SECTION 07 31 13

ASPHALT SHINGLES

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\*\* NOTE TO SPECIFIER \*\* IKO; asphalt shingles and accessories.
This section is based on the products of IKO, which is located at:
Technical inquiries for Canada 1-888-766-2468 or https://www.iko.com/na/residential-product-concerns-and-technical-inquiries-canada/
Technical inquiries for USA 1-888-456-7663 or
https://www.iko.com/na/residential-product-concerns-us/
Web: [www.iko.com](http://www.iko.com)
[ [Click Here](http://www.arcat.com/arcatcos/cos46/arc46928.html) ] for additional information.
We are a family owned company that has been committed to manufacturing quality residential and commercial roofing products since 1951.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Asphalt shingles and accessories for structures with attic spaces.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 07 05 00 - Common Work Results for Thermal and Moisture Protection.
		2. Section 07 62 00 - Sheet Metal Flashing and Trim.
		3. Section 07 71 23 - Manufactured Gutters and Downspouts.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. Reference Standards are latest editions, unless noted otherwise.
		2. Flashing, ASTM International (ASTM):
			1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
			2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
			3. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
		3. Roofing Cement, ASTM International (ASTM):
			1. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
			2. CAN/CGSB 37.4 - Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing.
			3. CAN/CGSB 37.5 - Cutback Asphalt Plastic Cement.
			4. ASTM D3019 - Standard Specification for Lap Cement, Asbestos-Free.
			5. ASTM D2822 - Standard Specification for Asphalt Roof Cement.
		4. Fasteners, ASTM International (ASTM):
			1. ASTM F1667 - Specification for Driven Fasteners, Nails, Spikes and Staples, Type I, Style 20.
			2. CSA B 111 - Wire Nails, Spikes, and Staples.
		5. Shingles, ASTM International (ASTM):
			1. ASTM D226 / D226M - 09 Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and Waterproofing.
			2. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used as Steep Roofing Underlayment for Ice Dam Protection.

\*\* NOTE TO SPECIFIER \*\* Energy Star performance standard only. Delete if not required.

* + - 1. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
			2. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
			3. ASTM D3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
			4. ASTM D3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
			5. ASTM D4601/D4601M - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
			6. ASTM D7158/D7158M-11 - Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method).
			7. ASTM D3462 - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules.
			8. ASTM D4869 / D4869M - 05(2011) - Standard Specification for Asphalt Saturated Organic Felt Underlayment Used in Steep Slope Roofing.
			9. ASTM E108 - 11 - Standard Test Methods for Fire Tests of Roof Coverings (ULC S107).

\*\* NOTE TO SPECIFIER \*\* Energy Star performance standard only. Delete if not required.

* + - 1. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres.
		1. Asphalt Roofing Manufacturers Association (ARMA).
		2. Canadian Asphalt Shingle Manufacturers' Association (CASMA):
			1. CAN/CSA A123.16 - Asphalt-Coated Glass-Base Sheet.
			2. CSA A 123.2 Asphalt Coated Roofing Sheets.
			3. CSA A 123.3-05 (R2010) Asphalt Saturated Organic Roofing Felt.
			4. CSA A 123.3-22-08 - Self-Adhering Polymer Modified Bituminous Sheet Materials Used As Steep Roofing Underlayment For Ice Dam Protection.
			5. CAN/CSA A 123.5-05 (R2010) Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granule.
			6. CAN2 51.32 Sheathing, Membrane, Breather Type Paper.
			7. CAN3 A 123.51 -M85 (R2011) Asphalt Shingle Application on Roof Slopes 1:3 and Steeper.
			8. CAN3 A 123.52 Asphalt Shingle Application on Roof Slopes 1:6 to Less than 1:3.
		3. Canadian Roofing Contractors Association (CRCA):
		4. FM Class Number 4473 Specification Test Standard for Impact Resistance Testing of Rigid Roofing Materials by Impacting with Freezer Ice Balls.
		5. International Building Code (IBC).
		6. National Roofing Contractors Association (NRCA).
		7. Underwriters Laboratories (UL):
			1. UL 2218 - Standard for Impact Resistance of Prepared Roof Covering Materials.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's data sheets, including product characteristics, performance criteria, on each product to be used, including:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.
		3. Shop Drawings: Indicate specially configured metal flashing, jointing methods and locations, fastening methods and locations, and installation details as required by Project conditions.
		4. Certificate of Compliance: Provide Certificate of Compliance from the manufacturer or an independent laboratory indicating that the asphalt fiberglass shingles made in normal production meet or exceed the requirements of the following:
			1. ASTM E108 indicating Class A Fire Resistance.
			2. ASTM D3161/D7158 indicating class of Wind Resistance.
			3. ASTM D3462/CSA A 123.5-05 indicating product properties.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. FM Class Number 4473 indicating Class 4 Impact Resistance when applicable.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. State of Florida Approval where applicable.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
			1. Submit duplicate samples of full-sized shingles to match finish and profile for each type of roofing shingle to be used on the Project.
		2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
			1. Submit duplicate samples of full-sized shingles to match finish and profile for each type of roofing shingle to be used on the Project.
	1. REGULATORY REQUIREMENTS
		1. Provide a roofing system achieving an ASTM E108 Class A fire classification.

\*\* NOTE TO SPECIFIER \*\* ENERGY STAR rated only. Delete if not required.

* + 1. Provide a roofing system achieving an ENERGY STAR rating.
		2. Ensure that materials and fastening methods meet requirements of jurisdictional authorities. The Installer shall be licensed or otherwise authorized to install roofing in the jurisdiction the work is to be performed in.
		3. Install all roofing products in accordance with all Federal, Provincial, State and local building codes.
		4. All work shall be performed in a manner consistent with current OSHA guidelines.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.
		2. Provide all primary roofing products including shingles, underlayment, and leak barrier by a single manufacturer.
		3. Installer Qualifications: Where required for extended limited warranty coverage, the installer shall be approved or otherwise authorized by IKO to install all roofing products to be installed on this project. Work is to be executed only by those skilled to perform it expeditiously and who has been responsible for satisfactory installations similar to that specified during a period of at least the immediate past three years.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application for installation of system to be installed.
			1. Do not proceed with remaining work until workmanship and pattern are approved by Architect or equivalent.
			2. Rework Mock-Up area as required to produce acceptable work.
		2. Source: Primary roofing products, including shingles, underlayment, and ice and dam protection shall be supplied by a single manufacturer.

\*\* NOTE TO SPECIFIER \*\* The pre-installation meeting is suggested for all projects over 250 squares total roofing. Delete if not required.

* 1. PRE-INSTALLATION MEETINGS
		1. General: For all projects in excess of 250 squares of roofing being installed by a ROOFPRO Credentialed installer, a pre-installation meeting is strongly recommended.
		2. Timing: The meeting shall take place prior to the start of the roofing installation.
		3. Topics: The ROOFPRO Credentialed installer and Owner's representative shall review all pertinent requirements for the project, including but not limited to, scheduling, weather considerations, project duration, product availability, and requirements for the specified warranty.
		4. Agenda will include:
			1. Installation procedures and manufacturer's recommendations.
			2. Safety procedures.
			3. Coordination with installation of other work.
			4. Availability of roofing materials.
			5. Preparation and approval of substrate and penetrations through roof.
			6. Other items related to successful execution of work.
	2. DELIVERY, STORAGE, AND HANDLING
		1. All materials shall arrive on site with their original containers or wrappings carrying the manufacturer's seals and labels intact. Store materials at least 100 mm (4 inches) off the ground or roof deck and be contained in the manufacturer's unopened and labeled packaging until they are ready for installation. Packing is to have the manufacture's name, product brand name, and standards pertaining thereof.
		2. Store products in a covered, ventilated area.
		3. Store bundles on a flat surface. Maximum stacking height shall not exceed manufacturer's recommendations. Store all rolls on end.
	3. PROJECT CONDITIONS
		1. Apply each part of the roofing system only when surfaces are clean and dry.
		2. Cover walls and other surfaces in the vicinity of hoisting apparatus (when used) with heavy canvas or other suitable protective material. Any damage caused shall be repaired to match the original materials and appearance at no cost to the Owner.
		3. Conduct operations to leave deck exposed for the minimum period of time. Protect the work area as required to prevent water infiltration or environmental damage to building interior.
		4. Material shall be neatly stored, elevated, and protected from damage due to wetness or freezing.
		5. Maintain all site equipment in good working order.
		6. Maintain one copy of manufacturers' application instructions at the Project site.

\*\* NOTE TO SPECIFIER \*\* Refer to IKO Residential Information Bulletin R-52.

* + 1. Weather Conditions:
			1. Proceed with work only when existing and forecasted weather conditions will permit work to be performed as recommended by manufacturer.
			2. When application conditions might limit the effectiveness of the sealing strip, such as in cool weather or in areas subject to high winds or blowing dust, shingle adherence shall be ensured through manual sealing.
	1. SEQUENCING
		1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	2. WARRANTY SUPPLEMENT
		1. In addition to manufacturer's standard warranty the following supplements modify the warranty provisions.
		2. Provide manufacturer's supplemental warranty to cover labor and materials in the event of a material defect for the following period after completion of application of shingles:

\*\* NOTE TO SPECIFIER \*\* Choose Warranty Option (Iron Clad or ROOFPRO Extended). Delete supplemental warranty not required.

* + - 1. First 15 Years (Limited Lifetime Warranty) for selected products; First 5 Years for 3-Tab/Strip Shingle products.
			2. Extended Warranty Protection (Installed by an IKO ROOFPRO Credentialed Installer).
			3. Upgraded Wind Warranty from 110 to 130 mph (by complying with all manufacturers' conditions and instructions).
			4. Warranty Transferability Clause: Make available to the Owner, manufacturer's standard supplemental warranty for transferring warranty to a new owner.

\*\* NOTE TO SPECIFIER \*\* Refer to IKO's warranty for adjustments for commercial applications.

1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: IKO
		 1. Technical inquiries for Canada 1-888-766-2468 or https://www.iko.com/na/residential-product-concerns-and-technical-inquiries-canada/
		 2. Technical inquiries for USA 1-888-456-7663 or https://www.iko.com/na/residential-product-concerns-us/
		 3. Web: www.iko.com.

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

* 1. SHINGLES

\*\* NOTE TO SPECIFIER \*\* Delete shingle not required. Delete shingle provisions not required.

* + 1. Shingles: Crowne Slate as manufactured by IKO.
			1. Type: Architectural Slate or Tile.
			2. Exposure: 10 inches (254 mm).
			3. IKO Iron Clad Protection Period: 15 years.
			4. Limited 10-Year Algae Resistant Warranty.
			5. Limited wind warranty coverage up to: 110 mph (177 kph).
			6. High Wind warranty upgrade to 130 mph (209 kph) available.
			7. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		2. Shingles: ArmourShake as manufactured by IKO.
			1. Type: Dimensional.
			2. Exposure: 5-1/2 inches (140 mm).
			3. IKO Iron Clad Protection Period: 15 years.
			4. Limited 10-Year Algae Resistant Warranty.
			5. Limited wind warranty coverage up to: 110 mph (177 kph).
			6. High Wind warranty upgrade to 130 mph (209 kph) available.
			7. ICC ER - 3532 Listed.
			8. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		3. Shingles: Royal Estate as manufactured by IKO.
			1. Type: Architectural
			2. Exposure: 5-5/8 inches (143 mm).
			3. IKO Iron Clad Protection Period: 15 years.
			4. Limited 10-Year Algae Resistant Warranty.
			5. Limited wind warranty coverage up to: 110 mph (177 kph).
			6. High Wind warranty upgrade to 130 mph (209 kph) available.
			7. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		4. Shingles: Cambridge installed in the United States of America as manufactured by IKO.
			1. Type: Architectural
			2. Exposure: 5-7/8 inches (149 mm).
			3. IKO Iron Clad Protection Period: 10 years on SFD/MFD/Commercial Steep Slope.
			4. Limited 10-Year Algae Resistant Warranty.
			5. Limited wind warranty coverage up to: 110 mph (177 kph).

\*\* NOTE TO SPECIFIER \*\* The high wind warranty upgrade is optional. Delete if not required.

* + - 1. High Wind warranty upgrade to 130 mph (210 kph).
			2. ICC ER - 3532 Listed. (Sumas only).
			3. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		1. Shingles: Cambridge installed in Canada as manufactured by IKO.
			1. Type: Architectural.
			2. Exposure: 5-7/8 inches (149 mm).
			3. IKO Iron Clad Protection Period: 15 years on SFD/MFD/Commercial Steep Slope.
			4. Limited 10-Year Algae Resistant Warranty.
			5. Limited wind warranty coverage up to: 110 mph (177 kph).

\*\* NOTE TO SPECIFIER \*\* The high wind warranty upgrade is optional. Delete if not required.

* + - 1. High Wind warranty upgrade to 130 mph (210 kph).
			2. ICC ER - 3532 Listed. (Sumas only).
			3. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		1. Shingles: Cambridge Cool Colors as manufactured by IKO.
			1. Type: Architectural
			2. Exposure: 5-7/8 inches (152 mm).

\*\* NOTE TO SPECIFIER \*\* The following feature is available in the USA only. Delete option if not required. Delete options not required.

* + - 1. IKO Iron Clad Protection Period: 10 years.
			2. Limited 10-Year Algae Resistant Warranty.
			3. Limited wind warranty coverage up to: 110 mph (177 kph).
			4. High Wind warranty upgrade to 130 mph (209 kph) available.
			5. Blue-Green Algae Resistant; Dual Grey Only.
			6. CRRC-1 SRI: 16 or greater.
			7. CRRC-1 SRI: 20 or greater.
			8. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		1. Shingles: Dynasty as manufactured by IKO.
			1. Type: Architectural.
			2. Exposure: 5-7/8 inches (152 mm).
			3. IKO Iron Clad Protection Period: 15 years.
			4. Limited 10-Year Algae Resistant Warranty.
			5. Limited wind warranty coverage up to: 130 mph (209 kph).
			6. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		2. Shingles: Marathon Plus AR as manufactured by IKO.
			1. Type: 3-tab.
			2. Exposure: 5-5/8 inches (143 mm).
			3. IKO Iron Clad Protection Period: 5 years.
			4. Limited 5-Year Algae Resistant Warranty. (AR only).
			5. Limited wind warranty coverage up to: 60 mph (97 kph).
			6. ICC ER - 3532 Listed.(Sumas only)
			7. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		3. Shingles: Nordic as manufactured by IKO.
			1. Type: Architectural Polymer - Modified Asphalt
			2. Exposure: 5-7/8 inches (152 mm).
			3. FM Class No. 4473, Class 4.
			4. IKO Iron Clad Protection Period: 15 years.
			5. Limited 10-Year Algae Resistant Warranty.
			6. High Wind warranty up to 130 mph (209 kph) available.
			7. Color: As selected by Architect from manufacturer's color range available in the location of the Project.
		4. Shingles shall comply with the following performance standards and ratings.
			1. Complies with ASTM D3462.
			2. Complies with ASTM D3018.
			3. Complies with ASTM D3161 (Wind); Class F.
			4. Complies with ASTM D7158 (Wind); Class H.
			5. Complies with Fire Resistance Rating ASTM E108 (Fire) - Class A.
			6. Complies with CSA A123.5.
			7. Complies with IRC Wind Code Requirements.
			8. Color: As selected by Architect from manufacturer's color range available in the location of the Project.

\*\* NOTE TO SPECIFIER \*\* Dynasty shingles do not require additional nails for the warranty. Delete paragraph if not required.

* + 1. To ensure coverage under the High Wind Application Limited Wind Resistance Warranty; the shingles shall be installed with additional nails, the shingles shall have an opportunity to seal or be manually sealed and starter strip shingles shall be used at all eaves and rakes.
	1. HIP AND RIDGE SHINGLES

\*\* NOTE TO SPECIFIER \*\* Choose One. Delete product not required.

* + 1. Product: Hip and Ridge 12 Ridge Cap Shingles: A high profile self-sealing hip and ridge cap shingle matching the color of selected roof shingle. Each bundle covers approximately 33 lineal feet (10 linear meters).
		2. Product: Hip and Ridge Plus: IKO Hip and Ridge Plus Shingles are precut and include pre-tapered headlaps. Each Bundle covers 29.5 linear ft (9 linear meters). Meets ASTM D3161 Class F, ASTM D3462, ASTM E108, and CSA A123.5.
		3. Product: Ultra HP High Profile Ridge Cap Shingles: A high profile self-sealing hip and ridge cap shingle matching the color of selected roof shingle. Each bundle covers approximately 20 lineal feet (6.1 linear meters).
		4. Product: Ultra HP IR High Profile Ridge Cap Shingles: A high profile self-sealing hip and ridge cap shingle matching the color of selected roof shingle. Each bundle covers approximately 20 lineal feet (6.1 linear meters). Meets UL 2218 Class 4 impact resistance.
		5. Product: Marathon Series 3Tab: For use as a field fabricated ridge cap shingle and is to be from shingles matching the color of the selected roof shingle. Each bundle covers approximately 29.5 linear feet (9 linear meters).
	1. ICE AND WATER PROTECTOR

\*\* NOTE TO SPECIFIER \*\* Choose One. Delete product not required.

* + 1. Product: GoldShield: Self-adhering, self-sealing, bituminous sheet with advanced flexibility, slip resistant surface meeting ASTM D1970. Each roll contains approx. 200 sq ft (36 inches x 66.7 feet) (18.6 sq m) (914 mm x 20.3 m). Each roll is backed by a silicone treated release film for easier installation.
		2. Product: ArmourGard: Self-adhering, self-sealing, bituminous sheet with advanced flexibility and a slip-resistant surface meeting ASTM D1970. Each roll contains approx. 195 sq ft (36 inches x 65 feet) (18.2 sq m) (914 mm x 19.8 meters). Each roll is backed by a silicone treated release film for easier installation.
		3. Product: StormShield: Self-adhering, self-sealing, bituminous sheet surfaced with a sand-fines surface. Each roll contains approx. 195 sq ft (36 inches x 65 feet) (18.1 sq m) (914 mm x 19.8 m). Each roll is backed by a silicone treated release film for easier installation.
	1. SHINGLE UNDERLAYMENT
		1. Product: IKO Stormtite Synthetic Underlayment.
		2. Product: RoofGard-Cool Grey Synthetic Underlayment.

\*\* NOTE TO SPECIFIER \*\* SBS DeckBase 44 is an economical eave protection membrane beneath asphalt shingles. Delete if not required.

* + 1. Product: IKO SBS DeckBase 44. Inorganic, reinforcing mat made of, non-woven glass fibers, heavily coated and impregnated with SBS modified asphalt.
			1. Standards Compliance:
				1. CAN/CSA-A123.16 Asphalt coated base sheet. Type 1.
				2. ASTM D4601, Type 1 specification in all respects
				3. IBC Clause 9.26.5.2.(c).

\*\* NOTE TO SPECIFIER \*\* See IKO Residential Information Bulletin R-24. Generic. Delete if not required.

* + 1. Product: Water repellent, breather type cellulose fiber building paper meeting or exceeding the requirements of ASTM D 226 Type I / CSA 123.3-M, No. 15 Roofing Underlayment.

\*\* NOTE TO SPECIFIER \*\* Generic. Delete if not required.

* + 1. Product: Water repellent breather type sheathing cellulose fiber building paper meeting or exceeding the requirements of ASTM D226 Type II and/or CAN 2-51.32 No. 30 Roofing Underlayment.

\*\* NOTE TO SPECIFIER \*\* Generic. Delete if not required.

* + 1. Product: Type I-No. 8 Underlayment: Water repellent breather type cellulose fiber building paper meeting or exceeding the requirements of ASTM D4869 Type I.

\*\* NOTE TO SPECIFIER \*\* See IKO Residential Information Bulletin R-32. Generic. Delete if not required.

* + 1. Product: Type II-No. 13 Underlayment: Water repellent breather type cellulose fiber building paper meeting or exceeding the requirements of ASTM D4869 Type II.
		2. Underlayment Accessories:
			1. Product: EdgeSeal. Double-sided, extra-tacky adhesive creates a super strong bond to seal the drip-edge below to the shingle above to ensure the roof perimeter is securely fastened down.
				1. Standards Compliance: ASTM D1970
				2. Size: 1 Roll: 67.3 ft (20.5 m) x 8.75 inch (222 mm) wide.
			2. Product: GoldSeam. The IKO GoldSeam tape can be applied over plywood or OSB seams as well as to cover gaps near fascia - near the eave.
				1. Standards Compliance: D1970, CSA A123.22-08
				2. Size: 1 Roll: 67.7 ft (20.6 m) x 4.25 inch (108 mm) wide.
	1. ROOFING CEMENT
		1. Product: Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II or CAN/CGSB-37.5.
		2. Product: Lap Cement meeting the requirements of ASTM D3019, Non-Asbestos-Fibered, Type III or CAN/CGSB-37.4.
		3. Product: ASTM D2822, Standard Specification for Asphalt Roof Cement.
	2. ATTIC VENTILATION

\*\* NOTE TO SPECIFIER \*\* Choose One - Ridge vent shall have intake from soffits or passive ventilation. Delete vent system not indicated or required.

* + 1. Ridge ventilator designed to allow the passage of air out of attics. For use in conjunction with eave/ soffit intake ventilation products. Roof ventilation shall be installed as to meet building codes and as instructed from the architectural drawings.
		2. Passive Ventilation (roof louvers or equal), shall be used only as additional exhaust ventilation, or when ridge vents cannot be installed due to architecture. Install in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
		3. Power Ventilation (power ventilation fans or equal), shall be used only when ridge vents cannot be installed due to architecture. Install in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
	1. NAILS/FASTENERS
		1. Product: Standard round wire, zinc-coated steel or aluminum complying with CSB B 111 and meeting local building codes.
		2. Product: ASTM F1667 Specification for Driven Fasteners, Nails, Spikes and Staples and meeting local building codes.
	2. METAL FLASHING

\*\* NOTE TO SPECIFIER \*\* Choose One. Delete product not required.

* + 1. Product: Hot-dip galvanized steel sheet, complying with ASTM A653/A653M and meeting local building codes.
		2. Product: Copper sheet, complying with ASTM B370 and meeting local building codes
		3. Product: Aluminum sheet, complying with ASTM B209 and meeting local building codes.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until the roof deck has been properly prepared.
		2. If roof deck preparation is the responsibility of another installer, notify the architect or building Owner of unsatisfactory preparation before proceeding.
		3. The roof deck shall be smooth, firm, dry, and securely nailed. Plywood shall be exterior grade, conforming to building code requirements. 1/2 inch (13 mm) plywood is recommended for best deck performance.
		4. The installation of asphalt shingles on dimensional lumber (including shiplap/board decks) is not recommended as it may potentially cause buckling problems. Buckling will not be covered by the Limited Material Warranty.
		5. Roof slope shall be 1:3 or steeper. For slopes 1:3 to 1:6, provide special underlayment requirements. 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.
		6. Never apply asphalt shingles to roof slopes less than 2:12.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Reroofing: Split and re-nail curled or buckled shingles, replace any missing shingles, remove loose or protruding nails, and sweep surface clean.
	1. APPLICATION
		1. Follow manufacturer's application instructions in conjunction with manufacturer's reference standards 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 per manufacture 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. Apply 1-ply of underlayment over the entire deck surface, except where Ice and Water protector membrane has been installed.

\*\* NOTE TO SPECIFIER \*\* Tear-Off Only. Delete if not required.

* 1. PREPARATION
		1. Remove all existing roofing down to the roof deck.
		2. Verify that the deck is dry, sound, clean, and smooth. It shall be free of any depressions, waves, and/or projections. Cover with sheet metal, all holes over 25 mm (1 inch) in diameter, cracks over 12 mm (1/2 inch) in width, loose knots, and excessively resinous areas.
		3. Replace damaged deck with new materials.
		4. Clean deck surfaces thoroughly prior to installation of Ice and Water protector membranes used for eaves protection and before installation of underlayment.

\*\* NOTE TO SPECIFIER \*\* New Construction. Delete if not required.

* 1. PREPARATION
		1. Clean deck surfaces thoroughly prior to installation of IKO's Ice and Water protector membranes used for eaves protection and before installation of underlayment.
		2. At areas that receive Ice and Water protector membrane, fill knotholes and cracks with latex filler.
		3. Install crickets on any chimney wider than 600 mm (24 inches), on the upslope side of all chimneys and penetrations, on all roofs steeper than 6:12, and where required by code.

\*\* NOTE TO SPECIFIER \*\* Recover Only. Delete if not required.

* 1. PREPARATION
		1. Verify that the deck is structurally sound and free of deteriorated decking. All deteriorated decking shall be removed and replaced with new materials.
		2. Verify that the existing shingles are dry, sound, clean, and smooth. All curled, buckled, or loose tabs shall be nailed down or removed.
		3. Clean deck surfaces thoroughly prior to installation of Ice and Water protector membranes used for eaves protection and before installation of underlayment.

\*\* NOTE TO SPECIFIER \*\* Required for New/Tearoff - Optional for Recover. Delete if not required

* 1. INSTALLATION OF UNDERLAYMENTS
		1. General:
			1. Install using methods recommended 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 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 and Water protector membrane has been installed.
			3. Install underlayment accessories; EdgeSeal, and GoldSeam as required and in accordance with application instructions.
		2. Eaves:
			1. Install eave protection using methods recommended 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 51 mm (2 inches) and seal with plastic cement; nail at the top of the flange.
			3. Base flashing shall be in place before shingles are applied. Cap flashings of sheet metal and base flashing of metal or mineral surfaced roofing shall 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 Ice and Water protector membrane product, up the slope from eaves edge a full 914 mm (36 inches) or to at least 610 mm (24 inches) beyond the interior "warm wall". Lap ends 152 mm (6 inches) and bond.

\*\* NOTE TO SPECIFIER \*\* Note: if these procedures are followed, shingles applied to slopes 3:12 to 4:12 will be warranted for the full warranty term for the shingle. Shingles on slopes 2:12 to 3:12 will be warranted for 12 years - see Limited Warranty for full details.

* + - 1. Contractor Option: Use 2 layers of asphalt saturated felt (or equivalent), the first sheet overlapping the eave protection by 480 mm (19 inches), followed by full 914 mm (36 inches) widths overlapping each preceding course by 480 mm (19 inches). 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 51 mm (2 inches) horizontal laps and 104 mm (4 inches) end laps. Apply metal drip edges on top of any underlay along rake edges and directly to the deck along eaves.
		1. Valleys:
			1. Install eaves protection at least 914 mm (36 inches) wide and centered on the valley. Lap ends 152 mm (6 inches) and seal.

\*\* NOTE TO SPECIFIER \*\* 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.

* + - 1. Where valleys are indicated to be "open valleys", install metal flashing over Ice and 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.
		1. Roof Deck:
			1. Install one layer of roof deck underlayment over the entire area not protected by Ice and Water protector membrane. Install sheets horizontally so water sheds.
			2. On roofs sloped at more 4:12, lap horizontal edges at least 51 mm (2 inches) and at least 51 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 102 mm (4 inches). Stagger end laps of each layer at least 914 mm (36 inches).
			5. Lap underlayment over valley protection at least 152 mm (6 inches).
		2. Penetrations:
			1. Vent pipes: Install a 600 mm (24 inches) square piece of Ice and Water protector membrane lapping over roof deck underlayment; seal tightly to pipe.
			2. Vertical walls: Install Ice and Water protector membrane for eaves protection extending at least 152 mm (6 inches) up the wall and 305 mm (12 inches) on to the roof surface. Lap the Ice and Water protector membrane over the roof deck underlayment. Sheet metal flashing along the slopes of roof shall be stepped with a minimum of 76 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 (15-3/4 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 and Water protector membrane from under the built-in counter flashing and 305 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 152 mm (6 inches) up the wall and 305 mm (12 inches) on to the roof surface. Lap the Ice and Water protector membrane over the roof deck underlayment.

\*\* NOTE TO SPECIFIER \*\* 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

* + - 1. Rake Edges: Install metal edge flashing over the Ice and Water protector membrane and roof deck underlayment; set tight to rake boards; lap joints at least 52 mm (2 inches) and seal with plastic cement; secure with nails.
	1. INSTALLATION OF SHINGLES
		1. General:
			1. Install in accordance with manufacturer's instructions and local building codes in conjunction with reference standards.
			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 degrees C or 40 degrees F) 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.

\*\* NOTE TO SPECIFIER \*\* Tear-Off or New Construction. Delete if not required.

* + 1. Placement and 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 (3/4 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.

\*\* NOTE TO SPECIFIER \*\* Re-cover. Delete if not required.

* + 1. Placement and Nailing:
			1. Beginning with the starter strip, trim shingles so that they "nest" within the shingle located beneath it. This procedure will yield a first course that is typically 76 mm to 102 mm (3 inches to 4 inches) wide rather than a fully exposed shingle.
			2. Laterally, offset the new shingles from the existing keyways, to avoid waves or depressions caused by excessive dips in the roofing materials.
			3. Using the bottom of the tab on existing shingles, align subsequent courses.
			4. Secure with 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.
			5. Nails shall be driven flush with the shingle surface. Do not overdrive or underdrive the nails.
			6. Shingle offset varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details

\*\* NOTE TO SPECIFIER \*\* see IKO Residential Information Bulletin R-64. Delete if not required

* + 1. Nailing on Steep Slopes/High Wind Areas:
			1. For high wind areas, or on slopes of 21:12 (60 degree) or more, use more nails per shingle (consult specific shingle instructions and building code for exact quantity). Ensure that no nail is within 50 mm (2 inches) of a joint/cutout of the underlying shingle.
			2. Seal down each shingle at time of application with three 25 mm (1 inch) diameter (approx. size and thickness of a quarter) spots of asphalt plastic cement placed under the shingle 51 mm (2 inches) above the bottom edge and equally spaced along the shingle. Apply plastic cement in moderation since excessive amounts may cause blistering. CAUTION: Shingles shall seal to the underlying course when the factory applied asphalt sealant is sufficiently warmed by the heat of direct sunlight.
			3. When application conditions might limit the effectiveness of the sealing strip, such as in cool weather or in areas subject to high winds or blowing dust, shingle adherence shall be ensured through manual sealing as described above.

\*\* NOTE TO SPECIFIER \*\* see IKO Residential Information Bulletin R-49. Choose a Method. Delete method not required.

* + 1. Valleys:
			1. Install valleys using the "open metal valley" method:
				1. Snap diverging chalk lines on the metal flashing, starting at 76 mm (3 inches) each side of top of valley, spreading at 3 mm per 300 mm (1/8 inch per foot) to the eaves.
				2. Run shingles to chalk line.
				3. Trim last shingle in each course to match the chalk line; do not trim shingles to less than 300 mm (12 inches) wide.
				4. Cut a 50 mm (2 inches) triangle off the top corner to direct water into the valley and embed the valley end of each shingle into a 75 mm (3 inches) band of asphalt plastic cement.
				5. Apply a 50 mm (2 inches) wide strip of plastic cement under ends of shingles, sealing them to the metal flashing.

\*\* NOTE TO SPECIFIER \*\* 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.

* + 1. Penetrations
			1. All penetrations are to be flashed according to Asphalt Roofing Manufacturers Association (ARMA), Canadian Asphalt Shingle Manufacturers' Association (CASMA), Canadian Roofing Contractors Association (CRCA), and/or National Roofing Contractors Association (NRCA) guidelines to meet local building codes.
	1. VENTILATION
		1. General:
			1. Ventilation shall meet or exceed current F.H.A., H.U.D. and local code requirements.

\*\* NOTE TO SPECIFIER \*\* Instructions on additional details for the installation of proper ventilation can be found in the ARMA's Residential Asphalt Roofing Manual and/or NRCA's Roofing and Waterproofing Manual.

* + 1. Ridge / Soffit Ventilation:
			1. Cut continuous vent slots through the sheathing, stopping 152 mm (6 inches) from each end of the ridge.
			2. On roofs without a ridge board, make a slot 51 mm (2 inches) wide, centered on the ridge.
			3. On roofs with a ridge board, make two slots 45 mm (1-3/4 inches) wide, one on each side.
			4. Install ridge vent material along the full length of the ridge, including uncut areas.
			5. Butt ends of ridge vent material and join using roofing cement.
			6. Install eaves vents in sufficient quantity to equal or exceed the ridge vent area.
	1. PROTECTION
		1. Protect installed products from foot traffic until completion of the project.
		2. Any roof areas that are not completed by the end of the workday are to be protected from moisture and contaminants.

END OF SECTION