SCOPE OF WORK . SPECIFICATIONS . DRAWINGS

Project:

2014 Roof Rehabilitation Program At
VANCOUVER PUBLIC LIBRARY SOUTH HILL
6076 Fraser Street
Vancouver, BC, V5W 2Z7

IRC Building Sciences Group
250-21900 Westminster Hwy
Richmond, BC, V6V 0A8

Copyright © 2014 by IRC Group
All rights reserved. Reproduction in whole or in part in any form without the written consent of IRC Group is strictly prohibited.
<table>
<thead>
<tr>
<th>SECTION</th>
<th>DESCRIPTION</th>
<th>NO OF PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 01005</td>
<td>General Requirements</td>
<td>8</td>
</tr>
<tr>
<td>Section 01110</td>
<td>Summary of Work</td>
<td>6</td>
</tr>
<tr>
<td>Section 01330</td>
<td>Submittal Procedures</td>
<td>6</td>
</tr>
<tr>
<td>Section 01560</td>
<td>Temporary Barriers and Enclosures</td>
<td>4</td>
</tr>
<tr>
<td>Section 01705</td>
<td>Health and Safety</td>
<td>2</td>
</tr>
<tr>
<td>Section 01775</td>
<td>Closeout Procedures</td>
<td>4</td>
</tr>
<tr>
<td>Section 02225</td>
<td>Selective Demolition and Removal</td>
<td>6</td>
</tr>
<tr>
<td>Section 05520</td>
<td>Metal Railings</td>
<td>6</td>
</tr>
<tr>
<td>Section 06101</td>
<td>Rough Carpentry</td>
<td>4</td>
</tr>
<tr>
<td>Section 07411</td>
<td>Metal Cladding</td>
<td>6</td>
</tr>
<tr>
<td>Section 07521</td>
<td>SBS Modified Bituminous Membrane Roofing</td>
<td>20</td>
</tr>
<tr>
<td>Section 07620</td>
<td>Sheet Metal Flashings and Trims</td>
<td>6</td>
</tr>
<tr>
<td>Section 07920</td>
<td>Joint Sealants</td>
<td>6</td>
</tr>
</tbody>
</table>

**DRAWINGS & DETAILS**

- R1 Roof Plan 1
- VCMM477 Curb Detail 1
- VCMM478 Sleeper Detail 1
- VDMM206 Drain Detail 1
- VPMM585 Parapet Detail 1
- VPMM586 Parapet Detail 1
- VRMM379 Wall Detail 1
- VRMM381 Wall Detail 1
- VRMM382 Wall Detail 1
- VRMM383 Wall Detail 1
- VSMM365 Plumbing Stack Detail 1
- VSMM366 Gravity Air Vent Detail 1
- VVMN033 Walkway Paver Detail 1
PART 1 - GENERAL

1.1 SAMPLES

.1 Submit samples for review, in duplicate unless specified otherwise, as requested in respective specification Sections.

.2 Identify name of manufacturer and product.

.3 Deliver samples pre-paid to Consultant’s business address.

.4 Notify Consultant in writing at time of submission of deviations in samples from requirements set forth in Contract Documents.

.5 Adjustments of samples made by Consultant are not intended to change Contract Price or Schedule. If adjustments affect value of work, state in writing to Consultant prior to proceeding with performance of work.

.6 Make changes in and to samples as requested by Consultant, consistent with Contract Documents.

.7 Installed work to match reviewed and approved samples.

1.2 CONTRACTOR’S USE OF SITE

.1 This is an occupied site and normal operations must be maintained during performance of work. Take proper care to avoid unnecessary noise, clatter or obstruction in corridors, walkways, sidewalks, and roadways. Do not interfere with use or safe passage to and from building and adjacent public sidewalks and roads. Do not unreasonably encumber site with materials or equipment. Where excessive noise or obstruction is in certain instances unavoidable, advise Owner Representative ahead of time and make suitable arrangements.

.2 Hours of Work:

.1 Work will be carried out Monday to Friday, 7:30 a.m. to 6:00 p.m., unless otherwise approved by Owner.

.2 Working times must be coordinated with Owner’s Representative prior to commencement of work.

.3 Designated Parking & Office:

.1 Site office and parking will be provided on site, unless specified otherwise in Instructions to Bidders, at a location acceptable to Owner’s Representative. Provide and pay for additional parking, if required.

.4 Access:

.1 Access and egress from work site to be as per prescribed and designated routes only. Provide and arrange for traffic control where necessary for delivery of materials, removal of garbage, etc. as required by Owner’s Representative and as required by laws, ordinances, rules and regulations relating to Place of Work.

.2 Ensure that privileges presently accruing to adjacent properties are maintained.

.3 Do not transport materials through building without prior approval from Owner’s Representative. Access to building and elevators, storage space for material and tools will be as specified by Owner’s Representative.
.5 Storage:
  .1 Use of site for storage of materials and equipment will be at a location acceptable to Owner's Representative. Location of site storage provision for removal of debris must be coordinated with Owner and Consultant in advance. Obtain and pay for use of additional storage of work areas needed for operations.
  .2 Do not store materials or use trucks, cranes, hoists or other equipment in a manner which would load existing building structure beyond its design capacity.
  .3 Provide adequate weather tight sheds or trailers for storage of materials, tools, and equipment which are subject to damage by weather.
  .4 Move stored products or equipment which interfere with operations of Owner or other Contractors.

.6 Sanitary Facilities:
  .1 Provide on-site washroom facilities on ground level only. Contractor will not have access to building washroom facilities.
  .2 Maintain Contractor's facilities in good and clean working condition.
  .3 Workers will not be permitted to use any other sanitary facilities, intended for use of public or building personnel.

.7 Signage:
  .1 No signs or advertisements other than warning signs are permitted on site unless approved by Owner's Representative or Consultant.

1.3 COORDINATION AND COOPERATION
  .1 Coordinate all construction work with Owner's Representative and Consultant to obtain access to work site areas.
  .2 Coordinate all construction work with Sub-Contractors when work is related.
  .3 Adhere to approved project schedule as closely as possible so that proper pre-arranged access can be arranged.
  .4 Execute work with minimum disturbance to occupants, public and normal use of site and building.
  .5 Maintain access to building and exits.
  .6 Where security has been reduced by work of contract, provide temporary means to maintain security.

1.4 CODES AND STANDARDS
  .1 Perform work to meet or exceed:
    .1 Rules and regulations of all Authorities having jurisdiction at Place of Work.
    .2 Federal regulations, latest edition including all amendments up to project date:
      .1 Fire Commissioners of Canada, FC 301, Standard for Construction Operations.
.2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.3 Provincial regulations, latest edition including all amendments up to project date:
  .2 WorkSafeBC OHS Regulations.

1.5 PROJECT MEETINGS
  .1 Hold project meetings as requested by Owner’s Representative and/or Consultant.
  .2 Notify all concerned parties of meetings.
  .3 Record meetings and distribute to all parties within 3 days of meeting. Include in minutes all significant proceedings, decisions and identify action by appropriate party.

1.6 SETTING OUT OF WORK
  .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
  .2 Provide devices needed to lay out and construct work.
  .3 Supply such devices as straight edges and templates required to facilitate Consultant’s observation of work.

1.7 CUTTING, FITTING AND PATCHING
  .1 Execute cutting, fitting and patching required to make work fit properly.
  .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
  .3 Obtain Consultant’s approval before cutting, boring or sleeving load-bearing members.
  .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
  .5 Fit work airtight to pipes, sleeves, ducts, and conduits.

1.8 EXISTING SERVICES
  .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to building operations and pedestrian and vehicular traffic.
  .2 Before commencing work, establish location and extent of service lines in area of work and notify Consultant of findings.
  .3 Provide 48 hours notice and submit schedule to, and obtain approval from, Owner’s Representative and Consultant for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
  .4 Where unknown services are encountered, immediately advise Owner’s Representative and Consultant and confirm findings in writing.
  .5 Record locations of maintained, re-routed and abandoned service lines.
1.9 PERFORMANCE OF WORK

.1 Perform Work with least possible interference or disturbance to occupants, public and normal use of premises, roadways, parking areas, sidewalks, alleys, or passageways. Arrange with Consultant to facilitate execution of work. **All egress doors providing access to work areas to be controlled. This to be coordinated with Owner’s Representative.**

.2 Provide all protection necessary or as required by local by-laws including but not limited to: hoarding, covered walkways, guard rails, barriers, night lights, sidewalk or curb protection and warning notices in locations where renovation and alteration work is adjacent to areas used by building occupants or public.

.3 Take all necessary precautions to keep dust, dirt, and debris to an acceptable level as directed by Owner’s Representative and Consultant. Comply with all laws, ordinances, rules and regulations relating to work in connection with above.

.4 Where work is performed adjacent to air intakes, Owner’s Representative and Consultant must be notified so that appropriate measures can be taken.

.5 Protect exterior surfaces of building and grounds from debris and damage.

.6 Protect adjacent property and buildings against damage which may occur as a result of work. Make good, to satisfaction of Owner’s Representative and Consultant, any damage resulting from work of this Contract.

1.10 SHOP DRAWINGS

.1 Term ‘shop drawings’ means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of work.

.2 Shop drawings should indicate method of construction, method of anchorage, fastening, sealing, as well as material type, thickness, finish and other pertinent data.

.3 Cross-reference shop drawing information to applicable portions of Contract Documents.

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

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

.6 Submit two (2), unless otherwise specified, copies of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

.7 Submit two (2), unless otherwise specified, copies of product data sheets or brochures for requirements requested in specification Sections and as Consultant may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.

.8 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copy to be returned and fabrication and installation work may proceed. If shop drawings are rejected, noted copy will be returned and re-submission of corrected shop drawings, through procedures indicated above, to be performed before fabrication and installation work may proceed.
1.11 ADDITIONAL DRAWINGS

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

.2 Perform Work in accordance with such additional instructions. Contractor to do no additional work without written instructions from Consultant.

1.12 WASTE DISPOSAL

.1 Provide for storage and removal of garbage as a result of work and obtain approval of storage location(s) from Owner's Representative and Consultant prior to commencement of work.

.2 Disposal of debris and garbage to be on a daily basis with minimum disturbance to Owner and occupants.

1.13 QUALITY CONTROL

.1 Provide Consultant with date each phase of work will begin, 48 hours before commencing work.

.2 Quality Assurance Observations to be performed by IRC Building Sciences Group Inc. Provide assistance required for observation and testing of work.

.3 Copies of observation and testing reports to be issued to prime Contractor and Owner.

.4 Contractor to cooperate with Consultant to facilitate observation and documentation of existing substrate and details throughout demolition work.

.5 Correct defects and irregularities of performed work at no additional cost to Owner.

.6 When initial tests and observations reveal work not to contract requirements, Contractor to pay for additional tests and observations required by Consultant for correction of work.

1.14 EQUIPMENT, HOISTING AND SAFETY

.1 Provide all required hoisting equipment for removal of debris and for movement and placing of materials and equipment during construction. Debris chutes to be totally enclosed and inclined, with watering down facilities as necessary to control dust, fire hazards, and nuisance factors. Exercise extreme care in disposal of wash water.

.2 Any damage caused by hoisting equipment or operator to be made good to satisfaction of Owner’s Representative and Consultant.

.3 Provide and maintain temporary ladders required to perform work. Ladders to be strongly constructed and to comply with all requirements of safety authorities having jurisdiction over work. All ladders to be secured and used only by methods approved by Authorities.

.4 Provide all required scaffolding necessary to perform work. Erect scaffolding independent of walls. Construct, maintain and use scaffolding in accordance with CAN/CSA-S269.2M, Access Scaffolding for Construction Purposes.

1.15 TEMPORARY FACILITIES AND SERVICES

.1 Provide and maintain temporary facilities to carry out work.

.2 Provide and maintain sanitary facilities to be used by Contractor’s forces.

.3 Remove temporary facilities and services on completion of work.
1.16 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 impeding installation and obtain approval for actual location.

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

1.17 FIRE PREVENTION

.1 No open burning to be permitted within any construction at site.

.2 Provide and maintain temporary fire protection equipment during performance of work required by insurance companies having jurisdiction and governing codes, regulations and bylaws. Provide a 20 lb. dry chemical fire extinguisher fully charged and in operable condition at every location where open flames are used.

.3 Keep site free of waste materials, rubbish and debris.

1.18 WELDING AND CUTTING

.1 Safety Provisions

.1 Ensure compliance with following regulations regarding welding and cutting operations and other operations generating flames, sparks, smoke, and heat;

.1 Prior to commencement of welding/cutting/torching operations confirm with Consultant or Owner’s Representative.

.2 Provide as a minimum a Type ABC 20 lb, dry chemical fire extinguisher and a small hose at all welding, cutting and torching locations. Ensure a knowledgeable operator trained in its use is provided at all times.

.2 Safety Procedures by Contractor

.1 Clear area in immediate vicinity of welding, cutting and torching locations as much as possible of combustible materials and refuse and obstacles to operations.

.2 Cover or protected with a non-combustible material all combustible materials which cannot be removed to satisfaction of Consultant and Owner’s Representative. Provide shielding to prevent spread of sparks and molten metal from welding, cutting and torching operations.

.3 Shield or otherwise protect sprinkler heads, smoke and heat detectors from any welding, cutting and torching operations. If it is likely that shielding will not prevent activation of any of these devices, it to be necessary to have affected fire protection zones(s) isolated for duration of any of operation.

1.19 SMOKING ENVIRONMENT

.1 Comply with smoking restrictions at work site.
1.20 OCCUPATIONAL HEALTH AND SAFETY

.1 Conform to safe work practices in accordance with regulations and authorities having jurisdiction.

.2 Promptly report to Owner and Consultant all accidents or if any claim is made against Contractor or Subcontractor on account of accident.

.3 Provide at site, equipment to supply first aid.

.4 Enforce proper work methods and act immediately on directions regarding safety and work practices given by authorities having jurisdiction or Owner, at no additional cost to Owner.

.5 Failure of Contractor to comply with verbal or written instructions or orders from Ministry of Labour inspector or other authorities as well as Owner or Consultant regarding safe work practices or provision of specified requirements under Act to be considered non-compliance with Contract.


.7 Ensure that all personnel are adequately equipped to comply with safety regulations and that sufficient safety equipment is available.

1.21 TEMPORARY POWER AND WATER

.1 Coordinate with Consultant and Owner’s Representative for use of temporary power and water supply.

.2 Provide any necessary special wiring for lights, equipment, etc.

.3 Owner will pay for all utility charges.

.4 Temporary power distribution wiring to comply with provincial Hydro Electrical Safety Code. Obtain inspection certificates for temporary electrical work from local authorities.

1.22 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

.1 Contractor to be familiar with WHMIS regulations and be responsible for compliance.

.2 Controlled products to be properly labeled.

.3 Provide proper warning labels and training at workplace.

.4 Provide copies of material safety data sheets (MSDS) for any controlled product in workplace.

.5 Be responsible for all other requirements of regulations as applicable to Employers.

.6 Contractor shall, before commencing work, provide Owner with a proposal as to how hazardous materials will be stored and dispensed on-site. Specifically outline measures to be taken to prevent damage or injury in event of an accidental spill.

1.23 CLEANING

.1 Maintain project free of accumulated waste and rubbish. Disposal of debris and garbage to be on a per shift basis with minimum disturbance to Owner and tenants. Under no circumstances shall debris be allowed to accumulate on-site.

.2 Final cleaning:
.1 Remove temporary protection.
.2 Remove dust, dirt and foreign matter from surfaces.
.3 Broom clean paved exterior surfaces.
.3 Contractor’s parking areas, storage areas, and access routes between work areas and aforementioned areas to be as defined by Owner’s Representative and be strictly adhered to.
.4 At end of project, landscaping to be repaired to match pre-existing conditions to satisfaction of Owner’s Representative and Consultant.

1.24 CONTRACT CLOSE-OUT

.1 Expedite and complete deficiencies and defects identified by Consultant.
.2 Submit required documentation such as statutory declarations, Workers’ Compensation Certificates, warranties, certificates of approval or acceptance from regulating bodies.
.3 Review observation and testing reports to verify conformance to intent of documents and that changes, repairs or replacements have been completed.
.4 Provide on-going review, observation, and attendance to building, call-back, maintenance and repair problems during Warranty periods.
.5 Provide warranties and bonds fully executed and notarized.
.6 Execute transition of Performance of Labour and Materials Payment Bond to warranty period requirements.
.7 Collect and assemble documents executed by Subcontractors, suppliers and manufacturers.

END OF SECTION - 01005
1.1 GENERAL SITE REQUIREMENTS

.1 Owner 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.

.2 Contractor Use of Premises

.1 Contractor to limit use of premises for Work, for storage, and access.

.2 Coordinate use of premises under direction of Owner and Consultant.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.3 Temporary Barriers, enclosures and signage will be highly enforced given use of property.

.4 Contractor to ensure safety and proper execution of public routing; ensuring temporary access to fire exists if and when they are affected as part of Work.

.5 Determine nature and extent of all site services above and below grade prior to commencement of Work.

.6 Coordination of trades will be responsibility of Contractor to ensure work is completed as soon as possible. Provide winter protection and heating as required to perform Work if required and as specified.

.7 Supply, set-up, maintain and remove scaffolding, man-lift platforms and/or swing-stages during performance of Work as required to access work areas. If scaffolding is to be used, Contractor to provide complete shop drawings bearing seal of a Professional Engineer, licensed to practice in Place of Work. Work to include review and approval of installed scaffolding by Designer. Allowance should be made for access to all elevations of building.

.8 No public access to Work area to be allowed. Ensure access to fire exits are maintained and hoarded through Work area. Pedestrian access along sidewalks must be maintained as per Owner’s requirements. No areas of access to or around building are to be restricted without approval of Owner.

.9 Install temporary protection at all locations of Work, as required to ensure safe, clean, orderly removal and disposal work, and to provide protection for all interior and exterior building components, vehicles, pedestrians and occupants.

.10 Provide temporary support to existing structural and cladding components during performance of work if required.

.11 Install temporary protection for all materials and building components, which have been exposed during demolition/removals as specified.

.12 Dispose of all materials at landfill site authorized by authorities having jurisdiction.

1.2 PROTECTION OF ROOFS

.1 Protect all roof areas within area of Work and where equipment or materials are stored. Do not store equipment or materials directly on roof surface.
.2 Protect existing roof systems to remain against damage from traffic generated by new Work.

.3 Protection of existing and newly installed roof membranes to use sheets of 25mm (1") expanded polystyrene insulation cover with 13mm (0.5") plywood.

1.3 SCOPE OF WORK: LOW SLOPE ROOFING SYSTEM REPLACEMENT

.1 On Roof Areas 1.1, 1.2, 2.1 and 3.1: Supply and install all labour, plant, equipment, and materials to install new SBS Modified Bitumen roof system. New roof system to comply to Section 07521 and to include, but not be limited to, following provisions:

.1 On Roof Areas 1.1, 1.2, 2.1 and 3.1: The existing roofing components are to be removed down to the existing wood roof deck in preparation for the installation of a new roof system. The new system is to include tapered polyisocyanurate insulation crickets, a two (2) ply modified bitumen membrane system, and pre-finished metal flashings.

.2 Examine and review entire existing exposed wood roof deck for deterioration and decay to identify areas requiring replacement. Consultant to be notified 48 hours prior to roof deck examination. Fix and / or paint any sections requiring repair.

.3 Install new wood blocking and plywood at perimeter and curbs as required.

.4 Install 1 layer new Soprabase overlay, mechanically fastened.

.5 Install new tapered polyisocyanurate insulation crickets as per IRC drawings and details, mechanically fastened. Mechanically fasten with plates new layer of insulation boards complete with face laminated modified bitumen base sheet. Stagger board offset by half a board width. Heat weld overlapping seams of base sheet membrane.

.6 Install new self-adhered base sheet and base sheet flashing.

.7 Install one ply, granular modified bitumen cap sheet and cap sheet flashings, torch applied except adhered on flammable surfaces.

.8 Install new prefinished metal flashings, hook strips, and trim at all perimeter and projection locations where indicated on drawings and detailed in related technical sections.

1.4 SCOPE OF WORK: REMOVAL OF HAZARDOUS MATERIALS

.1 Contractor to refer to Hazardous Material Report by Sure Hazmat and Testing and perform Asbestos abetment as required.

.2 Remove and dispose all of identified asbestos containing materials as required.

.3 Carry all costs in Lump Sum Price associated with provision of all labour, supervision, materials, equipment, testing, and services required and essential for asbestos removal, disposal, and cleaning as per Hazardous Material Report, these Specifications, provincial Occupational Health and Safety, and any other applicable regulations.

1.5 SCOPE OF WORK: ROOF FALL PROTECTION UPGRADES – GUARDRAIL SYSTEM

.1 The new roof systems will have a Fall Protection Upgrade. See related specifications (Section 05520) attached in the Contract Documents.

.2 Supply and install new guardrail system as indicated on the roof plan. The guardrail system shall be a non-penetrating system and shall be designed to suit the existing site conditions.
.3 Design guardrails in accordance with BCBC 2012, as well as all local requirements to withstand structural loads exceeding the allowable working stresses of the materials. Design shall conform to OSHA 1910.23.

.4 Guardrails shall be made of galvanized round HSS Schedule 40 pipes joined together with component fittings.

.5 Design system to accommodate the following without damage to components:
   .1 Movement within railing system.
   .2 Movement between railings and adjacent building components.
   .3 Deflection of structural support framing.

.6 Contractor to conform to all related sections of the Contract Documents.

.7 Contractor must provide a five (5) year Extended Warranty for the guardrail on a form acceptable to IRC Building Sciences Group.

1.6 SCOPE OF WORK: DIVISION OF THE WORK

.1 Division of the Work among Subcontractors, suppliers or vendors is solely the Contractor’s responsibility. The Owner assumes no responsibility to act as an arbiter to establish subcontract terms between sectors or disciplines of work. The following procedure is recommended for the re-roofing and upgrades stated above.
   .1 Contractor will tear off the existing roofing and accessories at the roof replacement area.
   .2 Install structural reinforcements for fall protection upgrades, where indicated on the drawings, and as instructed by the Consultant.
   .3 Install new fall protection components as indicated on the drawings.
   .4 Install new roofing systems as indicated by the drawings and as instructed by the Consultant.

1.7 SCOPE OF WORK: REVIEW AND REPAIR OF DETERIORATED WOOD DECK

.1 Contractor to replace any seriously damaged or deteriorated wood at perimeters and projections with new wood blocking or plywood to match existing. Determination of the suitability to re-use or replace existing wood to be at the sole discretion of the Owner’s Representative and Consultant.

.2 Contractor to indicate on the Tender Form, Unit Price per linear foot to replace all deteriorated wood at perimeters and projections.
   .1 Allow for 250 ft² of existing wood deck replacement in Bid Price.

1.8 SCOPE OF WORK: DUCTWORK AND MECHANICAL WORK

.1 Contractor to remove and reinstall HVAC sheet metal ductwork. Modify connections where curb alterations are required.

.2 Contractor to provide rooftop conduit supports to replace existing wood blocking beneath HVAC conduit.
1.9 SCOPE OF WORK: NEW METAL CLADDING

.1 Contractor to provide new metal cladding complete with self-adhered modified bitumen underlayment and hat channel furring in accordance with the IRC detail drawings provided. Standard of acceptance for metal cladding shall be: Weathershield 1 26 ga. as manufactured by Westform Metals. Standard of acceptance for self-adhered underlayment shall be Lastobond Shield HT as manufactured by Soprema. Colour of the new metal cladding to be selected by the Owner from the Manufacturer’s standard colour palette.

.2 Contractor to remove stucco where located on IRC Roof Plan and replace with new metal cladding complete with self-adhered underlayment and hat channel furring in accordance with the IRC detail drawings provided.

1.10 SCOPE OF WORK: NEW METAL VENTS

.1 Replace all existing exhaust vents with new prefabricated, galvanized metal vents with removable lids to suit. Raise existing wood curbs or add new curbs as required to min. 8” (200 mm) before installation of new galv. vents. All vent pipes to be insulated and extended as required to match the IRC detail drawing provided. Contractor to ensure free flow of ventilation.

1.11 SCOPE OF WORK: NEW METAL FLASHINGS

.1 New roof metal flashing to comply to Section 07620 and to include, but not be limited to, following provision(s):

.2 Provide new 22 ga. stainless steel venting/hook strip and 24 ga. prefinished metal cap flashing at low slope to steep slope transitions located at the perimeter of the low slope roof areas as per the IRC Detail Drawing provided. Existing prefinished metal cap flashing to be removed as required to perform perimeter vent detail and re-instated upon completion.

1.12 SCOPE OF WORK: NEW SPLASH PADS

.1 Contractor to provide new splash pads below gutter downspouts as per IRC Roof Plan. Splash pads to consist of new concrete pavers and XPS insulation membrane protection.

.1 At the base of the rain water leaders, fully adhere a 600 mm wide x 900 mm long piece of membrane cap sheet in grey colour. Extend the splash pad up to the top of the cant strip at the wall.

.2 Walkways: Fully torch apply a 1000 mm wide piece of membrane cap sheet in contrasting colour to areas as designated as walkways on the roof plan.

1.13 SCOPE OF WORK: MISCELLANEOUS

.1 It shall be the responsibility of the Contractor to verify that all existing conditions and roof system components are accurately reported in these specifications.

.2 All details specified by this Scope of Work constitute acceptable installations. Any deviation from these specifications must first be approved by the Consultant prior to any installation.

.3 All reasonable precautionary measures will be undertaken. It shall be the responsibility of the Contractor to ensure minimal dust and debris contamination of the interior and exterior of the work site.

.4 At the end of each day’s work drag a magnetic bar across all work areas to remove all fasteners from the grounds. All loose debris shall be removed from the designated roof areas and disposed of accordingly.
It shall be the responsibility of the Contractor to disconnect and reconnect all ventilation, mechanical and A/C units.

If the removal of any exhaust vents or equipment results in an opening in the deck that cannot be permanently sealed that day, the Contractor shall be responsible for providing overnight security to the building by a company approved by the Consultant.

It shall be the responsibility of the Contractor to ensure that no attachments (wiring, lighting, etc.) are attached to the underside of any deck that is to be removed. The contractor shall notify a representative of the Owner, who will then disconnect any such services, if necessary.

Security fencing shall be provided at all times for equipment and materials at stored at ground level. No materials or equipment shall be left unsecured on the ground. Locate material and equipment compound minimum 40' away from buildings. The materials and equipment compound shall be locked when access is not required.

Cover all roof materials properly with suitable tarps to prevent exposure to moisture and sunlight. Manufacturer’s packaging does not constitute adequate tarping and protection. All roof materials are to be stored off the ground on suitable wood pallets.

Existing grounds shall be restored to original condition upon completion of project by the Contractor to the satisfaction of the Consultant.

**CLEANING**

Perform daily and final clean-up of Work area and surrounding areas of site.

**WARRANTY**

On all low slope Roof Replacement Areas: The Contractor must provide the following warranties for all work areas and include a sample copy in Bid submission:

- Contractor must provide a two (2) year Contractor Warranty for all Work on a form acceptable to IRC Building Sciences Group.

- Contractors must provide a Five (5) Year RCABC RoofStar Guarantee.

- Sheet Metal Flashings:
  - Contractors must provide a Two (2) year Material Warranty and one (1) year Workmanship Warranty.

- Metal Cladding:
  - Contractors must provide a Forty (40) year Manufacturer’s Labour, Material and Workmanship System Warranty for all metal wall cladding.

- Roof Fall Protection Upgrades:
  - Contractor must provide a five (5) years extended warranty on all the components and the installation of the guardrails on a form acceptable to IRC Building Sciences Group.

END OF SECTION - 01110
(This page left blank intentionally)
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section details procedures to be followed for delivery of Submittals identified and required by other specification sections, consisting of but not limited to:

.1 Shop drawings.
.2 Samples.
.3 Mock-ups.
.4 Certificates and transcripts.

1.2 GENERAL REQUIREMENTS

.1 Transmittal for Submissions: Accompany all submittals with transmittal letter containing:

.1 Date of transmittal,
.2 Sequential number for tracking of each submission,
.3 Project title and number,
.4 Identification and quantity of each shop drawing, product data sheet, sample, etc,
.5 Contractor's business name and address,
.6 Name of reviewer for Contractor,
.7 Contractor’s review stamp: completed, dated, and signed certifying submittal has been reviewed, checked, and approved for compliance with Contract documents.

.2 Delivery: Direct submittals identified and required by individual technical sections to Consultant for review at following address, unless otherwise directed in writing:

.1 Attention: Tim Altizer, AScT., RRO
Office: IRC BUILDING SCIENCES GROUP
Address: 250–21900 Westminster Hwy., Richmond, BC, V6V 0A8
Telephone: 604.295.8070
Facsimile: 604.279.9644
Email: taltizer@ircgroup.com

.2 All deliveries prepaid by Contractor.

.3 Time and Scheduling:

.1 Deliver submittals with reasonable promptness and in orderly sequence to avoid delay in progress of Work.
.2 Allow up to ten (10) working days for Consultant's review of each submission.
.3 Time for review to begin and be noted upon receipt of submittal by Consultant.
.4 No adjustments to Contract Time or Price allowed due to delay in progress of Work caused by review, rejection, and re-submission process.

.4 Deviations from Contract Requirements: Notify Consultant in writing of any deviations from Contract Document requirements and state reasons for said deviations at time of submission:

.1 Contractor is responsible for errors and omissions in submission and is not relieved by Consultant’s review.
.2 Contractor is responsible for deviations in submission from requirements of Contract Documents and is not relieved by Consultant’s review.
.5 Review Before Delivery: Contractor to:

.1 Review each submittal for completeness and compliance with Contract Documents.

.2 Ensure that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work.

.3 Verify co-ordination of field measurements and affected adjacent Work.

.6 Incomplete Submissions:

.1 Entire submission package to be returned to Contractor if deemed incomplete during a preliminary review, for reasons including:

.1 Insufficient number of copies provided,

.2 Transmittal for submission incomplete, missing, or unsigned,

.3 Submittal not stamped, completed, signed, dated, and/or identified to specific project.

.7 Re-submissions:

.1 Use same procedure indicated here and above for re-submission.

.2 Clearly identify each correction or change made to submittal.

.3 Use original submittal number with appended suffix at end to indicate revision number.

.8 Acceptance and Rejection:

.1 Where review by Consultant discovers no errors and omissions or only minor corrections, min. two (2) copies to be returned for fabrication and installation of Work to proceed.

.1 One copy of accepted submission to be retained by Consultant for project record.

.2 If submittals are rejected or require significant modification, noted copies to be returned to Contractor and marked with request for correction and re-submittal.

.1 One copy of rejected submission to be retained by Consultant for project record.

.3 Re-submit corrected submittals using same procedure indicated above and listed in this section. Include required number of copies for subsequent re-submission.

.9 Distribution:

.1 Proceed with Work affected by submittals only after Consultant’s review is complete.

.2 Distribute copies of accepted submittals as required. Deliver one copy to Owner or Owner’s Representative for project management.

.3 Keep one copy of each reviewed submittal on site during performance of Work.

1.3 ACTION SUBMITTALS

.1 Shop Drawings:

.1 Definition: “Shop Drawings” to mean drawings, diagrams, illustrations, schedules, performance charts, brochures and other data to illustrate details of a portion of Work.
.2 Number of Copies: Submit three (3) copies of shop drawings for each requirement identified and requested in technical sections, and as many additional copies as Consultant may reasonably request.

.1 Where shop drawings will not be prepared due to standardized manufacture of product, submit copies of product data sheets or brochures.

.3 Identify and Indicate: Products and materials to be used, methods of construction, attachment or anchorage, erection diagrams, connection diagrams, explanatory notes, and any other information necessary for completion of Work.

.1 Where articles or equipment attach to or connect to other articles or equipment, indicate that such items have been coordinated; regardless of Section under which adjacent items to be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Drawings and Diagrams:

.1 Field Measurements: Note critical dimensions established by field measurement and any relationships to other critical features of Work.

.2 Project specific information and dimensions to be drawn accurately to scale.

.3 Manufacturer’s Standard Drawings: Supplement standard information to provide detail specifically applicable to project. Modify to delete information not applicable to project.

.4 Measurements and Units: Present shop drawings, product data, samples, and mock-ups in SI Metric units. Where items or information are not produced in SI Metric units, converted values are acceptable.

.5 Submittals to Include:

.1 Date and revision dates,

.2 Project title and number,

.3 Name and address of Subcontractor, Supplier, and Manufacturer,

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

.5 Where required, licensed Engineer’s signed and dated stamp or seal, valid for Place of Work,

.6 Details for appropriate portions of Work, as applicable including:

.1 Fabrication,

.2 Dimensioned layouts, including field dimensions and clearances,

.3 Setting or erection details,

.4 Capacities,

.5 Performance characteristics,

.6 Standards,

.7 Operating weight,

.8 Wiring diagrams,

.9 Single line and schematic diagrams,

.10 Relationship to adjacent work.

.6 Changes and Adjustments:
.1 Make noted changes to shop drawings as Consultant may require, consistent with Contract Documents. When re-submitting notify Consultant in writing of any revisions other than those requested.

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

.2 Samples:

.1 Number of Copies: Submit duplicate (2) samples for each requirement identified and requested in technical sections, and as many additional sample copies as Consultant may reasonably request.

.2 Identify and Indicate: Label sample’s source or manufacture, material, size, model number, and intended usage in Work.

.3 Sample Size:

.1 Full size samples, cured and finished, as indicated in technical sections,
.2 Physically identical to product proposed for use in Work,
.3 Prepared from same materials and methods to be used for installation of Work.

.4 Mount, display, or otherwise package samples in sufficient way to facilitate review of sample for quality.

.5 Where colour, pattern, or texture is criterion, submit full range of samples.

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

.7 Changes and Adjustments:

.1 Make noted changes to samples as Consultant may require, consistent with Contract Documents.

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

.8 Do not proceed with any Work associated with samples until each has been reviewed and accepted by Consultant.

.1 Acceptance of samples to be noted in writing by Consultant.

.9 At least one of each accepted sample to be returned to Contractor to store on site.

.10 Reviewed and accepted samples to become standard of workmanship and material referenced for comparison and verification of finished Work.

.3 Mock-ups:

.1 Erect sample mock-ups for each requirement identified and requested in technical sections, and as requested by Consultant.

.2 Mock-ups to be full scale and in section sizes as identified in technical section or as requested by Consultant.

.3 Coordinate location for on site installation of mock-ups with Consultant.
.4 Deliver one submittal letter noting completion of mock-up installation and requesting on site review by Consultant.

.5 Do not proceed with any Work associated with mock-up until it has been reviewed and accepted by Consultant.

.1 Acceptance of mock-ups to be noted in writing by Consultant.

.6 Accepted mock-up to constitute minimum project standard of workmanship and material to be maintained throughout performance of Work.

.7 Maintain and protect mock-ups on site during progress of Work as reference for comparison and verification of finished Work.

.1 Any Work completed after review not meeting mock-up standard to be removed and reinstalled, at Consultant’s discretion, with new materials at no additional cost to Owner.

1.4 INFORMATIONAL SUBMITTALS

.1 General:

.1 Number of Copies: Unless otherwise noted, submit three (3) copies for each requirement identified and requested in technical sections, and as many additional copies as Consultant may reasonably request.

.2 Contractor’s Roof System Certification:

.1 Letter certifying that products and materials specified in Scope of Work for Roofing and its related technical sections:

.1 Are compatible with each other and substrate,
.2 Are approved by membrane manufacturer for application and installation type,
.3 Meet specified warranty and system requirements,
.4 Achieve and meet specified FM wind uplift ratings.

.2 Certification letter to contain:

.1 Contractor’s business letterhead,
.2 Name of representative authorized to provide certification,
.3 Stamp, date, and signature of authorized representative.

.3 Manufacturer’s Warranty: Full size, true copy of official warranty:

.1 Indicating Manufacturer’s name and business address,
.2 With terms and conditions for specified warranty type and coverage period,

.4 Contractor’s Warranty: Full size, true copy of official warranty:

.1 On recognized form by provincial roofing association or one approved by Consultant,
.2 Indicating Contractor’s name and business address,
.3 With terms and conditions for specified warranty type and coverage period.

.5 Manufacturer’s Instructions and Product Data Sheets:

.1 Published or written instructions or information documenting recommended guidelines and installation procedures in accordance with individual specification sections, including:

.1 Manufacturer’s Name,
.2 Product name and model number,
.3 Current and latest edition.

.6 Manufacturer’s MSDS Data Sheets:
   .1 Published or written information documenting physical and chemical characteristics of
      products to be installed with handling, safety, and first aid guidelines, including:
      .1 Manufacturer’s Name,
      .2 Product name and model number,
      .3 Current and latest edition.

.7 Health and Safety Plan for Specific Site:
   .1 Submit in accordance with Section 01705 – Health and Safety.

.8 Certificates: Full size, true copies indicating:
   .1 Name and address of Issuing Authority,
   .2 Purpose of certificate,
   .3 Individual or company covered by issued certificate,
   .4 Notarized and executed.

.9 Trade or Installer Qualifications:
   .1 Present accreditation cards or tickets, or true copy of, to QA Observer at start of Work
      and whenever Observer requests, containing:
      .1 Name and photo of qualifying individual,
      .2 Identification of training type or certification received,
      .3 Date achieved or received, or expiry of certification.

.10 Applications for Payment:
   .1 One copy by courier, fax, or email with all required accompanying submittals and
      documentation in accordance with Section 01290 – Payment Procedures.

.11 Closeout Submittals:
   .1 Upon completion and acceptance of Work, deliver copies of submittals in accordance
      with Section 01775 – Closeout Submittals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION - 01330
PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Barriers
.2 Environmental Controls
.3 Fall Arrest
.4 Traffic Controls
.5 Fire Routes

1.2 APPLICABLE PUBLICATIONS

.1 Canadian General Standards Board (CGSB)
   .1 CGSB 1.189M – Primer, Alkyd, Wood, Exterior
   .2 CGSB 1.59 – Alkyd Exterior Gloss Enamel
.2 Canadian Standards Association (CSA)
   .1 CSA O121M – Douglas Fir Plywood
.4 Canadian Standards Association (CSA), CSA S350-M, Code of Practice for Safety in Demolition of Structures.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.
.2 Remove from site all such work after use.

1.4 COVERED HOARDING

.1 Covered hoardings will be required when working over exits that serve as fire exits and locations where entrance or exit is required to remain open during work as stipulated by Owner.
.2 Covered hoardings to be provided when work occurs overhead of following:
   .1 Emergency exits
   .2 Safe Areas
   .3 Emergency access roads
   .4 Entrances and exits determined by Owner to remain open during work
   .5 Entrances and exits required to remain open to provide adequate egress in and out of building
1.5 WORKING FROM ROOF
   .1 If and when work is performed on roof, existing roof composition to be protected by following:
      .1 minimum 25 mm (1") rigid insulation;
      .2 6 mil polyethylene sheet, lapped at discontinuities by 300 mm (12");
      .3 19 mm (3/4") plywood sheathing.

1.6 FALL ARREST
   .1 Upon award, Contractor to submit a Fall Protection plan specific to the project.
   .2 Contractor shall comply with all WorkSafeBC requirements, as described in the Contract.

1.7 WEATHER ENCLOSURES
   .1 Weather to be considered incidental to work and to not be claimed as additional.
   .2 Applicable standard to be used for materials or building components when enclosures and/or heating is required to complete work.
   .3 Provide weather tight closures for, but not limited to:
      .1 unfinished door and window openings (where applicable);
      .2 openings in floors and roofs;
      .3 openings through walls (where applicable);
      .4 locations where daily work is not completed in a days work and components left exposed are sensitive to weather conditions;
      .5 protection of materials used that are sensitive to weather conditions.
   .4 Design enclosures to withstand wind pressure, snow loading etc.

1.8 DUST TIGHT SCREENS
   .1 Provide dust tight screens to localize dust generating activities, and for protection of workers, finished areas of Work and public.
   .2 Maintain and relocate protection until such work is complete.
   .3 Provide means for ventilating area if work is to occur in an interior or confined space.
   .4 Ventilate work area when it corresponds with areas used by tenants or patrons concurrently for parking or egress. If dust generation will affect tenants or patrons provide sealed enclosure with adequate ventilation for health and safety of workers.

1.9 ACCESS TO SITE
   .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
   .2 Provide all appropriate signage directing public and building occupants away from work area
Emergency exits: Maintain clear and unobstructed use of all existing exit doors and routes. This may include provision of overhead protection and enclosed exit walkways in case of overhead work. Provide adequate lighting for 24 hour use.

1.10 PUBLIC TRAFFIC FLOW

1.10.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.11 FIRE ROUTES

1.11.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.11.2 Provide all required signage to inform emergency vehicles of temporary route for access if modified as part of work.

1.12 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

1.12.1 Protect surrounding private and public property from damage during performance of Work.

1.12.2 Be responsible for damage incurred.

1.13 PROTECTION OF BUILDING FINISHES

1.13.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

1.13.2 Provide necessary screens, covers, and hoardings.

1.13.3 Confirm with Consultant locations and installation schedule 3 days prior to installation.

1.13.4 Be responsible for damage incurred due to lack of or improper protection.

END OF SECTION - 01560
(This page left blank intentionally)
PART 1 - GENERAL

1.1 DESCRIPTION

.1 This section includes for compliance and submittals required for health and safety during Work.

1.2 REFERENCES

.1 Federal regulations, latest edition including all amendments up to project date:

   .1 Fire Commissioners of Canada, FC 301, Standard for Construction Operations.
   .2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Provincial regulations, latest edition including all amendments up to project date:

   .1 BC Building Code Latest Edition
   .2 Vancouver Building ByLaw Latest Edition
   .3 WorkSafeBC Regulations

1.3 SUBMITTALS

.1 Informational Submittals:

   .1 Health and Safety Plan for Specific Work Site including, but not limited to:

      .1 Name and contact info of Contractor’s Health and Safety Representative for Work Site; including twenty-four (24) hour emergency contact phone numbers.
      .2 Phone numbers of local fire, police, and ambulance outside of 911 services.
      .3 Location of nearest medical facility and level of injury that each can service.
      .4 Copies of certification for all employees on site of applicable safety training including, but not limited to:
         .1 WHIMIS.
         .2 Fall arrest and protection.
         .3 Suspended Access Equipment.
         .4 Erection of Scaffolding.
         .5 License for powder actuated devices.
   .5 Material Safety Data Sheets (MSDS) of controlled products to be used.
   .6 On-site Contingency and Emergency Response Plan addressing:

      .1 Standard procedures to be implemented during emergency situations.
      .2 Preventative planning and protocols to address possible emergency situations. For example, if swing stage work is required, list protocol to be followed if supporting cable breaks.
      .7 Guidelines for handling, storing, and disposing of hazardous materials that may be encountered on site, including measures to prevent damage or injury in case of an accidental spill.
   .2 Incident and accident reports, promptly if and upon occurrence.
   .3 Make submittals in accordance with Section 01330 - Submittal Procedures.
1.4 RESPONSIBILITY

.1 Contractor responsible for health and safety of persons on Work Site and for protection of persons adjacent to Site to extent that they may be affected by performance of Work.

.2 Contractor responsible for safety of property and environment on Work Site and for protection of same adjacent to Site to extent that they may be affected by performance of Work.

.3 Contractor is responsible for health and safety at Work Site and is not relieved by Consultant’s review of Health and Safety Plan for Specific Work Site.

1.5 OCCUPATIONAL HEALTH AND SAFETY

.1 Comply and conform to all health and safety work practices in accordance with regulations and authorities having jurisdiction at Place of Work including, but not limited to:

.1 WHMIS awareness and training.
.2 Fall-arrest, temporary guardrails, and travel-restraint systems.
.3 Eye protection, hardhats, and safety boots.


.3 Ensure that all personnel are adequately equipped to comply with safety regulations and that sufficient safety equipment is available.

.4 Provide at Work Site sufficient equipment to supply first aid.

.5 Promptly report to Owner and Consultant all accidents, and any claims made against Contractor or Subcontractor on account of accident.

.6 Enforce proper work methods and act immediately on directions regarding safety and work practices given by authorities having jurisdiction or by Owner, at no additional cost to Owner.

.7 Failure of Contractor to comply with verbal or written instructions or orders from Ministry of Labour Inspector, other authorities, Owner, or Consultant regarding safe work practices or provision of specified requirements under regulations to be considered Non-Compliance with Contract.

.1 Owner or Consultant may stop Work for failure to rectify non-compliance of health and safety regulations.

1.6 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHIMS)

.1 Contractor to be familiar with WHIMIS regulations and be responsible for compliance.

.2 Contractor responsible for all other requirements of regulations as applicable to Employers.

.3 All controlled products to be properly labelled and stored.

.4 Immediately inform Owner and Consultant if any unforeseen or peculiar safety-related factor, hazard, or condition becomes evident during performance of Work.

END OF SECTION - 01705
PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Consideration of Substantial Performance
.2 Review and QA Observations required for applications of Substantial Performance and Total Completion
.3 Closeout Submittals

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

1.3 CONSIDERATION OF SUBSTANTIAL PERFORMANCE AND COMPLETION BY CONSULTANT

.1 A contract will be considered substantially performed given following:
   .1 when improvement to be made under that contract is capable of completion or, where there is a known defect, correction, at a cost of not more than,
      .1 3 percent of first $500,000 of Contract Price,
      .2 2 percent of next $500,000 of Contract Price, and
      .3 1 percent of balance of Contract Price.
   .2 Where work cannot be completed expeditiously for reasons beyond control of Owner or Contractor, remaining costs will be deleted from Contract Price in determination of substantial performance.

.2 A contract will be considered completed given following:
   .1 when improvement to be made under that contract is capable of completion or, where there is a known defect, correction, at a cost of lesser of,
      .1 1 percent of Contract Price.
      .2 $1000.00

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 EXAMINATION AND DECLARATION

.1 Contractor and all Subcontractors to conduct a review of Work; identify deficiencies and defects in preparation of list for application of Substantial Performance.
.2 Consultant will schedule date within time allowance of Contract documents for both Consultant and Contractor to perform review of Work and to confirm Work identified on submitted list.
.3 Consultant will within time allowance of Contract documents provide a breakdown of costs associated with deficiencies and defects for Consideration of Substantial Performance.

.4 If Work is deemed incomplete in Consideration of Substantial Performance, complete outstanding items and request additional review following same protocol.

.5 When Contractor is satisfied that Work is completed make application for final review by Consultant. Consultant will within allowances of Contract documents perform final review of Work.

.6 Any deficiencies and defects to be tabulated with associated costing for Consideration of Completion.

.7 If Work is deemed incomplete by Consultant, complete outstanding items and request additional review.

.8 Defective products will be rejected, regardless of previous review and observations. Replace products with new at no expense to Owner.

3.2 MAINTENANCE AND RECORD DOCUMENTS

.1 Following to be submitted to Owner at completion of Work:

   .1 Maintenance manuals for, but not limited to, operating instructions, maintenance manuals, record of “as built” drawings, spare parts, maintenance of materials, special tools for completeness.

   .2 Record of substantial and project completion correspondence inclusive, but not limited to Contractor lists, Consultant tabulations and certificates.

   .3 Compile all shop drawings that have been submitted.

3.3 RECORDING ACTUAL SITE CONDITIONS

.1 Submit Actual Conditions as outlined in following sentences.

.2 Record information on set of Project Specifications provided by Consultant.

.3 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.4 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.5 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

   .1 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

   .2 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

   .3 Field changes of dimension and detail.

   .4 Changes made by change orders.

   .5 Details not on original Contract Drawings.
.6 References to related shop drawings and modifications.

.6 Specifications: legibly mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

3.4 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after certification of completion.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

3.5 CONTRACT CLOSE-OUT

.1 Expedite and complete deficiencies and defects identified by Consultants.

.2 Submit required documentation such as statutory declarations, Workers’ Compensation Certificates, warranties, certificates of approval or acceptance from regulating bodies.

.3 Review QA Observation and testing reports to verify conformance to intent of documents and that changes, repairs or replacements have been completed.

.4 Provide on-going review, examination and attendance to building, call-back, maintenance and repair problems during Warranty periods.

.5 Provide warranties and bonds fully executed and notarized.

.6 Execute transition of Performance of Labour and Materials Payment Bond to warranty period requirements.

.7 Collect and assemble documents executed by Subcontractors, suppliers and manufacturers.

END OF SECTION - 01775
PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01110 – Summary of Work

.2 Section 01560 – Temporary Barriers and Enclosures

.3 Section 07521 – Modified Bituminous Roofing Membrane

1.2 REFERENCES

.1 Latest edition of all listed references to apply:

.1 Canadian Standards Association CSA S350, Code of Practice for Safety in Demolition of Structures.


.3 Occupational Health and Safety Act and regulations for Construction Projects.

.4 Canadian Environmental Protection Act (CEPA), 1988.

.5 Canadian Environmental Assessment Act (CEAA), 1995.


1.3 STORAGE AND PROTECTION

.1 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Consultant and at no cost to Owner.

.2 In all circumstances, ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

.3 Protect trees, plants and foliage on site and adjacent properties where indicated.

1.4 EXISTING CONDITIONS

.1 Prior to start of any demolition work, remove contaminated or hazardous materials from site and dispose of at designated disposal facilities.

.2 Record and discuss with Consultant any deviations from existing assumed conditions as indicated by drawings and/or specifications.

1.5 REGULATORY REQUIREMENTS

.1 Ensure all work is performed in compliance with CEPA, CEAA, TDGA, and all applicable provincial regulations.

1.6 NOTICE

.1 Provide a minimum twenty-four (24) hour notice to Consultant and Owner prior to proceeding with any work that may disrupt building access or services.
PART 2 - NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

.1 Examine site with Consultant and verify extent and location of items designated for removal, disposal, recycling, salvage and items to remain. Removal of HVAC units require confirmation by Owner’s Representative.

.2 Locate and protect utilities where applicable. Notify and obtain approval of utility companies before starting demolition.

3.2 GENERAL PROTECTION

.1 Prevent movement, settlement, or other damage to adjacent structures, utilities, and parts of building to remain in place. Provide engineered bracing and shoring as required.

.2 Minimize noise, dust, and inconvenience to occupants.

.3 Protect existing building systems, services and equipment.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

.5 Provide required signage, barricades, hoarding, overhead protection and temporary egress.

.6 Support affected structure or building components and if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures and then cease operations and notify Consultant immediately.

.7 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

.8 Do not dispose of waste or volatile materials such as: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.

.9 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.

.10 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

.11 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.

.12 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

3.3 DEMOLITION SALVAGE AND DISPOSAL

.1 Remove parts of existing structure or roof system to permit repairs or new installation. Sort materials into appropriate piles for recycling and or reuse.

.2 Carry in Base Bid Price all costs to salvage, protect from harm, and re-use following components, unless indicated otherwise elsewhere in specifications:
.1 Existing skylights, mechanical equipment, cladding, stairs and ladders, satellite and communications equipment, electrical lines, and service lines, etc.

.3 Refer to drawings and specifications for items identified for reuse or salvage, if applicable.

.4 Remove items to be reused, store in a protected location, and reinstall under appropriate section of specification.

.5 Trim edges of partially demolished building elements to suit future use.

.6 Include for disposal of removed materials to appropriate Landfill and/or recycling facilities, except where specified otherwise, and in accordance with authority having jurisdiction.

.1 Where possible, all existing recyclable materials, gravel, asphalt products, etc. to be transported to an appropriate recycling facility.

.2 Provide location of local facility receiving removed recyclable materials to Owner and Consultant.

.7 Dispose of debris on a continuous basis. Do not stockpile debris in a manner which would overload structure, or impede access around site.

3.4 SEQUENCE OF OPERATION

.1 Removal:

.1 Remove items as indicated in technical sections, including roofing ballast or gravel, metal roofing flashings, roofing membrane and flashings, roofing insulation, and or vapour retarder.

.1 Do not disturb items designated to remain in place.

.2 Restrict roofing demolition work to sections in limited size that will be restored and made watertight by end of working day.

.3 Use extreme caution when performing demolition work around skylights, sloped glazing, and other force and vibration sensitive roof projections.

.2 Removal From Site:

.1 Interim removal of stockpiled material may be required, if it is deemed to interfere with operations of Owner.

.2 Do not overload existing roof structures.

.3 Salvage:

.1 Carefully dismantle items containing materials for salvage and stockpile salvaged materials at locations acceptable to Owner and Consultant.

.4 Disposal of Material:

.1 Dispose of materials not designated for salvage or reuse on site to be hauled to an authorized disposal site and or recycling facilities.

.5 Backfill:

.1 Backfill in areas as indicated.
3.5 ABANDONED AND UNUSED ITEMS

.1 Items of unused and/or abandoned rooftop equipment, units, service lines, cabling, and any related supports which are not operational or in use are to be removed and disposed of.

.2 Existing services for abandoned equipment to be dismantled to below roof deck, and closed off in accordance with local bylaws and Code requirements. Confirm all electrical lockout procedures with Owner’s representative.

.3 Existing roof deck openings to be closed using following guidelines:

   .1 Openings up to 152mm (6") in diameter or 152x152mm (6"x6"):
      .1 Metal Decking: Install 610x610mm (24"x24") galvanized steel plate, min. 18ga. secured with 4 screws per side to existing decking.

   .2 Openings greater than 152mm (6") in diameter or 152x152mm (6"x6"):
      .1 Wood Planking: Replace with SPF #1 grade boards to match existing thickness. All replacement decking shall have 3 points of bearing. Provide new framing to match original as required.

      .2 Plywood Decking: Replace with No.1 construction grade plywood sheathing, Good One Side (G1S), to match existing thickness. All replacement decking shall have 3 points of bearing and installed in logical rectangular shapes. New plywood decking to be supported by at least half thickness of roof joist, turss, or rafter underneath. Provide galv. H-clips to existing decking on unsupported sides.

      .3 Steel Decking: Obtain ruling from Engineer whether decking is to be replaced or suitably overlaid with identical decking. Secure all decking with TEK screws at each lower flute bearing point structure; welding is not permitted.

      .4 Concrete Deck: Refer to detail drawing.

   .3 Openings greater than 915x915mm (3’x3’):
      .1 Consult Structural Engineer for deck review and design of new framing, decking, securement, and any other required support.

3.6 DECK REPAIRS

.1 Wood Decking: Areas of deteriorated wood planking or plywood decking to be cut out and replaced with new to match existing.

.2 Metal Decking: Areas of corroded steel decking not requiring replacement to be cleaned using a wire brush to completely remove all evidence of corrosion. Remove all dust and coat with zinc rich epoxy primer to completely cover all areas where corrosion was evident.

.3 Concrete Decking: Areas of concrete decking with pitted or deteriorated surfaces to be cleaned sufficiently to receive repair material. Repairs to be completed with quick set masonry repair grout trowelled to a smooth even finish, flush with surrounding areas.

3.7 RESTORATION

.1 Restore areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.
.2 Use only soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.8 CLEANUP

.1 Upon completion of work, remove debris, trim surfaces and leave work site clean.

.2 Use only cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

END OF SECTION - 02225
Part 1  General

1.1 SCOPE OF WORK – GUARDRAIL SYSTEM
   .1 Contractor to supply and install a non-penetrating guardrail system, including pipe railings, uprights, bases, counterweights, fittings, and other accessories where indicated on the IRC Roof Plan.
   .2 Guardrails and handrails shall be designed in accordance with BC Building Code. Contractor to submit shop drawings stamped by a Professional Engineer licensed in B.C.

1.2 RELATED SECTIONS
   .1 Section 01 10 00 – Summary of Works

1.3 REFERENCES
   .1 ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.
   .2 ASTM A153/A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   .3 ASTM A307 - Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
   .4 ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
   .5 ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
   .6 CAN/CGSB-1.40- Anti-corrosive Structural Steel Alkyd Primer.
   .8 CAN/CSA-G40.20/G40.21 - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
   .9 CAN/CSA-G164 - Hot Dip Galvanizing of Irregularly Shaped Articles.
   .10 CSA W47.1-03 - Certification of Companies for Fusion Welding of Steel Structures.
   .11 CSA W48-06 - Filler Metals and Allied Materials for Metal Arc Welding
   .12 CSA W59 - Welded Steel Construction (Metal Arc Welding).
   .13 CSA W59.2 - Welded Aluminum Construction.
   .14 SSPC (The Society for Protective Coatings) (formerly SSPC - Steel Structures Painting Council) - Steel Structures Painting Manual.
1.4 SUBMITTALS FOR REVIEW

.1 Product Data: Submit manufacturer’s printed product literature, specifications and datasheets. Provide component dimensions, describe components within assembly, anchorage and fasteners.

.2 Shop Drawings:
   .1 Indicate materials and profiles and provide scaled details for all components.
   .2 Provide structural and physical characteristics of framing members and anchors. Indicate dimensional limitations and special installation requirements, if applicable.
   .3 Indicate assembly details, installation details, and sequencing.

1.5 DESIGN REQUIREMENTS

.1 Design guardrails in accordance with BC Building Code 2012, as well as all local requirements to withstand structural loads without exceeding the allowable working stresses of the materials.

.2 Design shall conform to Occupational Safety & Health Administration (OSHA): 1910.23

.3 Guardrails and handrails shall be designed to withstand a 225 lbs concentrated load applied any direction and at any point on the top rail.

.4 Guardrails shall be made of galvanized round HSS Schedule 40 pipes joined together with component fittings. Samples of all components, bases, toeboard and pipe must be submitted for approval at the request of the engineer.

.5 Concrete anchors shall be stainless steel type 303 or 304 wedge anchors and shall be furnished by the handrail manufacturer.

.6 Design system to accommodate the following without damage to components:
   .1 Movement within railing system
   .2 Movement between railings and adjacent building components.
   .3 Deflection of structural support framing.

1.6 QUALITY ASSURANCE

.1 Products of this section: Manufactured to ISO 14000 certification requirements, supplied by one manufacturer.

.2 Installer Qualifications: Company or person specializing in guardrail and railing installations with five (5) years documented experience.

.3 Mock Up: Construct mock up. Provide mock up section including intermediate supports.

.4 Allow twenty four (24) hours notification for inspection of mock-up before proceeding with construction of mock-up.

.5 When accepted, mock up will demonstrate minimum standards for this work. Approved mock up may remain as part of finished work.
.6 Conduct pre-installation meeting one week prior to commencing work of this section to verify project requirements.

1.7 WARRANTY

.1 Provide Warranties as required in the General Requirements and the Contract.

.2 Manufacturer’s Warranty: Submit standard manufacturer’s warranty document executed by authorized company official. Manufacturer’s warranty is in addition to and not a limitation of other rights the Owner may have under the Contract Documents.

.3 Warranty Period: Five (5) Year commencing on dates of Substantial Completion. Warranty shall cover repair or replacement of defective material and workmanship.

.1 Contractor must provide a five (5) years extended warranty on all the components and the installation of the guardrails on a form acceptable to IRC Building Sciences Group.

Part 2 Products

2.1 MATERIALS - STEEL

.1 All structural steel shall be designed as per CSA/CAN-S16.1.

.2 All steel HSS members are to be A500 Grade C according with CSA/CAN3-G40.21 with FY=317 MPA.

.3 All plate steel channels and angles shall have FY=250 MPA in accordance with CSA/CAN3-G40.21.

.4 Stainless steel is to be type 316 for cable and type 304 for members as per ASTM A193.

.5 All bolts shall be galvanized type A325 or stainless steel type 304 with compatible nuts and washers.

.6 All anchor bolts shall be stainless steel type 304 with compatible nuts and washers.

.7 All rivets are to be stainless steel type 304.

.8 Acceptable products / manufacturers for non-penetrating Guard rail systems:

.1 Kee Guard Roof Fall Protection Railing, manufactured by Simplified Safety

2.2 FABRICATION

.1 Fabricate railing system in accordance with manufacturer’s written instructions.

.2 Fabricate railing systems with minimum clearances around perimeter of assembly as recommended by manufacturer without adversely affecting the installation and normal expansion and contraction of components.

.3 Design and fabricate joints to eliminate any visible seams and provide a functional split, to permit modular construction and to allow for thermal expansion.
All joints to be accurately machined, fit, assembled, secured and sealed to provide tight, hairline, flush, neat weather tight joints and corners prefabricated sleeve.

Fit and shop assemble items in largest practical sections, for delivery to site.

Fabricate items with joints tightly fitted and secured.

Continuously seal joined members by continuous welds.

Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.3 FABRICATION TOLERANCES

Squareness: <3 mm> <<1/8 inch>> maximum difference in diagonal measurements.

Maximum Offset Between Faces: <1.5 mm> <<1/16 inch>>.

Maximum Misalignment of Adjacent Members: <1.5 mm> <<1/16 inch>>.

Maximum Bow: <3 mm> <<1/8 inch>> in <1.2 m> <<48 inches>>.

Maximum Deviation From Plane: <1.5 mm> <<1/16 inch>> in <1.2 m> <<48 inches>>.

2.4 FINISHES - STEEL

Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

Do not prime surfaces in direct contact with concrete or where field welding is required.

Prime paint items with two coats. The primer used is NOT to contain any lead.

Structural Steel Members: Galvanize after fabrication to CAN/CSA-G164. Provide minimum <600 g/sq m> <<2.0 oz/sq ft>> galvanized coating.

Non-structural Items: Galvanized after fabrication to CAN/CSA-G164. Provide minimum <380 g/sq m> <<1.25 oz/sq ft>> galvanized coating.

Part 3 Execution

3.1 EXAMINATION

Verify that field conditions are acceptable and are ready to receive work.

Verify dimensions, tolerances, and method of attachment with other work.
3.2 PREPARATION

.1 Clean and strip primed steel items to bare metal and aluminum where site welding is required.

3.3 INSTALLATION

.1 Install items plumb and level, accurately fitted, free from distortion or defects, and in accordance with manufacturer’s written instructions.

.2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

.3 Field weld components indicated on Drawings.

.4 Perform field welding to CSA requirements.

.5 Obtain approval prior to site cutting or making adjustments not scheduled.

.6 After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete. Apply finish coat of paint to match shop applied coating, or apply zinc rich paint to touch up galvanized coatings.

3.4 ERECTION TOLERANCES

.1 Maximum Variation From Plumb: <6 mm> <<1/4 inch>> per story, non-cumulative.

.2 Maximum Offset From True Alignment: <6 mm> <<1/4 inch>>.

.3 Maximum Out-of-Position: <6 mm> <<1/4 inch>>.

3.5 PROTECTION

.1 protect installed products until completion of project.

.2 Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01110 – Scope of Work
.2 Section 07521 – Modified Bitumen Roofing

1.2 REFERENCES

Latest edition of all listed references to apply:

.1 ALSC (American Lumber Standards Committee) – Softwood Lumber Standards.
.3 AWPA (American Wood Preservers Association) C1 – All Timber Products Pressure Treatment.
.4 CAN/CSA B111 – Wire Nails, Spikes and Staples.
.5 CAN/CSA-G164M – Hot Dip Galvanizing of Irregularly Shaped Articles.
.6 CAN/CSA O121M – Douglas Fir Plywood.
.8 CAN/CSA O151M – Canadian Softwood Plywood.
.9 CAN/CSA-O325.0 – Construction Sheathing.
.11 NFPA (National Forest Products Association) – Grading Rules.

1.3 QUALITY ASSURANCE

.1 Lumber identification to be by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
.2 Plywood identification to be by grade mark in accordance with applicable CSA standards.
.3 Plywood, OSB and wood based composite panel construction sheathing identification to be by grademark in accordance with applicable CSA standards.
.4 At all times during Work, Contractor will have on site a qualified project supervisor. It will be Supervisor’s responsibility to ensure that Work is carried out in an efficient manner, according to Plans and Specifications.
.5 Provide shop drawings for Consultants review, of new wall modification including louvre extension and new window units.
.6 Mock up of exposed Carpentry will be made available for review of Owner and Consultant at wall modifications. This may be submitted by partial constructed components.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Protect lumber and other products from dampness both during and after delivery at site.
.2 Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.
.3 Stack plywood and other board products so as to prevent warping.

.4 Locate stacks on well drained areas, supported at least 152mm (6") above grade and cover with well ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Set aside damaged wood and dimensional lumber off-cuts for acceptable alternative uses (e.g. bracing, blocking, cripples, bridging, finger-joining, or ties). Store this separated reusable wood waste convenient to cutting station and area of work.

.2 Separate and recycle waste materials in accordance with applicable local, provincial and national regulations. Include for tipping fees associated with landfills and recycling depots.

.3 Unused preservatives and fire retardant materials are to be diverted from landfill through disposal at a special wastes depot.

.4 Do not burn scrap at project site.

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

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

.1 Materials to be best merchantable lumber, straight and sized and shaped to correct dimensions from nominal sizes noted on drawings. Lumber to be selected from well seasoned stock, free from loose resinous knots, shakes, waxed edges, splits, dry rot or other defects which would impair strength or durability.

.2 Lumber in accordance with following standards:

   .1 CAN/CSA-O141.
   .2 NLGA Standard Grading Rules for Canadian Lumber.

.3 Unless specified otherwise all framing members to be No.1/No.2 SPF.

.4 All materials directly exposed to exterior to be pressure treated unless noted otherwise on drawings or elsewhere in specification.

.5 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers to be pressure treated where exposed to exterior elements.

.6 Moisture Content:

   .1 At time of delivery and maintained at site.
   .2 Boards and lumber 51mm (2") and less in thickness: 19% or less.
   .3 Lumber over 51mm (2") thick: 25% or less.

.7 Preservative Treatment:

   .1 All wood exposed to exterior environmental conditions, in contact with concrete or masonry to be treated with wood preservative.
   .2 Do not treat Heart Redwood and Western Red Cedar.
.3 Treat wood members and plywood exposed to weather or in contact with plaster, masonry or concrete, including framing of open roofed structures; sills, sole plates, furring, and sleepers that are less than 610mm (24") from ground; nailers, edge strips, blocking, crickets, curbs, cant, vent strips and other members used in connection with roofing and flashing materials.

.4 Treat other members specified as preservative treated (PT).

.5 Preservative treat by pressure method complying with ASTM D1760, except any process involving use of Chromated Copper arsenate (CCA) for pressure treating wood is not permitted.

2.2 PANEL MATERIALS

.1 Douglas fir plywood (DFP): to CSA O121, standard construction.

.2 Canadian softwood plywood (CSP): to CSA O151, standard construction.

.3 Plywood, OSB and wood based composite panels: to CAN/CSA-O323.

2.3 ACCESSORIES

.1 toggle bolts for anchorage to hollow masonry and gypsum walls.

.2 expansion shields and lag bolts for anchorage to solid masonry or concrete.

.3 explosive actuated fastening devices where specified on drawings only.

.4 screws for attachment of decking to joists and sleepers

.5 Splines

.1 douglas fir

.2 galvanized metal

.3 use recommendation of manufacturer on proprietary elements where it differs from specification.

.6 New Glazing units: Aluminum framed single glazing fixed units to meet CAN/CSA-A440.

.7 Louvre Extension: Of materials to match existing ductwork.

2.4 ACCESSORY FINISHES

.1 Galvanizing

.1 to CAN/CSA-G164

.2 galvanized fasteners for all exterior work unless otherwise specified

.3 galvanized fasteners for all high interior humid areas unless otherwise specified

.2 Use stainless steel type 304 where noted on drawings
PART 3 - EXECUTION

3.1 PREPARATION

.1 Comply with safety regulations and applicable bylaws governing work included in this section. Provide and maintain necessary barriers, guards and rails.

.2 Scope of work includes extension of existing walls to accommodate height of new lower roof installation. Extend wall as required to maintain flashing height specified, and provide following modifications:

.1 Provide new aluminum framed fixed window units at existing locations complete with flashings, sill plates etc. to create a watertight installation.

.2 Relocate existing louvers to new wall surface complete with flashings, sill plates etc. to create a watertight installation.

.3 Provide new membrane wall covering, wood strapping and siding to match existing where required.

.4 Entire completed assembly to be made watertight and tie into existing roofing system on both upper and lower roof areas as per detail drawings.

3.2 SITE APPLIED WOOD TREATMENTS

.1 Treat ends of site cut surfaces of materials delivered to site with wood preservative.

.2 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.3 INSTALLATION

.1 Comply with requirements of OBC, supplemented by following paragraphs.

.2 Ensure continuity and completeness of vapour retarder membrane as coinciding with new wood blocking installation.

.3 Provide mineral wool insulation to fill voids at roof deck level or as otherwise required or indicated on detail drawings.

.4 Install furring and blocking as required to space-out and support new walls, window projections and louver extensions, fascia, soffit, siding and other work as required.

.5 Align and plumb faces of furring and blocking to tolerance of 1:600.

.6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.7 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure with adequate fasteners.

.8 Install sleepers as indicated.

3.4 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

END OF SECTION - 06100
PART 1 - GENERAL

1.1 DESCRIPTION

.1 Contractor to provide new metal cladding complete with self-adhered modified bitumen underlayment and hat channel furring in accordance with the IRC detail drawings provided.

.2 Contractor to remove stucco where located on IRC Roof Plan and replace with new metal cladding in accordance with the IRC detail drawings provided.

1.2 GENERAL

.1 All conditions of Contract and General Requirements apply to this section.

.2 All materials and equipment must be set up in a position satisfactory to Owner’s representative.

.3 All materials to be new and in perfect condition, free from defects which may impair strength, durability or appearance.

.4 Scheduling of work to be discussed with, and be subject to approval of Owner.


1.3 REFERENCE STANDARDS

.1 ASTM A 525-M-80, “Steel Sheet, Zinc Coated (Galvanized) by Hot Dipped Process, General Requirements”.

.2 ASTM A 446 (Latest Edition), “Steel Sheet, Zinc Coated (Galvanized) by Hot Dipped Process, Structural (Physical) Quality”.

.3 CAN3-S136.1-M84, “Cold Formed Steel Structures Members”

.4 CGSB 93-GP-3M, “Sheet Steel, Galvanized Prefinished, 1985”

1.4 EXAMINATION

.1 Examine drawings and specifications to determine extent of work involved, together with other data affecting work. Under no circumstances will any claims against Owner be allowed resulting from failure to ascertain extent of such work shown herein, described or implied.

1.5 DESIGN PRINCIPLE

.1 Entire exterior skin execution to provide such gaskets, baffles, overlaps and seals as required to provide a rain barrier to prevent rain water entry into cavity and water entry into building.

.2 Provide adequate drainage of water and condensate to exterior from cavity.

1.6 REQUIREMENTS OF SUPPORTING MEMBERS

.1 Design and fabricate brackets and anchorage devices so that when installed they will:

.1 Compensate for unevenness and dimensional differences in structure to which they are secured;

.2 Allow full expansion and contraction of framing members without causing undue stress within assembly which may result in buckling, joint failures and other detrimental effects, as a result of thermal expansion and contraction;
Adequately sustain themselves during superimposed wind, rain and snow loads without exceeding deflection requirements as set forth.

### 1.7 SUBMITTALS

.1 **Samples:**

.1 Upon award of Contract, submit samples of materials, with their respective finishes and colours. Samples to fully represent physical and chemical properties of materials to be supplied and installed.

.2 **Manufacturer’s Technical Data:**

.1 Upon award of Contract, submit all technical data from material manufacturer.

.3 **Structural Design Load Calculations:**

.1 Upon request submit for review all structural design calculations, certified by a Professional Engineer licensed to practice in province at Place of Work, upon award of contract and prior to commencing installation.

.2 The scope of this project includes the installation of supplemental masonry anchors between the masonry veneer and back-up load bearing CMU.

.4 **Shop Drawings:**

.1 Upon award of Contract and prior to commencing installation, submit Shop Drawings stamped by a Professional Engineer licensed to practice in the province of British Columbia detailing all component members and method of attachment for approval by Owner and Consultant.

.2 Shop Drawings to detail all component members and method of attachment of metal cladding system, including but not limited to:

.1 cladding profile,

.2 trim, flashings, and closures,

.3 method of sealing,

.4 method of anchorage,

.5 type of fasteners and spacing,

.6 type of material, thickness and finishes.

### 1.8 SAMPLE PANEL (MOCK-UP)

.1 Construct full size sample including typical components, complete with flashings and fixing to substrate, in accordance with requirements of the Specifications.

.2 Mock-up to be reviewed by Consultant and Owner and if accepted form base standard for work. Accepted mock-up may form a part of work.

### 1.9 PERFORMANCE CRITERIA

.1 Positive and negative design wind loads to be in accordance with British Columbia Regulation 413/90 of British Columbia Building Code or equivalent Provincial Building Code, based on a 1 in 50 year probability of occurrence.

.2 No water shall penetration into building under design wind loads.

.3 Water infiltration through preformed metal roof assembly to drain to exterior at plane of drainage layer.
.4 Deflection of members to not exceed L/180 unless more stringent requirements are dictated for other reasons.

1.10 DELIVERY AND STORAGE

.1 Deliver and store materials to manufacturer’s instructions and CSSBI guidelines.

.2 Do not store materials on roof.

.3 Store materials under cover on elevated platforms.

.4 Remove and replace damaged material.

1.11 WARRANTY

.1 Contractors must provide a Forty (40) year Manufacturer’s Labour, Material and Workmanship System Warranty for all metal wall cladding.

.2 Submit a written warranty for metal cladding installation specified in this section at no cost to Owner.

.3 Contractor to warrant that cladding installation will be free from defects related to workmanship or material deficiencies, including but not limited to water penetration, material deformation, and fading of finish.

.4 Any repair required under Warranty will be carried out in accordance with recommendations of Consultant.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Standard of acceptance for metal cladding shall be: Weathershield 1 26 ga. as manufactured by Westform Metals. Colour to be selected by the Owner from the Manufacturer’s standard colour palette.

.2 Standard of acceptance for self-adhered modified bitumen underlayment shall be Lastobond Shield HT as manufactured by Soprema.

2.2 STEEL FRAMING:

.1 Z-bars, U-bars, subgirts, spacers, clips, brackets and supports: To ASTM A446 (latest edition), Grade A, base metal 1.22 mm core thickness (18 gauge), hot-dipped galvanized minimum Z275 after fabrication, minimum profile available. Z-bars to be adjustable for leveling purposes.

.2 Hat-bars: To ASTM A446 (latest edition), Grade A, base metal 1.91 mm core thickness (14 gauge), hot-dipped galvanized minimum Z275, profile size as per details. Minimum 150 mm wide at each support.

.3 Metal Flashing: (flashings, closure strips) galvanized steel 0.61 mm core nominal thickness (24 gauge), Z275 zinc coating designation to ASTM A525M-80, prefinished to CGSB 93-GP-3M, Class F1S or approved equivalent. Colour to match cladding panels.

.4 Starter strips: 0.76 mm core nominal thickness to match flashing and fastened at 300 mm o.c.

.5 Exterior Sealants: One component, moisture curing, modified polyurethane complying with CAN/CGSB 19.13 M87 Class MC 2-25-B-N or silicone based sealant complying with
CAN/CGSB 19.13 M87 for exterior applications. Colour of sealant to be selected to match cladding components.

.1 Primer: As recommended by sealant manufacturer to assure adhesion of compound, to prevent staining of substrate.

.2 Joint Backing: Polyethylene, urethane, neoprene, or vinyl, extruded closed cell foam in circular shape with diameter 25% greater than joint width before installation; joint breaking tape approved by sealant manufacturer where specified.

.3 Cleaning Material: As recommended by sealant manufacturer.

.6 Concealed Sealants: Polysulphide compound.

.7 Screw Fasteners: Hex head cadmium plated with neoprene washers as manufactured by Fabco Fastening Systems, Atlas, Perma-Grip, or approved equivalent. or IRC Group approved equal. Consult manufacturer for screw type and sizing for materials being secured. Provide caps for screw heads to match colour of materials being secured as otherwise specified or shown.

.8 Fasteners to Masonry: Tapcon fastener with Climaseal corrosion resistant finish, as manufactured by Buildex/Red Head or approved equivalent, ¼ " diameter and of sufficient length to provide a minimum of 38 mm penetration into substrate.

.9 Supplementary Masonry Connectors (Helical Ties): Stainless Steel 8 mm (5/16") Helical Wall Tie by Blok Lok, length to suit application, minimum 75mm (3") embedment into back up wall.

.10 Secondary Water Barrier: WallShield by Vaproshield LLC or approved alternative.

.11 Transition Membrane: Self-adhering, Blueskin SA by Henry (Bakor) or an IRC Group approved equivalent membrane.

.12 Transition Membrane Primer: Quick drying, rubber base adhesive compatible with Transition Membrane; Blueskin Adhesive, or Blueskin LVC Adhesive by Henry (Bakor) or an IRC Group approved equivalent peel and stick primer.

.13 Thermal Insulation: Where wall panel insulation exists, re-install existing insulation.

.14 Insulation Adhesive: Suitable adhesive as recommended by manufacturer.

.15 Rivets: Stainless steel with pan heads painted after installation.

.16 Dissimilar Materials:

.1 Protect material from electrolytic action when dissimilar metals are in contact with one another.

.2 Paint mating surfaces of aluminum and galvanized steel with bituminous or zinc chromate primers. Taping or gasketing with non-absorptive materials or sealants is also acceptable.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

.1 Remove existing metal cladding and support framing from masonry wall surfaces. Dispose off-site in accordance to Municipal and Environmental regulations.
3.2 PREPARATION OF MASONRY SURFACE

.1 Prior to starting work, arrange a meeting with Consultant to clarify criteria for brick repair.

3.3 PROCEDURE FOR PATCHING BRICK

.1 Do not store materials in direct sunlight or where water may come in contact with material. Surface must be clean, dry and free from spalled brick. Remove all dirt, blacktop, tar, and oil substances from area to be covered, leaving a rough clean surface.

.2 Do not pre-wet application surface. Keep an adequate supply of water on hand to wash mixer and tools as soon as set begins. (15 minutes at 21°C).

.3 Apply patching mortar to provide smooth surface in accordance to Manufacturer's printed instructions. At patch areas greater than 20 mm in depth, provide Tapcon anchors into brick at one per 0.1 m² area. Tapcon anchors to project to 5 mm from finished surface.

3.4 PROCEDURE FOR SUPPLEMENTAL MASONRY ANCHORS (HELICAL TIES)

.1 Prior to installing the cladding, supplemental anchorage of the veneer is required. New ties are to be installed at all locations with the following spacing guidelines:

.1 Wall field areas – maximum spacing of 600 mm (24”) on centre horizontally and 600 mm (24”) on centre vertically.

.2 At window and door openings – maximum spacing of 600 mm (24”) on centre around the perimeter of the opening, spaced a maximum of 300 mm (12”) back from the edge of the opening.

.3 At siding terminations – maximum spacing of 600 mm (24”) on centre spaced a maximum of 300 mm (12”) from the line of the siding termination.

.2 Anchors to be installed in existing masonry to remain are to be installed in the joints of the existing masonry or using the ‘dryfix’ method, and in accordance with the manufacturers written instructions. Installation procedure as follows:

.1 Pre-drill 5mm holes through the exterior masonry by means of a speed rotary percussion drill at the specified spacing. Stop before entering concrete backup wall.

.2 At the pre-drilled holes, drill a 5 mm hole into the concrete block backup wall a minimum 75 mm (3”).

.3 Drive anchor into position using appropriate anchor tool. Recess anchor into opening in masonry a minimum 5 mm and a maximum 10 mm.

3.5 INSTALLATION OF INSULATED METAL CLADDING SYSTEM

.1 Install specified secondary water barrier membrane to general wall surface in accordance to manufacturers written instructions. Membrane to tie into new transition membranes, roof perimeter membrane flashings and base roof membrane flashings.

.2 Fasten cladding supports and clips to masonry with specified fasteners. Spacing of sub-girts not to exceed 1.2 m (4 ft.). Spacing of fasteners to masonry to be as per approved Shop Drawings. Securely install components plumb and square, in true straight, flat or flush planes, free from distortion and to satisfaction of Consultant. Shim framing components as required to compensate for unevenness of existing substrate.

.3 All U channels to have 6mm (1.4”) weep holes at 600mm (24”) o.c. to prevent the accumulation of water.
.4 Install preformed metal cladding system in accordance with the approved shop drawings and manufacturer’s written instructions.

.5 Fasten metal siding and flashings to Z-bar supports with specified fasteners. Drip flashings to provide a minimum 2% slope outwards. Spacing of Z-bar supports and fasteners to be as per approved Shop Drawings. Profile of exterior panels to be installed in vertical direction.

.6 Exposed or face fastening will not be permitted except as shown on approved Shop Drawings.

.7 Install new metal cap and base flashings as per approved Shop Drawings. Sheet metal work to be installed in a uniform manner, free of oil canning, level and true to line.

### 3.6 FABRICATION OF SHEET METAL FLASHINGS

.1 Use competent mechanics and work accurately to details indicated and as specified herein.

.2 Verify all dimensions on site prior to fabrication.

.3 Fabricate sheet metal flashings to size and shape indicated for drip flashings: termination flashings, starter strips and all other flashings, closures and trim as required according to site measurements.

.4 Fabricate drip and sill flashings to provide a minimum 2% slope outward. End joints of adjacent lengths of metal flashing to be made using an “S-lock” joint.

.5 All edges to be hemmed a minimum 13 mm (1/2 inch) for appearance and stiffness.

.6 Form flashings to profile, free of oil canning with 2400 mm maximum lengths.

.7 Install continuous concealed locking strips at all exterior faces. Install cleats as required to protect membrane roofs and flashings from damage at lock joints and as otherwise required to permanently hold flashing in place.

.8 Install sheet metal with concealed fasteners at lock joints. Exposed fastening will not be permitted, without approval of Consultant. Space all fasteners evenly in an approved manner. Use lead plugs and screws with rubber washers where metal flashings are installed over concrete or masonry.

.9 Join sheet metal by means of “S” lock seams, to allow thermal movement. Space joints evenly where exposed to view. Make corners by means of raised seams. Lock seam and caulk.

### 3.7 PROCEDURE FOR APPLICATION OF SEALANTS

.1 Remove dust, oil, grease, oxidation, mill scale, coatings and all other loose material by cutting, brushing, scrubbing, scraping and/or grinding. In no case, however, to remaining components such as door frames be damaged during surface preparation.

.2 Clean down surfaces to be caulked with clean cellulose sponges or rags soaked in solvent recommended by sealant manufacturer, and wipe dry with clean cloth. Ensure that solvent does not damage existing finishes.

.3 Use method of surface preparation suitable for substrate, as recommended by sealant manufacturer and that does not damage existing finishes.

.4 Do not caulk joints until they are in compliance with manufacturer of sealant and specific requirements of other sections of Specification.

.5 Install sealant in compliance with sealant manufacturer’s recommendation.
.6 Install backing material in all joints prior to caulking. Diameter of backing material to be 25 percent greater than width of joint.

.7 Install backing material to a depth to provide a caulked joint meeting depth requirement as set out in sealant manufacturer's specifications.

.8 Apply bond breaker tape as required by sealant manufacturer's recommendation.

.9 Where surfaces adjacent to joints are likely to become coated with sealant during application, mask them with masking tape prior to sealing.

.10 Apply primer as per manufacturer's directions and test substrates for adhesion.

.11 Fill joints completely to required depths with sealant compound. Use sufficient pressure to fill all voids and joints.

.12 Tool joints to a slight concave bead, smooth and free from ridges, wrinkles, sags, air pockets and imbedded impurities.

.13 As work progresses remove masking tape and sealant smears and droppings resulting from work of this section before it has set. Use recommended cleaners, as required.

3.8 CLEANING

.1 Daily as work proceeds and on completion, remove all surplus materials and debris resulting from foregoing work.

.2 Remove all stains, caulking or other adhesive from all affected surfaces.

.3 Touch-up scratches in surface finish with paint recommended by cladding manufacturer.

END OF SECTION - 07411
PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Installation of a new roof system over prepared substrate.

.2 Existing roofing components and related appurtenances to be removed as specified in preparation for installation of a new low slope, conventional roofing system, including but not limited to:

.1 On Roof Areas 1.1, 1.2, 2.1 and 3.1:

.1 Existing wood roof deck,

.2 1 ply 0.5" (12 mm) base sheet laminated fiber board, mechanically attached,

.3 1 ply granular modified bitumen cap sheet and cap sheet flashings, torch applied, except adhered on flammable surfaces,

.4 Prefinished metal flashings and trim.

1.2 RELATED SECTIONS

.1 Section 01110 – Summary of Work

.2 Section 02225 – Selective Demolition & Removal

.3 Section 07620 – Sheet Metal Flashing & Trim

.4 Section 07920 – Joint Sealants

1.3 REFERENCES

.1 Latest edition of all listed references; most stringent requirements to govern in conflicts:

.1 American Society for Testing and Materials (ASTM) International:

.1 D41: Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.

.2 D312: Asphalt Used in Roofing.

.3 D2822: Asphalt Roof Cement.

.4 D4601: Standard for Asphalt Coated Glass Fibre Base Sheet Used in Roofing.

.5 D6162: SBS Mod. Bit. Sheets Using Polyester & Glass Fiber Reinforcements.

.6 D6163: SBS Mod. Bit. Sheets Using Glass Fiber Reinforcements.

.7 D6164: SBS Mod. Bit. Sheets Using Polyester Reinforcements.

.2 Canadian Standards Association (CAN/CSA):

.1 A123.2: Asphalt Coated Roofing Sheets.

.2 A123.16: Asphalt Coated Glass Base Sheets.

.3 A123.21: Dynamic Wind Uplift Resistance of Mechanically Attached Membrane Roofing Systems.

.4 0121M: Douglas Fir Plywood.

.5 0151M: Canadian Softwood Plywood.

.3 Canadian General Standards Board (CAN/CGB):

.1 37.29M: Rubber-Asphalt Sealing Compound


.5 51.26M: Thermal Insulation, Urethane and Isocyanurate, Boards, Faced.
City of Vancouver Capital Maintenance Division

Thermal and Moisture Protection – Division 07

Vancouver Public Library South Hill, Vancouver, BC

SBS MODIFIED BITUMINOUS MEMBRANE ROOFING

IRC No. VR14-018SP-12285

Section 07521

Copyright© 2014 IRC Building Sciences Group

Page 2 of 20

1.4 SUBMITTALS

.1 Provide with Bid Submission for Roof Work:

.1 Sample copy of Manufacturer’s Labour, Material, and Workmanship Warranty,

.2 Sample copy of Contractor’s Warranty.

.2 Provide to Quality Assurance Observer, within five (5) working days after Notice of Award:

.1 Initial project work schedule showing anticipated progress stages and final completion of work from Start Date. Do not commence Work before project schedule has been provided and reviewed.

.3 Provide to Quality Assurance Observer, at Prestart Meeting:

.1 Finalized project work schedule listing start date, anticipated number of working days working, and manpower assignments for project.

.2 Complete Materials List; including installation instructions and product datasheets providing characteristics of all proposed materials to be installed.

.3 Material Safety Data Sheets (MSDS) pertaining to all proposed materials to be used on site to perform Work.

.4 Health & Safety Plan for Specific Work Site including contact list and phone numbers for project, and twenty-four (24) hour emergency contact numbers.

1.5 CONTRACTOR QUALIFICATION

.1 Roofing Contractor to perform specified Work must:

.1 have a minimum ten (10) years work experience with materials specified or similar comparable products,

.2 be a member in good standing with Roofing Contractors Association of British Columbia (RCABC),

.3 and be licensed and insured for Place of Work.

.4 Contractor’s installers must be certified and carded for installation of specified materials.

.5 Contractor’s employees and Subcontractors must be WHMIS certified.

.6 Owner reserves right to reject any proposed Subcontractor for reasonable cause.

1.6 QUALITY ASSURANCE

.1 Compatibility between components of roofing system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in new system will meet this requirement.
.2 Perform Work in accordance with Contracts Documents and Manufacturer’s written instructions.

.3 Make no deviation from Project Specifications or approved shop drawings without prior written approval by Consultant and, if applicable, Manufacturer.

.4 Contractor to arrange for a Technical Representative of Manufacturer to review installed roof system wherever a Standard or System Warranty requirement has been specified.

.5 Upon completion of new installation, provide certification that all work has been done in strict accordance with Contract Documents and to Manufacturer’s requirements.

1.7 QUALITY ASSURANCE OBSERVATION

.1 IRC Building Sciences Group Inc., hereafter known as “Observer”, is an independent Quality Assurance Observation Agency appointed by Owner to observe performance of roof Work:

.1 Arrange Prestart site meeting with Observer no more than three (3) weeks prior to commencement of Work on site. Obtain Observer’s instructions and reference procedures to be followed on project.

.2 Provide to Observer date when each phase of work will begin, at least forty-eight (48) hours prior to commencement of Work for phase.

.3 Arrange Final Observation and examination of installed roof with both Observer and Manufacturer’s Technical Representative.

.2 Cooperate with Observer and afford all facilities necessary to permit full Quality Assurance Observations during performance of Work. Act immediately on instructions given by Observer.

.3 When required, provide roof cut-outs and samples in field where directed by Observer and make good without additional cost to Owner.

.4 When initial tests and observations reveal work failing to meet contract requirements, pay for any additional testing and observations required by Observer or third party testing agency for correction of Work, without additional cost to Owner.

.5 Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.

1.8 DELIVERY, STORAGE, AND HANDLING

.1 Site storage is limited. Where applicable, location of storage and related facilities to be coordinated with Prime/General Contractor.

.2 All materials to be delivered and stored in their original packaging bearing manufacturers label, grade and product weight, including all other related standards, specifications, and like.

.3 All materials to be adequately protected from inclement weather conditions and stored in a dry, well ventilated and weather protected location. Use only dry materials and apply only during weather that will not introduce moisture into roofing system.

.4 Only materials to be installed on same day to be removed from protected location to work site.

.5 During extreme temperature, materials to be stored in a heated location with a 4.4°C (40°F) minimum temperature and removed only as needed.

.6 Modified bitumen rolls to be kept clear of all flames and sparks when not being applied to roof.

.7 All materials in a rolled configuration to be stored on end, elevated off ground, and on a pallet or skid to protect bottom surface from foreign debris and moisture.
.8 Restrict stockpiling of material in one location on roof to prevent exceeding specified deck live load capacity. Avoid point loading that may compromise structural integrity of roof.

.9 Handle and store products in a manner to prevent damage and deterioration.

.10 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Do not apply roofing materials to damp, wet, or frozen deck or substrates.

.2 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

.3 Only install as much new roofing as can be made weather-tight each day, including all flashing and detail work. All seams to be heat welded before leaving job site that work day.

.4 All work to be scheduled and executed without exposing interior building areas to effects of inclement weather. Existing building and its contents to be protected against all risks.

.5 All new and temporary construction, including equipment and accessories, to be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

.6 Uninterrupted water-stops to be installed at end of each day’s work and to be completely removed before proceeding with next day’s work. Water-stops to not emit dangerous or unsafe fumes and to not remain in contact with finished roof as installation progresses. Contaminated membrane to be replaced at no cost to Owner.

.7 Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, provide all necessary protection and barriers to segregate work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over felt or plywood over insulation board to be provided for all new and existing roof areas that receive rooftop traffic during construction.

.8 Prior to and during application, all dirt, debris and dust to be removed from surfaces by vacuuming, sweeping, blowing with compressed air, and/or similar methods.

.9 Follow all safety regulations as required by OHS (Occupational Health and Safety) and any other applicable authority having jurisdiction.

.10 All roofing, insulation, flashings and metal work removed during construction to be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable Local, Provincial, and National requirements.

.11 All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) to be immediately removed from site by Contractor and properly transported to a legal dumping area authorized to receive such material.

.12 Take precautions that storage and/or application of materials and/or equipment does not overload roof deck or building structure.

.13 Flammable adhesives and deck primers to not be stored and not be used in vicinity of open flames, sparks and excessive heat.

.14 All rooftop contamination that is anticipated or that is occurring to be reported to manufacturer to determine corrective steps to be taken.
.15 Verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Contractor to report any such blockages in writing to Consultant for corrective action prior to installation of roof system.

.16 Immediately stop work if any unusual or concealed condition is discovered and immediately notify Consultant of such condition in writing in order to obtain additional instruction.

.17 Site cleanup, including both interior and exterior building areas that have been affected by construction, to be completed to satisfaction of Consultant.

.18 All landscaped areas damaged by construction activities to be repaired at no cost to Owner.

.19 Do not install membrane under following conditions without consulting Manufacturer’s Technical Department for precautionary steps:

.20 Take precautions when using adhesives at or near rooftop vents or air intakes. Avoid adhesive odours from entering building. Coordinate operation of vents and air intakes in such a manner as to avoid intake of adhesive odour while ventilating building. Keep lids on unused cans at all times.

.21 Protective wear to be worn when using solvents or adhesives or as required by job conditions.

1.10 PREPARATORY WORK

.1 Review roof levels and advise Consultant of any deviation from specified tolerances.

.2 Review roof drain locations and number. Advise Consultant of any deviation or alteration from specifications.

.3 Sweep roof deck free of dust or dirt and remove all debris prior to any installation work.

1.11 SAFETY AND PROTECTION

.1 Latest edition of all listed references to apply:

.2 Solvents, Adhesives and Membranes:

.1 Store only enough solvents and adhesives on roof for same day's use. Do not leave adhesives on roof over night. Manufacturer supplied adhesives should be stored in their over night containers. Minimum temperature for solvent based adhesives and primers is -5°C (23°F).

.2 Do not install roof membrane when temperature remains below -5°C (23°F) for self adhering installations. Apply materials in accordance with manufacturer’s recommendations and in accordance with Canadian Modified Bitumen Manufacturer’s Association.

.3 Refer to Manufacturer’s literature for additional guidelines.
.4 Protect walls where hoisting is required.

.5 Protect roofs from damage due to traffic and materials handling until completion.

.6 Keep a fire extinguisher at access to building interior wherever solvent based products are stored or used.

.3 Fire Safety:

.1 Contractor must keep charged and ready fire extinguishers on site at all times, including on roof and at access points to building interior.

.2 Contractor responsible to provide a two (2) hour fire watch at completion of each day’s activities on all projects implementing use of propane torches and/or burners.

.3 A handheld, infrared thermal scanner suitable for roofing applications and fire alert must be kept on site at all times during torching procedures. Fire scanner by Raytek or approved IRC Group equal. Check seams and flashings at hourly intervals for flare ups.

.4 Health and Safety:

.1 Contractor to comply with all safety requirements as per current printed edition of Provincial Occupational Health and Safety Act and with Roofing Contractors Association of British Columbia (R.C.A.B.C.) standards.

1.12 WARRANTY

.1 Roof Replacement Workmanship Warranty:

.2 On all low slope Roof Replacement Areas: The Contractor must provide the following warranties for all work areas and include a sample copy in Bid submission:

.1 Contractor must provide a two (2) year Contractor Warranty for all Work on a form acceptable to IRC Building Sciences Group.

.2 Five (5) Year RCABC RoofStar Guarantee.

.3 All other items not specifically noted in related sections to be supplied with a two (2) year Contractor’s Warranty for materials and workmanship.

.4 Cost of all warranties to be included in Bid Price.

PART 2 - PRODUCTS

2.1 GENERAL

.1 All membrane materials are to be supplied by Soprema, meeting manufacturer’s respective material compatibility requirements to achieve required warranty.

.2 Components to be used that are other than those supplied or manufactured by membrane manufacturer may be submitted for review and acceptance by membrane manufacturer.

.3 Membrane Manufacturer’s acceptance of any other product is only for a determination of compatibility with products and not for inclusion in manufacturer’s warranty.

.4 Specifications, installation instructions, limitations, and/or restrictions of respective manufacturers must be reviewed by Consultant for acceptability for intended use with membrane manufacturer’s products.
2.2 OVERLAY INSULATION

.1 Install polyisocyanurate foam rigid insulation crickets with minimum 4% slope where indicated on the Roof Plan. Secure crickets independently of the overlay board by means of Dekfast or equivalent mechanical fasteners with plates. Check underside of roof deck before installation to eliminate damaging any existing conditions below the deck. Submit layout drawings to Consultant for review of sloped insulation.

2.3 MODIFIED BITUMEN MEMBRANE

.1 Install a two ply modified bitumen membrane system overtop of the prepared substrate. The new membrane system is to consist of a mechanically fastened base layer and a torch applied cap layer. All membrane materials are to be supplied by one manufacturer, Soprema, meeting manufacturer’s respective material compatibility requirements to achieve the required Warranty.

.1 Base Layer: Standard of Acceptance to be Soprabase FR DG as manufactured by Soprema. Mechanically fasten base layer as per manufacturer’s written instructions.

.2 Base sheet flashing: Self adhering modified bitumen: minimum 3.0mm thick, with minimum 85g/m² non-woven polyester or woven glass fibre scrim reinforcement, Type 2, Class C, Grade 2, and conforming to CGSB 37-GP-56M. Standard of Acceptance to be Sopralene Flam Stick as manufactured by Soprema.

.3 Cap sheet: Torch grade modified bitumen: minimum 4.0mm thick, granular with minimum 250g/m² non-woven polyester reinforcement, Type 1, Class A, Grade 2, and conforming to CGSB 37-GP-56M. Standard of Acceptance shall be: Sopralene Flam 250 GR.

.4 Cap sheet flashing: Torch grade modified bitumen: minimum 4.0mm thick, granular with minimum 250g/m² non-woven polyester reinforcement, Type 1, Class A, Grade 2, and conforming to CGSB 37-GP-56M. Standard of Acceptance shall be: Sopralene Flam 250 GR.

2.4 FASTENERS, PLATES & FASTENING BARS

.1 All fasteners and plates to meet requirements of Factory Mutual Global 4470 Standard for wind uplift and corrosion resistance in roofing.

.2 Wood to steel, wood to wood or steel to steel:

.1 Tru-Fast Ultra Solid Stainless Steel fastener or equal approved by membrane Manufacturer, to penetrate substrate by minimum 19mm (3/4”).

.3 Wood/steel to concrete or concrete block:

.1 Perma-Grip Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection or equal approved by membrane Manufacturer, to penetrate substrate by 32mm (1 1/4”).

.2 Tru-Fast Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection to penetrate substrate by 32mm (1 1/4”).

.4 Steel/aluminum to aluminum:

.1 Tru-Fast DP with Trucote PC-3 corrosion protection fastener c/w EPDM galvanized steel sealing washers or equal approved by membrane Manufacturer, to penetrate substrate by 19mm (3/4”).

.5 Termination bar for membrane:
.1 Extruded aluminum, 1.5mm (0.060") thick x 25mm (1") wide x 3.05m (10') long with 6mm x 9.5mm (1/4" x 3/8") slotted holes on 203mm (8") o/c. Acceptable material: TB-120 aluminum termination bar by Tru-Fast or equal approved by membrane Manufacturer. 

.6 Termination bar fastener for wood, steel or aluminum:

.1 Tru-Fast Ultra Solid Stainless Steel fastener to penetrate substrate by 19mm (3/4") c/w EPDM galvanized steel sealing washers or Construction Fasteners Inc. Woodgrip #14 screw complete with Sentri coating on threads, Chromagard colour match head and EPDM washer, or equal approved by membrane Manufacturer, 

.7 Termination bar fastener for concrete or masonry:

.1 Tru-Fast Tap Grip Truss Head fastener with Perma-Coat Z3 corrosion protection or equal approved by membrane Manufacturer, to penetrate substrate by 32mm (1 1/4") c/w EPDM galvanized steel sealing washers. 

.8 Pre-painted metal flashing to steel or wood:

.1 #14 Colormate fasteners by Leland Industries, Construction Fasteners Inc. Woodgrip #14 screw complete with Sentri coating on threads and Chromagard colour match heads with EPDM washer, or equal approved by membrane Manufacturer, to penetrate substrate by minimum 19mm (3/4").

.9 Membrane to wood:

.1 Galvanized round top roofing nails with minimum 25mm (1") diameter heads or plate and head combination, to penetrate substrate a minimum 32mm (1 1/4").

2.5 ROOFING ACCESSORIES

.1 Unless indicated otherwise roofing accessories are to be manufactured from aluminum, and where applicable are to come complete with removable caps. All accessory units penetrating the roof to have foamed-in-place, closed cell, urethane foam insulation sprayed into the unit at the plant under controlled conditions.

.2 Unless specifically identified or designated by the Consultant, pitch pockets are not to be installed on the project. Contractor to install low-maintenance projection flashings; either metal flashings with appropriate removable caps or copper gooseneck constructions as per IRC detail drawing.

.3 Acceptable materials:

<table>
<thead>
<tr>
<th>Detail Type:</th>
<th>Prefab Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>New roof drain</td>
<td>Copper Clamp-Tite by Menzies Metal Products</td>
</tr>
<tr>
<td>Plumbing stack</td>
<td>Aluminum by Menzies Metal Products</td>
</tr>
<tr>
<td>Gooseneck Flashing</td>
<td>Electrical Roof Flashing by Menzies Metal Products</td>
</tr>
<tr>
<td>Conduit supports</td>
<td>CXM-Mini Port by C-Port Rooftop Support Solutions</td>
</tr>
<tr>
<td>Walkway paver or splash pad</td>
<td>See IRC detail drawing</td>
</tr>
</tbody>
</table>

.4 Installation of membrane flashings at penetrations:
.5 Install roof drains, vent stack flashings, support flashings and other roof penetration flashings and seal with membrane in accordance with the manufacturer’s recommendations and as indicated on detail drawings.

.6 Prime all metal flanges with appropriate primer and allow solvents to flash off prior to installation.

.7 Burn off poly film on areas to receive metal flashing. Set metal flange in full layer of elastomeric asphalt sealant ensuring a positive bond.

.8 Install modified bitumen base sheet flashing across the metal flange, staying short of curved metal section, and running on to the roof membrane a minimum of 4” (102mm).

PART 3 - EXECUTION

3.1 WORKMANSHIP

.1 Perform roofing work which is not specifically covered by these Specifications in accordance with applicable industry standards and good roofing practices of:

.1 Roofing Contractors Association of British Columbia (RCABC)
.2 Canadian Modified Bitumen Manufacturer’s Association’s recommendations,
.3 Manufacturer’s preprinted and published technical specifications,
.4 ULC Design No. S-107 criteria,
.5 Factory Mutual Global design criteria FM 1-28 and 1.49,
.6 Compliance with local fire insurance requirements,
.7 Compliance with local building codes.

.2 Procedures for application of materials should be in accordance with Manufacturer’s printed instructions and recommendations.

.1 Advise Consultant of adjustments to specified roofing procedures recommended by Manufacturer or due to site conditions.

.2 Written approval by Consultant is required to make any adjustments to specified procedures.

.3 All work to be carried out in accordance with drawings, and specifications provided.

.1 All supplied drawings and details constitute acceptable installations. Any deviance from these details must first approved by Consultant prior to installation.

.4 While work is in progress, all steps must be taken to safeguard building from damage due to weather, fire, and structural overloading.

.5 Examine underside of roof deck when installing mechanical fasteners, to avoid accidental damage to existing services.

.6 Apply each part of roofing system when surfaces are free of moisture for successful application.

.7 Do priming for asphalt roofing in accordance with CAN/CGSB 37-GP-15M and as recommended by membrane manufacturer.

.1 Adhesives or sealants and liquid primers will not be applied until surfaces are dry.

3.2 EXAMINATION OF SITE CONDITIONS

.1 Examine existing site conditions and substrates upon which work of this section is dependent. Report to Consultant in writing any defects or discrepancies. Commencement of work implies
acceptance of existing conditions and assumption of full responsibility for finished condition of work.

.2 Defective work resulting from application to unsatisfactory conditions will be considered responsibility of those performing work of this section.

### 3.3 PROTECTION

.1 **Adjacent Buildings and Tenants:**

- Take care to not damage any adjacent or closely located buildings and all related grounds in vicinity of Work during roofing operations.
- Protect against infiltration of dust, debris, and other such contaminants and occurrences.
- Locate garbage chutes to minimize exposure to adjacent building, its grounds, and its occupants.
- Protect walls by means of tarpaulins where garbage chutes and hoisting equipment are located and operated.
- Cover dumpsters and bins to prevent debris from blowing away.
- Do not use spray installation methods on days with significant wind.
- Damage to adjacent buildings, grounds, and vehicles to be rectified by Contractor at no additional cost.

.2 **Adjacent Roof Areas and Completed Work:**

- Take care not to damage any previously performed work or existing roofs.
- If work area is accessed across existing roof areas, provide protection to existing roof system. Use continuous Protection Walkways consisting of 19mm (0.75") plywood sheathing over 38mm (1.5") extruded polystyrene insulation.
- Protect newly installed roof work from traffic and damage using Protection Walkways where warranted by traffic requirements.
- Comply with any precautions deemed necessary by Consultant.

.3 **Material Storage:**

- Deliver all materials to site in undamaged condition with original manufacturer’s label intact and clearly visible for easy verification of specified materials.
- Provide security fencing at all times for equipment and materials stored at ground level.
- Protect rolls from flattening by storing on ends on skids.
- Whenever possible, store roof materials off roof at designated, protected storage area.

.4 **Structural Integrity of Roof:**

- Use only equipment that will not adversely affect, damage, or alter roof deck.
- Do not create point loads that may adversely affect performance of existing deck when storing materials on roof.
.5 Inclement Weather:

.1 Immediately halt work during inclement weather, including but not limited to rain fall, snow, drizzle, fog, and hail. Protect exposed building substrates, open building cavities, and moisture sensitive products.

.2 At end of each work day or when stoppage occurs due to inclement weather, provide suitable protection from elements for completed work and materials out of storage.

.3 Place in to heated storage any temperature sensitive materials such as membranes, adhesives, and sealants when temperature falls below 5 °C (40 °F).

.4 Protect all vents, stacks, drains and related deck openings from inclement weather and contamination from debris.

.6 Roof Safety, Access, and Egress:

.1 Use warning signs and barriers. Maintain in good order until completion of work.

.2 Access to roof to remain unobstructed.

.3 Keep doorways and fire routes clean and clear of any obstacles.

.4 Protect and safeguard all man-size or larger openings in roof deck with warning flags and suitable temporary barriers or railings.

.7 When Hot Asphalt is used:

.1 Set up warning signs and barriers, and maintain in good order until completion of Work.

.2 Cover walls and adjacent completed work where materials are hoisted and used.

.3 Clean off all drips and smears of bituminous materials immediately.

.8 Damage and Defective Work:

.1 Avoid use on roof of any petroleum based and other chemical products that are corrosive and/or damaging to membrane. Provide protection to membrane from any accidental spills or drips. Any damage to roof system caused by non-compatible products to be cut out and replaced at no cost to Owner.

.2 Investigate and examine any damage caused by execution of Work for this contract, and repair or replace with new materials to match original finish. Restoration and repair work to be reviewed and approved by Consultant.

.3 Defective Work resulting from application of material on unsatisfactory surface or substrate to be rectified by Contractor at no additional cost.

.4 Defective Work resulting from improper installation of materials to be rectified by Contractor at no additional cost.

3.4 SURFACE PREPARATION

.1 Preparation:

.1 Examine all roof decks and existing site conditions to ensure that they are in satisfactory condition for commencement of work in this section.
.2 Examine work of other trades for defects and discrepancies and report them to Consultant in writing. Do not proceed with work until surfaces are satisfactory.

.3 Divide work into logical sections and only tear-off as much existing roof as can be made watertight in same working day to prevent damage to building interior.

.4 Prior to removal of any roof components, all existing openings (drains, vents, air intakes, etc.) to be covered or plugged to prevent any debris or contaminate from entering building below. All such coverings are to be removed at end of each working day and reinstalled prior to next day’s start up.

.5 Disconnect Electrical Services and Mechanical Equipment as required.

.1 Any rooftop equipment requiring disconnection to be responsibility of Contractor in consultation with Owner.

.2 Existing Roof Removal:

.1 On all Roof Areas: Remove existing roof system components down to expose existing wood deck in preparation for installation of new roof system.

.2 At areas designated for roof removal and replacement, remove existing projection and perimeter metal flashings, ballast, gravel, roof membrane and flashings, insulation, vapour retarder and flashings, and old appurtenances. Disposed of removed items an appropriate site for building material waste.

.3 All unused and abandoned pitch pockets, vents, curbs, sleepers, projections, etc. are to be removed from designated areas and disposed of.

.1 Obtain verification and authorization from Client before removing and disposing of any suspected unused or abandoned projections.

.2 Install new roof decking as required to close off any deck openings prior before proceeding with new roof system installation.

.3 Substrate Review:

.1 Exposed roof deck surfaces to be reviewed by Contractor with Consultant. Ensure to review entire roof area to satisfy any warranty requirements of Manufacturer of new roof membrane system.

.1 Notify Consultant of review at least forty-eight (48) hours prior to site review.

.2 Report any anomalies found that may impact soundness and structural integrity of roof system to Consultant and Owner immediately. Areas with damaged decking must be replaced or repaired before any further work may take place on that particular section.

.3 Ensure roof decks are firm, straight, smooth, dry, free of snow, ice, frost, oils, or other contaminants. Decking must be properly cleaned of any dust and debris prior to proceeding with new installation. Test whether specified adhesion to deck will be obtained where required.

.4 Ensure roof drains have been installed at proper elevations relative to finished roof surface in order to allow for sufficient drainage of roof surface.

.5 Ensure that projections and any equipment (electrical conduit, gas lines etc.) are correctly secured to roof decking where applicable. If any inadequate securement is found, inform Consultant and halt work around that area until situation is rectified.
.6 Examine existing plywood sheathing, wood blocking, and cant strips. Do not install new roofing unless such items are adequately secured to withstand stresses imposed by thermal movement of new roofing components.

3.5 CARPENTRY

.1 On All Roof Replacement Areas: Contractor is to add new wood blocking as necessary to maintain minimum heights at perimeters and curbs. The minimum height above the finished roof at curb locations and at wall bases is to be 8" (203mm). The minimum height at parapets is to be 6" (152mm) above the finished roof.

.2 Contractor to replace any seriously damaged or deteriorated wood at perimeters and projections with new construction grade spruce wood blocking or exterior grade, good one side plywood to match existing. Determination of the suitability to re-use or replace existing wood to be at the sole discretion of the Consultant.

.1 Ensure existing wood blocking remaining at perimeters and curbs is securely fastened to existing substrate before installing any new blocking.

.3 Contractor to install wood blocking as required to ensure that all curbs and sleepers for H.V.A.C. and mechanical equipment are level. Install wood blocking as required to ensure that all curbs and sleepers for H.V.A.C. and mechanical equipment are level.

.4 All new and existing wood blocking and plywood is to be considered part of the roof, and to be made watertight by the end of each working day to eliminate moisture infiltration into the roof system.

3.6 MODIFIED BITUMEN MEMBRANE APPLICATION

.1 On all Roof Areas: Install a two ply modified bitumen membrane system overtop of the prepared substrate. The new membrane system is to consist of a mechanically fastened base layer and a torch applied cap layer. All membrane materials are to be supplied by one manufacturer, Soprema, meeting manufacturer’s respective material compatibility requirements to achieve the required Warranty.

.2 Install base layer perpendicular to roof slope starting at drain locations and moving toward perimeters using parallel courses. Side joints and end joints to be in accordance with manufacturer written instructions. Install Sopralap membrane at end joint as per manufacturer instructions.

.3 Mechanically fasten base layer as per manufacturer’s written instructions using plates and fasteners as recommended by membrane manufacturer and installed in accordance with FM 1-90 wind resistance requirements. Fasteners to have anti-corrosion coating and penetrate underside of roof deck by minimum 0.5" (13mm). Plates to be 2" (51mm) diameter and galvanized.

.4 Terminate base layer at perimeter and curb details in accordance with manufacturer instructions. ALL SIDE AND END LAPS OF THE BASE SHEET SHALL BE HEAT WELDED TO THE SATISFACTION OF THE CONSULTANT.

.5 The base sheet flashing will be installed in accordance with the IRC Detail Drawing provided and carried across the flat of the roof a minimum of 4" (101mm). Install base sheet flashing with primer as recommended by membrane manufacturer. Ensure silicone release film is completely removed during installation.

.6 Torch apply the cap sheet membrane across the base sheet perpendicular to roof slope. Start at drain location and move outward in parallel courses. Laps in the cap sheet to be offset away
from those in the base sheet. Overlap side joints by 4" (101mm) and end joints by 6" (152mm). Ensure thermofusible film is completely flashed-off to achieve good bond to base sheet.

.7 The cap sheet flashing shall be installed in accordance with the IRC Detail Drawing provided. The cap sheet flashing is to extend from the outside edge of the perimeter down on to the flat of the roof and to extend a minimum of 6" (152mm) on to the flat of the roof. Ensuring cap sheet flashing extends past the edge of the base sheet flashing beneath.

.8 All membrane installations shall conform to the manufacturer’s printed literature, recommendations, and specifications.

.1 Surface Inspection:

.1 Modified bitumen membranes can be applied over wood, metal, gypsum board, and concrete decks, which must be clean, smooth, free of ice, snow, moisture, and debris. Concrete decks must have all holes filled and rough patches removed. Wood decks are to have a minimum thickness of 5/8" with ship lapped of T & G edges. Where fasteners have been used the heads are to be driven into the deck as to prevent damage to the membrane. All joints in wood decking should be covered prior to installing the base sheet.

.2 Application of Primer:

.1 Priming all substrates prior to the installation of a modified bitumen membrane is recommended. The primer should be applied at a rate of approximately 1/2 Gal per 100 sq.ft. with a roller or sprayer. Contractor is to allow primer to dry prior to mopping or torching to the prepared substrate. Drying time will vary according to deck and weather conditions.

.3 First Roll Starting Point:

.1 The lowest point of the area to be roofed is to be the starting point.

.4 Sloped Roofs:

.1 The first roll is to be placed at the perimeter detail and the membrane should be run vertically up the roof.

.2 It is recommended that the first roll of base sheet be a half-width roll to ensure the seams between base and cap sheets are staggered.

.5 Low Slope and Flat Roofs:

.1 The base sheet should begin at drain level with the side lap lined up with the center of the drain, rolls should run perpendicular to the slope (where applicable). The cap sheet is to be installed over the base sheet and cover the overlap lined up with the center of the drain.

.6 Alignment of Rolls

.1 The first roll should be completely unrolled and lined up with the edge of the roof. Where required membranes are to be unrolled and allowed to relax for the required time. The membrane is to be rerolled from both ends to the centre, then applied as per specifications.

.7 Staggering of Sheets:
1. End laps between base and cap sheets are to be staggered approximately 24". Side laps between base and cap sheets are to be offset 12". Laps in the membrane (base & cap) are to be 3" wide for side laps and 6" wide for end laps.

.8 End Lap and Side Lap Sealing:

.1 Areas of possible infiltration of moisture are the voids created by the overlapping of rolls of membrane.

.9 Procedure to Seal Voids:

.1 The corner of the salvage edge that will be covered by the next roll of material is to be cut off when the membrane is unrolled prior to installation.

.2 This procedure should be carried out for all application of the membrane; base and cap sheets & flashings.

.9 Torching Technique:

.1 The position of the flame is to be 2" - 6" away from the surface being torched to depending on weather conditions. The torch should be waved in a sideways motion allowing the flame to cover the entire width of the membrane without burning the side of the adjacent sheet, already installed. The flame is to be pointed toward the inside of the roll on the salvage edge of the adjacent sheet. This procedure will prevent damage (discolouring of granules, asphalt being blown out at the seams & etc.) to the adjacent rolls. The membrane is to be pulled toward the torcherer (not pushed).

.10 Salvage Edge Preparation:

.1 Degranulation (embedding of the granules):

.1 Granules along the edge of the membrane must be embedded into the membrane bitumen to provide good adhesion at the laps. Plan clean, straight line of degranulation to ensure that no areas of bare bitumen are left exposed to elements after completion.

.2 To Degranulate:

.1 Carefully heat the granular mineral surface of the cap sheet with the torch. Once hot the granules will start to sink into the bitumen of the membrane. Use a hot trowel to embed the granules into the bitumen.

.3 Caution:

.1 The trowel is to be used in an S sliding motion. Do not attempt to scrape off the granules from the bitumen. Embedding of the granules on end laps should be done far enough in advance to allow the bitumen to cool. If the bitumen is not allowed to cool the membrane will overheat and damage the membrane material. Side laps of granular sheets can be fully bonded without visible asphalt bleed-out, but a 5mm (max.) is an immediate sign the lap is sealed. Bleed out can be covered with matching granules cast into reheated bitumen.

.11 Membrane Flashings:

.1 Base flashings are to extend a minimum of 4" onto the base sheet, 6" preferred, from the bottom of the perimeter detail.
Cap flashings are to extend 6" onto the cap sheet, 9" preferred, from the bottom of the perimeter detail.

Seams:
1. Seams in all sheets are to be checked with a round nosed trowel while work is in progress. Any deficiencies found are to be repaired prior to installing the covering layer or leaving the roof area at the end of the day.

Reinforcement:
1. Reinforcement is required at the following locations.
   1. Corners
   2. vents & stack
   3. drains
   4. mechanical units
   5. gravel stops

Defects to watch for when torching:
1. Overheating:
   1. polypropylene film on top side of the membrane starts to melt
   2. granules begin to sink
   3. modified bitumen melts away exposing the polyester reinforcement
   4. visible waves due to overheated reinforcement

2. De-lamination of Materials
   1. Three reasons why the membrane may not be fully bonded to the substrate are:
   2. moisture was present on the substrate
   3. dirt, dust or other contaminate was on the substrate acting as a parting agent.
   4. the membrane was not adequately heated to provide a good bond between the membrane and substrate

3. Mis-Alignment of Roll:
   1. This is when the roll of membrane being applied swerves to the left or right and the alignment to the starting line is lost. This can occur when the roll is not unrolled and aligned and rerolled perfectly straight. When a roll becomes mis-aligned it is to be cut at the point where the swerve begins and restarted.

4. Wrinkles:
   1. Wrinkles are undulation located on the surface of the membrane, after it has been applied. Depending on its origin a wrinkle may have different appearances.

5. Blisters:
A blister is a pocket of air under the membrane where full adhesion was not attained or trapped moisture was released from the substrate. In isolated areas, no overlap location and low traffic areas, blisters pose no threat to the water tight integrity of the membrane. Large blisters should be removed and repaired. The repair consists of torching any loose membrane, then applying a patch extending a minimum 6” beyond the cut out area on all sides.

3.7 MISCELLANEOUS MECHANICAL & ELECTRICAL

.1 Co-ordinate roofing work with General, if applicable, and other Sub-Contractor trades that may be present on roof.

.2 Contractor responsible to:

.1 Coordinate any planned disruptions in advance with Owner to minimize inconvenience.

.2 Disconnect, lift (if necessary), modify, and reconnect all Heating, Ventilation, Air Conditioning, and Mechanical units to facilitate installation of new roof system.

.3 Modify existing sleepers, curbs, and supports as required to suit new roof system installation and configuration as detailed. Ensure modified sleepers, curbs, and supports are made watertight with new membrane and flashings as required.

.4 Provide overnight security, at no additional cost to Owner, where removal of any venting or HVAC equipment results in an opening in roof deck that cannot be permanently sealed on same day. Security company must be preapproved by both Owner and Consultant.

.5 Remove and dispose of identified and designated abandoned, redundant, and unused HVAC equipment from roof and worksite.

.6 Disconnect, modify, and reconnect all gas lines and conduits as required to suit new roof installation height and configuration of projection detailing.

.1 All gas line work must be performed by a qualified Gas Fitter and must conform to requirements of CSA B149.1-10.

.2 Re-install gas lines and conduits at a height of 150mm (6”) to 200mm (8”) above finished roof surface.

.7 Paint all gas lines on areas of roof work with exterior grade, yellow paint for metal surfaces; Rust Paint by Tremclad or IRC Group approved equivalent.

.8 Any and all costs associated with HVAC disconnection, removal, and reconnection, including modification of gas and conduit lines, to be included in Bid Price.

.3 Where existing sections of roof decking are to be removed, ensure any cabling, conduits, and attachments (plumbing, electrical wiring, lighting fixtures, etc.) secured to underside are disconnected, removed, and relocated. Notify Owner’s Representative, if necessary, to have interior services disconnected, removed, and relocated by Owner.

3.8 METAL FLASHINGS

.1 On All Roof Replacement Areas: After installation of roof membrane and membrane flashings, new perimeter metal and metal flashings to be installed as detailed in Section 07620 and as indicated on detail drawings.
3.9 SEALANTS

.1 On All Roof Replacement Areas: After installation of roof membrane and membrane flashings, install sealants as per Section 07920 – Sealants and as recommended by membrane manufacturer.

3.10 ROOF DRAINS (REUSE EXISTING)

.1 General Practice:

.1 Ensure existing roof drains, rain gutters, and down pipes are clear of debris and are free flowing prior to installation of new roof system.

.1 Any blockages are to be reported prior to start of Work. Once Work has begun, Contractor assumes responsibility for free flowing drains and clearing blockages at no additional cost to Owner.

.2 Once work has begun, no roof area to be left overnight without adequate provision for drainage.

3.11 PLUMBING AND DRAINAGE

.1 Contractor is responsible for verifying that all drains are clear of debris and free flowing. Any blockages are to be reported prior to the start of work. Once work has begun, the Contractor assumes responsibility for free flowing drains and the cost associated with clearing.

.2 Remove existing cast drain assemblies. Install new Clamp-Tite drains by Menzies complete with new mechanical seal.

.3 Prior to the installation of new insulation and membrane, the Contractor is to ensure that all new and retro drains are located at a height where the roof is able to clear the majority of roof top water caused by rainfall within a 72 hour period.

.4 All plumbing connections to be performed by a qualified Plumbing Contractor. Flood testing of drains and connections is to be performed on all Roof Areas in the Contract. Contractor shall schedule the flood testing with a minimum 48 hours prior notice to the Consultant, and shall be performed in the presence of Consultant and Owner. Contractor shall provide proper documentation of all testing results.

.5 Contractor to provide new overflow scuppers as indicated in the IRC Roof Plan. Install fully soldered, box type 24 oz. copper scuppers. Solder all joints to make continuous water tight seal. If required, affix prefinished metal rain water leaders to suit to the scupper collector heads. Rainwater leaders shall be minimum 75mm in diameter; DWV pipe to ASTM, white plastic pipe to match existing. Use either galvanized steel pipe or cast iron pipe for the first 1800mm above the ground. Install a 45 degree elbow at the bottom of each rainwater leader.

.6 All plumbing works to be executed in accordance with all applicable Provincial and Local Building Codes.

3.12 TEMPORARY WATER CUT-OFFS

.1 All membrane flashings to be installed concurrently with roof membrane in order to keep roof system watertight during performance of work.

.2 Temporary waterproof seals to be placed on daily work as required. All temporary water-stops to be constructed to provide a one hundred (100) percent watertight seal.
.3 New roofing membrane to be carried into water-stop. Water-stop to be sealed to roof deck and/or substrate to prevent water travel and infiltration under new or existing roofing.

.4 Edge of roof membrane to be sealed in a continuous heavy application of sealant. Temporary seals to be removed and cleaned up before proceeding with remaining work.

.5 When work resumes, cut out and dispose of all contaminated membrane. All sealant, contaminated membrane, insulation fillers, etc. to be removed from work area and properly disposed of offsite. Reuse of these materials in new work is strictly prohibited.

.6 If inclement weather occurs while a temporary water-stop is in place, Contractor to provide all necessary labour required to monitor situation and maintain watertight condition.

.7 If any water is allowed to penetrate under newly completed roofing, then affected area to be cut out, removed, and replaced with new materials at Contractor’s own expense.

3.13 CLEAN-UP

.1 On All Roof Replacement Areas: Clean up and remove from job site on a daily basis, all rubbish and surplus materials resulting from this work.

.2 Drag a magnetic bar across work area and grounds to ensure removal of all discarded fasteners and sharp metal debris.

END OF SECTION - 07521
(This page left blank intentionally)
PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Supply and installation of new prefinished sheet metal flashings and counter flashings to complete roof system installation. Unless specifically indicated otherwise, all references to Sheet Metal Flashings in specifications and drawings to refer to new prepainted steel.

.2 Form, break, and install metal flashings to suit perimeter and projection details as specified and as shown on detail drawings.

.3 Coordinate all work in this section with other sections and trades as required to ensure proper installation of specified components.

1.2 RELATED SECTIONS

.1 Section 01110 – Summary of Work

.2 Section 02225 – Selective Demolition & Removal

.3 Section 07521 – Modified Bituminous Roofing Membrane

.4 Section 07920 – Joint Sealants

1.3 APPLICABLE PUBLICATIONS

.1 Latest edition of all listed references to apply:


.2 ASTM A653/A653M – Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.

.3 ASTM A792/A792M – Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by Hot-Dip Process.

.4 CSA B111 – Wire Nails, Spikes and Staples.

.5 CAN/CGSB 51.32M – Sheathing, Membrane, Breather Type.

.6 CAN/CGSB 93.1M – Sheet, Aluminum Alloy, Prefinished, Residential.


1.4 SUBMITTALS

.1 Warranty: Provide Owner with a Material and Workmanship Warranty for sheet metal flashing work on Contractor’s letterhead, signed and authorized.

.2 Compatibility: Provide written certification to Consultant stating that materials and components of roofing system and wall system, as assembled in system are compatible.

.3 Mock-ups: Create mock-up sample of typical metal flashing detail and related accessories for review. Provide any additional mock-up samples as reasonably requested by QA Observer.
1.5 STORAGE AND HANDLING

.1 Do not store metals in direct contact with earth, road surface, roof deck, or other metals.

.2 Place suitable supports or pallets under metal stock upon delivery. Protect metal from scratches, dents, punctures, and moisture.

.3 Store caulking and sealants at +5ºC minimum.

.4 Handle and store products in a manner to prevent damage, oxidization, and deterioration.

.5 Remove and replace damaged products at own expense and to satisfaction of Quality Assurance Observer/Consultant.

.6 Apply materials in accordance with Manufacturer’s recommendations.

1.6 SAFETY AND PROTECTION

.1 References:

.1 CAN/CSA S269.2M: Access Scaffolding for Construction Purposes.

.2 FCC No. 301: Standard for Construction Operations.

.3 Comply with all safety requirements as per current printed edition of OHSA, and with WorkSafe BC standards.

.2 Solvents, Adhesives and Membranes

.1 Store only enough solvents and adhesives on roof for same day’s use.

.2 Manufacturer supplied adhesives should be stored in their overnight containers. Minimum temperature for solvent based adhesives and primers is -5ºC.

.3 Hoisting:

.1 Protect walls and roof perimeters where hoisting is required.

.2 Protect roofs from damage due to traffic and material handling until completion of project.

1.7 WARRANTY

.1 Sheet Metal Flashings:

.1 Two (2) year Material Warranty and one (1) year Workmanship Warranty.

1.8 QUALITY ASSURANCE OBSERVATION

.1 IRC Building Sciences Group Inc., hereafter known as “Observer”, is an independent Quality Assurance Observation agency appointed by Owner to observe installation of sheet metal flashing Work:

.1 Arrange Prestart site meeting with Observer no more than three (3) weeks prior to commencement of Work on site. Obtain Observer’s instructions and reference procedures to be followed on project.

.2 Provide to Observer date when work will begin, at least forty-eight (48) hours prior to commencement of Work for phase.
3. Arrange Final Review of installed work with QA Observer, and where required with membrane Manufacturer’s technical representative.

2. Cooperate with Observer and afford all facilities necessary to permit full Quality Assurance Observations during performance of Work. Act immediately on instructions given by Observer.

3. When required, provide cut-outs and samples in field where directed by Observer and make good without additional cost to Owner.

4. When initial tests and observations reveal work failing to meet contract requirements, pay for any additional testing and observations required by Observer or third party testing agency for correction of Work, without additional cost to Owner.

5. Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.

1.9 PREPARATORY WORK

.1 Examine drawings and specifications and any other necessary data which may affect installation to determine extent of Work involved in this Section. No additional claims against Owner to be allowed resulting from failure to ascertain full extent of Work required as described or implied.

.2 Prior to application of flashings, review roof perimeters and projections.

.3 Examine installed membrane flashings for any defect of level or construction before proceeding with work.

.4 Advise Consultant of any deficiencies that may affect performance of roof system and any deviations from specified tolerances.

.5 Defective or improper work must be corrected before proceeding with installation of sheet metal flashings.

PART 2 - PRODUCTS

2.1 PRE-FINISHED METAL FLASHINGS

.1 All standards, regulations and specifications listed herein are considered to be latest available edition.

.2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

.3 Prefinished Metal Flashing: 24 gauge (0.026” or 0.66mm) steel with G90 (Z275) zinc coating conforming to ASTM A653A/A653M. Surface with Dofasco Perspectra Series or Valspar WeatherX factory-baked finish. Colour selected by Architect from Manufacturer’s standard colour range.

.4 Cleats and Hook Strips Not Otherwise Specified: Two gauges heavier of material matching that of flashing being employed; minimum 22 gauge (0.032” or 0.82mm).

2.2 JOINTING

.1 Linear mating of sections of cap flashings and parapet flashings to be with an “S” lock joint.

.2 Corner mating to be completed with a standing seam.
2.3 ACCESSORIES

.1 Underlay: Smooth unsaturated quality rosin sized paper weighing not less than 0.3 Kg/m² (6 lbs per 100 ft²) unless otherwise shown to CSA A123.3M.

.2 Joint Filler: Extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 210 kilopascals (20 to 30 psi), 25% to 30% wider than joint to be caulked.

.3 Touch-up paint: As recommended by pre-finished material manufacturer.

.4 Bituminous Paint: Gilsonite asphalt 910-02 by Bakelite to CGSB 1-GP-108 Type II.

.5 Sealants: as per Section 07 92 00.

2.4 FASTENERS

.1 Use galvanized, copper, aluminum or stainless steel nails or screws most compatible with materials being employed. Use fasteners as most generally suitable to.

.2 Fasteners to Wood: Nails, annular threaded of length to penetrate into bases minimum 1" (25 mm) or No. 8 screws to penetrate surface by min. 19 mm (0.75"), at 600 mm (24") o.c.

.3 Exposed Fasteners: Nylon headed, No.14 Colormate fasteners by Leland Industries with 11mm (7/16") hex heads, self tapping or drilling point tips. Length to suit installation and with colour to match prepainted metal.

.4 Masonry Fasteners: Tapcon, Gripcon or Rawl spike sized to penetrate concrete 38mm (1.5") minimum unless otherwise shown.

.5 Wedges: Rolled plumber sheet lead. Secure metal flashings on inside and should be secured with No.10 galvanized screws through neoprene washers at 760 mm (30") o.c.

.6 Masonry Anchors: Rawl lead lags for screws as recommended by manufacturer.

2.5 FABRICATION

.1 Fabricate all possible work in shop in 2.4m (8’) lengths by brake forming, bench cutting, drilling and shaping. On high vertical sections install metal in 1.2m (4’) section as specified and detailed. Profiled metal to be cold rolled.

.2 On coping or flashing with a horizontal dimension of 406mm (16”) or greater, fabricate metal flashings in maximum 1.2m (4’) sections.

.3 On coping or flashing with a horizontal dimension of 508mm (20”) or greater, use 25mm (1”) lock folded standing seam joints.

.4 Form bends with straight sharp lines, angles and corners into true planes, free from twists, buckles, dents and other visual distortions.

.5 Double-back exposed metal edges at least 13mm (0.5”). Raw edges will not be permitted.

.6 Supply all accessories required for installation of sheet metal work of this Section. Fabricate accessories of same materials to which they will be used.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install sheet metal flashings at copings, walls, joints, roof openings and other components required to protect membrane flashings as shown on drawings, or otherwise required.
.2 Install continuous concealed hook strips at all exterior faces. Install cleats as required to protect membrane roofs and flashings from damage at lock joints and as required to permanently hold flashing in place. Secure cleats at 152mm (6") on center in V-pattern, keeping lower fastener within 32mm (1.25") of drip edge.

.3 Sheet metal work to be installed to cover entire area it protects and to be watertight under all service and weather conditions.

.4 Install in a uniform manner, level, true to line, free of dents, warping and distortion.

.5 Back-paint at rate of 0.12L/m2 (¼ Gal/100 ft2) with bituminous paint, sheet metal that comes into contact with another kind of metal, masonry or concrete.

.6 Install sheet metal with concealed fasteners at lock joints. Exposed fastening will be permitted only with approval of Consultant. Space all fasteners evenly in an approved manner. Use lead plugs and screws where fasteners are exposed, otherwise use concrete drive fasteners where metal flashings are installed over concrete or masonry.

.7 Install underlay under sheet metal, installed directly over wood or masonry surfaces. Overlap joints 51mm (2") and turn up 76mm (3") at edges where horizontal surfaces intersect vertical planes.

.8 Join sheet metal by “S” lock seams, to permit thermal movement. Space joints evenly where exposed. Form inside and outside corners by means of raised seams. Lock seams to ensure water tightness. Do not use pop rivets.

.9 Slope all metal to interior to maintain minimum 8% slope. Do not form open joints or pockets that fail to drain water.

.10 Caulk all open sheet metal joints. Solder corners and other locations as required for a permanent waterproof connection.

.11 Where existing reglets can not be reused, provide new reglets sized minimum 10mm (3/8") wide, 25mm (1") deep and to suit site conditions.

.12 Clean reglets free of contaminates and dust.

.13 Wedge flashings into reglet joints with lead wedges at 229mm (9") o.c. Set minimum 6mm (¼") from masonry surface.

.14 At reglets wider than 10mm (3/8") and deeper than 19mm (¾") provide polyethylene rod, 25% wider than joint width. Caulk all reglets to provide a continuous waterproof seal. Use colour to match materials. Conform to manufacturer’s latest printed recommendations for use of products being employed.

.15 Carry flashings out onto roof minimum 76mm (3").

.16 Prepare mock-up installations of metal flashing details for approval by QA Observer prior to installation of sheet metal flashings.

3.2 FINISH

.1 At project’s conclusion, leave surface and adjacent work areas free of damage and clean of debris. Finished surfaces of formed metal flashings to be free of oil canning, dents and be perfectly colour matched.

.2 Changes in colour between sheets and dented or oil canned surfaces that detract from visual appearance of finished product will be rejected. Remove and replace damaged, defaced or defective work.
.3 Paint all exposed metal due to cutting.

.4 After erection touch-up finish surfaces damaged during handling and erection in conformance with manufacturer’s recommendations. Refinish shop applied finishes as approved by Consultant.

.5 Remove deposits or protections and wash metals left unpainted and exposed to view as specified by metal manufacturer.

3.3 CLEAN-UP

.1 Daily as work proceeds and on completion, remove all surplus materials and debris resulting from foregoing work.

.2 Drag a magnetic bar across work area and grounds to ensure removal of all discarded fasteners and sharp metal debris.

.3 Remove all stains, caulking or other adhesive from all affected surfaces.

END OF SECTION - 07620
PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01110 – Summary of Work
.2 Section 02225 – Selective Demolition & Removal
.3 Section 07521 – Modified Bituminous Roofing Membrane
.4 Section 07620 – Sheet Metal Flashing & Trim

1.2 REFERENCES

Latest edition of all listed references to apply:

.1 ASTM C920 – Elastomeric Joint Sealants
.2 CAN/CGSB-19.13 – Sealing Compound, One-component, Elastomeric, Chemical Curing
.3 Sealants: Professionals’ Guide, Sealant, Waterproofing and Restoration Institute
.4 SWRI (Sealant, Waterproofing and Restoration Institute) – Sealant and Caulking Guide Specification

1.3 QUALITY ASSURANCE OBSERVATION

.1 Observation of work will be carried out by designated QA Observer.
.2 Prior to mobilizing on site, prepare and install sealant samples for adhesion testing, a minimum of two (2) samples for each substrate combination, according to manufacturers written guidelines. Test sealant in contact with samples of materials to be caulked to ensure that proper adhesion will be obtained and no staining of material will result. Testing to be completed prior to mobilization on site. Do not proceed with Work until samples have been approved.
.3 Adhesion tests on new sealant will be performed at random locations at discretion of Owner’s representative. Any work that is found to be sub-standard, is to be removed and replaced at no cost to Owner. Contractor is to assist with sealant adhesion tests as directed.
.4 Execute Work of this Section by Subcontractors approved by manufacturers of materials incorporated in Work; who has equipment, adequate for Project, and skilled tradesmen to perform it expeditiously; and is known to have been responsible for satisfactory installations similar to that specified during a period of at least immediate past five years.
.5 Remove sealant and re-caulk disapproved joints.
.6 Approved joints will establish minimum acceptable quality of workmanship and will serve as standard by which subsequent Work will be compared for Acceptance.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and store materials in original wrappings and containers with manufacturer’s seals and labels, intact.
.2 Protect from freezing, moisture, water and contact with ground or floor.
1.5 ENVIRONMENTAL AND SAFETY REQUIREMENTS

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

.2 Conform to manufacturer’s recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Place materials defined as hazardous or toxic waste in designated containers.

.2 Ensure emptied containers are sealed and stored safely for disposal away from children.

.3 Dispose of surplus chemical and finishing materials in accordance with federal regulations.

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

.5 Use trigger operated spray nozzles for water hoses.

.6 Return solvent and oil soaked rags for contaminant recovery and laundering or for proper disposal.

.7 Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.

.8 Close and seal tightly all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperature.

.9 Place used hazardous sealant tubes and other containers in areas designated for hazardous materials.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

.1 Sealants and caulking compounds must:

.1 meet or exceed all applicable governmental and industrial safety and performance standards.

.2 be manufactured and transported in such a manner that all steps of process, including disposal of waste products arising therefrom, will meet requirements of all applicable governmental acts, by laws and regulations including.

.2 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.

.3 Caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant to not be used in or near air handling units.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Acceptable single component neutral cure silicone sealants for skylight related work include:

.1 CWS by Dow Corning; or
Acceptable single component, moisture curing, polyurethane sealants for reglets and other roofing related flashing termination work include:

- Dymonic by Tremco; or
- CWS by Dow Corning

Butyl (for concealed skylight related sealant joints): Tremco Curtainwall Sealant or approved alternate.

Primers:

- Primers to be as recommended by sealant manufacturer.

Cleaners:

- Acceptable cleaners:
  - Xylol
  - Methylene ketone (MEK)
  - Isopropyl Alcohol

Surfaces to receive silicone sealants to not be cleaned with Xylol.

All substrate materials to be cleaned with compatible cleaners.

Preformed Compressible and Non-Compressible back-up materials.

- Polyethylene:
  - Extruded closed cell foam backer rod.
  - Size: oversize 30 to 50%.

- Bond Breaker Tape.
  - Polyethylene bond breaker tape.

Compatibility: All materials in a sealant system to be compatible with each other, with substrate and any coating or waterproofing to be installed. Sealants used with elastomeric coating or waterproofing systems must be approved by coating or waterproofing manufacturer.

2.3 JOINT PRIMER

- Non-corrosive and non-staining type, compatible with joint forming materials and sealant. Primer as recommended by sealant manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

- Protect existing facades from staining or contamination.
- Protect public from falling debris during installation.
.3 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. At no time shall unsealed joints be left open. If protection is required, then entire drop/bay to be adequately protected.

3.2 EXAMINATION

.1 Before commencing Work, verify that joint configuration and surfaces have been provided as specified under Work of other Sections to meet intent of sealant Specification, that joint conditions will not adversely affect execution, performance or quality of completed Work and that they can be put into acceptable condition by means of preparation specified in this Section. Verify Site conditions together with manufacturer’s representative of sealant to be applied.

.2 Examine existing conditions and substrates upon which work of this section is dependent. Report to Consultant in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for finished condition of work.

.3 Ascertain that sealers applied to sealant substrates are compatible with sealant used and that full bond between sealant and substrate is attained. Request samples of sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.

.4 Examine sealant configuration for width and depth. Depth of joint should be 1/2 joint width with a minimum depth of 6mm (0.25”) and a maximum depth of 13mm (0.5”) unless specified otherwise. For fillet joints, a minimum of 6mm (0.25”) adhesion between sealant and substrate must be achieved on both sides of joint unless specified otherwise.

.5 Defective work resulting from application to unsatisfactory joint conditions will be considered responsibility of those performing work of this section.

3.3 SURFACE PREPARATION

.1 Prepare surfaces in accordance with manufacturer’s directions.

.2 Before any sealant repairs are made, type of existing sealant to be determined. If uncertain as to type, then a sealant manufacturer technical representative to be contacted to confirm type. Only sealant compatible with existing to be installed as part of repairs. Urethane based sealants are not to be applied over existing silicone sealants.

.3 Where existing, remove sealant completely. In no case shall new sealant be applied over old. In addition:

.1 Remove existing sealants, dust, oil, grease, oxidation, mill scale, coatings and all other loose material by cutting, brushing, scrubbing, scraping and/or grinding. In no case, however, shall components be damaged during surface preparation.

.2 Clean substrates with recommended solvent cleaner. Apply solvent with a clean cloth, pad or soft paper towel. Applicator cloth or towel to not leave fiber residue on substrate surface. Surface should be wiped clean and dried with a second clean cloth to ensure removal of contaminants. If substrate surfaces is still not clean, repeat procedures as needed. Change cloths frequently to prevent depositing contaminants from cloth onto substrate surface.

.3 Use method of surface preparation suitable for substrate, as recommended by sealant manufacturer and that does not damage existing finishes.

.4 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
.5 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.

.6 Ensure joint surfaces are dry and frost free.

.7 Remove loose particles present or resulting from routing by sweeping particles out with a dry brush, blowing out joints with oil free compressed air or by vacuuming joints prior to solvent cleaning.

3.4 PRIMING

.1 Where necessary to prevent staining or for neat appearance, 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 Use only primer approved by sealant manufacturer for particular installation, applying in strict accordance with manufacturers printed recommendations.

.4 Always pour primers onto rag or brush, do not dip rag or brush into container.

.5 Prime only as much area that can be packed and caulked in a single day.

.6 Do not apply excess primer, and apply primer only to areas which it will be contacted by sealant.

3.5 BACKUP MATERIAL

.1 Apply bond breaker tape where installation of backer rod is not possible, three point adhesion needs to be eliminated or throat to width ratio needs to be created as per manufacturers recommendations.

.2 When using backing material comprised of tubular or rod stock, avoid lengthwise stretching of material. Do not twist or braid backer material.

.3 Provide a stiff blunt-surfaced wood or plastic installation tool, having shoulders designed to ride on finished surface and a protrusion of required dimensions to assure a uniform depth of backup material below sealant. Do not puncture exterior skin or surface of backer material. A screwdriver is prohibited for use on this project.

.4 Using approved tool, smoothly and uniformly place backup material to depth indicated on drawings or otherwise required, compressing backer material 25% to 50% and securing a positive fit.

.5 Install backing material to a depth to provide a caulked joint meeting depth requirement as set out in sealant manufacturer’s specifications.

3.6 MIXING

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

3.7 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 exist to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Ensure that new sealant is adhered to substrates a minimum of 6 to 10 mm at each side of joint.

.6 Use sufficient pressure to fill voids and joints solid.

.7 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.8 Tool exposed surfaces before skimming begins to give slightly concave shape. Tooling to be performed by proper metal or wood tool. Finger tooling joints will not be accepted.

.9 Remove excess compound promptly as work progresses and upon completion.

Curing:

.1 Cure sealants in accordance with sealant manufacturer’s instructions.

.2 Do not cover up sealants until proper curing has taken place.

3.8 CLEAN-UP

.1 Clean adjacent surfaces immediately and leave work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

END OF SECTION - 07920
NEW MOD. BIT. CAP SHEET
NEW 0.5" SOPRABASE
EXISTING WOOD DECK

NEW PREFINISHED METAL FLASHING
NEW COLOURMATE FASTENERS

NEW MOD. BIT. CAP MEMBRANE FLASHING
NEW MOD. BIT. BASE MEMBRANE FLASHING
NEW ASPHALTIC BOARD

4"
2"
NEW MOD. BIT. CAP SHEET
NEW 0.5" SORABASE
EXISTING WOOD DECK

NEW MOD. BIT. CAP FLASHING
NEW MOD. BIT. BASE FLASHING
ADD NEW SLOPED WOOD BLOCKING

NEW PREFINISHED METAL CAP FLASHING
NEW COLOURMATE FASTENERS

NEW WOOD BLOCKING

4" 2"

PARAPET DETAIL

NOTE: NO REPRODUCTION OR USE OF THIS DRAWING IS AUTHORIZED WITHOUT EXPRESSED WRITTEN CONSENT
©COPYRIGHT 2014 IRC BUILDING SCIENCES GROUP BC INC.

SCALE: 3" = 1'-0"

IRC

REV#:  VPM585

DRN. BY: B.W.

CHK. BY: T.A.A.

DATE:  

SCALE: 3" = 1'-0"
NEW COLOURMATE FASTENERS
NEW TERMINATION BAR

NEW MOD. BIT. CAP SHEET
NEW 0.5" SOPRABASE
EXISTING WOOD DECK

NEW MOD. BIT. BASE SHEET FLASHING
NEW MOD. BIT. CAP SHEET FLASHING
NEW PLYWOOD

4"  2"

WALL DETAIL

NOTE: NO REPRODUCTION OR USE OF THIS DRAWING IS AUTHORIZED WITHOUT EXPRESSED WRITTEN CONSENT
©COPYRIGHT 2014 IRC BUILDING SCIENCES GROUP INC.

REVISED:  SCALE: 3" = 1'-0"
DATE

VRMM381

ORN. BY: B.W.
CHK. BY: T.A.A.
NEW MENZIES VANDALPROOF CAP

2 NEW STAINLESS STEEL FASTENERS

EMBED DECK FLANGE IN LAYER OF COMPATIBLE MASTIC

NEW MASTIC AND GRANULES

NEW BASE SHEET FLASHING

EXISTING WOOD DECK
NEW 0.5" SOPRABASE
NEW MOD. BIT. CAP SHEET

SEAL WITH MOD. BIT. COMPATIBLE RUBBERIZED SEALANT
NEW 22"x12"x1" ROOFMATE INSULATION
NEW CONCRETE PAVERS
ENSURE 3" GAPS ARE MAINTAINED TO PREVENT WATER DAMMING
NEW 22"x6"x1" ROOFMATE INSULATION

PAVER WALKWAY

NEW 22"x12"x1" ROOFMATE INSULATION
NEW CONCRETE PAVER
NEW 22"x22"x1" ROOFMATE INSULATION

SINGLE PAVER