SPEC NOTE (Leverett 2022-01-10): Last updated.

SPEC NOTE (Leverett 2022-01-10): This section has been developed for use on New Brunswick Department of Transportation and Infrastructure (DTI) - Buildings Division Roof Projects based on the MRGNB Roof Warranty and CSA123.21 wind uplift test results.

# General

## Section Includes

### Materials and installation for modified bituminous roofing for conventional build up roofing (BUR) system. This Section includes materials and installation for carpentry, roof drains and metal flashing.

SPEC NOTE: Use the following paragraph when the scope of work is part of new construction or renovation project and the roofing trade will be bid using a Bid Depository. Coordinate Carpentry section in part 2

### The General Contractor will provide perimeter and roof opening curbs, expansion and control joint dividers, and related blocking required to support and frame openings for mechanical and electrical equipment.

## Related Sections

### Project Specific General Requirements: Section 01 00 01.

### Standard General Requirements: Section 01 00 02.

### Fire Safety Requirements Section 01 35 31.

### Health and Safety: Section 01 35 30.

## References

### ASTM International Inc

#### ASTM C 1177/C 1177M-17, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

#### ASTM D 41-11, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.

### Canadian Standards Association (CSA International)

#### CSA A123.21:20 Standard test method for the dynamic wind uplift resistance of membrane-roofing systems

#### CSA A123.23-15 (2020) Product Specification for Polymer-Modified Bitumen Sheet, Prefabricated and Reinforced

#### CSA O121-17, Douglas Fir Plywood.

#### CSA O151-17, Canadian Softwood Plywood.

### Canadian General Standards Board (CGSB)

#### CGSB 37-GP-9Ma-83 Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.

#### CGSB 37-GP-56M-80b(A1985) Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

#### CAN/CGSB-51.33-[M89], Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.

### Canadian Roofing Contractors Association (CRCA)

#### CRCA Roofing Specifications Manual 2011.

### Underwriter's Laboratories of Canada (CAN/ULC)

#### CAN/ULC-S702.1-14 R2019 Thermal Insulation, Mineral Fibre, Boards for Buildings.

#### CAN/ULC-S704.1:2017, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

### Master Roofers Guarantee of New Brunswick (MRGNB)

#### MRGNB Roofing Specifications 2010, Latest Revision.

## Administrative Requirements

### Convene pre-installation meeting no later than one week prior to beginning waterproofing Work, with roofing contractor's representative, Departmental Representative Engineer – Architect, and Consultant.

#### Verify project requirements.

#### Review installation and substrate conditions.

#### Co-ordination with other building sub trades if required.

#### Review manufacturer's installation instructions and requirements.

#### Review Time/Work Schedule

## Quality Assurance

### Roofing Work to be done in accordance with applicable standard in Master Roofers Guarantee of New Brunswick (MRGNB) and Canadian Roofing Contractors Association (CRCA) Roofing Specifications Manual.

### Contractor is to ensure the Roof Observer identified by the Departmental Representative is informed of construction schedule and changes 24 hours in advance.

## Scheduling of Work

SPEC NOTE: Choose one section below to indicate appropriate work hours. If required, list limited working hours in coordination with DTI representative.

### Work Hours

#### Work at Educational Facilities is to be performed during the Summer Break. Work outside of this time period is required to be done after school hours as scheduled with the Engineer-Architect and the School District Representative.

#### Work may be scheduled during normal hours of operations and must be approved by building and Engineer-Architect representatives. Provide information to the Engineer-Architect indicating how the Contractor will keep emissions to a minimum.

#### Work is limited to [ ] and must be approved by building and Engineer-Architect representatives. Provide information to the Engineer-Architect indicating how the Contractor will keep emissions to a minimum.

### Demolition work is not to commence until all material has been ordered and date of arrival of products has been verified. Contractor to provide copy of order to Engineer-Architect

## Action and Informational Submittals

### Provide submittals in accordance with Section 01 00 02 - Standard General Requirements and 01 00 01 - Project Specific General Requirements and 01 00 01 – Project Specific Requirements.

### Shop Drawings:

#### Indicate flashing, control joint, mechanical fasteners and pattern and all related details.

#### Provide layout for tapered insulation when applicable.

#### Provide CSA123.21 Dynamic Wind Uplift Resistance summary document.

### Product Data:

#### Provide copies of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations

#### Submit product data for roof membranes, asphalt, sealants, vent stack covers, and roof drains.

#### Provide copies of WHMIS MSDS in accordance with Section 01 35 30 -Health and Safety and indicate VOC content for Primer, Asphalt, Sealers, Adhesives.

### Submit laboratory test reports certifying compliance of bitumens, fiberboard, membrane, and insulation with specification requirements.

### Submit copy of work order indicating materials have been ordered and delivery dates.

### Include copies of all Daily Observation Reports, Photos, and Final Completion Letter, as submitted by the Roof Observer, in each Maintenance Manual provided at completion of project.

## Fire Protection

### Fire Extinguishers: maintain one cartridge operated type or stored pressure rechargeable type with hose and shut-off nozzle, ULC labeled for A, B and C class protection. Size 9 kg on roof per torch applicator, within 10 m of torch applicator.

### A continuous fire watch shall be provided as per the Hot Works requirement of the National Fire Code of Canada (latest edition):

#### Perform the fire watch during roofing operations and for a period of not less than 2 hours after operations cease for breaks and at end of day.

#### The fire watch is to consist of visual inspection and monitoring using an infrared thermal imaging camera.

#### Include a final inspection of the hot work area and adjacent exposed areas, conducted after completion of the fire watch.

## Delivery Storage and Handling

### Deliver, store and handle materials in accordance with manufacturer's written instructions.

### Storage and Handling Requirements:

#### Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.

#### Provide and maintain dry, off-ground weatherproof storage.

#### Store rolls of felt and membrane in upright position. Store membrane rolls with selvage edge up.

#### Remove only in quantities required for same day use.

#### Place plywood runways over completed work and existing roofs not under construction to enable movement of material and other traffic.

#### Store caulking at +5°C minimum.

#### Store insulation protected from daylight and weather and deleterious materials.

#### Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

## Environmental Requirements

### Do not install roofing when temperature remains below -18°C for torch application, or -5°C and to manufacturers' recommendations for adhesive application.

### Minimum temperature for solvent-based adhesive is -5°C.

### Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

### Demolished materials are to be removed from site and disposed of in an approved disposal site as authorized by authority having jurisdiction. Contractors may be requested to provide certified weigh bills or receipts from authorized disposal sites.

## Guarantee

### Contractor shall guarantee all workmanship related to the installation of the Roofing System and that the roof membrane will remain leak-proof for a period of three (3) years from the date of Interim Certificate of Completion. At the Substantial Completion the Contractor is to provide the guarantee from the Issuing Guarantor that provided written documentation at the time of Tender. A three year guarantee provided through an issuing bonding agency must be valued at a minimum of forty percent (40%) of the roofing component of the tender price.

### Provide membrane manufacture’s standard material warranty.

# PRODUCTS

## Performance Criteria

SPEC NOTE: This spec is written to apply to roofs with wind uplift ratings up to 3.0kPa (62.5psf) in the field, 3.6kPa (75psf) in the perimeters, and 5.6kPa (117psf) in the corners. For new construction or roof replacements, the consultant is required to perform building specific calculations to confirm the wind uplift ratings are below these values and determine the corner zone dimensions.

.1 Proceed to the Wind Load Calculator for Roof Cladding at
https://www.nrc-cnrc.gc.ca/eng/services/windrci/index.html

.2 Choose appropriate building location, geometry, and roof type. Note that geometry is to be the entire building or wing, not just the roof section.

.3 Choose appropriate exposure. Open terrain is defined as open water, shorelines, or level terrain with only scattered buildings, trees, or other obstructions. Rough terrain is suburban, urban, or wooded terrain extending upwind from the building for at least 1km. Pay special attention to buildings that are on an island, near the coast, or on a hill or escarpment.

.4 Choose appropriate opening category.

.5 Importance category is to be at least “High” for all government owned buildings.

.6 Note Wind Load and End Zone Widths below and on drawings.

.7 If calculated wind load results are higher than the ratings indicated above, consult with DTI representative for alternatives.

### Roofing work is to be performed in accordance with the requirements of CSA A123.21 for wind uplift resistance and in accordance with the following:

#### Applicable Uplift Tests

##### Soprema SOPI-231265-02: 3.6kPa (75psf)

##### Soprema SOPI-231265-08: 5.6kPa (117psf)

##### IKO PARS018: 3.6kPa (75psf)

##### IKO AARS011: 3.0kPa (62.5psf)

##### IKO PARS017: 6.7kPa (140psf)

#### WindRCI calculated uplift and minimum zone dimensions:

##### End zone width: [ ]

##### Corner: [ ]

##### Perimeter: [ ]

##### Field: [ ]

### Contactor must choose one system and cannot interchange products between systems. Alternates to the products listed in this specification must be listed as an eligible or substitutable product in the CSA123.21 Dynamic Wind Uplift results. Alternate systems are to provide similar design intent and wind uplift results.

### Compatibility between components of roofing system is essential. Provide written declaration to Engineer - Architect stating that materials and components, as assembled in system, meet this requirement.

SPEC NOTE: Choose appropriate Deck Cover and Vapour Barrier

## Deck Cover and Vapour Barrier (Steel or Wood Deck)

### Glass Mat, Gypsum Board: to ASTM C 1177, FM Class 1, UL 790, thickness 12.7mm, Mold and moisture resistant.

#### Acceptable products:

##### "DensDeck Prime Roof Board" by Georgia Pacific

##### "Securock Glass Mat Roof Board" by CGC

### Self-adhesive vapour retarder: Self-adhesive membrane, top surface with a polyethylene facer, bottom surfaced with a release sheet, thickness 0.8mm (30mil) minimum. Surface primer as per manufacturer.

#### Acceptable Products:

##### System 1:

###### “M.V.P. Sand” by IKO

###### “Armourbond Flash Sand” by IKO

##### System 2:

###### “Sopra Vap’r” by Soprema

###### "Sopraply Stick Duo” by Soprema

### Fasteners: #12 or #14 self-drilling screws, complete with 75 mm diameter galvanized steel plates.

#### Acceptable products:

##### System 1: #14 Fastener and 76mm round metal plates, “Dekfast” by SFS Intek, ”HD Roofing Fastener” By TruFast, or “Heavy Duty Roofing Fastener” by OMG.

##### System 2: #12 Fastener and 76mm round metal plates by “Dekfast” by SFS Intek,

## Deck Cover and Vapour Barrier (Concrete Deck)

### Base sheet: To CSA123.23-15 Type B-Grade 3 (Polyester reinforcement-non exposed), or CGSB 37-GP-56M Type 2-Class C-Grade 2 (Covered Application – Plain Surfaced - Heavy Duty Service). Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, weighing 180 g/m², minimum thickness of 3 mm ± 0.2 mm. Top and Bottom surface: Polyethylene/Sanded

#### Acceptable products

##### System 1: "Torchflex TP-180-FS-Base 3.0mm" by IKO

##### System 2: “Sopralene 180 SP 3.5” by Soprema

## Deck Primer

### Asphalt primer: Manufacturers recommended primer in adherence to CGSB 37-GP-9Ma and ASTM D 41.

## Carpentry

### Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:

#### CAN/CSA-O141.

#### NLGA Standard Grading Rules for Canadian Lumber.

### Blocking, nailing strips, grounds, curbs, fascia backing and sleepers:

#### Board sizes: "Standard" or better grade.

#### Dimension sizes: "Standard" light framing or better grade.

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

### Batt and blanket mineral fibre: to ASTM C 665, Type 1.

### Fasteners for wood:

#### Nails, spikes and staples: to CSA B111.

#### Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

#### Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.

## Membrane

### Base sheet: To CSA123.23-15 Type B-Grade 3 (Polyester reinforcement-non exposed), or CGSB 37-GP-56M Type 2-Class C-Grade 2 (Covered Application – Plain Surfaced - Heavy Duty Service). Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, weighing 180 g/m², minimum thickness of 2 mm ± 0.2 mm. Top and Bottom surface: Polyethylene/Sanded

### Fire Seal Membrane: To CSA123.23-15 Type C-Grade 3 (Polyester reinforcement-non exposed), or CGSB 37-GP-56M Type 2-Class C (Covered Application – Plain Surfaced). SBS modified bitumen membrane, Top and Bottom surface: Polyethylene/Pressure-Sensitive. Provide primer as recommended by manufacturer.

### Base Flashing: To CSA123.23-15 Type B-Grade 3 (Polyester reinforcement-non exposed), or CGSB 37-GP-56M Type 2-Class C-Grade 2 (Covered Application – Plain Surfaced - Heavy Duty Service). Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, weighing 180 g/m², minimum thickness of 3 mm ± 0.2 mm. Top and Bottom surface: Polyethylene/Polyethylene.

### Cap sheet: To CSA123.23-15 Type B-Grade 1 (Polyester reinforcement-exposed granule surface), or CGSB 37-GP-56M Type 1-Class A-Grade 2 (Exposed Application - Granule Surfaced - Heavy Duty Service). Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, weighing 250 g/m², minimum thickness of 4 mm ± 0.2 mm at selvage edge. Bottom surface: Polyethylene

### Cap flashing: same as Cap sheet, 1000 mm wide, unless noted otherwise.

### Acceptable products:

#### System 1:

##### Cap Sheet: "Torchflex TP-250-Cap" by IKO

##### Cap Flashing: Same as Cap Sheet

##### Base Flashing: "Torchflex TP-180-FF" by IKO

##### Fire Seal: "Armourbond Flash" by IKO

#### System 2:

##### Cap Sheet: "Sopralene Flam 250 GR" by Soprema

##### Cap Flashing: Same as Cap Sheet

##### Base Flashing: "Sopralene Flam 180" by Soprema

##### Fire Seal: "Sopraply Flam Stick" by Soprema

#### System 3: (recap sections only)

##### Cap Sheet: “Vanguard 250 TC” by Lexcor

##### Cap Flashing: Same as Cap Sheet

##### Base Flashing: “Vanguard 180 FF” by Lexcor

##### Fire Seal: “Vanguard Flash SA” by Lexcor

## Flame Free Membrane Flashing

### Approved equivalent to the torched base and cap flashing base design: Pressure sensitive or cold adhered base and cap flashing.

### Base Flashing: SBS modified bitumen membrane, composite reinforcement, sanded top surface, pressure sensitive or sanded bottom surface.

### Cap Sheet Flashing: SBS modified bitumen membrane, composite reinforcement, granuled top surface, pressure sensitive or sanded bottom surface.

### Acceptable products:

#### System 1:

##### Primer: “SAM Adhesive” by IKO

##### Adhesive: “Cold Gold Flashing Adhesive” by IKO

##### Pressure Sensitive

###### Cap Flashing: “Armourstick HD Cap” by IKO

###### Base Flashing: "Armourbond 180" by IKO

##### Cold Adhered

###### Cap Flashing: “Armourstick HD Cap” by IKO

###### Base Flashing: "MP-180-SS-Base" by IKO

#### System 2:

##### Primer: “Elastocol Stick Primer” by Soprema

##### Adhesive: “Colply Adhesive Trowel Grade” By Soprema

##### Pressure Sensitive

###### Cap Flashing: "Sopraply Stick Traffic Cap" by Soprema

###### Base Flashing: "Sopraply Stick Duo" by Soprema

##### Cold Adhered

###### Cap Flashing: "Colply Traffic Cap" by Soprema

###### Base Flashing: "Colply Base 410" by Soprema

#### System 3 (recap only)

##### Primer: “Multigrip” by Lexcor

##### Adhesive: “Lexplast Trowel Grade” by Lexcor

##### Pressure Sensitive

###### Cap Flashing: “Vanguard SA Cap” by Lexcor

###### Base Flashing: “Vanguard Flash SA” by Lexcor

##### Cold Adhered

###### Cap Flashing: “Vanguard 250 MC” by Lexcor

###### Base Flashing: “Vanguard 180 SS” by Lexcor

## Cold Applied Adhesive

### Adhesive (for adhering rigid and fiberboard insulation): A two component, 100% solids, solvent free, asphalt extended, flexible vulcanizing adhesive. Primer as recommended by membrane manufacturer.

#### Acceptable material:

##### System 1: “Millenium Adhesive” by IKO

##### System 2: “Duotack Adhesive” by Soprema

## Isocyanurate (Urethane) Insulation

### Isocyanurate (Urethane) insulation to CAN/ULC-S704-01, CFC free, reinforced paper bottom facer.

SPEC NOTE: Continuous slope to drain required via structure or tapered insulation (minimum 1% for replacements, 2% for new construction). When structural slope is not possible, consider the use of tapered insulation slope rates, sump sizes, crickets, and/or saddles to achieve appropriate insulation thickness at perimeter for blocking/flashing height.

#### Shape:

##### [flat, [125 mm] total thickness]

##### [tapered, [50mm] minimum thickness at drain sump, and [1%] [2%] [as indicated on drawings] slope throughout].

##### Boards are to be a maximum of 1220 mm width x 1220 mm length. Install insulation in at least two field applied layers. Minimum thickness per layer of 50mm.

#### RSI: LTTR of 1 / 25 mm thickness minimum

#### Acceptable products:

##### System 1:

###### "IKOtherm" by IKO

###### Acceptable alternate to the field zone top layer of insulation: ”Composite “I”” by ISOX.

##### System 2:

###### "ACFoam II" by Atlas

###### "ENRGY 3" by Johns Manville

###### "Sopra-ISO" by Soprema

## Integrated Cover Board and Base Sheet

### Integrated Asphalt Board and Base Sheet: Factory laminated panel consisting of an asphalt core board with factory applied base sheet with a minimum thickness of 2.0 mm ± 0.2 mm. Asphalt Core board, 4.8mm thick, to be semi-rigid asphalt core board composed of a mineral fortified asphaltic core between two layers of high-strength reinforcing glass fiber

#### Acceptable Products

##### System 1: “Protectobase 180” by IKO

##### System 2: “2-1 SopraSmart Board” by Soprema

## Crickets and Sumps

### Provide sump at all drains. Sump panel to have a minimum size of 1200x1200 and reduce insulation thickness from edge to centre by 25mm. Sump material to be by same manufacturer supplying insulation for field of roof.

### Provide tapered shapes as indicated.

### Form shapes using tapered insulation from the same manufacturer supplying insulation for field of roof.

## Sealers

### Modified bitumen mastic: as recommended by roofing membrane manufacturer.

### Sealing compound: rubber asphalt type.

### Sealants: to CAN/CGSB-19.24-M80.

## Prefinished Steel Flashing

SPEC NOTE: (LEverett 2015-03-25) Specify 24 gauge for roof replacements and 22 gauge for new construction.

### Prefinished steel with factory applied silicone modified polyester of flashings, copings and fascias. Form to profiles indicated from [0.65 mm thick (24 gauge) steel] [0.80mm thick (22 gauge)] steel. Flashing to be a maximum of 200 mm without a bend in metal. The length of flashing on the cant face is to be a maximum of 75 mm and cant to be at 45 degrees.

#### Class: F2S

#### Colour: Selected by Engineer - Architect to match existing metalwork.

#### Specular gloss: 30 units +/- 5 in accordance with ASTM D 523.

#### Coating thickness: thickness: not less than 25 micrometres.

#### Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D 822 as follows:

##### Outdoor exposure period 1000 hours.

##### Humidity resistance exposure period 1000 hours.

### Fasteners: #9 x 1/4" hex head screws, cadmium plated carbon steel, self-drilling, with steel and neoprene washers, pre-painted head to match flashing colour.

## Accessories

### Polyethylene back-up rope: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa, compatible with primers and sealants, oversized 30 to 50%.

### Vent stack covers: telescoping cap and pre-insulated flange sleeve of aluminum, sized to suit vents. Height to be 300mm with piping extended to suit.

#### Acceptable manufacturers: ”Flash-Tite Insulated” by Lexcor; “SJ-26” by Thaler; or approved equivalent.

### Roof Drain: Aluminum dome, coated cast iron body, clamp collar with integral gravel guard, Roof sump receiver, and an elevating body plate or Underdeck clamp. Size to suit existing rain water leader system.

#### Acceptable products: “Z-100” by Zurn, “Cast Iron Drain Kit” by TruFast, or an approved equivalent.

### Termination Bars: 25 mm wide pre-punched aluminum with sealant ledge. Fasten with Self-tapping high load screw or masonry nail-in anchor as required to suit substrate.

### Asphalt Core board: semi-rigid asphalt core board, 3 mm thick, composed of a mineral fortified asphaltic core between two layers of high-strength reinforcing glass fiber

#### Acceptable products: "Protectoboard" by IKO, "Sopraboard" by Soprema, or an approved equivalent.

### Torchable cants: Premanufactured cant strip with 45 degree angle, torch safe, 101mm face.

#### Acceptable products: "T.R. Cant Strip" by Isox, "CantRSS" by ModulR TS, “Versalex” by Lexcor, “sopraRock” by Soprema, or approved equivalent.

SPEC NOTE: (LEverett 2021-01-15) Remove accessories below when not required

### Pipe Supports: Pre-manufactured UV resistant pipe support, sized to suit application.

#### Acceptable manufacturers: Cooper, OMG, Caddy, Ecoblock, or approved equivalent.

### Ladder Safety post: Spring loaded, painted or powder coated steel, extendable, safety post designed to be attached to ladder rungs.

#### Acceptable products: “Ladderup Safety Post” by Bilco, “Spring Balanced Safety post” by Maxam Metal Products, or approved Equivalent.

### Hot Pipe Flashing: Aluminum flashing sleeve with integral deck flange, two piece friction fit collar. Sleeve diameter to allow for 50mm clearance from chimney, height to be a minimum of 300mm.

#### Acceptable products: “MEF-3A” by Thaler, or approved equal.

### Roof Hatches: Galvanized steel, single leaf, pre-assembled. Reinforced and insulated 14-gauge cover with rubber gasket, weathertight assembly with fully welded corner joints on cover and curb. Insulated 14-gauge curb minimum 305 mm height above finished roof surface with an integral metal cap flashing of the same gauge and material as the curb. Provide anti-corrosive compression spring operators, locking hatch assembly, heavy pintle hinges, spring latch with interior and exterior turn handles.

#### Finish: Alkyd base red oxide primer

#### Size: 914mm x 762mm

#### Acceptable products: “S-20” by Bilco, “R100G/R20” by Lexcor, or approved equivalent.

### Sky light Dome: Provide acrylic double dome curb mount skylight to replace existing. Glazing to be clear over white acrylic. Size as required.

#### Acceptable products: “Model CG2” by Velux, “Arc-O-Lite double dome (aluminum) skylight” by Architectural Plastics Limited, or an approved equivalent.

# EXECUTION

## Workmanship

### Do examination, preparation, and roofing work in accordance with applicable, standard in Master Roofers Guarantee of New Brunswick (MRGNB) Roofing Specifications Manual, except where specified otherwise.

### Do priming for asphalt roofing in accordance with manufacturers written instructions.

### The interface of the walls and roof assemblies will be fitted with durable rigid material, plywood, providing connection point for continuity of air barrier.

### All panels adhered in place with bead applied adhesives are to be restrained against uplift by the adhesive until the expansion of the adhesive foam is complete.

## Protection

### Cover walls and adjacent work where materials hoisted or used.

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

### Clean off drips and smears of bituminous material immediately.

### Dispose of rain water off roof and away from face of building until roof drains installed and connected.

### Protect all roof areas from traffic and damage. Comply with precautions deemed necessary by Architect - Engineer.

### 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.

### Metal connectors and decking will be treated with rust proofing or galvanization.

## Demolition

### Remove existing roofing assembly to expose [steel deck.] [wood deck.] [concrete deck.]

### Exposed deck or deck cover on roof replacement projects is to be waterproofed by end of day.

### Dispose of materials off site.

### Verify that items scheduled to remain in place are not damaged during the work. Replace, where damaged, to satisfaction of Engineer - Architect.

## Examination of Roof Decks and Surfaces

### The Engineer - Architect is to be notified 24 hours prior to exposure of existing roof deck and/or removal of roof materials to existing that is to remain.

### Inspect with Engineer - Architect roof deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed. Report in writing any defects in structure or differences from details

### Inspect with Engineer – Architect to identify areas of fire risk or concern that may need to be addressed by alternate detail construction or assemblies.

### Prior to commencement of work ensure:

#### Decks are firm, straight, smooth, dry, free of snow or ice or frost, and swept clean of dust and debris.

#### Provide cants, curbs, dividers, and blocking as required and secure using galvanized fasteners.

#### Roof drains have been installed at proper elevations relative to finished roof surface. Verify that existing roof drains are at low point of roof elevation. Notify Engineer - Architect if drains are not at proper elevation to allow water drainage.

#### Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.

#### Install members square and plumb and true to line, levels, and elevations.

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

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

### Do not install roofing materials during rain or snowfall.

SPEC NOTE: Choose appropriate Preparation of Deck and Vapour Retarder

## Preparation of Deck (Steel Channel)

### Install sound absorbing insulation in flutes of acoustical steel roof deck in accordance with deck manufacturer's instructions.

### Field and perimeter zones: Mechanically fasten Gypsum Board Sheathing to steel deck with screws to steel deck's upper rib surfaces. A 2440 mm x 1220 mm sheet to have a minimum of 16 fasteners

### Corner zones are to use the following:

#### System 1: Loose lay or pre-secure deck cover in preparation for a mechanically fastened cover board. See Integrated Coverboard and Base Sheet Application section.

#### System 2: 32 fasteners per 2440 mm x 1220 mm sheet.

### Place with long axis of each gypsum sheet transverse to steel deck ribs, with end joints staggered and fully supported on ribs.

## Preparation of Deck (Plywood)

SPEC NOTE: Coordinate fastener pull tests with DTI and Engineer-Architect to verify fastener pull out resistance according to the manufacturers CSA A123.21 Wind Uplift Test results Retarder

### Field and perimeter zones: Mechanically fasten Gypsum Board Sheathing to wood deck with screws. A 2440 mm x 1220 mm sheet to have a minimum of 16 fasteners:

#### Corner zones are to use the following:

##### System 1: Loose lay or pre-secure deck cover in preparation for a mechanically fastened cover board. See Integrated Coverboard and Base Sheet Application section.

##### System 2: 32 fasteners per 2440 mm x 1220 mm sheet.

## Vapour Retarder (Steel or Wood Deck)

### Self Adhesive

#### All surfaces are to be primed in accordance with manufacturer's instructions. Surfaces must be free of dust, or any residue that may hinder adhesion of the vapour retarder.

#### Beginning at the bottom of the slope and without adhering the membrane, unroll onto the substrate for alignment. Do not immediately remove the release sheet.

#### Overlap each preceding sheet by 75 mm at the side laps and 150 mm at end laps. Stagger end laps by a minimum of 300mm.

#### Once aligned peel back one end of the release sheet and adhere the exposed membrane to the substrate. Peel back the remaining release sheet at a 45 angle to avoid wrinkles in the membrane.

#### If the membrane is not properly aligned, do not adjust it. Instead, cut the roll and start again, making sure that it is properly aligned and that it overlaps the end of the misaligned piece by 150 mm.

#### Roll the self-adhesive vapour retarder onto the substrate. Finish by aligning the edge of the roller with the lower end of the side laps and rolling up the membrane. Do not cut the membrane to remove air bubbles trapped under the laps. Squeeze out air bubbles by pushing the roller to the edge of the lap.

#### If applicable, heat seal remainder side laps.

#### Ensure continuity by extending vapour retarder to perimeter and deck penetrations.

#### Seal vapour retarder membrane at all perimeters, transitions and around each penetration to ensure continuity.

#### Seal the vapour retarder to the vertical surfaces at all roof penetrations, curbs, and parapets.

## Vapour Retarder ([Concrete Deck][Existing Vapour Barrier])

### Heat welded

#### Starting at low point of roof, perpendicular to slope, unroll base sheet, align, and reroll from both ends.

#### Unroll base sheet membrane onto concrete deck, taking care not to burn membrane or its reinforcement.

#### Lap sheets 75 mm minimum for side and 150 mm minimum for end laps.

#### Application to be free of blisters, wrinkles, and fish mouths

## Wood Blocking

### Curbs and projections are to be built up to 300mm above roof membrane or as indicated on drawings.

### New curbs over steel decks require the installation of minimum 300mm wide plywood matching the thickness of the deck cover.

### Install wood cants by anchoring into fascia supporting blocking as indicated on drawings. Wood blocking to be bolted to wall structure and ensure proper anchorage of roof edge from wind uplift.

## Fire Seal Membrane

### A self-adhering fire seal membrane is to be installed at all exposed wood and combustibles to provide a continuous fire seal.

#### Prime wood surface with primer as recommended by manufacturer

#### Install self-adhered fire seal membrane 100mm onto the vapour barrier and to cover all exposed wood and combustibles. Press into place with rollers.

#### Round top nails may be used to ensure good adherence.

## Roof/Wall Junction

### The Engineer - Architect is to be notified 24 hours prior to covering thru-Wall Flashings to allow Inspection.

### Inspect with the Engineer - Architect and examine Thru-Wall Flashings and report in writing any defects in structure or differences from details. Inspection will review water-tightness of membrane at thru-wall prior to installing siding material or masonry and metal flashings.

## Exposed Membrane Roofing Application

### Isocyanurate Insulation Application.

#### Adhere insulation to vapour barrier in beads of cold applied adhesive and in strict accordance with CSA A123.21 and adhesive manufacturer's recommendations.

#### Field and perimeter zones: Embed insulation in beads of adhesive evenly spaced at 305mm. Place insulation panels immediately and apply pressure to ensure maximum contact.

#### Corner zones:

##### System 1: Loose lay or pre-secure insulation in preparation for a mechanically fastened cover board. See Integrated Coverboard and Base Sheet Application section.

##### System 2: 102mm ribbons

#### Install additional layers of insulation in same manner as indicated above. Tapered insulation to be installed in accordance with shop drawings. Stagger joints between layers 150 mm minimum.

#### Place boards in parallel rows and length parallel with slope, with ends staggered, and in firm contact with one another. Ensure that top surface of insulation is smooth, even, and without steps.

#### Cut end pieces to suit.

#### All installed insulation is to be waterproofed with roof membrane by end of day.

### Integrated Coverboard and Base Sheet Application.

#### Adhere Integrated Coverboard and Base Sheet panels to insulation in beads of cold applied adhesive and in strict accordance with CSA A123.21 and adhesive manufacturer's recommendations.

#### Field and perimeter zones: Embed panels in beads of adhesive evenly spaced at 305mm. Place insulation panels immediately and apply pressure to ensure maximum contact.

#### Corner zones:

##### System 1: Mechanically fastened cover board with fasteners 305mm o.c. in seam and two mid seam rows 102mm either side of centre.

##### System 2: 102mm ribbons

#### Joints to be staggered a minimum of 150 mm from insulation joints.

#### Butt coverboard tight without gaps.

#### Remove release tape from the side lap self adhering strip and roll into contact with adjacent board.

#### Heat seal remainder side laps. Apply end lap cover strips and fastener cover patches as recommended by the membrane manufacturer.

### Cap sheet application.

#### Starting at low point on roof, perpendicular to slope, unroll cap sheet, align, and reroll from both ends.

#### Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.

#### Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.

#### Application to be free of blisters, fishmouths and wrinkles.

#### Do membrane application in accordance with manufacturer's recommendations.

### Flashings.

#### Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.

#### Nail and torch flashing base sheet and torch flashing cap sheet onto substrate in 1-meter wide strips.

#### Lap flashing base sheet to membrane base sheet minimum 200 mm and seal by torch welding.

#### Lap flashing cap sheet to membrane cap sheet 150 mm minimum and torch weld.

#### Provide 75 mm minimum side lap and seal.

#### Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.

#### Do work in accordance with manufacturer's recommendations.

## Flame Free Flashings

### Ambient temperature to be 4 degrees Celsius and rising or as per manufacturer’s recommendations. Material to be stored at 21 degrees Celsius until ready to use.

### Install sanded fire seal in accordance with base design execution. Install roof insulation, cover board, membrane base sheet, and membrane cap sheet as specified. Flash film from field base sheet adjacent to the detail prior to installation.

### Flashing sheet application

#### Pressure Sensitive: Remove release protection film and install membrane onto primed surface.

#### Cold Adhesive: Install membrane onto adhesive coated surface.

#### Use weighted roller or hand roller on entire surface of sheet to ensure full adherence.

### Lap flashing base sheet to membrane base sheet minimum 200 mm and seal edges by hot air welding where required. Install gussets at all inside and outside corners.

### Lap flashing cap sheet to membrane cap sheet 150 mm minimum and seal edges by hot air welding. Where embedding of granules is required use flashing adhesive as per manufacturer’s instructions.

### Provide 75 mm minimum side lap and seal by hot air welding where required.

### Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.

### Do work in accordance with manufacturer's recommendations.

## CANTS

### Interior Cants.

#### Install prefabricated torchable cants over Insulating Fiberboard and Base Sheet panel and fasten to vertical with 50 mm plate and fasteners spaced a minimum of 400 mm oc.

#### Angle cut cants to fit tightly on back and bottom where roof to wall angle varies from 90 degrees.

#### Cover cant strips with torch applied base sheet flashing to act as an extension of field base sheet. Extend 100mm onto field base sheet and 50mm onto fire seal membrane on curb. Install base sheet flashing and cap sheet flashing as indicated.

### Exterior cants (at roof edge) are to be fabricated out of wood and anchored into wood blocking supporting fascia. Wood blocking to be bolted to wall structure and ensure proper anchorage of roof edge from wind uplift.

## ROOF PENETRATIONS

### Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with the manufacturer's recommendations and details.

### Extend vent stack to 300mm above roof membrane. Install vent stack sleeve 12 mm below stack and install sealant to vent stack, place cap onto bead of sealant to seal cap to vent stack over flange. Installation of cap to vent stack cover is to be done after ventstack insulation has been reviewed by the Engineer – Architect

### Insulate underside of drain body.

SPEC NOTE: (L Everett 2019-01-01) Use when installing new cap sheet over existing roofing system. Delete when not required.

## Cap sheet application (Recapping Existing System)

### Inspect with Engineer-Architect conditions of existing roof system to determine readiness to proceed. Identify and repair any oil contaminated membrane, moisture contaminated or deteriorated materials, loose flashing flanges, blisters, and delaminated membrane.

### Reset and reseal with mastic the existing cap sheet membrane at roof drains prior to recapping.

### Thoroughly clean the existing membrane surface using a broom and blower to rid the surface of debris, loose granules and unbonded particles.

### Embed granules on the existing membrane, within a minimum 150 mm wide strip or radius around all areas of the roof perimeter, around all raised curbs and sleepers, and all vent stacks and other raised flashings.

### Embed granules on the existing membrane, in a minimum 500 mm wide radius around existing roof drains.

### Coat the remaining granulated surface with a full coat of modified bitumen primer at a minimum rate of 0.25 l/m2 and allow to dry thoroughly.

### At drains, install minimum 1,000mm x 2,000mm cap sheet target patch with drain at centre

### Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.

### Unroll and torch cap sheet onto existing cap sheet taking care not to burn membrane or its reinforcement.

### Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps and target patch overlaps at drains. Offset joints in cap sheet 300 mm minimum from those in base sheet.

### Application to be free of blisters, fishmouths and wrinkles.

### Do membrane application in accordance with manufacturer's recommendations.

## Flashings (Recapping Existing system)

### Thoroughly clean the existing flashing surface using a broom and blower to rid the surface of debris, loose granules and unbonded particles.

### Embed granules on the new cap sheet membrane a minimum of 150 mm onto the field of the roof, on the cant strip, and on the vertical and horizontal surfaces of the existing flashings.

### Lap flashing cap sheet to membrane cap sheet 150 mm minimum and torch weld.

### Provide 75 mm minimum side lap and seal.

### Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.

### Apply new sealant to ventstack flashings, gravel stop flashing, etc.

### Do work in accordance with manufacturer's recommendations.

## METAL FLASHING

SPEC NOTE: (LEverett 2015-12-15) On major projects ensure coordination on supply of metal for flashing.

### Bend and install metal flashings as detailed and in minimum 2440 mm or longest practical lengths.

### Fasten face of Flashing to wood fascia with nylon headed hex screws, 400mm on centre for each row. For metal flashing widths over 150 mm install two rows a minimum of 50 mm from top and bottom edge. Maximum width of metal flashing to be 200 mm on fascia, otherwise install in multiple layers on with each width to have a drip edge.

### Lock end joints and caulk with sealant.

## Field Quality Assurance

### Inspection and testing of roofing application will be carried out by testing laboratory as designated by the owner.

### Costs of inspection and testing will be paid by Owner.

## Cleaning

### Remove bituminous markings from finished surfaces

### In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.

### Repair or replace defaced or disfigured finishes caused by work of this section

END OF SECTION