Part 1 General

1.1 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.2 CGSB 37-GP-56M-1985, Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

.2 Canadian Roofing Contractors' Association (CRCA)

.1 CRCA Roofing Specification Manual – current edition.

.3 CSA International

.1 CSA A123.1/A123.5-05(R2010), Asphalt Shingles Made From Organic Felt and Surfaced With Mineral Granules/Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules.

.2 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.5 National Research Council Canada (NRC) - Canadian Construction Materials Centre (CCMC)

.1 CCMC Registry of Product Evaluations.

.6 Underwriters Laboratories

.1 UL 2218, Standard for Impact Resistance of Prepared Roof Covering Materials.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00- Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for asphalt shingles and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit proof of manufacturer's CCMC listing and listing number.

.3 Manufacturer's Instructions: provide to indicate special handling criteria, installation sequence and cleaning procedures.

.4 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06- Health and Safety Requirements.

.3 Samples:

.1 Submit duplicate samples of full size specified shingles.

1.3 QUALITY ASSURANCE

.1 Installer to have a minimum of 3 years of documented experience on comparable projects and to be a member in good standing of the Roofing Contractors Association of Manitoba (RCAM).

.2 Provide a RCAM Five Year Standard Form of Warranty in the name of the Her Majesty the Queen in the Right of Canada dated from Interim Acceptance of the Work.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions and Section 01 61 00- Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

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

.3 Store and protect asphalt shingles from nicks, scratches, and blemishes.

.4 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of padding, crates, pallets, packaging materials in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

1.5 EXTRA STOCK MATERIALS

.1 Submit maintenance materials in accordance with Section 01 78 00- Closeout Submittals.

.2 All unused shingles remain property of Departmental Representative.

.3 Provide six (6) bundles of extra shingles

Part 2 Products

2.1 MATERIALS

.1 Asphalt shingles: to CSA A123.1/A123.5 and as supplemented below.

.1 Type: fiberglass-reinforced, self-seal.

.2 Shingle Warranty: 50 years.

.3 Wind-Resistance Warranty: 209 km/hr

.4 Algae-Resistance Warranty Period: 15 years.

.5 Impact resistance: UL 2218 Class 4.

.6 Colour and texture: as selected from manufacturer's standard range by Departmental Representative.

.2 Roofing Underlayment: as recommended by asphalt shingle manufacturer.

.3 Roofing Underlayment Fasteners: as recommended by the roofing underlayment manufacturer.

.4 Eave (Ice Dam) Protection/Waterproof Membrane: CGSB 37-GP-56M, Sheet barrier of rubberized asphalt bonded to sheet polyethylene, 1 mm total thickness, with strippable treated release paper

.5 Asphaltic Cement:

.1 Plastic cement: to CAN/CGSB-37.5.

.6 Static Attic Vent:

.1 Slant-back style.

.2 Galvanized and colour coated sheet metal.

.1 Fabricated from .44 mm thick galvanized coiled sheet.

.2 Colour as selected by Departmental Representative from manufacturer's standard offering.

.3 Formed to permit installation with asphalt shingle roofing and shed water.

.4 Integral, molded screen with rain diverter

.5 Fabricate with 30,000 sq. mm minimum free area of ventilation.

.7 Nails: to CSA B111, of galvanized steel, sufficient length to penetrate 19 mm into deck.

.8 Staples: use of staples not permitted.

.9 Drip edge and Other Sheet Metal Flashings: Prefinished galvanized steel, as specified in Section 07 62 00.

.10 Carpentry: to Section 06 08 99 - Rough Carpentry for Minor Works.

Part 3 Execution

3.1 REMOVAL OF EXISTING ROOFING

.1 Remove existing roofing, flashings and underlay, and expose sheathing of roof.

.2 Withdraw existing shingle and flashing nails, set those which break off. Leave surfaces free from dirt and loose material.

.3 Departmental Representative to inspect roof sheathing.

.4 Remove portion of sheathing affected by fungal or insect attack as directed by Departmental Representative.

.5 Replace cut out portions of sheathing with sheathing of equal sectional dimensions, and matching grade. Seat each end on rafter, with 25mm bearing, and secure to rafter.

3.2 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt shingles installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

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

3.3 2004 BUILDING ADDITION INTERFACE WITH ORIGINAL BUILDING

.1 Refer to drawings for substrate preparation and installation of additional waterproof membrane where the 2004 building addition roof meets the original building roof.

3.4 APPLICATION

.1 Do asphalt shingle work to CRCA specifications except when specified otherwise by manufacturers' instructions.

.1 Notify the Departmental Representative when there are discrepancies between CRCA specifications and manufacturers' instructions.

.2 Provide extra protection against the wind by following the shingle manufacturer's wind warranty requirements.

.3 Install prefinished galvanized steel drip edge along eaves, overhanging 12 mm, with minimum 50 mm flange extending onto roof decking.

.1 Nail to deck at 400 mm on centre.

.4 Install open valley prefinished galvanized steel flashings ('W' flashings) as indicated and as per CRCA specifications.

.5 Provide prefinished galvanized steel flashing at the intersection of the asphalt shingle roofing and vertical surfaces to CRCA specification requirements.

.6 Provide flashing at all areas where vents, conduits, vent pipes or other projections protrude through the asphalt shingle roof to CRCA specification requirements.

.7 Install static vents as indicated and as per manufacturers' instructions.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

.3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by asphalt shingles installation.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

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

.1 ASTM A653/A653M-07, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM D523-89(1999), Standard Test Method for Specular Gloss.

.3 ASTM D822-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.2 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual 1997.

.3 Canadian Standards Association (CSA International)

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 29.06- Health and Safety Requirements.

.3 Samples:

.1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.

.4 Quality assurance submittals: submit following in accordance with Section 01 45 00- Quality Control.

.1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.3 QUALITY ASSURANCE

.1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with Departmental Representative in accordance with Section 01 32 16.07- Construction Progress Schedule - Bar (GANTT) Chart to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building sub-trades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.4 DELIVERY, STORAGE AND HANDLING

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

.2 Waste Management and Disposal:

.1 Separate waste materials for recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 STEEL SHEET MATERIALS

.1 Zinc coated steel sheet: minimum .7 mm thickness unless indicated otherwise, commercial quality to ASTM A653/A653M, with Z275 designation zinc coating.

2.2 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied silicone modified polyester.

.1 Colour: as selected from manufacturer's standard range by Departmental Representative.

.2 Specular gloss: 30 units +/- 5 in accordance with ASTM D523.

.3 Coating thickness: not less than 25 micrometres.

.4 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:

.1 Outdoor exposure period 1000 hours.

.2 Humidity resistance exposure period 1000 hours.

2.3 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.

.3 Touch-up paint: as recommended by prefinished material manufacturer.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work as indicated and in accordance with applicable CRCA 'FL' series’ details for asphalt shingle roofing.

.2 Form pieces in 2400 mm maximum lengths.

.1 Make allowance for expansion at joints.

.3 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

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

2.5 METAL FLASHINGS

.1 Form flashings to profiles indicated or specified of prefinished steel sheet.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install sheet metal work to requirements of Section 07 31 13 – Asphalt Shingles.

.2 Use touch-up paint as required and to manufacturer’s instructions.

3.3 CLEANING

.1 Proceed in accordance with Section 01 74 11- Cleaning.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM D412 - 16, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.

.2 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00- Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Manufacturer's product to describe:

.1 Caulking compound.

.2 Primers.

.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

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

.3 Samples:

.1 Submit samples of each type of material and colour.

.2 Cured samples of exposed sealants for each colour where required to match adjacent material.

.4 Manufacturer's Instructions:

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

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00- Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00- Common Product Requirements and manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect joint sealants from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of padding, crates, pallets, packaging materials in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

1.5 SITE CONDITIONS

.1 Ambient Conditions:

.1 Proceed with installation of joint sealants only when:

.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.

.2 Joint substrates are dry.

.3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Joint-Width Conditions:

.1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 ENVIRONMENTAL REQUIREMENTS

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

.2 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

Part 2 Products

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Sealant type 1: one-part, thermoplastic elastomer to ASTM D412.

.2 Preformed compressible and non-compressible back-up materials:

.1 Polyethylene, urethane, neoprene or vinyl foam:

.1 Extruded closed cell foam backer rod.

.2 Size: oversize 30 to 50 %.

.2 Bond breaker tape:

.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

.1 Perimeters of exterior openings where frames meet exterior facade of building and to all other exterior joints including around new openings or penetrations through the existing exterior envelope: sealant Type 1.

2.4 JOINT CLEANER

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

.2 Primer: in accordance with sealant manufacturer's written recommendations.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

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

3.2 SURFACE PREPARATION

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

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

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

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

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

3.6 APPLICATION

.1 Sealant:

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

3.7 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.

.1 Leave Work area clean at end of each day.

.2 Clean adjacent surfaces immediately.

.3 Remove excess and droppings, using recommended cleaners as work progresses.

.4 Remove masking tape after initial set of sealant.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION