

Project No. 1047430-271140
100% Submission/Tender

Re-Roofing

MNR Warehouse Building
322 Kent Street West
Lindsay, Ontario



Prepared for

Infrastructure Ontario

Prepared by

Christopher Z. Tworkowski Architect

34 Bridge Street, PO Box #541
Lakefield, Ontario, K0L 2H0
Tel (705) 652-1646

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Part 1 General

1.1 SYSTEM DESCRIPTION

- .1 Built-Up Roofing System: Assembly of components including cold adhesive-applied built-up roofing system on metal deck including but not limited to:
 - .1 Thermal Barrier
 - .2 Vapour Retarder
 - .2 Roof insulation (two 3" layers (6" total) – polyisocyanurate; plus polyisocyanurate crickets at drains).
 - .3 3 ply Built-Up Roof membrane and membrane base flashings.
 - .4 Roof surfacing consisting of cold-applied top pour and aggregate surfacing.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination:
 - .1 Coordinate with other work having a direct bearing on work of this section.
 - .2 Coordinate the work with the installation of associated metal flashings, as the work of this section proceeds.
- .2 Pre-installation Meetings:
 - .1 Meet with Consultant, Owner Representatives, roofing Installer, roofing manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - .2 Review demolition, preparation and installation procedures and coordinating and scheduling required with related work.

1.3 SUBMITTALS FOR REVIEW

- .1 Product Data: Provide product data sheets indicating membrane and bitumen materials, base flashing materials, thermal barrier, insulation and vapour retarder.
- .2 Shop Drawings:
 - .1 Tapered insulation (cricket) Plan.
- .3 Samples:
 - .1 Submit one (1) samples 254 x 254 mm in size illustrating sheet metal colour.
 - .2 Submit one (1) sample 0.5 kg (1 lb) containers of roofing aggregate.

1.4 SUBMITTALS FOR INFORMATION

- .1 Installation Data: Manufacturer's special installation requirements, including special procedures, and perimeter and penetration conditions requiring special attention.
- .2 Contractor's Certificate: Certify that Products meet or exceed specified requirements.
- .3 Qualification Data: For Installer and Roofing Inspector. Include letter from Manufacturer written for this Project indicating approvals.
- .4 Roofing Inspector's Field Reports:
 - .1 Manufacturer to provide roof inspections on first day of production, on a once-per-week basis during the roofing production period and at the conclusion of the Work to confirm all Work completed as specified.
 - .1 Inspection Reports to indicate procedures followed; ambient temperatures during application, supplementary instructions given, and corrective work performed.
 - .2 Manufacturer Roofing Inspector to submit written report from each inspection.
 - .2 Roof Inspector to provide written reports from each inspection. Contractor to provide access to Roof Inspector and shall follow instructions issued by the Roof Inspector.

1.5 QUALITY ASSURANCE

- .1 Products of this Section: Major membrane supplier products manufactured to ISO 14001 certification requirements.
- .2 Perform Work in accordance with current version of CRCA Roofing Specification Manual and manufacturer's written instructions.
- .3 Manufacturer Qualifications: Listed company specializing in manufacturing the Products specified in this section whose systems are UL listed and FM approved for built-up roofing membranes identical to that used for this Project.
 - .1 Source Limitations: Obtain roofing system components from or approved in writing by roofing system manufacturer.
- .4 Installer Qualifications: Employ workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years experience installing similar work, able to communicate verbally with Owner Representatives and Consultant, and qualified by the manufacturer to furnish warranty of type specified.
- .5 Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements

of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:

- .1 An authorized full-time technical employee of the manufacturer.

1.6 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for roof assembly fire hazard requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- .2 Store products in weather protected environment, clear of ground and moisture.
- .3 Protect foam insulation from direct exposure to sunlight.
- .4 Provide sufficient ballasting of materials to ensure material stored on roof or on ground will not become dislodged through wind conditions.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing to be installed according to manufacturer's written instructions and warranty requirements.
- .2 Do not apply roofing membrane to damp or frozen deck surface or when precipitation is occurring.
- .3 Do not apply roofing when substrate temperature is below 2°C. or when ambient temperature is below 5°C.
- .4 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

1.9 WARRANTY

- .1 Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- .2 Roof System Warranty, General: Warranties specified in this Section include the following components and systems specified in other sections supplied by the roofing system Manufacturer, and installed by the roofing system Installer:
 - .1 Sheet metal flashing and trim, including roof penetration flashings.
 - .2 Manufactured copings, roof edge, counterflashings, and reglets.
 - .3 Roof curbs, hatches, and penetration flashings.
 - .4 Roof and parapet expansion joint assemblies.
- .3 Manufacturer's Warranty: Manufacturer agrees to repair or replace components of built-up roofing that fail in materials or workmanship within

specified warranty period. Failure includes roof leaks. Components of built-up roofing includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners and vapour retarder and other components of built-up roofing. For areas of complete replacement, Manufacturer to provide inspections of roof surface in year two (2), year five (5), year ten (10) and year fifteen (15) of this warranty. Inspection to include visual inspection, minor repairs and limited clearing of debris.

.1 Warranty Period: 20 years from date of Substantial Completion.

- .4 **Installer's Warranty:** Submit roofing Installer's warranty, on warranty form acceptable to the Owner, signed by Installer, covering the Work of this Section and related Sections indicated above, including all components of built-up roofing such as built-up roofing membrane, base flashing, roof insulation, fasteners, cover boards, boards, vapour retarders, roof pavers, and walkway products, for the following warranty period:

.1 Warranty Period: two years from date of Substantial Completion.

1.10 EXISTING ROOF ASSEMBLY

- .1 Four ply built up roof membrane, fibre board, 4" rigid insulation, asphalt vapour barrier, gypsum thermal barrier, on sloped metal deck. (To be confirmed prior to tender close).

1.11 CONTRACTOR REQUIREMENTS

1. Contractor to take all required measures to protect the Owner's property during the Work to ensure no damage or staining occurs during the Work. Any damage or staining which occurs during the Work will be corrected at the Contractor's expense.
2. Contractor to provide the Owner with requirements for storage and staging areas.
3. Contractor to provide all necessary signage to conform to all applicable laws and codes.
4. Contractor to complete clean-up of debris from grounds on a daily basis.
5. Contractor will be responsible for payment of regular parking fees applicable in Owner parking lots.
6. Contractor to ensure that all members of his crew are familiar with Owner Safety Rules for Contractors. Contractor employees are required to follow these rules at all times. At the discretion of the Owner, any Contractor employee can be required to leave the site if repeated non-compliance with safety rules occurs. The Contractor is deemed to be the Constructor, as defined by the Occupational Health and Safety Act, Ontario. The Contractor is responsible for performing all aspects of the contract in accordance with the Occupational Health and Safety Act, Ontario. Contractor to identify HS&E Inspector and provide written reports from this Inspector confirming site set-up has been completed in accordance with applicable laws, codes and regulations.

Part 2 Products

2.1 VAPOUR RETARDER

- .1 One ply vapour retarder comprised of 2 layers of kraft paper laminated with asphalt and edge reinforced with woven fiberglass yarn, to ASTM E96/E96M-05.

2.2 INSULATION

- .1 General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
- .2 Polyisocyanurate Board Insulation: to CAN/ULC-S704, Type II, Class 1, Grade 2, HCFC-free, with glass-fiber mat facer on both major surfaces.
Thickness: two layers 76 mm each, Total Thickness: 152 mm
- .3 Tapered Insulation: Provide factory-tapered insulation boards (crickets) fabricated to slope as shown on Tapered Insulation Drawings; to CAN/CSA-A247-M86

2.3 INSULATION ACCESSORIES

- .1 General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with built-up roofing.
- .2 Insulation Adhesive: as recommended by the insulation manufacturer, and compatible with the roofing system.
- .3 Underlay Board: 13 mm thick glass mat faced gypsum panel with water-resistant core, and meeting the following criteria:
 - .1 Combustibility: Noncombustible to ASTM E136.
 - .2 Surface Burning Characteristics: To ASTM E84, maximum flame spread of 0, smoke developed of 0.
 - .3 Acceptable products: Dens-Deck Prime by G-P Gypsum, or approved equivalent.
- .4 Fibre Cant Strips: to ASTM C 208, Type II, Grade 1, wood-fibre insulation board.
- .5 Overlay Board: wood fibre, asphalt impregnated, high density, to ASTM C165 and ASTM C209
Thickness: 12 mm

2.4 BUILT-UP ROOFING MEMBRANE PLIES AND BASE FLASHING PLIES

- .1 A bitumen-coated, polyester and fibreglass reinforced sheet fabric specifically for use in cold applied built-up roofing systems, including flashing sheets for parapets, wall and curbs. The fabrics must be compatible with all other components of the built-up roofing system.

2.5 BITUMINOUS MATERIALS

- .1 Adhesive and sealant materials recommended by roofing manufacturer for intended use, and compatible with all other components of the cold applied built-up roofing system.
- .2 Liquid-type materials shall comply with VOC limits of authorities having jurisdiction.
- .3 Roofing membrane ply adhesive, flashing base ply adhesive, flashing sheet adhesive and built-up top pour: One-part, asbestos-free, cold-applied bituminous adhesive specifically formulated for compatibility and use with the roofing membranes and flashings, as per the roofing manufacturer's directions.
- .4 Asphalt Primer: to ASTM D41
- .5 Asphaltic Mastic: to ASTM D4586
- .6 Flashing Membrane: Flexible reinforced flashing sheet compatible with the roofing system.

2.6 ROOF SURFACING

- .1 Roof Aggregate: clean, dry roofing gravel, size 6 mm to 19 mm
- .2 Membrane Top Pour: Refer to section 2.5.3 above

2.7 ACCESSORIES

- .1 General: Accessory materials recommended by roofing manufacturer for intended use and compatible with built-up roofing.
- .2 Roof Drains: copper body (24 oz. Copper), with clamping ring and locking cast bonnet; Drain connector: screw-tightened double gasket. Flash-Tite Flip-Top drain by Lexcor, or approved equivalent.
- .3 Stack Flashings: Prefabricated aluminum sleeves. Flash-Tite Standard Vent Stack Covers by Lexcor, or approved equivalent.
- .4 Metal Flashing: as specified in Division 7A.
- .5 Reinforcing Mesh: As recommended by the roofing manufacturer for the intended use.
- .7 Sealant: One part polyurethane, to CAN/CGSB 19.13-M87
- .8 Termination Bar: 3 mm thick aluminum bar, 25 mm wide profile, pre-drilled for mechanical attachment.
- .9 Conduit Goosenecks: Spun aluminum base with 100 mm wide flange, stainless steel gooseneck; Flash-Tite Gooseneck Wire & Cable Flashing by Lexcor

Part 3 Execution

3.1 EXAMINATION

- .1 Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and conditions affecting performance of roofing system. Verify that surfaces and site conditions are ready to receive work.
- .2 Verify deck is supported and secure.
- .3 Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped to drains or eaves, and suitable for installation of roof system.
- .4 Verify deck surfaces are dry and free of snow or ice.
- .5 Verify roof openings, curbs, and penetrations through roof are solidly set, and cant strips, nailing strips, and reglets are in place.
- .6 Verify any existing damage or deficiencies on the roof or adjacent building components and grounds prior to commencement of the Work and provide the Consultant with photographic documentation.
- .7 Verify any existing cabling/wiring on the roof or adjacent building components prior to commencement of the Work and provide the Consultant with photographic documentation.

3.2 INSTALLATION, GENERAL

- .1 Install roofing system in accordance with manufacturer's recommendations. The manufacturer's written installation documentation supersedes the general information contained in the contract documents.

3.3 PREPARATION & DEMOLITION

- .1 Remove and discard existing metal flashing, membrane, cover board, insulation, thermal barrier and vapour retarder.
- .2 Remove and discard flashed cones and rain collars on stacks

3.4 VAPOUR RETARDER AND UNDERLAY BOARD

- .1 Install thermal underlay board mechanically-fastened to metal deck (8 fasteners per 1200 mm x 2400 mm board, 50% more fasteners within 1200 mm of edge, 75% more fasteners in corners).
- .2 Install one ply kraft vapour retarder to underlay board with insulation adhesive applied at .61 l/m² and in accordance with manufacturer's written instructions.
- .3 Install vapour retarder to extend 100 mm beyond insulation assembly and end-wrap insulation assembly adhered in insulation adhesive.

3.5 INSULATION & FIBRE CANT APPLICATION

- .1 Ensure vapour retarder sheet is clean and dry, continuous, and ready for application of roofing system.
- .2 Install base and second layers of polyisocyanurate insulation in insulation adhesive applied at .61 l./m². Offset joints of between layers of insulation minimum of 150 mm (6 inches) in each direction.
- .3 Install tapered insulation (crickets) in insulation adhesive applied at .61 l./m².
- .4 Install overlay board in insulation adhesive applied at .61 l./m². Offset joints of between polyisocyanurate insulation and overlay board minimum of 150 mm (6 inches) in each direction.
- .5 Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- .6 Do not apply more insulation than can be covered with membrane in same day.
- .7 Install fibre cant in insulation adhesive at all change in direction where wood cants not already present.

3.6 MEMBRANE APPLICATION

- .1 Install roofing membrane according to roofing manufacturer's written instructions and applicable recommendations of CRCA for Built-up Roofing (Assembly SGI-1, similar) and as follows:
 - .1 Number of Ply Sheets: 3.
 - .2 Embed each ply sheet in cold-applied membrane adhesive applied 1.2 kg/m².
 - .3 Apply felts smooth, free from air pockets, wrinkles, fishmouths, or tears.
 - .4 Extend membrane felts up cant strips and minimum of 50 mm onto vertical surfaces.
 - .5 Install two plies membrane and glaze coat for cut-off at end of day's operation. Remove temporary plies before resuming roofing.

3.7 FLASHING INSTALLATION

- .1 Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to built-up roofing manufacturer's written instructions;
 - .1 Adhere Base Flashing Ply over built-up roofing at cants in cold-applied adhesive extending 100 mm beyond base of cant onto field of roof, and a minimum of 100 mm above top of cant. At perimeters extend base flashing minimum 50mm onto horizontal parapet surface.

- .2 Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive at rate of 2 l./m² (15 ft.²/gal.) extending 150 mm beyond base of cant onto field of roof. Tie-in all leading edges of flashing sheet with 150 mm reinforcing mesh and asphalt mastic. Top dress end laps of flashing sheet with 150 mm reinforcing mesh and polymer-modified mastic.
- .3 At conduit penetrations, install new conduit goosenecks with flange flashed in same manner as Vent Stack Flashing below. If conduit cannot be disconnected/reconnected, install pitch box with metal cap fabricated to provide horizontal access to the conduit and positive drainage from the top of the box.
- .4 At round stacks, supply and install new tall cones and caulked rain collars.
- .5 Low Parapet Perimeter Flashing
 - .1 Seal exposed joint between the wall and roof deck for airtight seal.
 - .2 Adhere flashing sheet completely to flashing surface, cant, and roofing with specified adhesive
 - .3 Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends 100 mm and adhere with specified adhesive.
 - .4 Extend flashing sheet up and over parapet at least 38 mm onto outside elevation and face nail with 38 mm common roofing nails, 300 mm o.c.
- .6 Building Expansion Joints
 - .1 Fill joint with loose insulation.
 - .2 Provide 19 mm thick plywood to top of wood blocking, secured one side only (except where already in position).
 - .3 Apply foam rubber or 25 mm thick mineral fibre insulation to top of plywood.
 - .4 Install flashing sheet centred over expansion joint.
 - .5 Fully adhere flashing sheet to horizontal and vertical blocking surfaces with specified adhesive. Press sheeting into adhesive. Ensure complete bond and continuity without wrinkles or voids.
 - .6 Flashing sheet width: Sufficient to extend onto adjacent roofing minimum 150 mm.
 - .7 Lap flashing sheet ends 100 mm and adhere with specified adhesive.
- .7 Curb Flashing
 - .1 Install sealing tape to align with top of flashing sheet (unless flashing sheet extends to inside face of curb). Fully adhere sheeting to horizontal and vertical blocking surfaces with bitumen. Press sheeting into adhesive. Ensure complete bond and continuity without wrinkles or voids.
 - .2 Flashing sheet width: Sufficient to extend from top of curb down onto adjacent roofing minimum 150 mm. Mechanically fasten sheeting on top face of curb.

- .3 Lap flashing sheet ends 100 mm and adhere with specified flashing adhesive.
- .4 If flashing sheet does not completely cover sleeper, secure top edge with a termination bar. Mechanically fasten 300 mm OC. Overcoat bar with polymer-modified mastic and reinforcing mesh.
- .8 Vent Stack Flashing
 - .1 Apply polymer-modified mastic to prepared area and install aluminum base over pipe and set into the mastic.
 - .2 Select proper step of rubber cap and cut off above index ring. Fill base with loose-fill insulation.
 - .3 Install cap onto base collar and press edge to ensure proper seal.
 - .4 Provide ring clamp around pipe and rubber cap. Prime flange.
 - .5 Install flashing sheet embedded in bitumen.
 - .6 Cover flange completely. Extend flashing minimum 150 mm onto adjacent roofing. Remove wrinkles and voids. Lap flashing ply ends 100 mm.
- .9 Pitch Pans
 - .1 Uniformly apply a 3 mm thick layer of bitumen to surfaces designated to receive metal flange.
 - .2 Install pre-manufactured pitch pan into bitumen. Prime flange prior to installation.
 - .3 Ensure minimum 50 mm clearance between projection and side wall.
 - .4 Fully adhere flashing sheet to flashing surface with bitumen. Cover flange completely. Extend flashing at least 100 mm onto adjacent roofing. Ensure complete bond and continuity without wrinkles and voids. Lap flashing sheet ends minimum 100 mm.
 - .5 Fill pitch pan 25 mm from top with pitch pan base filler.
 - .6 Fill remainder with polymer-modified mastic. Crown top of mastic to ensure water run-off. Install metal cap providing horizontal access to projection, sloped to shed water away from opening.
- .10 Roof Drain
 - .1 Install drain assembly including connector in accordance with manufacturer's written installation guidelines. Set flange in bedding of polymer-modified mastic.
 - .2 If plumbing sub-trade must be employed, plug and seal drain to prevent water entry until service connection is completed.
 - .3 Provide 600 x 600 mm size flashing sheet reinforcement, centred over drain; and fully adhered with flashing adhesive. Remove wrinkles and entrapped air.
 - .4 Apply mastic to exposed edge of membrane inside the drain opening.
 - .5 Clamp flashing collar to drain in bed of polymer-modified mastic.
 - .6 Trim excess sheeting within drain.
 - .7 Contractor to provide unit price for installation of additional roof drains, including tapered insulation drain sumps as described in 2.2.3. Contractor to supply and install roof drain, tapered drain sump and all related roof flashing. Contractor responsible for deck penetration. College responsible for plumbing connection.

- .11 Wall Flashing
Extend base flashing up walls or parapets a minimum of 300 mm (12 inches) above built-up roofing and 150 mm (6 inches) onto field of built-up roofing. Apply Sealing Tape to align with top 25 mm of flashing sheet. Seal top termination of wall flashing membrane with a metal termination bar fastened 300 mm o.c.
- .12 Flashing Sheet tie-ins:
Flashing sheet leading edge: At all flashing sheet leading edges apply asphalt mastic, embed 150 mm reinforcing mesh and apply top-dressing of asphalt mastic, or as per roofing manufacturer's instructions.
Flashing sheet end laps: At all flashing sheet end laps apply polymer-modified mastic, embed 150 mm reinforcing mesh and apply top-dressing of asphalt mastic, or as per roofing manufacturer's instructions.

3.8 AGGREGATE SURFACING

- .1 Apply uniform flood coat of cold-applied adhesive at rate of 2.4 kg/m², and embed a single application of roofing aggregate at rate of 1,957 kg/100 sq m (400 lb/square).
- .2 Evenly distribute aggregate and ensure bond with flood coat. Extend aggregate to bottom edge of cant strips.

3.9 FIELD QUALITY CONTROL

- .1 Roofing Inspector: The Owner Project Manager will engage roofing inspector to perform roof tests and inspections.
- .2 Manufacturer's Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation upon completion. Notify Consultant and Owner Representative 48 hours in advance of date and time of inspection.
- .3 Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 CLEANING

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled by bitumen or any other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this section.

3.11 PROTECTION OF FINISHED WORK

- .1 Protect building surfaces against damage from roofing work.

- .2 Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION

1 **GENERAL**

1.1 Scope of Work

- .1 Work of this section comprises installation of metal counterflashing in areas of replacement of roofing.

1.2 Related Work

- .1 Division 7: Cold-Applied Asphalt Built-Up Roofing

1.3 References

- .1 S.M.A.C.N.A. – Sheet Metal and Air Conditioning Contractors National Association, Architectural Sheet Metal Manual

1.4 Shop Drawings and Samples

- .1 Submit shop drawings of all flashing conditions for Consultant's review and approval. Submit metal flashing samples as per Division 7.

1.5 Inspection

- .1 Roof inspection shall be carried out by an agency selected by the Owner to be borne by the Owner
- .2 Carry out procedures as directed by the roof inspector.

1.6 Storage and Handling

- .1 Secure stored materials against damage from wind, ongoing work, vandalism and theft.
- .2 Identify and remove from site immediately all damaged materials.

1.7 Warranty

For the work of this Division provide:

- .1 Contractor's two year warranty to correct at his own expense any defects in the work due to faulty workmanship appearing within a period of two (2) years from the date of completion of the total work.

2 PRODUCTS

2.1 Materials

- .1 Metal Counterflashing – 26 gauge pre-painted galvanized steel, Perspectra series finish. Provide metal flashing samples as per Division 7.
- .2 Colours – to be selected by Consultant from standard colour chart
- .3 Wood – ¾ inch plywood and 2 x sawn lumber. No pressure treated lumber.
- .4 Caulking - “Dymonic” or “Dymeric” as manufactured by Tremco, or approved equal.

3 EXECUTION

3.1 Metal Installation

- .1 Install new metal counterflashing on perimeters, walls, curbs, expansion joints, flashed sleepers and projections. Owner to select colour from standard colours, except as indicated in the Products section above.
- .2 Silica may be present in the mortar of the brick wall. Follow appropriate dust control and respiratory protection measures when cutting the new reglet in this wall.
- .3 All metal base flashing shall extend to base of cants. Exposed flashing sheet will not be accepted.
- .4 Counterflashing shall be applied using a s-lock type joint which will prevent buckling of metal and provide proper contraction and expansion, and produce a surface free of warp, wave, buckle, dents and other defects. Corners shall square and surface straight and true to plains. All metal shall have hemmed edges.
- .5 Install sheet metal with concealed fasteners. Exposed fasteners permitted only with Owner’s approval. Metal to be installed firmly to avoid movement or stripping by wind. Fasten into vertical surfaces only. No fastening into canted surfaces will be accepted.
- .6 Finish joints at horizontal mitred joints and canted corners with folded standing seams.
- .7 Caulk all reglets as detailed.

END OF SECTION

DIVISION 15 MECHANICAL

1. SCOPE

- .1 Shut off and disconnect and remove all mechanical equipment and fixtures from the roof areas being re-roofed, including: fan units, chimneys, roof drains, vents, etc.
- .2 In conjunction with the completion of the re-roofing work, reinstall and reconnect all the existing mechanical components including legthening all vent pipes and ducts as required due to the increase in thickness of the roof assembly.
- .3 Clean and paint the identified fan units, prior to re-installing them on the roof.
- .4 Extend plumbing vent pipes, and install stack flashings, to achieve minimum 18" height above new roof surface. Extend vent pipes such that the connections/unions will allow installation of new stack flashings.

2. PRODUCTS

- .1 Primer and paint for galvanized metal: Primer and paint to be selected for galvanized sheet metal.
- .2 Primer and paint for piping and steel: Primer and paint to be selected for exterior metal application.
- .3 Roof Drains: Flash-Tite Flip-Top Drains by Lexcor, or approved equivalent. Size to suit existing drain pipe.
- .4 Plumbing vent pipe: to match existing material and size.
- .5 Plumbing Vent Pipe Flashings: Flash-Tite Standard Vent Stack Covers by Lexcor, or approved equivalent. Size to suit existing plumbing vent pipes.

3. EXECUTION

- .1 Complete all required mechanical work in accordance with the following Codes, Regulations and Standards:
 - .1 The Ontario Building Code, with amendments.
 - .2 NFPA 90A with respect to Air Conditioning and Ventilation Systems.
 - .3 NFPA 90B with respect to Warm Air Heating and Air Conditioning Systems.
 - .4 CSA B149.1
 - .5 ASHRAE Guide and Data Books.
 - .6 All other codes, standards, and regulations referred to in the above documents.
 - .7 Infrastructure Ontario Design and Commissioning Guidelines.
- .2 All work shall be completed by a certified HVAC contractor.
- .3 Painting: Cleaning to include removal of all loose paint, rust, dirt, etc. Follow procedures recommended by the paint manufacturer.

- .4 Extend plumbing vent stacks to provide a finished height above the finished roof surface of 18 inches. Joints in the pipes are not to interfere with the installation of the new stack flashings.
- .5 Exhaust fans and chimneys: Remove and reinstall on new roof curbs as described on drawings. Paint fan unit as per above.

END OF DIVISION 15

DIVISION 16 ELECTRICAL

1. SCOPE

- .1 Disconnect the power supplies and make safe all wiring to the roof top fan and chimney units to facilitate removal of these units by Division 15.
- .2 In conjunction with the re-roofing operations, and Division 15 work, reconnect power to the roof top fan and chimney units. Provide junction boxes and/or extend wires as required.
- .3 All electrical work shall be completed by a licensed electrical contractor.

2. PRODUCTS

- .1 All wiring required for extensions shall match existing wiring type and gauge.
- .2 Junction boxes and connectors suitable to ESA and Infrastructure Ontario.

3. EXECUTION

- .1 Complete all required wiring in accordance with the following Codes, Regulations and Standards:
 - .1 Canadian Electrical Code.
 - .2 National Fire Protection Association.
 - .3 CAN/ULC Standards.
 - .4 Ontario Electrical Safety Code, including current bulletins and amendments.
 - .5 Ontario Building Code.
 - .6 Worker's Compensation Board Regulations.
 - .7 Governing Fire Codes in the Province of Ontario.
 - .8 Infrastructure Ontario Design and Commissioning Guidelines.
- .2 Obtain ESA clearance.
- .3 Supply and install all required junction boxes and connectors required as necessary to reconnect all disconnected equipment.

END OF DIVISION 16