

Section 073130

Metalworks® Steel Shingles



This three-part specification is for design professionals for use as a guide and must be edited to delete information and instructions not required on a particular project. Delete the "specifier notes" in red once the editing is completed. The design professional and not TAMKO is responsible for the final specification.

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PART I GENERAL

1.01 SECTION INCLUDES

- A. Metal Shingles
- B. Sheet membrane/Eave membrane - for eaves, valleys and ridges
- C. Shingle underlayments
- D. Roofing cements – one part urethane contractor grade sealant
- E. Attic ventilation
- F. Nails and screws
- G. Metal flashing steel shingles associated with shingle roofing

1.02 RELATED SECTIONS

Note: Delete sections below not relevant to this project

- A. Section 061000 - Rough Carpentry: Framing, wood decking, and roof sheathing
- B. Section 061500 – Wood Decking
- C. Section 071354 – Sheet Waterproofing
- D. Section 072600 – Vapor Retarders
- E. Section 076000 – Flashing and Sheet Metal: Sheet metal flashing not associated with shingle roofing; gutters and downspouts
- F. Section 077200 – Roof Accessories for Ridge Vents
- G. Section 086200 – Unit Skylights

1.03 REFERENCES

Note: Delete references below not relevant to this project

- A. American Society for Testing and Materials (ASTM) - Annual Book of ASTM Standards
 - 1. ASTM A653/A 653M - 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 D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 - 4. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
 - 5. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used as Steep Roofing Underlayment for Ice Dam Protection.
 - 6. ASTM D3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan Induced Method).
 - 7. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
 - 8. ASTM E108 - Standard Test Method for Fire Test of Roof Coverings.
- B. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide
 - 1. UL 790 – Standard Test Methods for Fire Tests of Roof Coverings.

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- C. Asphalt Roofing Manufacturers Association (ARMA)
- D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- E. National Roofing Contractors Association (NRCA)
- F. American Society of Civil Engineers (ASCE).
- G. Florida Building Code

1.04 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

1.05 SUBMITTALS

Note: Delete sections below not relevant to this project and delete show drawing paragraph unless unusual project conditions mandate shop drawings

- A. Product Data: Provide copies of manufacturer's product data information and samples for each type of roofing product.
- B. Manufacturers Application Instructions: Provide manufacturer's application instructions that indicate preparation required, installation procedures, and detail drawings.
- C. Shop Drawings: Provide drawings to indicate specially configured metal flashing, jointing methods and locations and installation details as required by project conditions indicated.

1.06 MANUFACTURER & CONTRACTOR QUALIFICATIONS

- A. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, sheet membrane-eaves membrane, and ridge ventilation, offered by a single manufacturer.
- B. Installer Qualifications: Installer must be licensed or otherwise authorized by all federal, state and local authorities for installation of all roofing products to be installed under this section.

1.07 REGULATORY REQUIREMENTS

- A. Provide a roofing system listed by Underwriters Laboratories (UL) for Class A or Class C fire classification.
- B. Install all roofing products in accordance with all applicable federal, state and local building codes.
- C. All work shall be performed in a manner consistent with current OSHA guidelines.

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1.08 PREINSTALLATION MEETING

Note: Delete sections below not relevant to this project

- A. General: Roofing Contractor to conduct a pre-installation meeting at the site prior to commencing work of this section: Require attendance of entities directly concerned with roof installation.
- B. Agenda: Installation procedures; safety procedures; coordination with installation and other work; availability of roofing materials; regulatory requirements; preparation and approval of substrate and penetrations through roof; and other items related to successful execution of work.
- C. Maintain one copy of manufacturer's application instructions on the project site.

1.09 DELIVERY, STORAGE, AND HANDLING

Note: Delete sections below not relevant to this project

- A. Deliver shingles and other materials to site in manufacturer's unopened labeled packaging. Promptly verify quantities and conditions. Immediately remove damaged products from site.
- B. TAMKO Metalworks® Steel Shingles should be kept in a dry place and under tarps while on the site.
- C. Limit stacking to a maximum of 3 boxes high on each pallet and only two pallets high. Boxes should be stacked on their sides. Do not lay flat.
- D. Store all products in manufacturer's unopened, labeled packaging until they are ready for installation.
- E. Store Metalworks® cartons on a flat surface. Maximum stacking height shall not exceed TAMKO's recommendations. Store all rolls on end.
- F. Store and dispose of solvent-based materials in accordance with all applicable federal, state and local regulations.
- G. Avoid having loose materials on the roof.

1.10 WEATHER CONDITIONS

- A. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with TAMKO®'s application instructions.
- B. Apply TW Metal & Tile Underlayment and TW Underlayment only in fair weather and when air, substrate, and membrane temperatures are above 40 degrees F (4.4 degrees C).

1.11 LIMITED WARRANTY

SHINGLES BEGIN TO AGE AS SOON AS THEY ARE EXPOSED TO NATURE. BUILDING EXPERIENCE AGING FACTORS DIFFERENTLY, SO IT IS DIFFICULT TO PREDICT HOW LONG SHINGLES WILL LAST. THAT'S WHY TAMKO PROVIDES A LIMITED WARRANTY THAT INCLUDES A BINDING ARBITRATION CLAUSE AND OTHER TERMS AND CONDITIONS WHICH ARE INCORPORATED HEREIN BY REFERENCE. YOU MAY OBTAIN A COPY OF THE LIMITED WARRANTY AT TAMKO.COM OR BY CALLING 1-800-641-4691.

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***Note: Choose Limited Warranty Option and delete sections not required ***

IMPORTANT NOTE: THIS SECTION IS FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT SUPERCEDE, ALTER OR LIMIT THE LIMITED WARRANTY. Contact TAMKO® for a copy of the Limited Warranty and carefully read the Limited Warranty for complete and detailed limited warranty information

- A. **Manufacturer's Limited Warranty:** Provide to the owner a TAMKO MetalWorks® Steel Shingle 50-Year Limited Warranty for the products listed below which includes a binding arbitration provision.
1. TAMKO StoneCrest® Slate Steel Shingles: MetalWorks® Steel Shingle Limited Warranty, 50 year term, 25 Year Full Start. Available at TAMKO.com
 2. TAMKO StoneCrest® Tile Steel Shingles: MetalWorks® Steel Shingle Limited Warranty, 50 year term, 25 Year Full Start. Available at TAMKO.com
 3. TAMKO Astonwood® Steel Shingles: MetalWorks® Steel Shingle Limited Warranty, 50 year term, 25 Year Full Start. Available at TAMKO.com

The TAMKO MetalWorks® Steel Shingle Limited Warranty provides the manufacturer's remedy to cover materials (and labor during the Full Start period) in the event of a material defect directly resulting in a leak after the completion of application of shingles:

1. Term: The period of time this Limited Warranty lasts is fifty (50) years for MetalWorks® Steel Shingles.
2. Full Start: First Twenty-five (25) years for MetalWorks® Steel Shingles.
3. Thirty (30) year Finished Limited Warranty on all colors except for Bright Red. For Bright Red the Finished Limited Warranty is twenty (20) years.
4. Fifty (50) year Limited Wind Warranty Coverage:
 - a. Standard Application Coverage for winds up to 110 mph
5. Transferability: Owner may transfer the Limited Warranty one (1) time during the Term to a purchaser of the building upon which the MetalWorks® Products are installed.
6. Coverage does not include cost of tear-off, removal and disposal on MetalWorks® Steel Shingles Limited Warranty projects.
7. Exclusions: **See MetalWorks® Steel Shingles Limited Warranty for exclusions and other important details.** Contact TAMKO for a copy of the Limited Warranty.

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PART II PRODUCTS

2.01 MANUFACTURERS

Note: Delete sections below not relevant to this project

- A. Acceptable Manufacturer: TAMKO® Building Products, Inc., 220 West 4th Street, Joplin, MO 64801. Toll Free: 1-800-641-4691.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted

2.02 SHINGLES

***Note: Select All Applicable Products and delete products not required ***

TAMKO'S MetalWorks® Steel Shingles are manufactured using G90 galvanized steel with Kynar 500®/Hylar 5000® finish paint coating to form simulated shingle sections of various widths and depths. Each steel shingle locks on all four (4) edges to provide for mechanical connection to adjacent components. Kynar 500®/Hylar 5000® paint finish for the exposed surface is available in multiple standard colors. The back surface of the shingle will be primed and wash-coated.

- A. **MetalWorks® StoneCrest® Slate Steel Shingles:** Steel shingles create the dramatic look and random finish of natural slate. The double-stamped manufacturing process creates stunning beauty. UL Listed for Class A Fire Rating (UL 790/ASTM E 108, Class A); UL Classified for Wind Resistance: ASTM D 3161, Class F, UL Classified in accordance with UL 2218 Class 4 Impact Resistance. UL Evaluation Report UL ER18590-01.
 - 1. Color: As selected from manufacturer's full range of Colors.
 - 2. Color: _____
- B. **MetalWorks® StoneCrest® Tile Steel Shingles:** Steel shingles create the distinctive look of smooth, uniform tile for those who appreciate a contemporary and refined appearance. UL Listed for Class A Fire Rating (UL 790/ASTM E 108, Class A); UL Classified for Wind Resistance: ASTM D 3161, Class F, UL Classified in accordance with UL 2218 Class 4 Impact Resistance. UL Evaluation Report UL ER18590-01.
 - 1. Color: As selected from manufacturer's full range of Colors.
 - 2. Color: _____
- C. **MetalWorks® AstonWood® Steel Shingles:** Steel shingles combine the look of cedar shingles with galvanized steel to produce a roofing product which replicates the rich look of wood. UL Listed for Class A Fire Rating (UL 790/ASTM E 108, Class A); UL Classified for Wind Resistance: ASTM D 3161, Class F, UL Classified in accordance with UL 2218 Class 4 Impact Resistance. UL Evaluation Report UL ER18590-01.
 - 1. Color: As selected from manufacturer's full range of Colors.
 - 2. Color: _____

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2.03 HIP & RIDGE SHINGLES

***Note: Select All Applicable Products and delete products not required ***

- A. **Hip Cap Tapered:** Hip shingles complementing the color of MetalWorks® Steel Shingles. Each carton covers approx. 50 lineal feet (15.24 m) with a 12 inch (304.79 mm) exposure.
- B. **12" Ridge Cap:** Hip and ridge shingles complementing the color MetalWorks® Steel Shingles. Each carton covers approx. 25 lineal feet (7.62 m) with a 12 inch (304.79 mm) exposure.

2.04 STARTER/EAVE FLASHING

***Note: Select All Applicable Products and delete products not required ***

- A. **Starter/Eave Flashing:** Complementing the colors of MetalWorks® Steel Shingles. Each carton covers approx. 100 lineal feet (30.48 m).

2.05 METALWORKS STEEL SHINGLE ACCESSORIES

- A. Gable/Rake Flashing, Valley, J-Channel, Sidewall Flashing and Trim Coil are manufactured by TAMKO.

2.06 SHEET MEMBRANES – EAVES MEMBRANE

***Note: Select All Applicable Products and delete products not required ***

- A. **TW Metal & Tile Underlayment:** Self-adhering, fiberglass mat, rubberized asphalt sheet membrane surfaced with polymer film and a removable treated release film on the adhesive side. UL Classified as a Prepared Roofing Accessory, ICC-ES ESR 1252, Florida Building Code Approved FL12328, Miami Dade County Florida Approved NOA 17-0530.12 Expiration Date 07/05/22.
 - a. **1.79 Square Roll** – Roll Coverage when applied according to instructions approx. 179.73 sq. ft. [±2.95 sq. ft.] (16.70 sq. m. [±0.27 sq. m.]), Roll Dimensions are 39-3/8" [±7/16"] X 60' 11-1/2" [±3"] (1 m [±1.11 cm.]x 18.59 m[±.28 m.]). Roll Contains approx. 200.05 sq. ft. [±3.03 sq. ft.] (18.59 sq. m. [±0.28 sq. m.]). 75 mils thick. TW Metal & Tile Underlayment by TAMKO®. Square equals 100 sq. ft.
- B. **TW Underlayment:** Self-adhering, non- reinforced, rubberized asphalt sheet membrane surfaced with polymer film. UL Classified as a Prepared Roofing Accessory, ICC-ES ESR 1252, Florida Building Code Approved FL12328.
 - a. **1.84 Square Roll** – Roll Coverage when applied according to instructions approx. 184.91 sq. ft. [±2.97 sq. ft.] (17.18 sq. m. [±0.28 sq. m.]), Roll Dimensions are 39-3/8"[±7/16"] X 61"[±3"] (1 m [±1.11 cm.]x 18.59 m[±.28 m.]). Roll Contains approx. 200.05 sq. ft. [±3.03 sq. ft.] (18.59 sq. m. [±0.28 sq. m.]). 40 mils thick. TW Underlayment by TAMKO®. Square equals 100 sq. ft.

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2.07 SHINGLE UNDERLAYMENTS

***Note: Select All Applicable Products and delete products not required ***

- A. **Synthetic Guard Plus™**: The underlayment is a non-woven synthetic underlayment with a grey coated polypropylene spun bond fabric surface, a polypropylene 10 × 5 scrim, and a grey backside coating. Intertek Code Compliance Research Report CCRR-1056, Florida Building Code Approved FL19948.
- a. Roll Coverage when applied according to instructions approx. 920.59 sq. ft. [± 3.29 sq. ft.] (85.53 sq. m. [± 0.36 sq. m.]), Roll Dimensions are 48.1" X 250.5' (122.2 cm x 76.35m) Roll Contains approx. 10.04 SQUARES 1004.09 sq. ft. [± 4.09 sq. ft.] (93.28 sq. m. [± 0.38 sq. m.]).
- B. **TW Metal & Tile Underlayment**: A flexible fiberglass-reinforced self-adhering, rubberized asphalt sheet membrane surfaced with polymer film and a removable treated release film on the adhesive side. UL Classified as a Prepared Roofing Accessory, ICC-ES ESR-1252, and Florida Building Code Approved FL12328.
- a. **1.79 Square Roll** – Roll Coverage when applied according to instructions approx. 179.73 sq. ft. [± 2.95 sq. ft.] (16.70 sq. m. [± 0.27 sq. m.]), Roll Dimensions are 39-3/8" [$\pm 7/16$ "] X 60' 11-1/2" [± 3 "] (1 m [± 1.11 cm.]x 18.59 m [± 0.28 m.]). Roll Contains approx. 200.05 sq. ft. [± 3.03 sq. ft.] (18.59 sq. m. [± 0.28 sq. m.]). 75 mils thick. TW Metal & Tile Underlayment by TAMKO®. Square equals 100 sq. ft.
- C. **TW Underlayment**: A flexible self-adhering rubberized asphalt sheet membrane with a polymer film on the surface and a removable treated release film on the adhesive side. UL Classified as a Prepared Roofing Accessory, ICC-ES ESR-1252 and Florida Building Code Approved FL12328.
- a. **1.84 Square Roll** – Roll Coverage when applied according to instructions approx. 184.91 sq. ft. [± 2.97 sq. ft.] (17.18 sq. m. [± 0.28 sq. m.]), Roll Dimensions are 39-3/8" [$\pm 7/16$ "] X 61" [± 3 "] (1 m [± 1.11 cm.]x 18.59 m [± 0.28 m.]). Roll Contains approx. 200.05 sq. ft. [± 3.03 sq. ft.] (18.59 sq. m. [± 0.28 sq. m.]). 40 mils thick. TW Underlayment by TAMKO®. Square equals 100 sq. ft.
- D. **TAMKO No. 30 asphalt saturated organic felt**: UL Classified as a Prepared Roofing Accessory.
- a. **2.04 Square Roll** – Roll Coverage when applied according to instructions approx. 204 sq. ft. [± 2.44 sq. ft.] (18.95 sq. m. [± 0.23 sq. m.]), Roll Dimensions are 36" X 72' (.91 m. x 21.95 m.). Roll Contains approx. 216.00 sq. ft. [± 2.49 sq. ft.] (20.07 sq. m. [± 0.23 sq. m.]). TAMKO No. 30 asphalt saturated organic felt by TAMKO®. Square equals 100 sq. ft.
- E. **A non-perforated asphalt saturated organic felt which meets ASTM D226 Type II.**

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2.08 ROOFING CEMENTS

***Note: Select All Applicable Products and delete products not required ***

- A. **TAM-PRO® SBS Flashing Cements** have been tested by an independent laboratory for compliance with **ASTM D 4586, Type I. One part urethane contractor grade sealant.**
- B. **TAMKO® Tam-Seal® Adhesive** has been tested by an independent laboratory for compliance with ASTM D 4586, Type I. One part urethane contractor grade sealant.
- C. **TAM-PRO® Plastic Roof Cements** have been tested by an independent laboratory for compliance with ASTM D 4586, Type I. One part urethane contractor grade sealant.
- D. **TAMKO® Plastic Roof Cements** have been tested by an independent laboratory for compliance with ASTM D 4586, Type I. One part urethane contractor grade sealant.

2.09 ATTIC VENTILATION

***Note: Select All Applicable Products and delete products not required ***

A. RIDGE VENTS

- 1. **TAMKO® Roll Vent® Continuous Ridge Vent:** Lightweight, rolled, shingle over ridge ventilation. Use in conjunction with eave/soffit ventilation products. Provides 18 sq. inches Net Free Ventilation Area per lineal foot (0.3 sq.m./m.). Each package contains 20 lineal feet (6.10 m.) or 50 lineal feet (15.2 m.) of vent. Hand-nail installation. Roll Vent® Continuous Ridge Vent by TAMKO®.
- 2. **TAMKO® Rapid Ridge® Nail Gun-able Ridge Vent:** Lightweight, rolled, shingle-over ridge ventilation. Use in conjunction with eave/soffit ventilation products. Provides 12.5 sq. inches Net Free Ventilation Area per lineal foot (0.3 sq.m./m.). Each package contains 20 lineal feet (6.10 m.) or 50 lineal feet (15.2 m.) of vent. Nail-gun installed. Rapid Ridge® Nail Gun-able Ridge Vent by TAMKO®.
- 3. **TAMKO® CoolRidge® Sectional Ridge Vent or TAMKO® CoolRidge® Filtered Sectional Ridge Vent:** Lightweight, sectional injection molded polypropylene shingle-over ridge ventilation. Use in conjunction with eave/soffit ventilation products. Provides 18 sq. inches Net Free Ventilation Area per lineal foot (0.3 sq.m./m.). Each package contains 48 lineal feet (14.6 m.) of vent. Each piece is 14-3/4" x 48", 12 pieces per bundle, 48 ft. per bundle. CoolRidge® Sectional Ridge Vent by TAMKO® or CoolRidge® Filtered Sectional Ridge Vent by TAMKO®.
- 4. **TAMKO® Xtractor Vent® XLP Turbo Continuous Ridge Vent:** Lightweight, rolled injection molded polypropylene shingle-over ridge ventilation. Use in conjunction with eave/soffit ventilation products. Provides 12 sq. inches Net Free Ventilation Area per lineal foot (0.3 sq.m. /m.). Each package contains 25 lineal feet (7.6 m.) of vent. Nail- gun installed. Xtractor Vent® XLP Turbo Continuous Ridge Vent by TAMKO®.
- 5. **TAMKO® Quick Vent Nail Gun-able Continuous Ridge Vent:** Lightweight, rolled, shingle over ridge ventilation. Use in conjunction with eave/soffit ventilation products. Provides 13.5 sq. inches Net Free Ventilation Area per lineal foot (0.01 sq.m. /m.). Each package contains 20 lineal feet (6.10 m.) or 50 lineal feet (15.24 m.) of vent. Nail-gun installation. Quick Vent Nail Gun-able Continuous Ridge Vent by TAMKO®.

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***Note: Select All Applicable Products and delete products not required ***

- B. FASCIA AND SOFFIT /UNDER EAVE VENTS: Soffit vents as required to provide balanced ventilation in accordance with TAMKO ventilation requirements.

***Note: Select All Applicable Products and delete products not required ***

- C. SOLAR POWERED ATTIC VENTS: Solar powered low-profile ventilators that mount to the roof surface, curb, or inside the attic space directly behind the gable vent as required in accordance with ventilation requirements.

***Note: Select All Applicable Products and delete products not required ***

D. ROOF LOUVERS OR GABLE LOUVERS

1. Rooftop mounted louvers as required to help provide balanced ventilation in accordance with ventilation requirements.
2. Gable Louvers as required to help provide balanced ventilation in accordance with ventilation requirements.

2.10 NAILS

- A. Fasteners are to be 11 or 12 gauge galvanized steel with 3/8" (1cm) heads. **Stainless Steel nails and other stainless steel fasteners must not be used with this product.** The minimum length of fastener is 1 1/2" (3.8cm). Fasteners must penetrate the deck by at least 1/2" (1.3cm). Check Local Building Codes for maximum allowable roof layers.
- B. Standard round wire, zinc-coated steel or aluminum; min 12 gauge, smooth, barbed or deformed shank, with 1 inch round plastic caps. Length must be sufficient to penetrate into solid wood at least 3/4 inch (19mm) or through roof deck by at least 1/8 inch (3.18mm).

2.11 METAL FLASHING

- A. 24 gauge hot-dip galvanized steel sheet, complying with ASTM A 653/A 653M, G90/Z275.
- B. 16-oz/sq. ft. (0.56mm) copper sheet, complying with ASTM B 370.
- C. 0.032-inch (0.8mm) aluminum sheet, complying with ASTM B 209.

PART III EXECUTION

IMPORTANT NOTE: THIS SECTION IS FOR INFORMATIONAL PURPOSES AND DOES NOT SUPERCEDE, ALTER OR LIMIT THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. For a copy of the applicable installation instructions for complete and detailed product installation information visit our web site at www.tamko.com or contact TAMKO at 800-641-4691.

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3.01 EXAMINATION

- A. Preparation and basic requirements for TAMKO's Metalworks® Steel Shingles
 1. The minimum required slope is 3:12 (7.62 cm in 30.48cm)
 2. All nails, screws and rivets used will be galvanized steel.
 3. The minimum length of nail is 1.5" (3.8cm), but in a roof over, the nail must penetrate the deck by at least ½" (1.27 cm). Nails are to be 11 or 12 gauge galvanized roofing nails with 3/8" (1 cm) heads. **(Stainless steel is not acceptable).**
 4. All field formed flashing will be formed from MetalWorks® Trim Coil.
- B. Sheathing
 1. New roof deck construction or where complete roof tear off is done, roof deck must be smooth, dry and free from warped surfaces.
 2. Before reroofing over existing asphalt shingles it is recommended that old metal drip edges must be removed or flush at eaves and rakes.
 3. All plywood shall be exterior grade as defined by the American Plywood Association. Plywood shall be a minimum of 3/8" (1 cm) thickness and applied in accordance with the recommendations of the American Plywood Association.
- C. Ventilation

To help ensure adequate ventilation and circulation of air, place louvers of sufficient size high in the gable ends and install an adequate number of roof vents and soffit vents. FHA minimum property standards require one square foot of net free ventilation area for each 150 square feet of attic floor area, or one square foot per 300 square feet if a vapor barrier is installed on the warm side of the ceiling or if at least one half of the ventilation is provided near the ridge. If the ventilation openings are screened, the total area should be doubled. For further information on proper ventilation contact your architect, building contractor or building materials supplier.

3.02 PREPARATION

Note: Recover Only

- A. Verify that the deck is structurally sound and free of deteriorated decking. All deteriorated decking shall be removed and replaced with new materials.
- B. Verify that the existing shingles are dry, sound, clean and smooth. All curled, buckled or loose tabs shall be nailed down or removed.

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3.03 INSTALLATION OF TAMKO UNDERLAYMENTS

IMPORTANT NOTE: THIS SECTION IS FOR INFORMATIONAL PURPOSES AND DOES NOT SUPERCEDE, ALTER OR LIMIT THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. For a copy of the applicable TAMKO installation instructions for complete and detailed product installation information visit our web site at www.tamko.com or contact TAMKO at 800-641-4691.

A. General:

1. Install using methods recommended by the manufacturer in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. The entire roof must be covered (prior to shingle application) with underlayment (double layer at eaves and valleys). This applies to new roof or re-roof applications.
3. For roof slopes of 3 inches per foot to 4 inches per foot, TAMKO's self-adhering TW Metal and Tile Underlayment or TW Underlayment must be applied over the entire deck for new roof construction.
4. Apply the underlayment parallel to the eaves, starting with the lowest course, lapping each course 2" (5.1 cm). Where ends join, lap 4" (10.2 cm).
5. When covering hips and valleys, always overlap felt by extending 24" beyond the center line of the hip or valley. Ice and Rain Protection: For new construction where there is a possibility of ice forming along eaves or in valleys causing a backup of water, TAMKO TW Metal and Tile Underlayment or TW Underlayment should be used in lieu of the bottom layer of underlayment. Extend from the eave's edge to a point at least 24" (61 cm) beyond the exterior wall line of the building and along the entire length of the valley, 19" (48 cm) on each side of the centerline.

B. Penetrations:

1. Vent pipes: Install a 24 inch (610 mm) square piece of eaves membrane lapping over roof deck underlayment; seal tightly to pipe.
2. Vertical walls: Install eaves membrane extending at least 6 inches (152mm) up the wall and 12 inches (305mm) on to the roof surface. Lap the membrane over the roof deck underlayment.
3. Skylights and roof hatches: Install eaves membrane from under the built-in counter flashing and 12 inches (305mm) on to the roof surface lapping over roof deck underlayment.
4. Chimneys: Install eaves membrane around entire chimney extending at least 6 inches (152mm) up the wall and 12 inches (305mm) on to the roof surface. Lap the membrane over the roof deck underlayment.
5. Rake Edges: Install metal edge flashing over eaves membrane and roof deck underlayment; set tight to rake boards; lap joints at least 1 1/2 inches (38.09mm). Face-fasten through rake side of Gable Flashing 24" o.c. using MetalWorks® color matched screws.

3.04 INSTALLATION OF TAMKO STARTER/EAVE

IMPORTANT NOTE: THIS SECTION IS FOR INFORMATIONAL PURPOSES AND DOES NOT SUPERCEDE, ALTER OR LIMIT THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. For a copy of the applicable installation instructions for complete and detailed product installation information visit our web site at www.tamko.com or contact TAMKO at 800-641-4691.

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A. General:

1. Install in accordance with TAMKO®'s application instructions and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Remove or cut back existing shingles flush with fascia at eaves and gables. (for reroofing only).
3. Apply first full width course of underlayment at eave (both new roofs and over existing shingles) and install MetalWorks® Starter Flashing. (Apply TW Metal and Tile Underlayment or TW Underlayment).
4. Fasten Starter with 2 rows of nails/screws 18" o.c. in a staggered pattern between the two rows. Fasten through vertical face of Starter into fascia 18" o.c.
5. Overlap Starter Flashing min. 2" at joints.
6. Apply underlayment to entire roof (both bare wood decks and over existing shingles) and lap over Starter Flashing, provide second layer of underlayment at the eave.

3.05 INSTALLATION OF TAMKO GABLE/RAKE

*****IMPORTANT NOTE: THIS SECTION IS FOR INFORMATIONAL PURPOSES AND DOES NOT SUPERCEDE, ALTER OR LIMIT THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. For a copy of the applicable installation instructions for complete and detailed product installation information visit our web site at www.tamko.com or contact TAMKO at 800-641-4691.*****

A. General:

1. Install in accordance with TAMKO®'s application instructions and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Install Metalworks® Gable Flashing over underlayment at rake and over Starter at eave.
3. Install Gable Flashing with clips 24" o.c. Place fastener in hole near bottom of clip. Face- fasten through rake side of Gable Flashing 24" o.c.
4. To join the Gable Flashings, trim the upper flashing and slide it over the lower flashing, overlapping 1-1/2 inches. The gable flashing on a dormer must be mitered to fit.

3.06 INSTALLATION OF TAMKO VALLEY

*****IMPORTANT NOTE: THIS SECTION IS FOR INFORMATIONAL PURPOSES AND DOES NOT SUPERCEDE, ALTER OR LIMIT THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. For a copy of the applicable installation instructions for complete and detailed product installation information visit our web site at www.tamko.com or contact TAMKO at 800-641-4691.*****

1. When MetalWorks® Valley Flashing finishes at the eave, trim the bottom of the Valley Flashing to the correct angle and crimp over the Starter Flashing. Miter the Valley Flashing to conform to the eave line.
2. Valley Flashing with a dormer finishes over the last course of shingles below the dormer's eave.
3. Place clip on one side of the valley flashing and fasten. Next, apply pressure to the valley flashing, place clip the opposite side, and fasten to assure the Valley Flashing is seated. Do not fasten through the Valley Flashing.
4. Install the Valley Flashing with clips 18 inches on-center.
5. To join two Valley Flashing meet at a ridge, miter the flashings to be flush at the ridge, where the two flashings join, overlay with Hip and Ridge Seal.

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3.07 INSTALLATION OF METALWORKS® STEEL SHINGLES

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1. All MetalWorks® Steel Shingles and accessories to be installed according to TAMKO's Metalworks® Installation Guide.

3.08 INSTALLATION OF ATTIC VENTILATION

IMPORTANT NOTE: THIS SECTION IS FOR INFORMATIONAL PURPOSES AND DOES NOT SUPERCEDE, ALTER OR LIMIT THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. For a copy of the applicable installation instructions for complete and detailed product installation information visit our web site at www.tamko.com or contact TAMKO at 800-641-4691.

A. General

1. Ventilation must meet or exceed current F.H.A., H.U.D. and local code requirements.

B. Ridge / Soffit Ventilation

1. Install ridge vent along the entire length of ridges:
2. Cut continuous vent slots through the sheathing, stopping 6 inches (152mm) from each end of the ridge.
3. On roofs without ridge board, make a slot 1 inch (25mm) wide, on either side of the peak (2 inch (51mm) overall).
4. On roofs with ridge board, make two slots 1-3/4 inches (44.5mm) wide, one on each side of the peak (3 ½ inch (89mm) overall).
5. Install ridge vent material along the full length of the ridge, including uncut areas.
6. Butt ends of ridge vent material and join using roofing cement.
7. Install eaves vents in sufficient quantity to equal or exceed the ridge vent area.

C. Roof and Gable Louvers:

1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
2. Install a 24 inch (610mm) square of TW Metal & Tile Underlayment, centered around the hole for roof louvers
3. Install according to manufacturer's instructions for flashing vent penetrations
4. Install eave vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer.

D. Solar Powered Ventilators:

1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
2. On rooftop applications, install a 36 inches (914mm) square of TW Metal & Tile Underlayment, centered around the hole
3. Install according to manufacturer's instructions for flashing vent penetrations
4. Install eave vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer

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E. Whole House Fans

1. Install at desired locations in ceiling below attic space per manufacturer recommended location and application instructions.

3.08 PROTECTION

- A. Wear soft-soled shoes.
- B. Walk only on the top portion of the shingles and avoid walking on the locks.
- C. Protect installed products from foot traffic until completion of the project.
- D. Any roof areas that are not completed by the end of the work day are to be protected from moisture and contaminants.

END OF SECTION