

.1 Roof Areas: For no hub coupling connection to existing drainage pipe system.

.1 Menzies Metal Products, Clamp-Tite Spun Aluminum Drain

.2 OMG Roofing Products, Aluminum Classic Drain

## 2.5 SCUPPER OVERFLOWS

.1 To meet CSA-B79-08, Commercial and Residential Drains and Cleanouts, Menzies Metal Products Clamp-Tite Overflow Scupper or approved alternative.

## Part 3 Execution

### 3.1 QUALITY OF WORK

.1 Do waterproofing work in accordance with applicable standard in Roofing Contractors' Association of B.C., Roofing Practices Manual.

.2 Do priming for asphalt waterproofing in accordance with CGSB-37-GP-15M "Application of Asphalt Primer for Asphalt Roofing, Damproofing and Waterproofing".

- .3 Install waterproofing elements on clean dry substrate in accordance with the Manufacturer's written instructions.
- .4 Waterproofing work shall be scheduled and performed in a sequence such that no component of the assembly is left unprotected when operations are interrupted.

**3.2 EXAMINATION OF ROOF DECKS AND ROOF PARAPET**

- .1 Evaluation and Assessment: prior to beginning of work ensure:
- .2 Decks are firm, straight, smooth, dry, free of water, snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.
- .3 Curbs have been built.
- .4 Roof drains have been installed at proper elevations relative to finished roof surface.
- .5 Spray foam has been installed to curbs, penetrations or details as shown in the Drawings.
- .6 Do not install waterproofing materials during rain or snowfall.
- .7 At roof parapet steel framing, refasten all studs to bottom and top tracks with one screw at each connection.

### **3.3 PROTECTION OF IN-PLACE CONDITIONS**

- .1 Cover walls, walkways, parapets and roofs and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Dispose of rainwater off roof and away from face of building until roof drains or hoppers installed and connected.
- .5 Protect roof from traffic and damage.
- .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
- .7 Metal connectors and decking will be treated with rust proofing or galvanization.

### **3.4 GYPSUM SHEATHING APPLICATION TO DECKS AND ROOF PARAPET**

- .1 Install new thermal barrier roof board to deck surface with low-rise two-part polyurethane adhesive. Apply continuous strip  $\frac{1}{2}$  to  $\frac{3}{4}$ " wide to top of every steel deck flute and lay panel into wet beads. Apply weight to panel for reasonable time to maximize adhesion of the panels.
- .2 Install roof board to roof parapet framing and attached with screws at 6"oc to

### **3.5 PRIMING DECK**

- .1 Apply deck primer to all substrates where waterproofing membrane is to be installed at the rate recommended by manufacturer.

### **3.6 MEMBRANE APPLICATION**

- .1 Installation of base sheet:
  - .1 Base sheet membrane shall be unrolled dry on deck for alignment.
  - .2 Base sheet shall be unrolled starting from the low point of the roof. Base sheet shall be re-rolled from both ends. Care must be taken to ensure good alignment of the first roll (parallel with the edge of the roof).
  - .3 Base sheet shall be adhered in accordance with recommendations of the membrane manufacturer.
  - .4 Care must be taken not to burn the membrane.
  - .5 Base sheet shall have side laps of 75 mm and end laps 150 mm.
  - .6 Heat seal all joints and overlaps
  - .7 Application shall provide a smooth surface without air pockets, wrinkles, fish-mouths or tears.

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

- .2 Using a chalk line, lay-out a straight line on the cap sheet surface, parallel to roof edge, 200mm inside roof, from base of wall.
- .3 Cap sheet stripping shall be torch adhered directly on its base sheet proceeding from bottom to top.
- .4 Cap sheet stripping shall be applied to extend down outside face of exterior edge, across top of parapet, down interior vertical surface and on to flat roof a distance of 150mm. Cut roll into required lengths and use width of roll (1 meter) down length of roof, maintaining specified 75mm side laps.
- .5 Roof penetrations:
  - .1 Install roof drains, vent stack covers and other roof penetration flashings and seal to membrane in accordance with the manufacturer's recommendations and details and as indicated.

### 3.7 FIELD QUALITY CONTROL

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

**3.8 CLEANING**

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this section.
- .4 Waste Management: separate waste materials for reuse and recycling.
  - .1 Place materials defined as hazardous or toxic in designated containers.
  - .2 Clearly label location of salvaged material's storage areas and provide barriers and security devices.
  - .3 Ensure emptied containers are sealed and stored safely.
  - .4 Unused paint, coatings, sealant, adhesive, gypsum or other material must be disposed of at official hazardous material collections site.

**END OF SECTION**



**Part 1 General**

**1.1 DESCRIPTION**

- .1 The work in this section includes:
  - .1 Supply and installation of new layered rigid insulation flat and tapered insulation complete with all related adhesive for roof assembly R1.

**1.2 RELATED SECTIONS**

- .1 Section 07 13 52 Modified Bituminous Sheet Roofing

**1.3 REFERENCES**

- .1 CAN/ULC S-701.1: Standard for Thermal Insulation, Polystyrene Boards and Pipe Covering.
- .2 ASTM D1621: Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- .3 ASTM D2842: Standard Test Method for Water absorption of Rigid Cellular Plastics
- .4 ASTM E96: Water Vapour Transmission of Materials..
- .5 ASTM-C578 "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation".

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 00 10 General Requirements, Submittals.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for board insulation and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit electronic copies of WHMIS SDS in accordance with Section 01 35 29 - Health and Safety Requirements. Indicate VOC's during application and curing.
- .3 Samples:
  - .1 Submit 300 x 300 mmm sample of board insulation if requested by consultant.
- .4 Certificates:

- .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports:
  - .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

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

- .1 Deliver, store and handle materials in accordance with Section [01 61 00 - Common Product Requirements] [and] [with manufacturer's written instructions].
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect specified materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 INSULATION**

- .1 Rigid Cellular Polyisocyanurate: Closed-cell, polyisocyanurate foam core insulation bonded on each side to fiberglass facers during the manufacturing process, meeting CAN/ULC-S704 Type 3, Class 3 and ASTM C1289 Type II, Class 2, Grade 2. Board thicknesses to provide replacement for existing assembly thickness at perimeter roof areas, two layers of 2", 4" total. Panel size to be 4'x4' only.

- .1 Performance Criteria to meet the following:
  - .1 Compressive Strength: To ASTM D1621, 138kPa minimum.
  - .2 Density: To ASTM D1622, not less than 32.0 kg/m<sup>3</sup>.
  - .3 Dimensional stability: To ASTM D2126, < 0.5%.
  - .4 Tensile Strength: To ASTM D1623, >35kPa
  - .5 Water Vapour Transmission: To ASTM E96, <57.2 ng/ Pa.s.m<sup>2</sup>.
  - .6 Moisture Resistance: To ASTM C1104, moisture sorption of 0.15 %.
  - .7 Non-organic facer material to meet ASTM D 3273 standards for mold resistance.
- .2 Acceptable materials:
  - .1 Soprema Sopra-ISO PLUS
  - .2 Siplast Paratherm CG
  - .3 IKO IKOTerm III
  - .4 Firestone Iso 95+ GL
  - .5 Atlas Energy Products AC Foam III
  - .6 Hunter H-Shield CG
- .2 Expanded Polystyrene (EPS) for Back Slope: Tapered rigid foam insulation meeting CAN/ULC-S701 Type 3. Taper to provide minimum 2% backslope to drains.
  - .1 Acceptable materials:
    - .1 Plastispan Tapered EPS Roof Insulation, Type 3.
    - .2 AirFoam Korolite 250 Tapered Rigid Foam Insulation
- .3 Mineral Wool Insulation for Steel Framed Roof Parapet: Mineral wool batt insulation meeting CAN/ULC-S702 Type 3.
  - .1 Acceptable materials:
    - .1 Rockwool Comfortbatt Semirigid Insulation, 5.5" Thickness.

## 2.2 ADHESIVE

- .1 Adhesive: to CGSB 71-GP-24M "Adhesive, Flexible , for Bonding Cellular insulation. Adhesive to be as compatible with the materials which it is in contact with and approved by the manufacturer of the roof assembly.

## Part 3 Execution

### 3.1 EXAMINATION

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

### 3.2 INSTALLATION

- .1 Install insulation after building substrate materials are dry.
- .2 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
- .4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 type A chimneys and CSA B149.1 and CSA B149.2 type B and L vents.
- .5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .6 Offset both vertical and horizontal joints in multiple layer applications a minimum of 12".
- .7 Do not enclose insulation until it has been inspected and approved by Consultant.

### 3.3 RIGID INSULATION INSTALLATION

- .1 Apply adhesive to insulation board and substrate at rate recommended by in accordance with manufacturer's recommendations to meet wind uplift resistance requirements listed in Section 07 13 52 Modified Bituminous Sheet Roofing.
- .2 Imbed insulation boards into adhesive beads, applied as specified, prior to skinning of adhesive.
- .3 Leave insulation board joints unbonded over line of expansion and control joints.

### **3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with general requirements.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
- .3 Waste Management: separate waste materials for as required in accordance with local municipal requirements.
  - .1 Remove waste containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1            Supply and installation of spray polyurethane foam insulation as indicated in the drawings.

**1.2                RELATED SECTIONS**

- .1            Section 07 13 52 – Modified Bitumen
- .2            Section 07 62 00 – Sheet Metal Flashing and Trim

**1.3                REFERENCE STANDARDS**

- .1            ASTM International (ASTM):
  - .1            ASTM D1622/D1622M-14 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- .2            Canadian Urethane Foam Contractors Association Inc. (CUFCA)
- .3            Underwriters’ Laboratories of Canada (ULC) (CSA)
  - .1            ULC 101, Standard Methods of Fire Endurance Tests of Building Construction and Materials. (CAN/ULC S101-140)
  - .2            ULC 102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies. (CAN/ULC S102)
  - .3            ULC 705.1, Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material – Specification. (CAN/ULC S705.1-15)
  - .4            ULC 705.2, Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Application. (CAN/ULC S705.2-05)
- .4            National Lumber Grades Authority (NLGA):
  - .1            NLGA Standard Grading Rules for Canadian Lumber [2017]
- .5            Telecommunications Industry Association (TIA):
  - .1            ANSI/TIA/EIA 569 B, Commercial Building Standard for Telecommunications Pathways and Spaces

**1.4                ADMINISTRATIVE REQUIREMENTS**

- .1            Pre-installation meeting:

- .1 Convene a pre-installation meeting two (2) weeks prior to beginning work of this Section or any on-site preparation or application. Insulation contractor, manufacturer, project manager and Consultant will review the following:
  - .1 Verify project requirements.
  - .2 Submission of technical literature and Test reports.
  - .3 Review installation and substrate conditions.
  - .4 Co-ordination with other building sub-trades.
  - .5 Review manufacturer's installation instructions.
  - .6 Preparation of Mock-Ups.
  - .7 On-site testing and inspections.

**1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 00 10 – General Requirement.
- .2 Submit manufacturer's printed product literature, specifications and data sheets. Include product characteristics, performance criteria, and limitations.
- .3 Submit manufacturer's installation instructions. Include preparation instructions, recommendations for special storage and handling. Include installation sequence and cleaning procedures.
- .4 Submit WHMIS Safety Data Sheet (SDS) in accordance with Section 01 00 10 – General Requirements.
- .5 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .6 Submit evaluation report, test reports and listing from an independent recognized evaluation service or testing laboratory, indicating compliance with specifications for specified performance characteristics and physical properties.
- .7 Submit test reports verifying compliance with CAN/ULC-S102 for surface burning characteristics.
- .8 Submit Manufacturer's Field Reports as described in PART 3 – FIELD QUALITY CONTROL. Submit manufacturer's written reports within 3 days of inspection. Submit Manufacturer's Field Reports as described in PART 3 – FIELD QUALITY CONTROL. Submit manufacturer's written reports within 3 days of inspection.
- .9 Provide Sustainable Design Submittals in accordance with Section 01 00 10 – General Requirements.

- .1 Incorporate requirements related to work of this section into Construction Waste Management Plan and Waste Reduction Workplan.
  - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
- .2 Recycled Content:
  - .1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-consumer and post-industrial content, and total cost of materials for project.
- .3 Regional Materials:
  - .1 Submit evidence that project incorporates and states its percentage of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.

## 1.6 QUALITY ASSURANCE

- .1 Manufacturer: company with experience in producing material required for this project, with sufficient production capacity to produce and deliver required units without causing delay in work.
- .2 Installer: person specializing in sprayed insulation installations with documented experience. Approved by manufacturer. Installer to be certified by an ISO 17024 accredited certification organization in accordance with the requirements in CAN/ULC S705.2. Submit copies of licenses to Consultant for each installer.
- .3 Construct mock-up in accordance with Section 01 00 10 – General Requirements.
  - .1 Construct mock-up of 10 m<sup>2</sup> minimum. Mock-up to include one inside corner and one outside corner and termination details at openings including doors and windows.
  - .2 Allow 24 hours for inspection of mock-up by project team and Consultant before proceeding with sprayed insulation work.
  - .3 When accepted, Mock-up will demonstrate minimum standard for this work.
  - .4 Approved Mock-up may be part of finished work.

## 1.7 HEALTH AND SAFETY

- .1 Comply with requirements of Workplace Hazardous Materials Information System regarding use, handling, storage and disposal of insulation materials.



- .2 Protect workers in accordance with CAN-ULC-S705.2 and manufacturer's recommendations.
- .3 Ensure that workers wear gloves, supplied fresh air system, dust masks, long sleeved clothing, eye protection and protective clothing when applying foam insulation.
- .4 Ensure that workers do not eat, drink or smoke while applying foam insulation.

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

- .1 Deliver, store and handle materials in accordance with 1.22 Materials and Equipment in Section 01 00 10 – General Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:
  - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground, indoors, and in clean, dry, well-ventilated area.
  - .2 Protect insulation materials from exposure to moisture.
  - .3 Replace wet or damaged materials with new.

## **1.9 WASTE MANAGEMENT**

- .1 Separate and recycle waste packaging materials in accordance with Waste Management Plan and Waste Reduction Plan.
- .2 Return all packaging materials for recycling as specified in the Construction Waste Management Plan and Waste Reduction Workplan.
- .3 Dispose of waste products at appropriate recycling facilities. Collect and separate paper and plastic material in appropriate on-site storage containers.
- .4 Dispose of waste foam daily and decontaminate empty drums in accordance with foam manufacturer's instructions. Divert metal drums to metal recycling facility.

## **1.10 SITE CONDITIONS**

- .1 Ventilate area, as required according to safety requirements, product directions and in accordance with Section 01 00 10 – General Requirements.
- .2 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and [24] hour after application to maintain non-toxic, unpolluted, safe working conditions.

- .3 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.
- .4 Protect adjacent surfaces and equipment from damage by overspray and fall-out.
- .5 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

## Part 2 Products

### 2.1 MATERIALS

- .1 Insulation: spray applied closed cell, rigid polyurethane foam to CAN/ULC-S705.1 and ASTM C1029 Type 2, two component, Medium density. Zero ozone depletion blowing agent. Properties as follows:
  - .1 Core density: minimum 29.6 kg /m<sup>3</sup> ( 1.85 lb/cu ft).
  - .2 Compressive strength: minimum 236 kPa. (34.2 psi).
  - .3 Tensile strength: 313 kPa. ( 45.34 psi).
  - .4 Open cell content by volume: maximum 5.6 %.
  - .5 Water absorption: less than 0.58 % by volume.
  - .6 Dimensional stability: aged 28 days at 70 ° C at 97 % RH plus/minus 3%: less than 9 % by volume.
  - .7 Long term thermal resistance: minimum RSI 1.82 (R10.3) per 50 mm (2") thickness.
  - .8 Air permeance at 50 mm thickness: <0.005 litres per second per m<sup>2</sup> .
  - .9 Water vapour permeance at 50 mm (2") thickness: less than 56.3 ng/Pa x second x m<sup>2</sup> (0.98 Perm).
  - .10 Maximum thickness per pass: 50 mm.
  - .11 Surface burning characteristics: to CAN/ULC-S102. Smoke developed:<500.
  - .12 Surface flame spread rating: to CAN/ULC-S102: Flame Spread <500.

### 2.2 EQUIPMENT

- .1 Spray equipment: in accordance with CAN-ULC-S705.2 and the equipment manufacturer's recommendations for specific type of application
- .2 Provide a separate proportioner unit for each spray gun.

## Part 3 Execution

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Comply with manufacturer's written instructions including data sheets, technical bulletins, catalogue installation instructions and carton installation instructions.

### **3.2 EXAMINATION**

- .1 Verify that conditions of existing substrate are acceptable for sprayed insulation application in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Consultant.
  - .2 Ensure surfaces are free of snow, ice, frost, grease and other deleterious materials.
  - .3 Measure moisture content and temperature of substrate and surface suitability in accordance with CAN/ULC S705.2. Measurements below CAN/ULC S705.2 requirements are not acceptable
  - .4 Inform [Departmental Representative] [DCC Representative] [Consultant] of unacceptable conditions immediately upon discovery.
  - .5 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from [Departmental Representative] [DCC Representative] [Consultant]].

### **3.3 PROTECTION OF IN-PLACE CONDITIONS**

- .1 Mask and cover adjacent areas to protect from over spray.
- .2 Ensure any required foam stop or back up material are in place to prevent over spray and achieve complete seal.
- .3 Seal off existing ventilation equipment. Install temporary ducting and fans to ensure exhaust fumes. Provide for make-up air.
- .4 Erect barriers, isolate area and post warning signs to advise non-protected personnel to avoid the spray area.

### **3.4 SURFACE PREPARATION**

- .1 Clean all surfaces free of oil, grease, dust and debris. Ensure surfaces are clean, dry and properly fastened to ensure adhesion of the foam to the substrate.
- .2 Ensure that all work by other trades that may penetrate through the insulation is in place and complete.

### **3.5 APPLICATION**

- .1 Apply primer to surfaces where recommended by manufacturer. Apply primer in accordance with manufacturer's instructions.

- .2 Spray apply insulation to maintain continuity of thermal protection to building elements and spaces.
- .3 Spray apply insulation to primed surfaces in accordance with CAN-ULC-S705.2</stdref>
- .4 Record equipment settings on the Daily Work Record as required by CAN-ULC-S705.2</stdref>
- .5 Spray apply insulation to final thickness as indicated on drawings. Apply in consecutive passes to thicknesses as recommended by manufacturer. Minimum thickness: 15 mm. Maximum thickness: 50 mm.
- .6 Spray insulation to seal perimeter of electrical boxes, pipes, ducts, frames and other objects into or passing through insulation.
- .7 Keep insulation away from heat emitting devices such as recessed light fixtures, chimneys and furnace vents. Maintain minimum distances as recommended by manufacturer's instructions.
- .8 Finished surface of foam insulation to be free of voids and imbedded foreign objects.
- .9 Remove masking materials and over spray from adjacent areas immediately after foam surface has hardened. Ensure cleaning methods do not damage work performed under other sections.
- .10 Trim, as required, any excess thickness that would interfere with the application of cladding system by other trades.
- .11 Do not enclose insulation until it has been inspected and approved by [Manufacturer] [Departmental Representative] [DCC Representative] [Consultant].

### **3.6 TOLERANCES**

- .1 Maximum variation from indicated thickness: minus [6] mm, plus [10] mm but not universally high or low.

### **3.7 PROTECTION**

- .1 Protect installed products and accessories from damage during construction.
- .2 Protect the spray foam from ultraviolet in accordance with manufacturer's requirements.
- .3 Cover the spray foam with an appropriate thermal barrier as required by code.

### **3.8 FIELD QUALITY CONTROL**

- .1 Provide Manufacturer's Field Services consisting of product use recommendations and regular site visits for inspection of product installation to ensure compliance with manufacturer's instructions.

### **3.9 CLEANING**

- .1 Perform daily cleaning in accordance with Section [01 74 00 - Cleaning].
  - .1 Leave Work area clean at end of each day.
- .2 Upon completion of insulation work, remove surplus materials, rubbish, tools and equipment.
  - .1 Remove insulation material spilled during installation and leave work area clean.
- .3 Separate waste materials for reuse and recycling. Remove recycling containers and bins from Site and dispose of materials at appropriate facility.

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1            Fabrication and installation of all related metal flashings including perimeter parapet curb flashings as indicated on the drawings.
- .2            Fabrication and installation of column covers as indicated on the drawings.

**1.2                RELATED SECTIONS**

- .1            Section 07 13 52 Modified Bituminous Sheet Roofing.
- .2            Section 07 21 13 Board Insulation.

**1.3                REFERENCES**

- .1            CSSBI-S8 "Quality and Performance Specification for Pre-Finished Sheet Steel Used for Building Products".
- .2            ASTM-A924/A924M "Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process".
- .3            ASTM-B32 "Standard Specification for Solder Metal".
- .4            ASTM-B69 "Standard Specification for Rolled Zinc".
- .5            ASTM-B370 "Standard Specification for Copper Sheet and Strip Building Construction".
- .6            ASTM-D822 "Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and related Coatings".
- .7            CSA-B111 "Wire Nails, Spikes and Staples".
- .8            CAN/CGSB-93.1M "Sheet Aluminum Alloy, Pre-Finished, Residential".
- .9            CAN/CGSB-1.171 "inorganic Zinc Coating".
- .10          ASTM-A653/A653M "Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process."
- .11          Aluminum Association Designation System for Aluminum Finishes.

- .12 Aluminum Association Aluminum Sheet Metal Work in Building Construction.
- .13 CSSBI-20M "Standard for Sheet Steel Cladding for Architectural Industrial and Commercial Building Application".
- .14 Roofing Practices Manual, Roofing Contractors Association of British Columbia (RCABC).

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with General Requirements.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature including product specifications and technical data sheets for sheet metal flashing fasteners and accessory materials. Include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit electronic copies of WHMIS SDS - Safety Data Sheets in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Samples:
  - .1 Submit a minimum three (3) 100 x 100mm samples for color choice. Provide 300mm (12") length of each type of sheet metal flashing profile.
  - .2 Provide 2 full size pieces of each profile used for future maintenance / replacement purposes by Owner.

#### **1.5 PRE-INSTALLATION MEETING**

- .1 Include sheet metal flashing and trim on agenda of pre-installation meetings of affected sections.

#### **1.6 MOCK-UPS**

- .1 Include flashings in mock-ups as specified for work of other affected sections.

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

- .1 Deliver, store and handle materials in accordance with Section [01 61 00 - Common Product Requirements].

- .2 Handle and store flashing materials to prevent creasing, buckling, scratching, or other damage.
- .3 Waste Management and Disposal:
  - .1 Separate waste materials for in accordance with municipal requirements.

## 1.8 **WARRANTY**

- .1 Finish Warranty: Limited product finish warranty against manufacturing finish defects:
  - .1 Provide 30 Year from date of substantial completion. Will not peel, fade or corrode. Finish warranty includes the cost of labour and materials.
- .2 Workmanship Warranty: Application limited warranty for 2 years from date of substantial

## Part 2 **Products**

### 2.1 **BASE SHEET METAL MATERIALS**

- .1 Provide sheet metal in base metal thickness specified. Where no thickness specified, provide base sheet metal in thickness recommended in SMACNA Architectural Sheet Metal Manual for type of item being fabricated, but not less than 24 gauge thickness for all installations.
- .2 Zinc coated steel sheet: 24 gauge thickness minimum, commercial quality to ASTM A653/A653M, with Z275 (G90) designation zinc coating.
- .3 Aluminum-zinc alloy coated steel sheet: to ASTM A792/A792M, commercial quality, grade 33 with AZ150 coating, regular spangle surface, 24 Gauge base metal thickness.
- .4 Aluminum sheet: to ASTM B209 plain 0.48 mm minimum thickness or thickness in accordance with AA Aluminum Design Manual Part VIII Aluminum Sheet Metal Work in Building Construction non-residential guidelines unless specified otherwise.



- .1 For sheet aluminum fabrications to be anodized, fabricate from minimum 0.8 mm thick sheet.

## 2.2 PREFINISHED STEEL SHEET

- .1 Prefinished steel with factory applied two-coat fluoropolymer (PVDF) resin on specified steel sheet substrate conforming to ASTM A755 and AAMA 621-02:
  - .1 Finished colour finished on both sides.
  - .2 Colour selected by Consultant from manufacturer's standard range.
  - .3 Specular gloss: 25 units +/- in accordance with ASTM D523.
  - .4 Exposed coating thickness: dry film coating system thickness not less than 22 micrometres.
  - .5 Resistance to accelerated weathering (20 years) for chalk rating of <8, colour fade 5 units or less and erosion rate less than 20 % to < ASTM D45878 as follows:
    - .1 Cycle #4 General Metal Coatings.
    - .2 Exposure period: 2000 hours.

## 2.3 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Pourable sealer: proprietary two-part polyurethane pourable sealer designed for sealing penetration pockets.
  - .1 Maximum VOC limit 50 g/L to SCAQMD Rule 1168 to GSES GS-36.
- .3 Loose laid underlay for metal flashing: asphalt laminated 3.6 to 4.5 kg kraft paper CSA A123.3.
- .4 Self-adhesive membrane for over IMP top of panel: sheet membrane minimum 0.25mm (10Mil) thickness, acceptable material: 3M™ Air and Vapour barrier 3015 sheet membrane.
- .5 Sealants: in accordance with Section 07 92 00 - Joint Sealants, in colour to match flashing finish colour.

- .6 Cleats and hook strips: of same material, and temper as sheet metal, minimum 50 mm wide one-third width of secured flashing continuous]. Thickness, one gauge thicker than flashing stock.
  - .1 Provide continuous hook strip at outside of parapets.
- .7 Nails: of same material as sheet metal, for wood substrate, flat head roofing nails of length and thickness suitable for metal flashing application but not less than 38mm.
- .8 Screws: of same material as sheet metal, suitable for substrate and material being fastened, galvanized or prepainted, not less than #10 x 38mm.
- .9 Solder: to <ASTM B32, "Standard Specification for Solder Metal".
- .10 Flux: rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.
- .11 Touch-up paint: as recommended by prefinished material manufacturer.
  - .1 Maximum VOC limit 50 g/L to Standard GS-11 to SCAQMD Rule 1113.

## 2.4 FABRICATION

- .1 Fabricate sheet steel flashings and other sheet steel work in accordance with applicable SMACNA and RCABC architectural details.
- .2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AAI-Aluminum Sheet Metal Work in Building Construction
- .3 Form pieces in 3048 mm maximum lengths.
  - .1 Make allowance for expansion at joints.
- .4 Hem exposed edges on underside 12 mm.
  - .1 Mitre and seal corners with sealant.
- .5 Provide minimum 4" flanges at sides and top where flashing terminate at vertical walls.
- .6 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

- .7 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

## 2.5 METAL FLASHINGS

- .1 Form all flashings, copings and fascias to profiles indicated of 24 Ga thick prefinished sheet metal.
- .2 Provide 19mm ( $\frac{3}{4}$ " ) high standing seam or 1" pocket S-Lock joints between flashing sections.

## 2.6 SCUPPER DRAINS AND OVERFLOW SUPPERS

- .1 Form scuppers from copper with minimum weight of 16 oz. (0.55mm or 0.0216"). Refer to Section 07 52 16 SBS Modified Bitumen Membrane Roofing.
- .2 Sizes and profiles: For existing location, custom box type scupper with 4" flanges around all sides. New locations: overflow scuppers can be round minimum 4" pipe with 4" flanges.
- .3 Provide necessary fastenings.

## Part 3 Execution

### 3.1 MANUFACTURER'S INSTRUCTIONS

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

### 3.2 INSTALLATION

- .1 Install sheet metal work RCABC warranty requirements.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal.
  - .1 Secure in place and lap joints 100 mm.
  - .2 Provide self-adhesive membrane to tie into adjacent assemblies.

- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
  - .1 Flash joints using S-lock or standing seams forming tight fit over hook strips.
- .5 Lock end joints and caulk with sealant.
- .6 Install surface mounted reglets true and level, and caulk top of reglet with sealant.
- .7 Lap metal flashing under cap flashing minimum 50mm (2") to form weather tight junction.
- .8 Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm. Lead wedge flashing securely into joint.
- .9 Caulk flashing at reglets with sealant.
- .10 Install pans, where shown around items projecting through roof membrane.
- .11 Where flashing installed with mechanical fasteners, install fasteners in slots or oversize holes to allow expansion and contraction of flashings.
- .12 Provide isolation coating or impervious self-adhesive membrane to separate aluminum items from concrete and masonry.

### **3.3 SCUPPERS**

- .1 Install scuppers as indicated.

### **3.4 CLEANING**

- .1 Proceed in accordance with General Requirements.
- .2 Replace construction damaged sections of flashing with new material.
- .3 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .4 Leave work areas clean, free from grease, finger marks and stains.

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1            Installation of new sealant joints at locations as indicated on the drawings.

**1.2                RELATED SECTIONS**

- .1            Section 07 62 00 Sheet Metal Flashing and Trim.
- .2            Section 08 44 13 Sloped Aluminum Glazing.

**1.3                REFERENCES**

- .1            CAN/CGSB-19.13-M87 – Sealing Compound, One-component, Elastomeric, Chemical Curing.
- .2            CAN/CGSB-19.24 – Multi-component, Chemical Curing Sealing Compound.
- .3            ASTM C719 – Standard Test Method for Adhesion and Cohesion of Elastomeric Sealant Joints Under Cyclic Movement (Hockman Cycle).
- .4            ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
- .5            ASTM C1193 – Standard Guide for Use of Joint Sealants.
- .6            ASTM C1311 – Standard Specification for Solvent Release Sealants.
- .7            ASTM C1330 – Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- .8            Sealants: The Professionals' Guide, Sealant, Waterproofing and Restoration Institute..

**1.4                ACTION AND INFORMATIONAL SUBMITTALS**

- .1            Submit in accordance with Section 01 00 10 General Requirements..
- .2            Product Data:
  - .1            Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2            Manufacturer's product to describe:
    - .1            Caulking compound.
    - .2            Primers.
    - .3            Sealing compound, each type, including compatibility when different sealants are in contact with each other.

- .3 Submit electronic copies of WHMIS SDS in accordance with Section 01 35 29.06 – Health and Safety Requirements.

.3 Samples:

- .1 Submit [2] samples of each type of material and colour.
- .2 Cured samples of exposed sealants for each colour where required to match adjacent material.

.4 Manufacturer's Instructions:

- .1 Submit instructions to include installation instructions for each product used.

**1.5 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section General Requirements.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

**1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect joint sealants from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

**1.7 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Proceed with installation of joint sealants only when:
    - .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
    - .2 Joint substrates are dry.

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

## 1.8 ENVIRONMENTAL REQUIREMENTS

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

## Part 2 Products

### 2.1 SEALANT MATERIALS

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

### 2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Sealant Type A, Silicone, single component, nonsag, low modulus, neutral-curing silicone joint sealant: meeting CAN/CGSB-19.13, ASTM C920, Type S, Grade NS Class 100/50. For Use NT. Acceptable material:
  - .1 Dowsil 790 Silicone Building Sealant
  - .2 Tremco Spectrem 1
- .2 Preformed compressible and non-compressible back-up materials:
  - .1 Polyethylene, urethane, neoprene or vinyl foam:
    - .1 Extruded open cell foam backer rod.

- .2 Size: oversize 30 to 50 %.
- .2 Neoprene or butyl rubber:
  - .1 Round solid rod, Shore A hardness 70.
- .3 High density foam:
  - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m<sup>3</sup> density, or neoprene foam backer, size as recommended by manufacturer.
- .4 Bond breaker tape:
  - .1 Polyethylene bond breaker tape which will not bond to sealant.

## **2.3 SEALANT SELECTION**

- .1 Between flashing and building, sealant Type A.
- .2 Between skylights and flashings: Type A

## **2.4 JOINT CLEANER**

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

## **Part 3 Execution**

### **3.1 EXAMINATION**

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

### **3.2 SURFACE PREPARATION**

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.



- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

### **3.3 PRIMING**

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

### **3.4 BACKUP MATERIAL**

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

### **3.5 MIXING**

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

### **3.6 APPLICATION**

- .1 Sealant:
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant using gun with proper size nozzle.
  - .5 Use sufficient pressure to fill voids and joints solid.
  - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
  - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:

- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.

### **3.7 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section [01 74 00 - Cleaning].
  - .1 Leave Work area clean at end of each day.
  - .2 Clean adjacent surfaces immediately.
  - .3 Remove excess and droppings, using recommended cleaners as work progresses.
  - .4 Remove masking tape after initial set of sealant.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with General Requirements.
- .3 Waste Management: separate waste materials and remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.8 PROTECTION**

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

**END OF SECTION**