

B-23

David [unclear] [unclear]
Chairman



Mary Fallin
Governor

JUL 15 2015

Uniform Building
Code Commission

Oklahoma Uniform
Building Code Commission

**PUBLIC COMMENT FORM FOR THE ADOPTION OF BUILDING/CONSTRUCTION CODES
PROPOSED CHANGE TO THE INTERNATIONAL RESIDENTIAL CODE®**

INSTRUCTIONS: Please type or print clearly. Form must be signed. Any form not signed or filled out completely, may not be considered. Each requested change must be on a separate form.

1. Submitters Contact Information:

Name: Neil Cagle Date: 7-15-2015
Company: All American Roofing, Inc.
Address: 6701 NW 50th St.
City: OKC State: OK Zip: 73008
Phone: (405) 787-0400 Ext: _____ Fax: _____
Email: Cagle1@allamericanrtg.com

2. Do you feel this proposed change will increase the cost of construction? Yes No

3. Which are of the code needs revision?
Section: R905.2.1 Table: _____ Figure: _____ Page No: 417

4. Please check the appropriate box:
 Revise as follows Delete as follows Add new text as follows Delete with substitute

Show the proposed NEW, REVISED, OR DELETED TEXT in legislative format, (line through text to be deleted and underline text to be added or revised).

See Attached

Supporting Information: State purpose and reason for the change and provide substantiation to support proposed change.

See Attached

5. Signature: Neil Cagle

Send completed "Public Comment Form" to:
Oklahoma Uniform Building Code Commission, PO Box 12540, Oklahoma City, OK 73157
Email to: Shawnta.Mitchell@oubco.ok.gov or Fax to: 405-521-6504

All American Roofing, Inc.
6701 NW 50th Street
Bethany, OK. 73008

Phone 405-787-0400
Fax 405-787-3751
(Five Time) Readers Choice Award Winners
Central Oklahoma BBB Member
GAF Master Elite Contractor
OK # 80000104 *Commercial Endorsement

July 15, 2015

Section of code to be revised:

905.2.1 "Asphalt shingles shall be fastened to solidly sheathed decks."

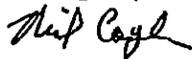
Proposed addition: Add the clarification "Plank decking wider than 6" is not considered a solid deck and does not meet manufacturer's specifications."

Supporting information:

1. See the attached engineer's report.
2. The use of plank decking requires detailed supervision to insure that it does not have gaps that are too wide or too narrow. These gaps often prevent the roofer from installing the shingle in the correct nail line specified by the manufacturer. The use of sheet decking takes this out of the equation.
3. The warping and cupping of the plank decking is frequently a source of leakage that the public finds disconcerting.
4. CertainTeed describes the practice of plank decking as "nearly obsolete". Codes are intended to improve construction techniques to current technology. Shingles have improved to resist storm damage, but shingles are not as heavy as they were in the past. Nailing to a flat surface makes them less susceptible to wind and hail because there are no voids underneath the shingles from warping. Insurance companies and homeowners will see a savings from this "best practice".

It just makes sense.

Best regards,



Neil Cagle
President
All American Roofing, Inc.
cagle1@allamericanrfg.com
B (405) 787-0400
C (405) 249-1400

Decking/Sheathing Case Study

OCTOBER 1, 2014

By Stanton Smith, P.E.

Code Compliant, Warranty Void

In a recent assignment from an insurer, the instructions started with: "[We] have determined the roof is a total loss due to hail damage and we have written an estimate to replace the roof."

However, the contractor countered, as described here by the insurance company:

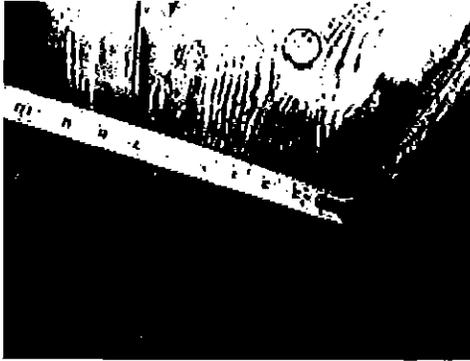
The roof decking is 1" x 8" (1x8) planks. The insured's contractor contends the decking does not meet code and must be removed and replaced if the roof is replaced. Please inspect and provide a determination of whether the 1"x8" decking complies with building code for solid decking.

In a meeting on site with the contractor, he indicated the roof decking was "not up to code," and that the decking would have to be replaced when the



roof was replaced.

His reasoning is similar to the rationale used during the replacement of a water heater. A city permit process will often force a contractor to replace a water heater's flue at the same time the water heater is replaced. The flue replacement is an upgrade, but the goal of the upgrade is to have the flue conform to code.



Therefore, it's important to determine whether the decking complies with the building code. As seen in the photos, the attic framing consists of wood trusses and wood decking. The decking size is 1×8. Our locale uses the 2009 version of the International Residential Code (IRC 2009). Note: the sheathing requirements in IRC 2009 have not changed from those of the previous code.

From IRC 2009 section R803, "Roof Sheathing," dimensional lumber is allowed for use as sheathing in this house (on a 2 foot span) as long as it has a minimum net thickness of 5/8 inch. The 1×8 lumber in this house conforms to that standard. Therefore, the decking complies with the code.

SECTION R803 ROOF SHEATHING	
R803.1 Lumber sheathing. Allowable spans for lumber used as roof sheathing shall conform to Table R803.1. Spaced lumber sheathing for wood shingle and shake roofing shall conform to the requirements of Sections R905.7 and R905.8. Spaced lumber sheathing is not allowed in Seismic Design Category D ₂ .	
TABLE R803.1 MINIMUM THICKNESS OF LUMBER ROOF SHEATHING	
RAFTER OR BEAM SPACING (Inches)	MINIMUM NET THICKNESS (Inches)
24	5/8

Since the decking complies with code, how can the roofer insist that there is a problem? What is the problem?

The problem is that the shingle manufacturers have begun to insist on a new standard.

The contractor provided documentation to support his assertion. The documentation is illuminating. Let's look at how roofing is addressed by some of the manufacturers.

GAF Shingles

The contractor provided two GAF Technical Advisory Bulletins. The first, dated 03/11/2011, number TAB-R 2011-101, is titled "Acceptable Substrate for GAF Asphalt Shingle Applications." The second, dated 04/11/2011, number TAB-R 2011-139, is titled "Deck Requirements for Existing Deck Boards." Both documents state that wood planking should be nominal 1" thick (minimum) and 6" wide (maximum). They also state that "Roof decks must meet local codes." As stated earlier, the deck complies with the codes.

The "Deck Requirements" document does not address board widths greater than 6", which is likely an intentional oversight, since the document purports to address existing decks. According to a strict interpretation of these documents, GAF shingles cannot be used over the unmodified 1x8 decking on this house without the likelihood of voiding the warranty.

CertainTeed Shingles

The contractor provided a copy of the *CertainTeed Shingle Applicator's Manual*, Chapter 4, "The Roof Deck and Tearing Off of Roofing Over," (no provenance). The document states, "If you apply a shingle roof over a deck surface that is unacceptable to the shingle manufacturer and damage results, the warranty *might not be honored*" (emphasis added). Further, the document states, "Boards wider than 6" may need too large of a gap between them and may move more than the shingles can permit. The result can be unsightly buckling"

Atop one page of the document is this tip:

Be sure to determine what type of decking or sheathing is in place when you're inspecting older homes prior to making a cost estimate. If you discover wide wood board decking that needs to be cut or covered over to avoid potential buckling problems, be sure to take this cost into account.

CertainTeed is clearly implying that its warranty will be voided by any unmodified, dimensional lumber decking wider than 1x6.

Owens Corning Shingles

The contractor provided an ICC Evaluation Service document ESR-1372, dated January 1, 2012. The document is specific to Owens Corning asphalt shingles. From section 4.1, "Installation of Owens Corning Shingles must comply with this report and the manufacturer's published installation instructions." It also says that, "The roof deck must be in conformance with the applicable code, *except as modified in this report*," (emphasis added).

This is the key point: the shingle manufacturers are insisting on a new standard which goes beyond code requirements. Their documents "modify" code.

The ICC document requires a maximum width of 6" for solid sheathing. Thus, Owens Corning shingles cannot be used over the unmodified decking on this house without the likelihood of voiding the warranty.

How can the problem be resolved?

The CertainTeed document suggests several methods of addressing deck boards wider than 6 inches:

To reduce the risk of shingle buckling, you can cover the boards with 4'x8' nailable decking which could be plywood, OSB, or COM-PLY, or cut through the center of the entire length of each wide board with a hand-held power saw, being careful not to cut into the rafter more than 1/8". This will create a new joint in the center of each board, resulting in wood decking that is narrower than 6".

Solution

According to their documentation, CertainTeed shingles can be installed on 1x8 decking if it is either overlaid or cut. The decking does not have to be replaced.

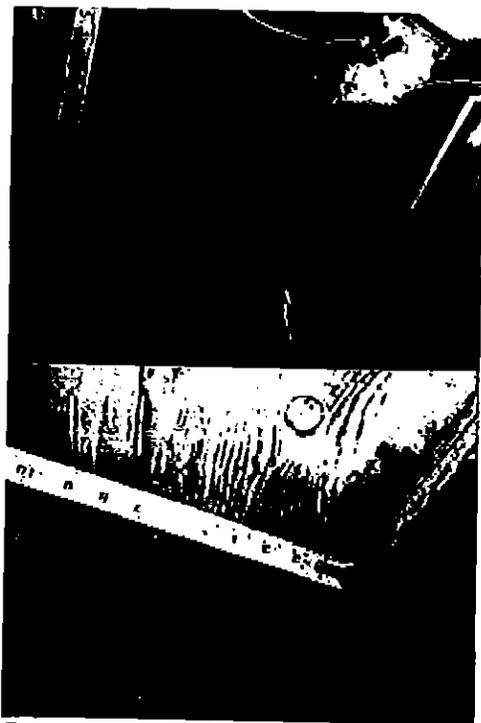
The CertainTeed suggestion of cutting the decking boards longitudinally would solve the problem of compliance with the manufacturers' requirements as well as eliminate the expense of additional decking. Cutting would meet the requirements for the use of GAF and Owens Corning shingles as well.

Other Requirements

Shingle manufacturers are also requesting additional requirements. For example, one of the GAF bulletins states that when roofing over an existing deck, "The deck boards must have been in place for a minimum of 5 years." In context, the statement follows a discussion of both sheet material and dimensional lumber. No differentiation is made between the two, so the statement applies to both. If the statement is enforced as written, any shingles installed over a deck which is less than 5 years old will require decking replacement, regardless of the condition of the decking.

- **FORENSIC ENGINEERING**
- **HAIL AND WIND**
- **COMMERCIAL & RESIDENTIAL ROOFING**
- **STRUCTURAL DAMAGE & COLLAPSE**
- **FORENSIC ENGINEER**
- **ARTICLES**

- **STANTON SMITH**



**SECTION R803
ROOF SHEATHING**

R803.1 Lumber sheathing. Allowable spans for lumber used as roof sheathing shall conform to Table R803.1. Spaced lumber sheathing for wood shingle and shake roofing shall conform to the requirements of Sections R905.7 and R905.8. Spaced lumber sheathing is not allowed in Seismic Design Category D₂.

**TABLE R803.1
MINIMUM THICKNESS OF LUMBER ROOF SHEATHING**

RAFTER OR BEAM SPACING (Inches)	MINIMUM NET THICKNESS (Inches)
24	5/8

David Timberlake, P.E.
Chairman



B-29

Mary Fallin
Governor
RECEIVED

JUL 20 2015

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Building Code Commission**

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1. Submitters Contact Information:

Name: Thad S Jennings Date: 7/6/15
Company: Jenco Roofing Company
Address: 8090 Glade Ave
City: Oklahoma City State: OK Zip: 73132
Phone: 405-720-9300 Ext: _____ Fax: 405-720-9310
Email: Jenceroofing@aol.com

2. Do you feel this proposed change will increase the cost of construction? Yes No

3. Which are of the code needs revision?

Section: R905.2.1 Table: _____ Figure: _____ Page No: _____

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Oklahoma Uniform Building Code Commission, PO Box 12540, Oklahoma City, OK 73157
Email to: Shawnta.Mitchell@oubcc.ok.gov or Fax to: 405-521-6504

IRC 2012

Chapter 9: Roof Assemblies (pg. 440)

R905.2.1 Sheathing Requirements

Asphalt shingles shall be fastened to solidly sheathed decks.

NEW

Asphalt shingles shall be fastened to solidly sheathed decks consisting of the minimum of 3/8" or 7/16" plywood or OSB decking. Existing structures with skip decking/resawn 1x6 or 1x8 are required to be covered with the aforementioned plywood or OSB.



To Whom It May Concern:

This letter is to inform the board of technical information regarding residential roof decking and a suggestion of implementing a new policy regarding current decking already in place and decking yet to be installed. Section R903 of the International Residential Code of 2012 (p. 439) says that all roof decks shall be covered with approved roof coverings. The roof assemblies must be designed and installed in accordance with the manufacturer's installation instructions. The subsequent Section R904 states much of the same, as roof assemblies shall be applied in accordance with the chapter and the manufacturer's installation instructions.

Years ago the use of 1x6 and 1x8 wood board decking was common in roof construction due to cost of materials. This practice has become nearly obsolete when installing new deck systems due to the fact 1x8 has the tendency to gap, cup, knot and check, which causes shingle buckling, according to the Certainteed Shingle Applicator's Manual (p. 33) The extra spacing between 1x8 deck boards don't allow for a proper nailable surface as they suggest an acceptable plywood deck must be built with plywood at least 3/8" thick and carry the American Plywood Association (APA) stamp. GAF, the largest manufacturer of composition shingles in the United States, also instructs installers to use a minimum of 3/8" (10 mm) plywood or OSB decking when installing their product. Other reputable brands such as Malarkey, Tamko and Atlas all instruct the same in order for their shingles to be properly installed. The manufacturer's note that failing to comply with their installation instructions will adversely affect the warranty of the product.

I, Thad Jennings, of Jenco Roofing Co., strongly recommend that action be taken to eliminate the use of and 1x8 decking when installing a new roof. I believe that current roofs housing 1x8 decking need to be replaced or layed over with the manufacturer-approved 3/8" plywood or OSB in order for our customers and contractors to receive the full warranty from the manufacturer. 1x8 decking does not comply with any shingle manufacturer's specifications and I believe a solid deck throughout is the best course of action and most reliable for the longevity of the roof. Action must be taken to notify and educate the municipalities of these shortcomings from 1x8 decking and stress the importance of a solid deck surface when installing a new roof. There is need to implement a policy for the municipalities to obtain permits to inspect the decking prior to a roof install and a follow up inspection after the installation.

Respectfully,

Thad S. Jennings, President
Jenco Roofing Co.
Member of CIB Roofing Examiners Committee
Oklahoma Roofers Contractors Assn., Vice President

International Building Code 2015

Section 1507

Requirements for Roof Coverings (pg. 336)

1507.1 Scope: Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions.

1507.2.1 Deck Requirements: Asphalt shingles shall be fastened to solidly sheathed decks.

International Residential Code 2012

Section R903

Weather Protection (pg. 439)

R903.1 General: Roof decks shall be covered with *approved* roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof assemblies shall be designed and installed in accordance with this code and the *approved* manufacturer's installation instructions such that the roof assembly shall serve to protect the building or structure.

Section R904

Materials (pg. 439)

R904.1 Scope: The requirements set forth in this section shall apply to the application of roof covering materials specified herein. Roof assemblies shall be applied in accordance with this chapter and the manufacturer's installation instructions. Installation of roof assemblies shall comply with the applicable provisions of this section.

R907

Reroofing (pg. 451)

R907.4 Roof recovering: Where the application of a new roof covering over wood shingle or shake roof creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other *approved* materials securely fastened in place.



Quality You Can
Trust... From
North America's
Largest Roofing
Manufacturer

TIMBERLINE®

LIFETIME HIGH DEFINITION® SHINGLES

INSTALLATION INSTRUCTIONS

Timberline® Shingles North America's #1-Selling Shingle!

GENERAL INSTRUCTIONS

- **MATERIAL SAFETY DATA SHEETS:** When using GAF products, e.g., shingles, underlayments, plastic cement, etc., please refer to the applicable MSDS. The most current versions are available at www.gaf.com. GAF does not provide safety data sheets or installation instructions for products not manufactured by GAF. Please consult the material manufacturer for their MSDS and installation instructions where appropriate.
- **ROOF DECKS:** Use minimum 3/8" (10 mm) plywood or OSB decking as recommended by APA-The Engineered Wood Assn. Wood decks must be well-seasoned and supported having a maximum 1/8" (3 mm) spacing, using minimum nominal 1" (25 mm) thick lumber, a maximum 6" (152 mm) width, having adequate nail-holding capacity and a smooth surface. Do NOT fasten shingles directly to insulation or insulated deck unless authorized in writing by GAF. Roof decks and existing surfacing material must be dry prior to application of shingles.
- **UNDERLAYMENT (LEAK BARRIER):** Install GAF Leak Barrier at the eaves in localities where leaks may be caused by water backing up behind ice or debris dams.
- **UNDERLAYMENT (ROOF DECK PROTECTION):** Underlayment beneath shingles has many benefits, including helping to prevent wind-driven rain from reaching the interior of the building and to prevent sap in some wood decking from reacting with asphalt shingles. Underlayment is also required by many code bodies and is required to maintain the shingles' UL Class A fire rating. When an underlayment is installed, use a breather-type underlayment, such as GAF Shingle-Mate® or Deck-Armor™ Underlayments, GAF Tiger Paw™ Underlayment, with its moisture control design, can also be used. Always have a design professional review ventilation requirements when using a moisture control design underlayment.
- **FASTENERS:** Use only zinc-coated steel or aluminum, 10-12 gauge, barbed, deformed, or smooth shank roofing nails with heads 3/8" (10 mm) to 7/16" (12 mm) in diameter. Fasteners should be long enough to penetrate at least 3/4" (19 mm) into wood decks or just through the plywood decks. Fasteners must be driven flush with the surface of the shingle. Overdriving will damage the shingle. Raised fasteners will interfere with the sealing of the shingles and can back out.
- **ASPHALT PLASTIC CEMENT:** Use asphalt plastic cement conforming to ASTM D4586 Type I or II.
- **WIND RESISTANCE/HAND SEALING:** These shingles have a special thermal sealant that firmly bonds the shingles together after application when exposed to sun and warm temperatures. Shingles installed in fall or winter may not seal until the following spring. If shingles are damaged by winds before sealing or are not exposed to adequate surface temperatures, or if the self-sealant gets dirty, the shingles may never seal. Failure to seal under these circumstances results from the nature of self-sealing shingles, and is not a manufacturing defect. If shingles are to be applied during PROLONGED COLD periods or in areas where airborne dust or sand can be expected before sealing occurs, the shingles MUST be hand sealed. See Nailing Instructions / Hand Sealing.
- **MANSARD AND STEEP SLOPE APPLICATIONS:** For roof slopes greater than 21° per foot (1750 mm/m), shingle must be hand sealed. DO NOT use on vertical side walls.
- **RELEASE FILM:** Plastic film strips are present either on the back or face of each shingle. The film strips are to prevent shingles from sticking together while in the bundle. Do not remove the film strip before or during the application.
- **THROUGH VENTILATION:** For optimal shingle life and to help prevent mold growth, all roof structures must have through ventilation to prevent entrapment of moisture-laden air behind roof sheathing. Ventilation must be designed to meet or exceed current F.H.A., H.U.D., or local code minimum requirements. Note: Minimum net free ventilation area of 1 sq. foot per 150 sq. feet (1 sq. meter per 150 sq. meters) of ceiling area is required. When vents are located at the eaves and near the roof's peak (balanced) for maximum air flow, ventilation may be reduced to 1 sq. foot per 300 sq. feet (1 sq. meter per 300 sq. meters).
- **EXPOSED METAL:** Paint all exposed metal surfaces (flashing, vents, etc.) with matching GAF ShingleMatch™ Roof Accessory Paint for best appearance.
- **NOTE:** All drawings not drawn to scale.

Landmark™ Series and Landmark™ TL

12

YOUR OBJECTIVE:

To learn the correct procedure for installing Landmark™ shingles.

LANDMARK™ SERIES AND LANDMARK™ TL

Landmark shingles have the installer-friendly NailTrak™ feature, which provides 1 1/2" wide nailing area and specially formulated Quadra-Bond laminating adhesive (See Figure 12-3).

Landmark Special is impact resistant and is specially manufactured with a reinforced fiberglass scrim to meet UL 2218 Class 4 Impact resistance rating.

NOTE: Landmark Special must be installed over a clean deck (no roof-overs) to obtain the UL 2218 rating. It is strongly recommended that impact resistant cap shingles made from XT 30 IR shingles be installed on all hips and ridges. Some insurance carriers may not consider the roof system as compliant to UL 2218 Class 4 without impact resistant cap shingles.

Landmark Solaris™ shingles are ENERGY STAR® qualified roof products that meet both solar reflectance and thermal emissivity requirements. Using CertainTeed's advanced roofing granules, Landmark Solaris reflects solar energy and radiates heat far better than traditional roofing shingles – it can reduce the roof's temperature by as much as 20 percent in the summer. **NOTE:** Use matching Landmark Solaris hip and ridge shingles which are also solar reflective.

Landmark TL is unique because its patented Tri-Laminate™ design combines three layers of material to provide a dramatically thick shingle with a wood shake style.

With the exception of Landmark TL, closed-cut valleys are preferred by CertainTeed when applying these shingles; however, open valleys are also acceptable. Open valleys are recommended when applying Landmark TL; however closed-cut valleys are also acceptable. Woven valleys are not recommended for Landmark TL because the tri-laminated shingle can buckle and become damaged when shaped into the valley. Nails are required as fasteners for Landmark TL, staples are not allowed.

STANDARD OR STBPP SLOPES: CertainTeed recommends DiamondDeck™ Synthetic Underlayment, Roofers' Select™ High Performance Underlayment, or shingle underlayment meeting ASTM D226, D4869 or D6757. Take care to ensure sufficient deck ventilation when DiamondDeck or other synthetic underlayment is installed. Follow manufacturer's application instructions.

LOW SLOPES: One layer of CertainTeed's WinterGuard™ Waterproofing Shingle Underlayment (or equivalent, meeting ASTM D1970) or two layers of 36" wide felt shingle underlayment (Roofers' Select or underlayment product meeting ASTM D226, D4869 or D6757) lapped 19" must be applied over the entire roof; ensure sufficient deck ventilation. When DiamondDeck or other synthetic underlayment is installed, weather-lap at least 20" and ensure sufficient deck ventilation.

IMPORTANT: When installing LandMark TL on low slopes, one layer of WinterGuard or an equivalent waterproofing shingle underlayment must be applied over the entire roof. Applying two layers of felt shingle underlayment is not an acceptable alternative to WinterGuard. One layer of shingle underlayment meeting ASTM D4869 applied over the required WinterGuard is also recommended.

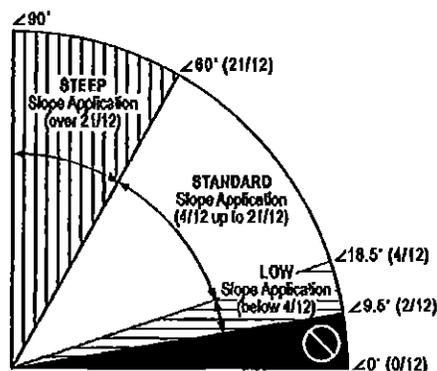


Figure 12-1: Slope definitions.

THE ROOF DECK* MUST BE AT LEAST: 3/8" (9.5 mm) thick plywood, or 7/16" (11 mm) thick non-veneer, or nominal 1" (25 mm) thick wood deck.

COLD WEATHER CLIMATES (ALL SLOPES): Application of WinterGuard or its equivalent is strongly recommended whenever there is a possibility of ice build-up. Follow manufacturer's application instructions.

FLASHING: Corrosion-resistant flashing must be used to help prevent leaks where a roof meets a wall, another roof, a chimney or other objects that penetrate a roof.

SEALING: Shingle sealing may be delayed if shingles are applied in cool weather and may be further delayed by airborne dust accumulation. If any shingles have not sealed after a reasonable time period, hand sealing may be necessary.

CAUTION: To prevent cracking, shingles must be sufficiently warm to allow proper forming for hips, ridges and valleys.

WARRANTY: These shingles are warranted against manufacturing defects and are covered by SureStart™ protection. See the warranty itself for specific details and limitations.

For technical questions, information on acceptable alternative application methods and materials, or a copy of the product warranty, contact the sources listed below:	Warranty	Alternate Instructions	Technical Questions
Your supplier or roofing applicator	✓		
CertainTeed Home Institute 800-782-8777	✓	✓	
CertainTeed-RPG Technical Services 800-345-1145	✓	✓	✓

for warranty terms and conditions or visit www.MalarkeyRoofing.com.

6.6 ROOF DECK REQUIREMENTS

The condition of the roof deck is critical to the installation of roofing materials and their appearance afterward. Take time to ensure the deck is dry, firm and smooth, and free of debris. Anything left on the surface could possibly poke through your new roof and cause leaks.

The surface to receive the new roofing should be in good shape and constructed of a minimum 3/8" (10 mm) thick exterior-grade plywood, 7/16" (11 mm) thick oriented strand board (OSB), or seasoned lumber, nominally 1" (25 mm) thick. Boards should be positioned tight to each other and securely nailed to framing members. Deteriorated or rotted boards should be replaced. For excessively resinous areas and loose knots, cover with sheet metal patches.

Malarkey strongly recommends installing sheathing over wood board decks. Problems with the performance of your roofing system, such as leaks and buckling, increase if installed directly over wood board decks. Failure to use properly conditioned deck materials can result in deck movement which can damage the roof covering. Deck movement may void your warranty.

Malarkey roofing products should only be installed over decks that will sufficiently support the weight of the roofing system and transient load during application of the roofing system.

Malarkey recommends removing the existing roof covering for best performance and appearance. When re-covering an existing shingle roof, evaluation of the existing weight and addition of the new Malarkey roof system must be considered relative to the load limitation of the roof deck and local code requirements.

6.6.1 Plywood/Oriented Strand Board (OSB)

Designers should research and specify the correct thickness of the plywood or OSB deck based on the amount of roof load (weight of roofing materials and desired performance,

etc.) and local building codes to ensure structural compliance and integrity.

Each panel should be supported, gapped and securely nailed to all framing members per APA recommendations.

Plywood and OSB decking should be protected to prevent the accumulation of moisture on its surface prior to installation of the roofing assembly. This is shown to be effective in reducing delamination and dimensional stability issues attributed to plywood and OSB panels.

When plywood or OSB is installed over steel panels to provide a substrate to attach shingles, increase the thickness of the plywood/OSB or install furring strips between the steel deck and plywood/OSB to allow shingle fasteners either 3/4" (19 mm) penetration into the wood or penetration completely through the wood yet not come in contact with the steel deck. Shearing of the fasteners that hold the plywood in place can occur when the shingle fasteners "punch" the top flutes of the steel decking. Shingle fasteners may fail to fully seat or be underdriven should this occur.

6.6.2 Wood Board Decks

Malarkey strongly recommends installing sheathing over all wood board decks due to problems noted below (cupping, gapping, bowing).

Wood board decks are composed of solid-sawn dimensional lumber, nominally 1" (25 mm) thick.

Wood board decks should be constructed of seasoned, kiln dried, or water-base-treated lumber.

Wood board decks are to be level and even, and not affected by warping, cupping or bowing.

Wood board decks shall be properly supported and securely nailed to framing members.

Remove and replace all split or cracked wood boards prior to installing Malarkey roofing products.

Wood board decking should be protected to prevent the accumulation of moisture on



Application Instructions for HERITAGE® LAMINATED ASPHALT SHINGLES

FORMERLY HERITAGE® 30

Dallas, TX • Frederick, MD • Joplin, MO • Phillipsburg, KS

THESE ARE THE MANUFACTURER'S APPLICATION INSTRUCTIONS FOR THE ROOFING CONDITIONS DESCRIBED. TAMKO BUILDING PRODUCTS, INC. ASSUMES NO RESPONSIBILITY FOR LEAKS OR OTHER ROOFING DEFECTS RESULTING FROM FAILURE TO FOLLOW THE MANUFACTURER'S INSTRUCTIONS. FAILURE TO FOLLOW THESE INSTRUCTIONS WILL ADVERSELY AFFECT COVERAGE UNDER THE LIMITED WARRANTY. SEE THE LIMITED WARRANTY FOR DETAILS.

THIS PRODUCT IS COVERED BY A LIMITED WARRANTY, THE TERMS OF WHICH ARE PRINTED ON THE WRAPPER.

IN COLD WEATHER (BELOW 40°F), CARE MUST BE TAKEN TO AVOID DAMAGE TO THE EDGES AND CORNERS OF THE SHINGLES.

IMPORTANT! It is not necessary to remove the plastic strip from the back of the shingles.

1. ROOF DECK

These shingles are for application to roof decks consisting of plywood or sheathing boards capable of receiving and retaining fasteners, and to inclines of not less than 2 in. per foot. For roofs having pitches 2 in. per foot to less than 4 in. per foot, refer to special instructions titled "Low Slope Application". For roofs having pitches greater than 21 in. per foot, refer to special instructions titled "Mansard Roof or Steep Slope Roof". Shingles must be applied properly. TAMKO assumes no responsibility for leaks or defects resulting from improper application, or failure to properly prepare the surface to be roofed over.

NEW ROOF DECK CONSTRUCTION: Roof deck must be smooth, dry and free from warped surfaces. It is recommended that metal drip edges be installed at eaves and rakes.

PLYWOOD: All plywood shall be exterior grade as defined by APA - The Engineered Wood Association. Plywood shall be a minimum of 3/8 in. thickness and applied in accordance with the recommendations of APA - The Engineered Wood Association.

SHEATHING BOARDS: Boards shall be well-seasoned tongue-and-groove boards and not over 6 in. nominal width. Boards shall be a 1 in. nominal minimum thickness. Boards shall be properly spaced and nailed.

2. VENTILATION

Inadequate ventilation of attic spaces can cause accumulation of moisture in winter months and a build up of heat in the summer. These conditions can lead to:

1. Vapor Condensation
2. Buckling of shingles due to deck movement.
3. Rotting of wood members.
4. Premature failure of roof.

To insure adequate ventilation and circulation of air, the ventilation system must include inlets and outlets. This may be accomplished with a combination of ridge and soffit vents or by using gable end vents. FHA minimum property standards require one square foot of net free ventilation area to each 150 square feet of space to be vented. This may be reduced to one square foot of ventilation area per 300 square feet if at least 40% and not more than 50% of venting is provided not more than 3 feet below the ridge or if a Class I or II vapor barrier is installed on the warm in winter side of the ceiling in climate zones 6, 7, and 8 as recommended by the 2012 International Residential Code. For more information consult your design professional. If the ventilation openings are screened, the total area should be doubled.

**IT IS PARTICULARLY IMPORTANT TO PROVIDE
ADEQUATE VENTILATION.**

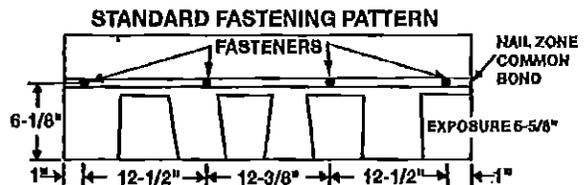
3. FASTENERS

WIND CAUTION: Extreme wind velocities can damage these shingles after application when proper sealing of the shingles does not occur. This can especially be a problem if the shingles are applied in cooler months or in areas on the roof that do not receive direct sunlight. These conditions may impede the sealing of the adhesive strips on the shingles. The inability to seal down may be compounded by prolonged cold weather conditions and/or blowing dust. In these situations, hand sealing of the shingles is required. To insure quicker sealing, apply 4 quarter-sized dabs of TAM-PRO® SBS Flashing Cement, TAMKO or TAM-PRO® Plastic Roof Cement, or TAMKO Tam-Seal Adhesive, meeting ASTM D 4586, Type 1, on the back of the shingle 1 in. (25mm) and 13 in. (330mm) in from each side and 1 in. (25mm) up from the bottom of the shingle. Press shingle firmly into the adhesive. For maximum wind resistance along rakes, install any TAMKO starter shingle including sealant or cement shingles to the underlayment and each other in a 4 in. (102mm) width of TAM-PRO® SBS Flashing Cement, TAMKO or TAM-PRO® Plastic Roof Cement, or TAMKO Tam-Seal Adhesive. Caution: Apply ONLY a thin uniform layer of adhesive less than 1/8 in. (3mm) thick. Excessive amounts can cause blistering of the shingles and may soften the asphalt in certain underlayments resulting in the asphalt flowing, dripping and staining. Shingles must also be fastened according to the fastening instructions described below.

Correct placement of the fasteners is critical to the performance of the shingle. If the fasteners are not placed as shown in the diagram and described below, this will result in the termination of TAMKO's warranties under the Limited Warranty. TAMKO will not be responsible for damage to shingles caused by winds in excess of the applicable mph as stated in the Limited Warranty. See Limited Warranty on the wrapper or tamko.com for details.

FASTENING PATTERNS: Fasteners must be placed 6-1/8 in. from the bottom edge of the shingle, penetrating through the common bond, and located horizontally as follows:

1) **Standard Fastening Pattern.** (For use on decks with slopes 2 in. per foot to 21 in. per foot.) One fastener 1 in. from each end and one 13-1/2 in. from each end of the shingle for a total of 4 fasteners. (See Standard Fastening Pattern illustrated below).



(Continued)

Visit Our Web Site at
tamko.com

Central District	220 West 4th St., Joplin, MO 64801	800-641-4891
Northeast District	4500 Tamko Dr., Frederick, MD 21701	800-368-2055
Southeast District	2300 35th St., Tuscaloosa, AL 35401	800-228-2656
Southwest District	7910 S. Central Exp., Dallas, TX 75216	800-443-1834
Western District	6300 East 43rd Ave., Denver, CO 80216	800-530-8668

09/19/14



General Installation Instructions

These instructions **MUST** be followed to ensure desired appearance and maximum performance. Please note the following important features:

All Purpose

For use on new or re-roofing applications over required types of roof decks (see Roof Deck section).

Roof Deck

A properly installed and conditioned roof deck constructed of exterior grade plywood, minimum thickness of nominal 1/2," or alternatively 7/16" thickness APA rated non-veneer oriented strand board (OSB) structural panel should be used, as a minimum.

Roof Deck Ventilation

Adequate ventilation under the roof deck must be provided to prevent harmful condensation in winter and heat build-up in summer. These conditions can cause:

- A.) accelerated roof weathering
- B.) deck rot and attic fungus
- C.) shingle distortion/cracking due to deck movement
- D.) blisters

Manufacturer will not be responsible for damage to shingles as a result of inadequate ventilation. Ventilation provisions must meet or exceed current FHA Minimum Property Standards and conform to all building codes and regulations. To best ensure adequate ventilation and circulation of air, a combination of vents at ridge and eaves should be used. All roof structures, especially mansard and cathedral type ceilings, must have complete through ventilation from bottom to top. FHA Minimum Property Standards require one sq. ft. of net free ventilation area for each 150 sq. ft. of space to be vented; or one sq. ft. per 300 sq. ft., if a vapor barrier is installed on the warm side of ceiling, or if at least one half the ventilation area is provided near the ridge.

Fasteners

Nails only are recommended for the attachment of Pro-Cut® Hip & Ridge shingles. Use galvanized 3/8" diameter head roofing nails long enough to penetrate through the APA rated deck panel or 3/4" into solid wood decking. (Generally 1 1/2" nails minimum).

Storage

These shingles can be damaged by careless and improper storage or handling. Keep shingles covered and protected from weather, keep dry and reasonably cool. Do not store near steam pipes, radiators or other sources of heat, or in direct sunlight until applied. Do not stack over 12 bundles high.

Manufacturer is not responsible for a slight variation in color which may occur from the positioning of the granular surfacing material used in this product. Proper application by these instructions will help minimize any such problem. The manufacturer is not responsible for the installed appearance by any other application method. Pro-Cut® Hip & Ridge Shingles are produced from the same high quality materials that are used to manufacture the heavyweight StormMaster® family of shingles. The double layer coverage method will provide a longer service life and provide a more distinct profile. Exposure: 5 5/8 inches.

Directions For Applying Malarkey Laminate Shingles

GENERAL INSTRUCTIONS

Install Malarkey laminate shingles according to building code and local amendments. To qualify for warranty protection and obtain stated coverage these instructions must be followed. Shingles must be applied according to printed instructions. We assume no responsibility for leaks or when there has been improper application, failure to properly prepare the surface, or failure to provide proper ventilation in accordance with F.H.A. minimum property standard requirements.

Your supplier and applicator have Malarkey warranties, please ask for one.

Standard exposure is 5 $\frac{1}{4}$ " (143 mm) to the weather. Offset between courses is 5 $\frac{1}{4}$ " (143 mm). Minimum offset for shingle installation is 4" (102 mm).

These step-by-step application instructions apply to standard slopes/inclines of not less than 4" (102 mm) per 12" (305 mm) or more than 12" (305 mm) per 12" (305 mm). For low slopes [2" (51 mm) to less than 4" (102 mm) per 12" (305 mm)] and steep slopes [more than 12" (305 mm) per 12" (305 mm)], modify the installation as described below. Do not apply shingles on roofs having a slope less than 2" (51 mm) per 12" (305 mm).

Ventilation- To prevent harmful condensation or heat build-up, air must circulate freely under the roof deck. F.H.A. minimum property standards require that there be a minimum of one square foot (0.0929 m²) of ventilation for every 300-square feet (28 m²) of attic floor space, distributed 50% at the eaves and 50% at the peak. All roof structures must have thorough ventilation to prevent entrapment of moisture laden air behind roof sheathing. Ventilation provisions must meet or exceed current F.H.A. or H.U.D. requirements.

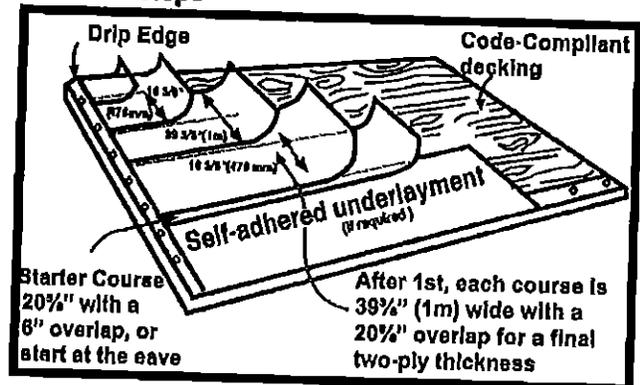
Roof Deck - Roof deck must be constructed of tongue and groove, seasoned dry lumber not over 8" (203 mm) in width and not less than $\frac{3}{8}$ " (16 mm) in thickness. Combustible decks shall be sheathed with a minimum code-complying $\frac{3}{4}$ " (10 mm) thick exterior-grade plywood, or minimum code-complying $\frac{7}{8}$ " (11 mm) thick oriented strand board (OSB) structural use panel, structural particleboard panels, composite panels, wafer-board panels, or nominally 1" (25 mm) lumber installed as solid sheathing. Install in accor-

dance with code and industry standards with the most stringent prevailing.

Underlayment - Apply a layer of Malarkey Right Start UDL underlayment on sheathing. Lap a minimum of 2" (51 mm) on sides, 6" (152 mm) on ends and nail sufficiently to hold in place. For application over decks with less than 4" (102 mm) in 12" (305 mm) slope see Low Slope Application Instructions at www.MalarkeyRoofing.com. Underlayment must carry a minimum 3" (76 mm) up onto any horizontal-to-vertical transition.

Low Slope Application - For slopes between 2" (51 mm) to 4" (102 mm) per 12" (305 mm) begin by nailing a 20 $\frac{1}{2}$ " (524 mm) wide strip of Malarkey Right Start UDL underlayment evenly along the eaves, or lap 6" (152 mm) onto self-adhered underlayment. Succeeding courses will all be 39 $\frac{1}{2}$ " (1 m) wide and positioned to overlap the preceding course by 20 $\frac{1}{2}$ " (524 mm). Secure each course by using only enough fasteners to hold in place until shingles are applied. For ice dam protection, see Ice Dam Protection section.

UDL Low Slope



Metal Drip Edges - Metal Drip Edges are installed along rake and eave edges on all decks, especially plywood/OSB decks. Drip edges should be made of corrosion-resistant materials that extend 2" (51 mm) minimum back from roof edges and bend downward over them. Drip edges are installed under the underlayment at the eaves and on top of the underlayment at the rake edges. Secure eave and rake metal with roofing nails, centered on the top flange of the

HOLLOWAY, ANITA

Norman Oklahoma

State Farm

House Exterior

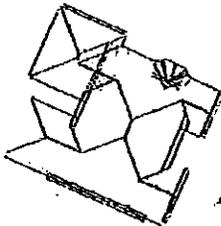
Main Level

Neil Cagel
Esiel

36-654Z-490

Main Level

QUANTITY	UNIT PRICE	TAX	GCO&P	RCV	AGE/LIFE CONDITION	DEPREC. DEP %	ACV
1. Dumpster load - Approx. 12 yards, 1-3 tons of debris							
1.00 BA	320.00	0.00	64.00	384.00			384.00
Total: Main Level		0.00	64.00	384.00		0.00	384.00



Roof

3,348.17	Surface Area	33.48	Number of Squares
294.21	Total Perimeter Length	61.20	Total Ridge Length
187.85	Total Hip Length		

QUANTITY	UNIT PRICE	TAX	GCO&P	RCV	AGE/LIFE CONDITION	DEPREC. DEP %	ACV
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The roof is decked with 1x8 decking. In order for the decking to have coverage for replacement or repair due to gaps, it must fail inspection by the permitting agency. A letter specific to the property address from the local permitting agency advising that it has not passed inspection would be required before coverage for any decking repairs or replacement of the decking would be considered. There was no damage to the drip edge. The drip edge can be re-used when the shingles are replaced.

2. Remove Tear off, haul and dispose of comp. shingles - Laminated							
33.48 SQ	42.33	0.00	283.44	1,700.65			1,700.65
3. Remove Additional charge for steep roof - 7/12 to 9/12 slope							
33.48 SQ	10.63	0.00	71.18	427.07			427.07
4. Valley metal - (W) profile - painted							
79.48 LF	7.78	25.64	128.80	772.79	2/35 yrs Avg.	(44.15) 5.71%	728.64
5. Ice & water shield							
328.44 SF	1.33	9.48	89.26	535.57	2/30 yrs Avg.	(35.71) 6.67%	499.86
<i>Ice and water shield installed in the valleys and around the roof penetrations. Ten square feet allotted for each roof penetration.</i>							
6. Laminated - comp. shingle rfg. - w/ felt							
38.67 SQ	192.41	291.40	1,546.38	9,278.27	2/30 yrs Avg.	(618.56) 6.67%	8,659.71
7. Additional charge for steep roof - 7/12 to 9/12 slope							
38.67 SQ	30.10	0.00	232.80	1,396.77			1,396.77
8. Ridge cap - High profile - composition shingles							
249.06 LF	4.87	50.96	252.78	1,516.66	2/30 yrs Avg.	(101.12) 6.67%	1,415.54
9. Continuous ridge vent - shingle-over style							
54.00 LF	7.30	13.19	81.48	488.87	2/35 yrs Avg.	(27.94) 5.71%	460.93

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