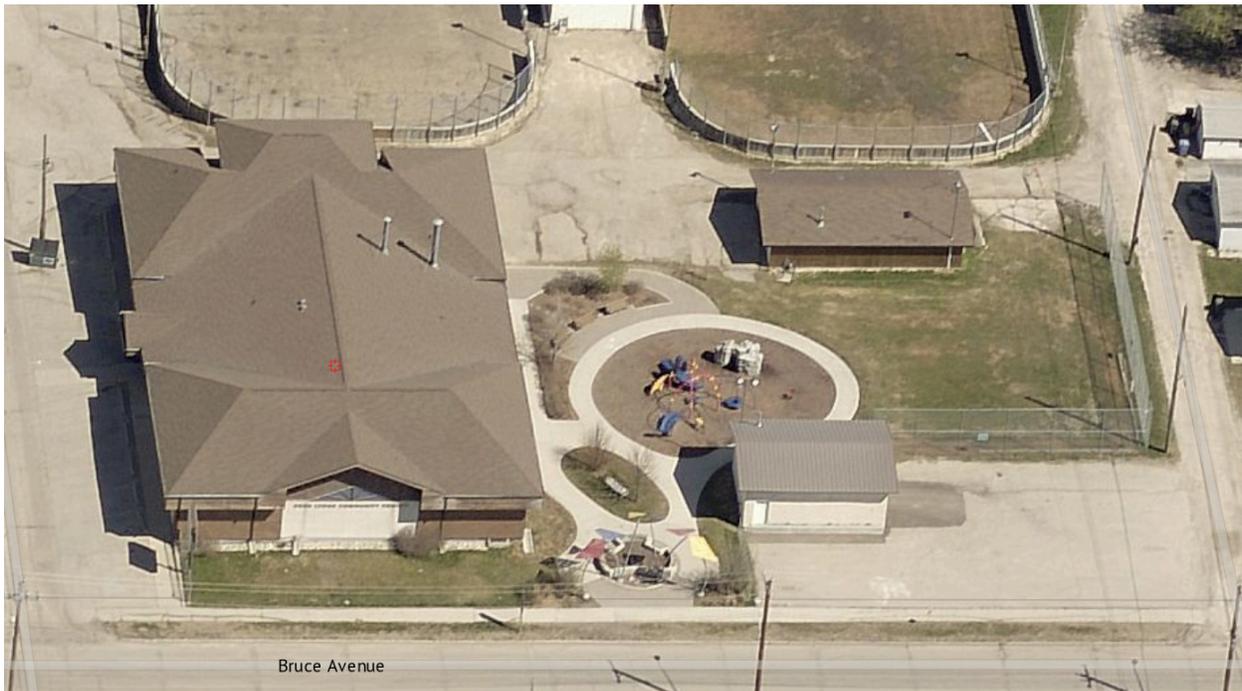


Bid Opportunity No. 878-2022

Provision of Roof Replacement at Deer Lodge Community Centre

323 Bruce Avenue, Winnipeg, MB R3J 2C3



BID OPPORTUNITY FOR: #878-2022
Provision of Roof Replacement at Deer Lodge Community Centre
323 Bruce Avenue, Winnipeg, MB R3J 2C3

DATE: November 10, 2020

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1. GENERAL

1.1. SECTION INCLUDES

1. Granule surfaced asphalt shingle roofing.
2. Moisture shedding underlayment, eaves, valley and ridge protection.
3. Associated metal flashing.

1.2. RELATED WORK

1. Section 07 46 43 Composite Siding
2. Section 07 92 00 Joint Sealants

1.3. REFERENCES

1. All references shall be the current version or latest revision at the date of building permit issue:
2. Canadian General Standards Board (CGSB):
 1. CAN/CGSB 37.5-M89, Cutback Asphalt Plastic Cement.
3. Canadian Roofing Contractors' Association (CRCA), Roofing Specification Manual.
 1. CRCA Roofing Specification Manual - 1997.
4. Canadian Standards Association (CSA International).
 1. CAN/CSA-A123.1/A123.5-98, Asphalt Shingles Made from Fibreglass Felt and Surfaced with Mineral Granules/Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
 2. CAN/CSA-A123.3-98, Asphalt Saturated Organic Roofing Felt.
 3. CAN3-A123.51-M85 (R2001), Asphalt Shingle Application on Roof Slopes 1:3 and Steeper.
 4. CSA B111-1974(R1998), Wire Nails, Spikes and Staples
 5. CAN3-A123.51 - Asphalt Shingle Application on Roof Slopes 1:6 and Steeper.
 6. CAN/CGSB-51.32-M77 - Sheathing, Membrane, Breather Type.
 7. CAN/CGSB 51.34-M86 – Vapour Barrier, Polyethylene Sheet for Use in Building Construction
 8. CAN/ULC-S107 - Methods of Fire Tests of Roof Coverings.
5. American Society for Testing and Materials (ASTM):
 1. ASTM B209M - Aluminum and Aluminum-Alloy Sheet and Plate.
 2. ASTM B370 - Copper Sheet and Strip for Building Construction.
 3. ASTM D3018/D3018M - Class A Asphalt Shingles Surfaced with Mineral Granules.
 4. ASTM D3161/ D3161M - Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
 5. ASTM D3462/D3462M - Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
6. Health Canada/Workplace Hazardous Materials Information System (WHMIS)

7. Material Safety Data Sheets (MSDS)

1.4. SUBMITTALS

1. Submit product data
2. Submit product data sheets for asphalt shingles. Include:
 1. Product characteristics.
 2. Performance criteria.
 3. Installation instructions.
 4. Limitations.
 5. Colour and finish.
3. Indicate specially configured accessories, metal flashings, jointing methods and locations, fastening methods and locations, and installation details.
4. Submit WHMIS and MSDS (Material Safety Data Sheets). WHMIS acceptable to Health Canada for asphalt shingles.
5. Samples
 1. Submit samples to Contract Administrator.
 1. Samples: Submit two (2) samples of full size of each fibreglass laminate shingle material of colour and type specified.
 2. Colours are to be selected by Contract Administrator.

1.5. DELIVERY, STORAGE & HANDLING

1. Deliver, handle, store and protect materials
2. Provide and maintain dry, off-ground weatherproof storage.

1.6. PROJECT ENVIRONMENTAL CONDITIONS

1. Anticipate and observe environmental conditions (temperature, humidity and moisture) within limits recommended by manufacturer for optimum results. Do not install products under environment conditions outside manufacturer's limits.
2. Take special care when applying Waterproofing Shingle Underlayment (WSU) and shingles when ambient or wind chill temperature is below 7 degrees C. Tack WSU in place if it does not adhere immediately to the deck.

1.7. WARRANTY

1. Manufacturer's Warranty: Furnish shingle manufacturer's warranty for the product listed below:
2. Owens Corning Roofing & Asphalt LLC:
 1. Lifetime limited warranty. Manufacturer shall deliver to the City of Winnipeg a warranty against defective materials for a period of 40 years.
3. Warranty Supplement:
 1. Provide manufacturer's supplemental warranty to cover labour and materials in the event of a material defect for the following period after completion of application of shingles:

4. First Ten Years:
 1. Where a manufacturer's warranty is requested by the City of Winnipeg, the roofing contractor will supply all materials as required by the manufacturer and install such materials to the acceptance of the manufacturer in order to qualify for the specified warranty.
 2. Correct at Contractor's expense any defects in the Work due to workmanship occurring within a period of Five (5) years from the date of completion of the total Work.
 3. Upon meeting the following: project completion manufacturer acceptance receipt of complete payment by both Contractor and material supplier
5. Receipt of Contractor's workmanship warranty.
 1. The manufacturer/contractor shall certify compliance with the above guarantee requirements by submitting a copy of the guarantee as a submittal item indicating who will respond to warranty requests and how monitoring will be reported. The manufacturer will advise in writing how to maintain the warranty.
 2. Manufacturer shall deliver to the City of Winnipeg a warranty against defective materials for a period of 40 years.

1.8. QUALITY ASSURANCE

1. Perform Work in accordance with the CRCA Roofing Specifications Manual. Maintain one (1) copy of document on site.
2. It is the Contractor's responsibility to take his own on-site measurements.
3. The Contractor shall provide within five (5) working days, advance notice to the Contract Administrator, for roof inspection and commencement of roof replacement.
4. All work to be performed in accordance with the manufacturers written instructions and meet or exceed the latest edition of the Manitoba Building Code and industry standard.

1.9. MOCK-UP

1. Upon request of Contract Administrator, provide 3000mm x 3000mm (10ft x 10ft) mock-up, including ice dam protection, eave protection, underlayment, shingle installation, and associated flashings.
2. Mock-up will be used to judge workmanship, substrate preparation, and operation of equipment and material application.
3. Locate where directed by Contract Administrator.
4. When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of the finished Work.

2. PRODUCTS

2.1. UNDERLAYMENT

1. Underlayment: ASTM D 226 and ASTM D 4869 synthetic polymer-based scrim reinforced underlayment designed for use on roof decks as a water-resistant layer beneath asphalt shingles, wood shingles, and shakes, metal shingles or slate.
 1. Owens Corning: Deck Defense
 2. Or approved equal in accordance with B7.

2. Waterproofing Underlayment: ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and “split” back plastic release film; Use in “low slope” areas (below 4:12, but no less than 2:12 pitch); provide material warranty with equal in duration to that of shingles being applied
 1. Owens Corning: WeatherLock G
 2. Ice and Water Shield
 3. Or approved equal in accordance with B7.

2.2. EAVES PROTECTION

1. ASTM D1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement and “split” back plastic release film; provide material warranty equal in duration to that of shingles being applied.
 1. Owens Corning: WeatherLock G
 2. Or approved equal in accordance with B7.

2.3. ASPHALT FIBREGLASS SHINGLES

1. Conforming to ASTM D 3018 Type I – Self-Sealing, UL Certification of ASTM D 3462, ASTM D 3161/UL997 110-mph Wind Resistance and UL Class A Fire Resistance, glass fiber mat base, ceramically colored/UV resistant mineral surface granules across entire face of shingle; algae-resistance; two piece laminate shingle.
 1. Owens Corning: Duration
 2. Or approved equal in accordance with B7.
 3. Colour: Colour to be chosen by Contract Administrator
 4. Weight: 229 / 240 pounds per square (dependent on manufacturing location) (100 square feet).

2.4. FASTENERS

1. Fasteners shall be 12 ga galvanized (zinc coated), with 3/8” diameter heads long enough to penetrate through plywood deck. Comply with ASTM F 1667.

2.5. CEMENT

1. Asphalt Modified Roofing Cement meeting the requirements of ASTM D 4586, Type I or II or CAN/CGSB-37.5.
2. Lap Cement meeting the requirements of D 3019, Non-Asbestos-Fibered, Type III or CAN/CGSB-37.4.A
3. ASTM D2822, Standard Specification for Asphalt Roof Cement. During cold weather and severe wind, hand sealing is required using flashing cement meeting ASTM D-4586. CAN/CSA-A 123.5 - M90 requires shingles applied in Canada between September 1 and April 30 is adhered with a field applied adhesive as outlined by manufacturer.

2.6. GUTTERS

1. Re-use existing.

2. Conduct maintenance of all gutter sealants. Sealant shall be Inland Coatings RC-2200 Rubber Seam Compound or approved equal in accordance with B7.

2.7. METAL FLASHING

1. Base and cap flashing shall be a minimum of 26 gauge in thickness. Metal is to be pre-finished and is to be chosen from stock range of Stelco 8000 series of colours.
 1. Or approved equal in accordance with B7.
2. Flashing Fabrication
 1. Form flashing to profiles indicated on Drawings and to protect roofing materials from physical damage and shed water.
 2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.

2.8. ROOF PENETRATION FLASHINGS

1. Remove and replace existing roof penetration flashings with new like-kind as fabricated by Oatey.
 1. Or approved equal in accordance with B7.

2.9. ATTIC VENTILATION

1. Ventilation at minimum must meet or exceed local building code requirements. Contractor to verify:
 1. Net Free Ventilating Area (NFVA) of 1:150 as a minimum.
 2. Balanced approach for most effective ventilation (balance between the lower and upper parts of the roof by providing 50% of NFVA at the soffit and 50% at the ridge).
 3. NFVA (Net Free Ventilation Area) at the upper part of the roof should not exceed 50%.
 4. Where length of the roof ridge is sufficient provide continuous ridge vents for most effective ventilation approach. (Modify existing as required to ensure sufficient venting.)
 5. Flexible ridge ventilator designed to allow the passage of air from attics, while prohibiting snow infiltration. Provides 12.5" NFVA per lineal foot. Owens Corning VentSure® Rigid Roll.
 6. Or approved equal in accordance with B7.

3. EXECUTION

3.1. ROOF AREAS

1. Base Bid: Main Portfolio and Detached Garage

3.2. SCOPE OF WORK

1. Remove the existing asphalt shingles and underlayment down to existing wood deck and discard to an authorized nuisance ground or recycling facility.
2. Save and reuse eaves-trough and down-pipes. Supply and install new chimney collars, step flashing, drip and rake edge and counter flashings plus accessories as required.

3. Supply and install synthetic underlayment as specified. Underlayment to be mechanically fastened.
4. Supply and install ice and water protector as specified at all penetrations, eaves, valleys and areas denoted on roof plan.
5. Supply and install the new two-piece laminated fibreglass-based asphalt shingle as specified. Shingles to be mechanically fastened with 6 nails per shingle.
6. Re-use existing gutter, and downspouts.

3.3. WORKMANSHIP

1. Do not begin installation until the roof deck has been properly prepared. If roof deck preparation is the responsibility of another installer, notify the Contract Administrator of unsatisfactory preparation before proceeding.
2. The roof deck must be smooth, firm, dry, and securely nailed. Plywood must be exterior grade, conforming to building code requirements. Half-inch plywood is recommended for best deck performance.
3. The installation of asphalt shingles on dimensional lumber (including shiplap/board decks) is **not recommended** as it may potentially cause buckling problems. Buckling is not covered by our Limited Material Warranty.
4. Roof slope should be 1:3 or steeper. For slopes 1:3 to 1:6, see special underlayment requirements outlined below. Follow the more stringent of the CAN3 A 123.52 Asphalt Shingle Application on Roof Slopes 1:6 to Less than 1:3 instructions or those of the local building code.
5. Never apply asphalt shingles to roof slopes less than 2:12.

3.4. APPLICATION

1. Follow manufacturer's application instructions and in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Install asphalt shingles on roof slopes in accordance with CAN3 A 123.51-M85 and as per manufacturer instructions. Follow whichever method is the more stringent.
3. Install ice dam protection underlayment directly on plywood at all eaves and roof edges as well as at all penetrations, abutments, and to vertical walls as instructed. Also apply 1-ply of underlayment over the entire deck surface, except where Ice & Water protector membrane has been installed.
4. Contractor shall support the use of application details as specified by ARMA, NRCA, and CRCA.
5. Installation of Underlayment
 1. General:
 2. Underlayment are to meet the requirements of one of the following:
 1. ASTM D 226 / D 226M - 09
 2. ASTM D 4869 / D 4869M - 05(2011)
 3. CSA A123.2
 4. CSA A 123.3-05 (R2010)
 5. CAN/CSA A 123.5-05 (R2010)
 6. CAN2 51.32

3. Install using methods recommended by Manufacturer and in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
4. Install an ice dam protection underlayment of self-adhesive membrane directly on to the plywood at all eaves and roof edges as well as at all penetrations, abutments, and to vertical walls. Add one ply of underlayment over the entire deck surface, except where Ice & Water protector membrane has been installed.

3.5. EAVES

1. Install eave protection using methods recommended by Manufacturer and in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Install eaves edge metal flashing tight with fascia boards; lap joints 50 mm (2 inches) and seal with modified-plastic cement; nail at the top of the flange.
3. Base flashing should be in-place before shingles are applied. Cap flashings of sheet metal and base flashing of metal or mineral surfaced roofing should be used at chimneys, skylights, vents, walls and other vertical surfaces and sealed with asphalt plastic cement. Flashing shall conform to the requirements of applicable building codes and good roofing practice.
4. Overhang eaves with underlayment by a nominal 6 mm (1/4 inch) minimum and extending up the roof at least 600 mm (24 inches) beyond the interior wall line.
5. In colder climates where required by codes, and on all roofs with slopes between 2:12 and 4:12 (low slopes), install eaves protection using an Manufacturers membrane product, up the slope from eaves edge a full 900 mm (36 inches) or to at least 600 mm (24 inches) beyond the interior "warm wall". Lap ends 150 mm (6 inches) and bond.
6. See Limited Warranty for full details. For areas where the roof slope is 150 mm per 300 mm down to 100 mm per 300 mm (6 inches per foot down to 4 inches per foot), it is strongly recommended to cover the remainder of the deck with one ply asphalt saturated felt (or equivalent) laid parallel to the eaves, with 50 mm (2 inches) horizontal laps and 100 mm (4 inches) end laps. Apply metal drip edges on top of any underlay along rake edges and along eaves.

3.6. VALLEYS

1. Install eaves protection at least 900 mm (36 inches) wide and centered on the valley. Lap ends 150 mm (6 inches) and seal.
2. Where valleys are indicated to be "open valleys", install metal flashing over Ice & Water protector membrane before roof deck underlayment is installed; DO NOT nail through the flashing. Secure the flashing by nailing at 450 mm (18 inches) on center just beyond edge of flashing so that nail heads hold down the edge of the flashing.
3. Instructions on additional details for valley installations can be found in the ARMA's Residential Asphalt Roofing Manual and/or NRCA's Roofing and Waterproofing Manual.

3.7. ROOF DECK

1. Install one layer of roof deck underlayment over the entire area not protected by Ice & Water protector membrane. Install sheets horizontally so water sheds.
2. On roofs sloped at more 4:12, lap horizontal edges at least 50 mm (2 inches) and at least 50 mm (2 inches) over eaves protection membrane.
3. On roofs sloped between 2:12 and 4:12, lap horizontal edges at least 480 mm (19 inches) and at least 480 mm (19 inches) over eaves protection membrane.

4. Lap ends at least 100 mm (4 inches). Stagger end laps of each layer at least 900 mm (36 inches).
5. Lap underlayment over valley protection at least 150 mm (6 inches).

3.8. PENETRATIONS

1. Vent pipes: Install a 600 mm (24 inches) square piece of Ice & Water protector membrane lapping over roof deck underlayment; seal tightly to pipe.
2. Vertical walls: Install Ice & Water protector membrane for eaves protection extending at least 150 mm (6 inches) up the wall and 300 mm (12 inches) on to the roof surface. Lap the Ice & Water protector membrane over the roof deck underlayment. Sheet metal flashing along the slopes of roof shall be stepped with a minimum of 75 mm (3 inches) head lap in both lower flashing and counter flashing. Where roof slopes downward from wall, flashing shall extend over shingles. Where a roof slopes upward from the wall, flashing shall extend up the slope under the shingles to a point equal in height of 400 mm (15 ¾ inches) to the flashing on masonry. Counter flashing shall be embedded approximately 25 mm (1 inch) into the wall with turn back water stop
3. Skylights and roof hatches: Install Ice & Water protector membrane from under the built-in counterflashing and 300 mm (12 inches) on to the roof surface, lapping over roof deck underlayment.
4. Chimneys: Intersection of shingle roofs and masonry walls or chimneys shall be protected using 24 gauge (or better) galvanized sheet metal to extend not less than 150 mm (6 inches) up the wall and 300 mm (12 inches) on to the roof surface. Lap the Ice & Water protector membrane over the roof deck underlayment.
5. Rake Edges: Install metal edge flashing over the Ice & Water protector membrane and roof deck underlayment; set tight to rake boards; lap joints at least 50 mm (2 inches) and seal with modified-plastic cement; secure with nails.
6. Instructions on additional details for sealing Penetrations can be found in the ARMA's Residential Asphalt Roofing Manual and/or NRCA's Roofing and Waterproofing Manual.

3.9. SHINGLES

1. General:
 1. Install in accordance with Manufacturer's instructions and local building codes.
 2. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
 3. Minimize breakage of shingles in cold weather (below 4°C) by avoiding dropping bundles on edge or by "breaking bundles" over the roof ridge or other bundles. Separating shingles carefully, taking extra precautions in colder temperatures.
 4. Handle shingles carefully in hot weather to avoid scuffing the surfacing or damaging the shingle edges.
 5. Install the asphalt shingles on roof slopes in accordance with CAN3 A 123.51-M85
 6. Installation of Shingles Cover walls and adjacent work where materials hoisted or used.
2. Placement & Nailing:
 1. Use galvanized (zinc coated) roofing nails, 11 or 12 gauge, with at least 10 mm (3/8 inches) diameter heads, long enough to penetrate through plywood or 20 mm (¾ inches) into boards.
 2. Use 4, 5, or 6 nails per shingle placed in the nail line per Manufacturer's instructions and local codes. Placement of nails varies based on the type of shingle specified, roof slope, and other environmental considerations. Consult the manufacturer's application instructions for the specified shingle for details.

3. Drive nails straight so that nail head is flush with, but not cutting into shingle surface. Do not overdrive or under drive the nails.
4. Shingle offset varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details.

3.10. PROTECTION

1. Use warning signs and barriers. Maintain in good order until completion of work.
2. Restore any areas damaged during construction to original condition.
3. At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed work and materials. Protect areas of incomplete work.
4. Protect any areas inside the building when stoppage occurs on roof due to inclement weather.
5. Do not leave any areas of roof exposed to inclement weather.

3.11. FIELD QUALITY CONTROL

1. Quality Control of the work will be provided by JDB Consulting Inc.. If conditions are unacceptable, JDB will notify the Installer & the City of Winnipeg.
2. Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents & good roofing practices.
3. If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Contract Administrator at no cost to the City of Winnipeg. Pay costs for retesting and re-inspection.

END OF SECTION

1. GENERAL

1.1. SECTION INCLUDES

1. Engineered wood cladding.
2. Soffit panels.
3. Trim and fascia.
4. Sealant.
5. Weather barrier.
6. Flashing.

1.2. RELATED WORK

1. Section 07 31 13 Asphalt Shingles
2. Section 07 92 00 Joint Sealants

1.3. REFERENCES

1. ASTM International (ASTM):
 1. ASTM A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 2. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
2. American National Standards Institute (ANSI):
 1. ANSI A135.6 - Engineered Wood Siding.
3. APA - The Engineered Wood Association (APA):
 1. PS 2-10 - Performance Standard for Wood-Based Structural-Use Panels.
 2. PRP 108 - Performance Standards and Qualification Policy for Structural-Use Panels.
 3. PR-N124 - APA Product Report, LP SmartSide Strand Substrate Lap and Panel Siding.
 4. PR-N117 - APA Product Report, LP SmartSide Strand Substrate Soffit.
4. Canadian Construction Materials Centre (CCMC):
 1. CCMC # 11826-L - LP SmartSide Strand Substrate Lap and Panel Siding.
 2. CCMC # 12353-L - LP SmartSide Fiber Substrate Lap and Panel Siding.
 3. CCMC # 07893-L - LP CanExel Siding.

1.4. COORDINATION

1. Coordinate installation with flashings, weather barriers, and other adjoining construction to ensure proper sequencing for weathertight performance.
2. Coordinate with finish coat to be applied over primed cladding, soffits, and trim. Comply with coating manufacturer's written requirements for substrate primer.

1.5.

SUBMITTALS

1. Submit product data
2. Submit product data sheets for:
 1. Engineered wood cladding.
 2. Soffit panels.
 3. Trim and fascia.
 4. Sealant.
 5. Weather barrier.
 6. Flashing.
 7. Include:
 1. Product characteristics.
 2. Performance criteria.
 3. Installation instructions.
 4. Limitations.
 5. Colour and finish.
 6. Indicate specially configured accessories, metal flashings, jointing methods and locations, fastening methods and locations, and installation details.
 7. Submit WHMIS MSDS Material Safety Data Sheets. WHMIS acceptable to Health Canada for asphalt shingles.
3. Samples
 1. Submit samples to Contract Administrator.
 2. Samples: Submit two (2) samples full size of each material and colour and type specified.
 3. Colours are to be selected by Contract Administrator.
4. Shop Drawings
 1. Indicate arrangement of cladding system, including dimensions, location of joints, profiles of inner and outer panels, types and locations of supports, fasteners, flashing, closures and all metal components related to cladding installation
5. Manufacturer Certificates
 1. Signed by manufacturer certifying that engineered wood cladding complies with requirements specified in "Performance Requirements" Article.
 2. Submit evidence of meeting performance requirements.
6. Product Test Reports
 1. Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for engineered wood cladding.
 2. Research/Evaluation Reports: For each type of engineered wood cladding required, from ICC-ES

7. Closeout Submittals
 1. Maintenance Data: For each type of product.
8. Maintenance Materials Submittals
 1. Furnish extra materials that match products installed in packaging acceptable to cladding manufacturer for storage with labels clearly describing contents.
 2. Furnish full lengths of cladding, soffit and trim and fascia including related accessories, in a quantity equal to 2 percent of amount installed.

1.6. QUALITY ASSURANCE

1. Installer: Company specializing in performing the work of this Section with minimum five years documented experience and approved by manufacturer.
2. Mock-up:
 1. Build mock-up for cladding, soffit, and trim and fascia including accessories, to establish quality standards for materials and installation.
 2. Build mock-up of typical wall area as directed by Contract Administrator in size approximately 96 inches (2440 mm) long by 120 inches (3050 mm) by full thickness.
 3. Include one wall and flashing.
 4. Acceptable mock-ups may remain as part of the Work if undamaged at time of Substantial Completion.

1.7. DELIVERY, STORAGE, AND HANDLING

1. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
2. Store products in manufacturer's labeled packaging until ready for installation. Protect from damage.
3. Store products off the ground, on a flat surface, and under a roof or separate waterproof covering.

1.8. PROJECT ENVIRONMENTAL CONDITIONS

1. Anticipate and observe environmental conditions (temperature, humidity and moisture) within limits recommended by manufacturer for optimum results. Do not install products under environment conditions outside manufacturer's limits.

1.9. WARRANTY

1. Manufacturer's Standard Warranty: Transferable limited warranty.
2. Warranty Period: Fifty years prorated from date of Substantial Completion.
3. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 2. Structural failures including buckling.
 3. Deterioration of materials beyond normal weathering.
 4. Fungal degradation.

5. Cracking, peeling, separating, chipping, flaking, or rupturing of resin-impregnated surface overlay.
6. Hail damage consisting of a crack, chip, or dent in the surface overlay exceeding 3/8 inch in length or diameter.
7. Warranty Period: Five years from date of Substantial Completion.

2. PRODUCTS

2.1. MANUFACTURERS

1. Subject to compliance with requirements, provide composite siding; KWP, Gentek, LP Building Products; LP SmartSide.
 1. Or approved equal in accordance with B7.
2. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2. ENGINEERED WOOD CLADDING

1. Fiber Lap Siding: Match existing. Horizontal application at corner, eye-brow locations.
 1. Description: Engineered wood siding complying with ANSI A135.6, with resin and linseed oil impregnated surface; EPA-registered zinc-borate-preserved-treated; AWPA compliant; acrylic primed for painting.
 1. Fire Rating: 1 hour per ASTM E119; ASTM E 84 Class C flame-spread.
 2. Thickness: 7/16-inch (11 mm) nominal, average.
 3. Style: Match existing.
 4. Length: 12 feet (3657 mm).

2.3. SOFFIT

1. *{NA}*

2.4. TRIM AND FASCIA

1. Strand Trim and Fascia: Same material as cladding, including fire rating.
 1. Finish: Embossed rough-sawn Cedar.
 2. Thickness: Match existing.
 3. Width: Match existing.
 4. Length: 16 feet (4877 mm).
2. Strand Trim Fascia Boards: Ploughed to receive soffit panel.
 1. Thickness: 0.625 inch (15 mm).
 2. Width: [5.5 inch (140 mm)]
 3. Length: 16 feet (4877 mm).
3. Fiber Trim and Fascia: Same material as cladding, including fire rating.
 1. Style: [Smooth grain][Cedar grain].

2. Thickness: [0.625 inch (15 mm)].
3. Width: [5.5 inch (140 mm)].
4. Length:[16 feet (4877 mm)].

2.5. ACCESSORIES

1. Fasteners: ASTM A153, hot-dip galvanized or stainless steel nails with 0.113 inch diameter shank and 0.27 inch diameter head, long enough to achieve 1 1-1/2 inch penetration into structural sheathing and framing
2. Sealant: ASTM C920, minimum Class 25 sealant.
3. Weather Barrier Building Wrap: ASTM E1677; made from polyolefin fibers.
 1. UV Exposure: Minimum three months.
 2. Seam Tape: Weather barrier manufacturer's standard product.
 3. Include drainable weather barrier for vertical siding installations.
 4. Drainable Weather Barrier Building Wrap: ASTM E1677; made from polyolefin fibers.
4. Flashing: Aluminum at window and door heads and where indicated on Drawings. Refer to Division 07 Section for sheet metal flashing.
5. Aluminum Flashing Finish: Siliconized polyester coating.

3. EXECUTION

3.1. EXAMINATION

1. Verify location of concealed framing for support and anchorage of engineered wood cladding, soffit and trim and fascia.
2. Verify that substrate has been installed to permit proper installation of engineered wood cladding, soffit and trim and fascia.
3. Verify that field measurements are as indicated on Shop Drawings.
4. Report unsatisfactory conditions to Contract Administrator in writing; do not start Work until unsatisfactory conditions are rectified

3.2. PREPARATION

1. Prepare substrates using methods recommended in writing by the cladding manufacturer.
2. Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances are corrected.
3. Commencement of installation constitutes acceptance of conditions.

3.3. INSTALLATION

1. Install in accordance with manufacturer's instructions.
2. Install in accordance with conditions stated in ICC-ES ESR-1301.
3. Properly space joints to allow for equilibration.

4. Do not install to green wood or crooked structural framing. Do not install over rain soaked or buckled materials. Do not install if excessive moisture is present in the interior, including that from curing concrete and plaster.
5. Do not cut cladding to fabricate trim; use trim components.
6. After installation, seal and flash joints except the overlapping horizontal lap joints. Seal around penetrations. Paint exposed cut edges.

3.4. ADJUSTING AND CLEANING

1. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
2. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

3.5. PROTECTION

1. Protect installed products until completion of project.
2. Touch-up, repair or replace damaged products.

END OF SECTION

1. GENERAL

1.1. SECTION INCLUDES

1. Materials, preparation and application for caulking and sealants.
2. Text to complete other various Sections containing sealant or caulking specifications, including Section 07 31 00 - Shingle Roofing and 07 46 43 – Composition Siding.

1.2. RELATED SECTIONS

1. Section 07 31 00 – Shingle Roofing.
2. Section 07 46 43 – Composition Siding.

1.3. REFERENCES

1. American Society for Testing and Materials International, (ASTM)
 1. ASTM C321, Standard Test Method for Bond Strength of Chemical-Resistant Mortars.
 2. ASTM C834, Standard Specification for Latex Sealants.
 3. ASTM C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.
 4. ASTM C919, Standard Practice for Use of Sealants in Acoustical Applications.
 5. ASTM C920, Standard Specification for Elastomeric Joint Sealants.
 6. ASTM C1330, Standard Specification for Cylindrical Sealant Backing for use with Cold Liquid Applied Sealants.
2. Canadian General Standards Board (CGSB)
 1. CAN/CGSB-19.21, Sealing and Bedding Compound Acoustical.
3. Department of Justice Canada (Jus)
 1. Canadian Environmental Protection Act (CEPA).
4. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 1. Material Safety Data Sheets (MSDS).
5. Transport Canada (TC)
 1. Transportation of Dangerous Goods Act (TDGA).

1.4. SUBMITTALS

1. 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.
 4. Installation instructions, surface preparation and product limitations.
2. Submit duplicate samples of each type of material and colour.
3. Cured samples of exposed sealants for each color where required to match adjacent material.

4. Manufacturers' instructions to include installation instructions for each product used.

1.5. QUALITY ASSURANCE

1. Manufacturer Qualifications: company engaged in the manufacturing of products specified in this section with a minimum of ten (10) years documented experience.
2. Applicator Qualifications: Experienced installer equipped and trained for application of joint sealant required for this project with record of successful completion of projects of similar scope.
 1. Applicator to be approved by sealant manufacturer.
 2. Applicator to submit documentation of a minimum three (3) successfully completed projects of similar size, scope and complexity.

1.6. MOCK-UP

1. Upon request of Contract Administrator construct mock-up in accordance with Section 01 45 00 - Quality Control.
2. Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant. Mock-up may be part of finished work.
3. Allow two (2) working days for inspection of mock-up by Contract Administrator before proceeding with sealant work.
4. Mock-up will be used:
 1. To judge workmanship, substrate preparation, operation of equipment and material application.
5. When accepted, mock-up will demonstrate minimum standard of quality required for this Work.

1.7. FIELD ADHESION/COHESION TESTS

1. Test Frequency:
 1. Perform a field test each type of sealant and substrate combination, for all interior and exterior sealants associated with the building envelope & siding.
 2. Perform three (3) additional tests for each failed test.
2. Locate test joints as directed by Contract Administrator. Tests to be performed in the presence of the Contract Administrator and/or manufacturer's representative.
3. Notify Contract Administrator seven (7) days prior to dates tests are to be performed.
4. Test joint sealants by hand-pull methods #1 and # 2. Record test results in Field Adhesion/Cohesion Test Form.
 1. Test Method #1:
 1. Make a knife cut horizontally from one side of the joint to the other.
 2. Make two (2) vertical cuts (from the horizontal cut) approximately 75 mm long on each side of the joint.
 3. Pry out flap created from cuts.
 4. Firmly grasp flap and slowly pull at 90° from sealant plane.
 5. Pull flap until adhesive or cohesive failure occurs.
 1. Adhesive failure will be evidenced by the sealant pulling off clean from the substrate.

2. Cohesion failure will be evidenced by the sealant ripping or failing within itself, leaving well-adhered sealant to the substrate.
 3. (Cohesive failure is considered a positive result).
5. Test Method # 2:
1. Follow steps one (1) through four (4) of Test Method # 1.
 2. Mark a benchmark on the sealant 25 mm (1") from the plane of the installed sealant.
 3. Firmly grasp the flap and pull slowly, while holding a ruler parallel to the sealant flap. Note the position of the benchmark on the ruler.
 4. Refer to manufacturer's printed literature for each sealant tested for the required extension factor pass criteria; (i.e.: if the 25 mm (1") benchmark on the sealant can be pulled to 100 mm (4") and held with no failure of sealant, 400% elongation is achieved.)
 5. If no failure occurs prior to the manufacturer's stated extension factor, the test is successful. Extension factor should be three (3) times the movement capability of the sealant.
6. Inspect joints for:
1. Complete fill,
 2. Absence of voids,
 3. Primer,
 4. Proper width/depth ratio, and
 5. Back up material.
7. Repair sealants pulled in test area by applying new sealants following same procedures used to original seal joints.
8. Contractor shall repair test areas at no additional cost to the City of Winnipeg.

1.8. DELIVERY, STORAGE, AND HANDLING

1. Deliver, handle, store and protect materials in accordance with contract documents.
2. Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.
3. Condition products to approximately 16 to 20 degrees C for use in accordance with manufacturer's recommendations.
4. Handle all products with appropriate precautions and care as stated on the Material Safety Data Sheet.

1.9. PROJECT CONDITIONS

1. Environmental Limitations:
 1. Do not proceed with installation of joint sealants under following conditions:
 1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4°C.
 2. When joint substrates are wet.
2. Joint-Width Conditions:
 1. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

3. Joint-Substrate Conditions:
 1. Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

2. PRODUCTS

2.1. SEALANT MATERIALS

1. Sealants and Caulking compounds must:
 1. Meet or exceed all applicable governmental and industrial safety and performance standards; and
 2. Be manufactured and transported in such a manner that all steps for the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act (CEPA).
2. Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulphate.
3. Sealant and caulking compounds must not contain a total of volatile organic compound (VOC's) in excess of 100 grams per litre as calculated from records of the amounts of constituents used to make the product.
4. Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.
5. Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
6. 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.
7. Where sealants are qualified with primers use only these primers.
8. Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

2.2. SEALANT MATERIAL DESIGNATIONS

1. Single component, low odor, moisture cure, medium modulus, low VOC sealant for use in sealing air/vapour barrier penetrations, to ASTM C920, Type S, Grade NS, Class 35.
 1. ASTM C719: $\pm 35\%$.
 2. Ultimate Elongation: 450 - 550%.
 3. Modulus, 100%: 275 - 345 kPa.
 4. Shore A Hardness: 25 ± 5 .
 5. Tensile Strength: 1034 – 1378 kPa.
 6. Maximum VOC: 5 g/L.
2. Single component, medium modulus, high-performance, neutral-cure silicone sealant for general purpose exterior use, to ASTM C920, Type S, Grade NS, Class 35, Use NT, M, A and O.

1. ASTM C719: $\pm 25\%$.
 2. Ultimate Elongation: 550%.
 3. Modulus, 50% extension: 380 kPa.
 4. Shore A Hardness: 25 ± 5 .
 5. Tensile Strength: 1240 kPa.
 6. Maximum VOC: 35 g/L.
 7. Colour to be selected from manufacturer's standard range.
3. Single component, low modulus, neutral-cure silicone sealant for general purpose masonry use, to ASTM C920, Type S, Grade NS, Class 50, Use T, NT, M, G, A and O.
 1. ASTM C719: $\pm 50\%$.
 2. Ultimate Elongation: 1600%.
 3. Modulus, 50% extension: 193 kPa.
 4. Shore A Hardness: 15.
 5. Tensile Strength: 690 kPa.
 6. Maximum VOC: 22 g/L.
 7. Colour to be selected from manufacturer's standard range.
4. Two-component, high modulus, neutral-cure flexible silicone rubber sealant for use with aluminum window and curtain wall fabrication, assembly and glazing installation, to ASTM C1184 and ASTM C920, Type M, Grade NS, Class 12 ½, Use NT.
 1. ASTM C719: $\pm 25\%$.
 2. Ultimate Elongation: 120%.
 3. Shore A Hardness: 30 - 40.
 4. Tensile Strength: 2000 kPa.
 5. Maximum VOC: < 18 g/L.
5. Single component, medium modulus, neutral-cure silicone sealant for general roofing applications, to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, A and O.
 1. ASTM C719: $\pm 50\%$.
 2. Shore A Hardness: 35.
 3. Tensile Strength: 415 kPa.
 4. Maximum VOC: 28 g/L.
 5. Colour to be selected from manufacturer's standard range.
6. Single component, chemical cure, silicone rubber sealant, for use with plumbing fixtures, showers, sinks, tubs, and junction of counter tops and adjacent wall finishes, to ASTM C920, Type S, Grade NS, Class 25, Use NT.
 1. Shore A Hardness: 25.
 2. Tensile Strength: 2100 kPa.
 3. Maximum VOC: 36 g/L.

4. Colour to be selected from manufacturer's standard range.
7. Single component, high-performance, elastomeric polyurethane sealant, paintable, for general purpose interior use, to ASTM C920, Type S, Grade NS, Class 35, Use NT, M, A, T, O and I.
 1. ASTM C719: 35%.
 2. Ultimate Elongation: 800%.
 3. Shore A Hardness: 25 - 30.
 4. Tensile Strength: 2400 kPa.
 5. Maximum VOC: 35 g/L.
 6. Colour to be selected from manufacturer's standard range.
8. Single component, non-skinning, non-hardening, synthetic rubber sealant for use in acoustical applications, to CAN/CGSB 19.21.
 1. Shrinkage: maximum 20%.
 2. Maximum VOC: 53 g/L.
 3. Sag: Maximum 4.0 mm.
9. Two-component, non-sag, tamper resistant, elastomeric polyurethane sealant, for use in interior joints, penetrations, doors, windows, perimeters of fixtures, where a flexible security sealant is required due to idle tampering or vandalism, to ASTM C920, type M, Grade NS, Class 12.5, Use T₁, M and O.
 1. Ultimate Elongation: 175 - 200%.
 2. Shore A Hardness: 40 - 45.
 3. Tensile Strength: 2000 to 2400 kPa.
 4. Maximum VOC: Activator - < 25 g/L, Base - < 100 g/L.
 5. Colour to be selected from manufacturer's standard range.

2.3. ACCESSORIES

1. Primer: Type as recommended by sealant manufacturer. Primer to be compatible with joint forming materials.
2. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer and compatible with joint forming materials.
3. 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. Neoprene or Butyl Rubber.
 1. Round solid rod, Shore A hardness 70.
4. High Density Foam.
 1. Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.

5. Bond Breaker Tape.
 1. Polyethylene bond breaker tape which will not bond to sealant.

3. EXECUTION

3.1. PROTECTION

1. Protect installed Work of other trades from staining or contamination.

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. All joint forming materials to be primed prior to sealant installation.
6. 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.(Employ purpose made caulking spatula.)
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. Cleanup.
 1. Clean adjacent surfaces immediately and leave Work neat and clean.
 2. Remove excess and droppings, using recommended cleaners as work progresses.
 3. Remove masking tape after initial set of sealant.

3.7.

CLEANING

1. Clean adjacent surfaces immediately and leave Work neat and clean.
2. Remove excess and droppings, using recommended cleaners as work progresses.
3. Remove masking tape after initial set of sealant.

END OF SECTION