RFP INFORMATION PACKET

CHILKAT CENTER FOR THE ARTS
CRITICAL ROOF REPAIRS, PHASE I
Issue Date: July 18, 2012

Contact:
Office of the Borough Clerk
Haines Borough
103 Third Ave. S
P.O. Box 1209, Haines, AK 99827
907-766-2231 x31
FAX - 907-766-2716
jcozzi@haines.ak.us

Bid Deadline: 12:00 noon, Wednesday, August 1, 2012

REQUEST FOR BIDS

CHILKAT CENTER FOR THE ARTS, CRITICAL ROOF REPAIRS, PHASE I

Issue Date: July 18, 2012

PURPOSE:

The Haines Borough is soliciting proposals from qualified and licensed contractors to provide roofing replacement and repairs for the Chilkat Center for the Arts, located at Soap Suds Alley and Theater Drive in Haines, Alaska. Proposals will be accepted until 12:00 noon Local Time, Wednesday, August 1, 2012 at the Haines Borough Administrative Offices in Haines, Alaska.

DESCRIPTION OF WORK:

1. Remove and dispose of all existing wood shake roofing, underlayment, flashing and associated materials down to bare roof sheathing (approximately 15.000 SF).
    a. Existing wood shakes have been treated with a flame retardant and must be disposed of in an approved manner and location, not burned.
    b. Examine underlying sheathing and roof framing for signs of water damage and/or decay and document with both photographs and notation as to location and severity.
2. Because the extent of damage to roof sheathing and structure cannot yet be fully known, proposals are to include anticipated crew size and hourly rate(s) for which the contractor will perform said repairs.
    a. Include **only** crew size and hourly rate(s) for this part of the job.
    b. The need for repairs will be determined on an individual basis and immediately by the Public Facilities Director or his representative.
    c. Materials needed for said repairs for this portion of the work will be provided by the Haines Borough. Unused materials are to remain on the jobsite.
3. Provide materials and labor for installation of new composition shingle roofing (approximately 150 Squares), underlayment, flashings and related materials per specifications and instructions in the RFP Information Packet, obtainable at the Borough Clerk's office.
    a. Install membrane ice and water shield over low-slope roofs and at junctures with steeper roof pitches.
    b. Install concealed zinc strip at ridges and changes in roof pitch.
    c. Verify that all existing roof penetrations come from functioning sources.

CONTRACTOR RESPONSIBILITIES:

1. Bids are to include the complete removal from the site of the wood shake roofing and any construction debris resulting from performance of the work as described above.
2. Contractor shall warrant the completed roofing installation for labor and materials for a period of five (5) years.

3. Verify all relevant existing conditions prior to offering bid or commencing work. The Haines Borough encourages interested bidders to visit the Chilkat Center to verify any dimensions critical to this installation.
4. Existing insulation and the building interior is to be protected from weather and other damage during construction.

CONTRACT CONDITIONS

- **PRODUCT**: All Plans, original drawings, electronic files, specifications, reports, photographs, and other documents relative to a project which the respondent prepares or causes to be prepared in connection with services performed shall be delivered to and become the property of the Borough.
- **INSURANCE**: The professional services provider to whom a contract is awarded may be required to furnish to the borough evidence of insurance coverage(s) including general liability, professional liability, and workers compensation insurance, as appropriate.
- **INSURANCE NOT LIMITING CONTRACTOR'S LIABILITY**: The provisions of this contract requiring insurance shall not limit the liability of the Contractor or anyone acting on behalf of the Contractor.
- **INDEMNITY**: Contractor agrees to defend, indemnify and hold the Borough harmless from any and all claims, demands or liability for bodily injury or death of any person, or damage to property arising out of the Contractor's execution of the contractual duties of the Contractor, its agents, employees or assigns.
- **DAMAGE TO BUILDINGS OR EQUIPMENT**: Any problems, including building or equipment damage, caused by or discovered by the Contractor during the execution of the contractual duties of the Contractor should be reported immediately.
- **COMPLIANCE WITH LAWS**: The Contractor and all persons acting on behalf of the Contractor shall comply with all applicable laws and regulations of Federal, State or Local government agencies with respect to the activities of the Contractor or anyone acting on behalf of the Contractor.
- **LIENS AND ASSESSMENTS**: The Contractor agrees that it will pay all employment security contributions required to be paid as a result of any services performed for the Borough regardless of whether they are performed by the Contractor or someone engaged by the Contractor. The Contractor shall not allow any lien to be placed against the Borough by reason of non-payment of such contributions or any other reason, and shall indemnify the Borough against any such lien.
- **EXPENSES AND ATTORNEY'S FEES UPON DEFAULT**: Contractor agrees to pay all actual costs, expenses and actual attorney's fees incurred by the Borough upon an Event of Default.
- **DEFAULT**: The Contractor shall be declared in default of the contract if the Contractor fails to adequately perform the contract services. If, in the opinion of the Borough, the Contractor's services do not adequately fulfill the intent of the contract, the Borough Clerk shall notify the Contractor in writing of service deficiencies. If the Contractor fails to correct such deficiencies within ten days of receiving this written notice, or consistently fails to provide adequate services as documented in writing by the Borough, the contractor shall be in default of the contract and the Borough shall terminate the contract.

- **BILLING/PAYMENT**: Requests for payment for performed services shall be submitted to the Borough and will be processed for payment at the time of the next accounts payable check run.

An RFP packet including instructions, forms, specs, and drawings is available from the Borough Clerk's Office:

Attn: Julie Cozzi, MMC, Borough Clerk
103 Third Ave / P.O. Box 1209
Haines, AK 99827
Phone: 907-766-2231 ext.31
Email: jcozzi@haines.ak.us
Online at www.hainesalaska.gov

To examine the Chilkat Center interior, contact:

Lee Heinmiller
907-766-2160

REQUEST FOR BIDS INFORMATION:		**SUBMIT BIDS TO:**	
Project Title	CCA Roof	Physical Address:	Haines Borough Administration Office 103 Third Ave S. Haines, Alaska
Date Issued:	July 18, 2012		
Contact Person:	Brian Lemcke		
Tel:	907-766-2257		
Fax:	907-766-2256		
Email Addresses:	blemcke@haines.ak.us	Mailing Address:	Haines Borough Attn: Borough Clerk PO Box 1209 Haines, AK 99827
RFP Website:	http://www.hainesalaska.gov/rfps		
Bid Deadline:	August 1, 2012 @ 12:00 noon		

PROJECT SCHEDULE. The Haines Borough anticipates the following project schedule:

Request for Bids (Advertisement dates)	July 18, and July 26, 2012
Receive and open bids	August 1, 12:00 noon Local Time
Borough Assembly Authorization	August 14, 2012
Notice of Intent to Award	August 15, 2012
Notice to Proceed	August 20, 2012 (approximate)
Project Completion	October 15, 2012

REQUIRED SUBMITTALS:

Return one signed copy of the following Bid Form in a sealed envelope clearly labeled as "*CCA ROOF*." The following documents must be attached to the bid form at the time of submission:

All contract bids must contain:

A. Non-Collusion Affidavit
B. Copies of a current Alaska business license and a borough business license;
C. Copy of an Alaska contractor's certificate of registration, if appropriate;
D. Acknowledgement of all addenda;
E. A bid bond of at least five percent of the amount of the bid or a certified check drawn to the Haines Borough in like amount. Checks and bid bonds will be returned to unsuccessful bidders.

HAINES BOROUGH

CHILKAT CENTER FOR THE ARTS, CRITICAL ROOF REPAIRS, PHASE I

BID FORM

Bid of _____ (hereinafter called *Bidder*), doing business as (underline one) a corporation, partnership or individual, to the Haines Borough (hereinafter called *Borough*). The Bidder agrees to furnish to the Haines Borough all information and data that may be requested to give evidence that the undersigned is properly qualified to carry out the obligations of the Contract Documents.

The undersigned Bidder agrees, if this bid is accepted, to complete the work required under the Request for Bids by August 1, 2012 and to accept as full payment the Contract Price stated on this Bid Form, and in the manner stipulated by the Request for Bids, subject to any negotiated changes in the work that might increase or decrease the contract amount. The Borough reserves the right to reject any and all bids and negotiate with the responsible bidder submitting the lowest bid amount.

Bidder accepts all of the terms and conditions of the Request for Bids and, if this bid is accepted, will furnish the following documents required by borough code for this project:

1. *Contract document or Agreement;*
2. *Payment Bond;*
3. *Performance Bond;*
4. *[Proof of insurance: general liability, auto insurance, worker's compensation];*
5. *Any overdue unpaid debts owed the borough must be current prior to award; and*
6. *Subcontractor report, if applicable.*

Bidder acknowledges receipt of the following addenda:

Addendum No._____ Initials:_____ Addendum No._____ Initials:_____

BIDDER INFORMATION:

Principal Contact: _____

Business Name: _____

Haines Borough Business License No: _____

Business Physical Address: _____

Business Mailing Address, if different: _____

Phone: _____ Fax: _____ Email:_____

_____
Bidder's Authorized Signature

_____ _____
Printed Name Date

Bidder proposes to furnish all tools, equipment, supplies, manufactured articles, labor, materials, services and incidentals, and to perform all work necessary for the Completion of the Project as shown and specified in strict accordance with the Contract Documents by October 15, 2012.

BASE BID:

Item No.	Quantity	Pay Item	Unit Price	Base Bid Total
1.	Lump Sum (LS)	Chilkat Center, Critical Roof Repairs, Phase I	N/A	$
_____ Per LS Written Lump Sum				

Haines Borough
CHILKAT CENTER FOR THE ARTS, CRITICAL ROOF REPAIRS, PHASE I

NON-COLLUSION AFFIDAVIT

UNITED STATES OF AMERICA)

STATE OF ALASKA)

I,_____ of _____

_____, being duly sworn, so depose and state:

That I, or the firm, association or corporation of which I am a member, a BIDDER on the contract to be awarded, by the Assembly of the HAINES BOROUGH for the contract services designated as:

CHILKAT CENTER FOR THE ARTS, CRITICAL ROOF REPAIRS, PHASE I

Located in Haines, Alaska, have not, either or indirectly, entered into any agreement, participate in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract.

Subscribed and sworn to this ___ day of _____, 2012.

Notary Public_____

My Commission Expires:_____

HAINES BOROUGH
CHILKAT CENTER FOR THE ARTS, CRITICAL ROOF REPAIRS, PHASE I
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

_____ as Principal and

_____ as Surety,

are hereby held and firmly bound unto the HAINES BOROUGH, as OWNER, in the penal sum of _____ Dollars ($_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed this _____ day of _____**, 2012**.

The condition of the above obligation is such that whereas the Principal has submitted to the HAINES BOROUGH, ALASKA a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for: **CHILKAT CENTER FOR THE ARTS, CRITICAL ROOF REPAIRS, PHASE I**

NOW, THEREFORE

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall

execute and deliver a contract in the Form of Contract attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor furnishing materials or equipment in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety of any and all claims hereunder shall in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by an extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, and day and year first set forth above. *Note: Surety companies executing BONDS must appear on the Treasury Department's most current list and be authorized to transact business in Alaska.*

_____
Principal

(SEAL) BY:_____

_____
Surety

(SEAL) BY:_____

KLEHINI VALLEY FIRE HALL UPGRADES
Issue Date: July 18, 2012

Contents

TECHNICAL PRODUCT DATA SHEET

LEGACY®

Note: Malarkey Roofing Products™ (Malarkey) inventory SKU numbers for this product: ***272 Legacy****,*
& 273 Legacy *featuring the Scotchgard™ Algae Resistant Roofing System from 3M™*

Product Use: Legacy® SBS rubber-modified asphalt-laminated shingles are used whenever increased flexibility, architectural design, tensile strength, and tear-resistance is desired. These SBS rubber-modified asphalt shingles are designed for a 5 ⅝" exposure.

Composition and Materials: Legacy® is mineral-surfaced and self-sealing, made with SBS rubber-modified asphalt coating and fire-retardant fillers on a Malarkey fiberglass mat. Legacy features the exclusive nail accuracy-enhancing design of The Zone™.

Application Procedure: All shingles should be applied over underlayment, Malarkey Right Start UDL™ or an approved substitute. Installation instructions are available on the shingle wrapper, at www.Malarkey-Roofing.com or by contacting your local Malarkey representative. Industry standards are found in NRCA manuals. Shingles should be attached to decking by approved fasteners. Malarkey recommends the use of nails for fastening.

Technical Data

Typical Properties:

Approximate Weight	275 lbs. (124.74 kg) per square
Dimensions	13-1/4"(± 1/8") x 40" (± 1/4") (.33 m x 1.02 m)
Exposure	5-5/8" (142.9 mm)
Shingles per square	64 shingles (4 bundles/square)
Granule Adhesion	0.5 gram loss
Fire Rating	Class 'A'
Warranty	50-year Limited Warranty
	110 mph (177 kph) Limited Wind Warranty
Algae Resistance Warranty	Legacy® sku #273 features a 20-Year Scotchgard Warranty

As manufactured, Legacy® meets the requirements of:
UL 2218 Class 4 Impact Resistance; ASTM D 3018 Type 1; ASTM D3161 Class 'F'; ASTM D 3462; ASTM E 108 Class 'A'; CSA A123.1/A123.5. ICC Approval - ESR 3150.

Warranty: The Legacy® shingle carries a 50-year limited warranty and a 110 m.p.h. limited wind warranty. Documents may be obtained from your roofer, local distribution center or at www.MalarkeyRoofing.com. Deviations from recommended application procedures may affect warranty coverage.

Precautions: Legacy® shingles require dry storage or plastic-covered storage and protection from the weather until applied. Do not use on roofs where the slope is less than 2". For slopes 2" to 4", additional deck protection is recommended. Legacy® shingles have a factory-applied self-sealing strip that activates in warm weather. When applied in cold weather or windy location, hand-sealing is recommended but not required if sealant activates. In high wind areas, six nails are required. Contact Malarkey for further conditions and instructions.

Technical Assistance: Malarkey has technical services assistance available. Contact Malarkey for details at (800) 545-1191 or (503) 283-1191, weekdays 7:00 a.m. to 5:00 p.m. Pacific Time.

Availability: Legacy® is available in many standard colors and with the Scotchgard™ Algae Resistant Roofing System from 3M™. Malarkey Legacy® shingles are available throughout North America and Pacific Rim Countries. Visit www.MalarkeyRoofing.com for additional product information and availability.

Corporate Office: 3131 N. Columbia Blvd., Portland, OR 97217-7472 • P.O. Box 17217, Portland, OR 97217-0217
Telephone: (503) 283-1191 • (800) 545-1191 • FAX: (503) 289-7644 • www.MalarkeyRoofing.com

Hip and Ridge Shingles

Please see inside cover for hip and ridge shingle color availability

PRODUCT DESCRIPTION	SPECIFICATIONS	
222 .....EZ-Ridge™ • 8" High-Profile, Decorative • SBS-Modified Ridge Shingle with Seal Down	Approx. Wt./Box: 40 lbs. (18.1 kg) Shingles/Box.: 30 Ln. Coverage: 20' (6.6 m)	Exposure: 8¼" (209 mm) Width: 8" (203 mm) Boxes/Pallet: 42 SG
224 .....EZ-Ridge™ XT • 10" High-Profile, Decorative • SBS-Modified Ridge Shingle with Seal Down • Featuring the Scotchgard Algae Resistant Roofing System from 3M	Approx. Wt./Box: 50 lbs. (22.7 kg) Shingles/Box.: 30 Ln. Coverage: 20' (6.6 m)	Exposure: 8¼" (209 mm) Width: 10" (254 mm) Boxes/Pallet: 42 PDX/SG
225 .....Hip & Ridge Strips • SBS-Modified Ridge Strips • Featuring the Scotchgard Algae Resistant Roofing System from 3M	Approx. Wt./Bundle: 70 lbs. (31.8 kg) Units/Bundle: 88 Shingles/Bundle: 22 Ln. Coverage: 41'3" (12.6 m)	Exposure: 5⅝" (143 mm) Scored strip provides 13¼" long x 9⅞" wide unit with seal down for 5⅝" (143 mm) exposure Bundles/Pallet: 60 PDX/SG
227..12" Hip & Ridge Strips • SBS-Modified Ridge Strips • Featuring the Scotchgard Algae Resistant Roofing System from 3M	Approx. Wt./Bundle: 70 lbs. (31.8 kg) Units/Bundle: 66 Shingles/Bundle: 22 Ln. Coverage: 30'11" (9.4 m)	Exposure: 5⅝" (143 mm) Scored strip provides 13¼" long x 12" wide unit with seal down for 5⅝" (143 mm) exposure Bundles/Pallet: 60 PDX/SG

Starter Shingles

PRODUCT DESCRIPTION	SPECIFICATIONS	SURFACING
220 .....Smart Start ™ Full-width starter shingle with perforated strip	Approx. Wt./Bundle: 78.3 lbs. (35.5 kg) Shingle/Bundle: 22 Linear Coverage: 72' (22.0 m) Width: 13¼" (.33 m) Length: 40" (1.02 m) Bundles/Pallet: 48 PDX	Mineral surfaced

*Malarkey Roofing systems require algae resistant EZ-Ridge™ XT (224) shingles or Hip & Ridge Strips (225 and 227), in conjuction with the algae resistant shingles, to receive the full 20-year algae resistant warranty system. Hurricane™ (240) featuring the Scotchgard™ Algae Resistant Protection from 3M can be substituted as hip and ridge shingle, in conjunction with the algae resistant shingle, to receive the full 20-year algae resistant warranty system.

Malarkey Roofing Products™

Underlayment

PRODUCT DESCRIPTION & TESTING	SPECIFICATION	SURFACING
Right Start™ UDL SBS-Modified Fiberglass Underlayment ASTM D4601 Type II; ASTM D4869; ASTM D226 Type II; Intertek/WHI Mark - Class 'A' Fire Systems; ICC Approval - ESR 1561; FBC Approval - #14807	Approx. Wt./Roll: 80 lbs. (36.3 kg) Coverage: 2 square Width: 39" (1 m) Length: 66' (20.1 m) Rolls/Pallet: 30 PDX/SG	Mineral fines
Arctic Seal® 401 Self-Adhered Underlayment Ice and Water Protection ASTM D1970	Approx. Wt./Roll: 80 lbs. (36.3 kg) Coverage: 2 square Width: 39⅜" (1 m) Length: 65'8" (20 m) Thickness: 70 mils Rolls/Pallet: 20 PDX/SG	Mineral fines
1030 Malarkey Synthetic Underlayment Light-weight Steep Slope Synthetic Underlayment	Approx. Wt./Roll: 27.5 lbs. (12.5 kg) Coverage: 10 square Width: 48" (1.2 m) Length: 250' (76.2 m) Rolls/Pallet: 25 PDX/SG	Smooth Anti-skid

Roll Roofing

PRODUCT DESCRIPTION & TESTING	SPECIFICATIONS	COLORS
350 GR Universal Premium SBS-Modified Mineral-Surfaced Fiberglass Cap Sheet ASTM D3909; ASTM E108 Intertek/WHI Mark - Class 'A', 'B' and 'C' Fire Systems	Approx. Wt./Roll: 78 lbs. (35.4 kg) Coverage: 1 square Width: 39⅜" (1 m) Length: 33' (10.0 m) Rolls/Pallet: 30 PDX/SG	See Front Inside Cover

Base Sheets - Conventional

PRODUCT DESCRIPTION & TESTING	SPECIFICATIONS	
515 Base ASTM D4601 Type II; ASTM E108 UL 790 Classified in Class 'A', 'B' and 'C' Fire Systems Intertek/WHI Mark - Class 'A', 'B' and 'C' Fire Systems FM Approved	Approx. Wt./Roll: 75 lbs. (25 kg) Coverage: 3 square Width: 39⅜" (1 m) Length: 99' (30.2 m) Rolls/Pallet: 20 PDX/SG	Sand Parting Agent Both Sides

Ply Sheets - Conventional

PRODUCT DESCRIPTION & TESTING	SPECIFICATIONS	
500 Ply 4 ASTM D2178 Type IV; ASTM E108; UL 55 'A' Type G1; UL 790 Classified in Class 'A', 'B' and 'C' Fire Systems Intertek/WHI Mark - Class 'A', 'B' and 'C' Fire Systems FM Approved	Coverage: 5 square Wt./Roll: 36 lbs. (16.4 kg) Width: 39⅜" (1 m) Length: 165' (50.3 m) Rolls/Pallet: 30 PDX/SG	Coverage: 10 square Wt./Roll: 72 lbs. (32.7 kg) Width: 39⅜" (1 m) Length: 330' (100.6 m) Rolls/Pallet: 16 PDX/SG
506 Ply 6 ASTM D2178 Type VI; ASTM E108; UL 55 'A' Type G1; UL 790 Classified in Class 'A', 'B' and 'C' Fire Systems Intertek/WHI Mark - Class 'A', 'B' and 'C' Fire Systems FM Approved	Approx. Wt./Roll: 42 lbs. (19.1 kg) Coverage: 5 square Width: 39⅜" (1 m) Length: 165' (50.3 m) Rolls/Pallet: 25 PDX/SG	

Malarkey Roofing Products™

Laminate Shingle Instructions

Legacy®

ECOASIS™

NORTHWEST XL™

HIGHLANDER-CS™

THE Z ZONE®

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 5⅝" (143 mm) to the weather. Offset between courses is 5⅝" (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).

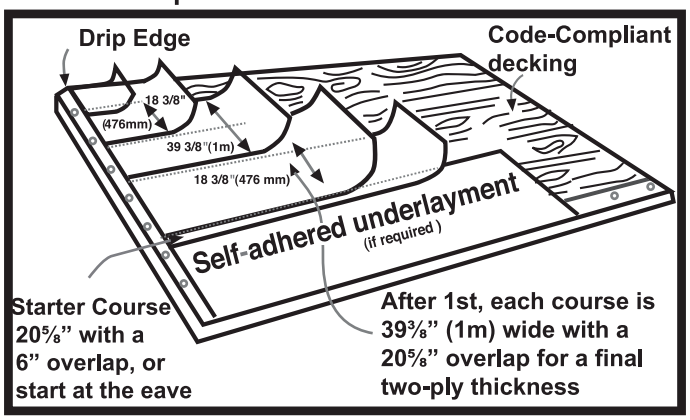
Ventilation- To prevent harmful condensation or heat build-up, air must circulate freely under the roof deck. F.H.A. minimum property standards require that there be a minimum of one square foot (0.0929 m²) of ventilation for every 300-square feet (28 m²) of attic floor space, distributed 50% at the 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 ⅝" (16 mm) in thickness. Combustible decks shall be sheathed with a minimum code-complying ⅜" (10 mm) thick exterior-grade plywood, or minimum code-complying 7/16" (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 accordance 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 20⅝" (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 39⅜" (1 M) wide and positioned to overlap the preceding course by 20⅝" (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

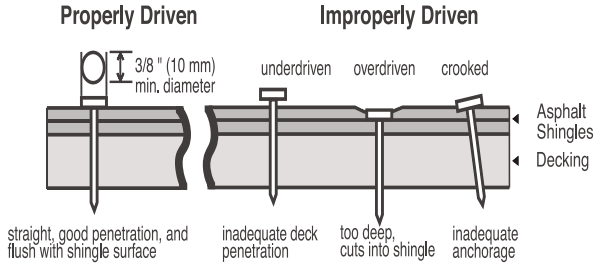
metal at 8" (203 mm) to 10" (254 mm) on center (or as required by building code).

Hand Tabbing - To ensure immediate sealing, Malarkey recommends hand tabbing shingles. Hand-tabbed laminate shingles require four quarter-sized dabs evenly spaced under each shingle. Press shingle firmly into the adhesive (excessive use of adhesive may cause blistering).

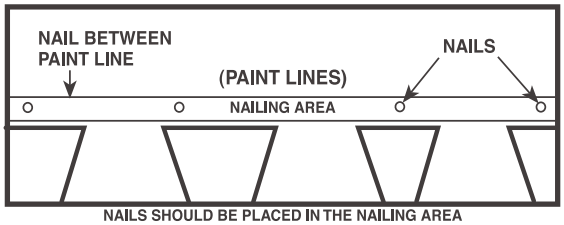
Ice Dam Protection - If there is a possibility of ice forming along the eaves causing a back-up of water, or if it is required by building codes, install a course of self-adhered underlayment. Self-adhered underlayment is installed directly to dry, clean roof deck on all eaves and rake sides of the roof and extend into the inside, warm interior wall of the roof a minimum of 24" (610 mm) or according to building code requirements.

Fastener Instructions - Nails must be galvanized 12-gauge with ⅜" (10 mm) head or the equivalent corrosion-resistant roofing nail, and must be sufficient in length to penetrate through the roof deck or into the deck a minimum ¾" (19.05mm).

Staples are not an approved fastening method.

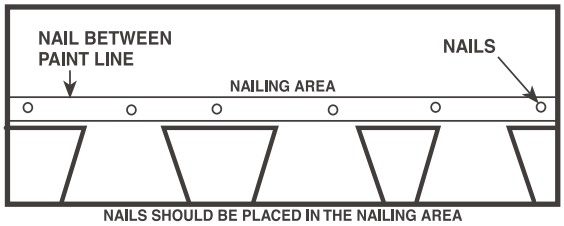


Nailing Pattern - Use four fasteners for each shingle. Nails must be placed within the nailing area, ¾" (19mm) to 1¼" (32mm) in from each edge of the shingle, with the two remaining nails equally spaced (±½")(±13mm) on the same line as the end nails. When fastening, butt shingles together loosely to prevent buckling. Fasteners must not be overdriven to cut into shingles or under-driven. Fasteners must be seated flush to shingle surface, as illustrated. Nails should penetrate through all layers of shingles.



Steep Slope Nailing of Shingles - Roof decks with slopes greater than 12" (305mm) per 12" (305mm) require installation with six fasteners per shingle.

Fasteners must be placed with the nailing area, end fasteners set ¾" (19 mm) to 1¼" (32 mm) in from each edge of the shingle. The remaining four fasteners should be evenly spaced on the same line as the end fasteners. (3-Tab nailing pattern, as described in "3-Tab Installation Instructions" and Malarkey Specification Manual, may also be used as an alternative.)



Roof decks with slopes greater than 12" (305mm) require four quarter-sized dabs of tab adhesive per shingle, evenly spaced under each shingle. The shingle must be pressed firmly into the cement. (Avoid excessive use of adhesive as it may cause blistering.)

High Wind Areas - Six fasteners and hand seal, as needed.

Wind Resistance - Malarkey shingles have a thermal sealant that bonds the shingles together after application when exposed to the sun and warm temperatures. Shingles installed in fall or winter may not seal until the following spring. Shingles may not seal if damaged by strong winds before sealing, not exposed to adequate ambient temperatures, or if sealant gets dirty. Failure to seal under these adverse circumstances is not a manufacturing defect.

To ensure immediate sealing, Malarkey recommends hand tabbing shingles.

Note: The film strip on each shingle is to prevent sticking together while in the bundle and is not designed to be removed.

APPLICATION 5⅝" (143 mm) OFFSET - DIAGONAL PATTERN

Starter Course: Start with Malarkey Smart Start, approved starter strip or a full 3-tab shingle of same type (regular asphalt or modified) with the tabs cut-off and the adhesive at the roof edge. Smart Start is manufactured with a perforation 8" (203 mm) up from the bottom of the shingle. If you do not wish to have full shingle height in the starter shingle the 5 ¼" (133 mm) piece at the top may be removed and used on rake to reduce water run off and provide a straight edge.

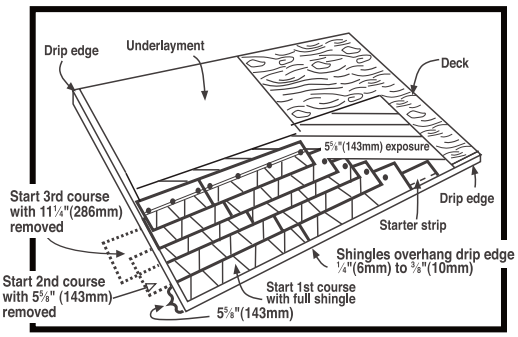
Cut 6" (152 mm) off the length of the starter strip/shingle from the left hand side and apply at the lower left hand corner of the roof. The starter course should overhang the drip edge ¼ - ⅜" (6 mm-10 mm). Continue starter course across the roof. Install with four fasteners 1½" - 3" (38 - 76 mm) in from the eave, one fastener 1" (25 mm) from each side of the starter with the remaining two evenly spaced on the same line as the end fasteners.

First Course: Start with a full shingle applied onto and flush with the starter course at the lower left hand corner of the roof and secure with fasteners.

Second Course: Cut 5⅝" (143mm) from the left end of the shingle and apply the remaining 34⅜" (871mm) section over the first course shingle, exposing the first course 5⅝" (143mm). Bottom edge of the shingle should be applied to the top of saw tooth of underlying shingle so that there will be 5⅝" (143mm) of each shingle exposed. Secure with fasteners.

Third Course: Cut 11¼" (286mm) from the left end of the shingle and apply the remaining 28¾" (730mm) section over the second course shingle, exposing the second course 5⅝" (143mm). Secure with fasteners.

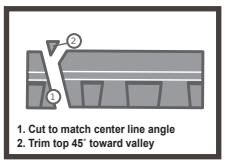
Succeeding Courses: Courses four through seven begin with a partial shingle progressively 5⅝" (143mm) shorter, establishing the overall diagonal method or stair step effect (See illustration). Pieces cut from shingle along the left rake can be used to finish off the right rake. Apply a full shingle to each of the first seven courses to extend the pattern starting with the first course. Courses eight through fourteen: repeat steps 1-7, beginning with a full shingle and continue succeeding courses with a partial shingle 5⅝" (143mm) shorter each time. Succeeding courses repeat this procedure beginning each seven course set with a full shingle. Strike a chalk line approximately every six courses to ensure courses are straight and that 5⅝" (143mm) exposure is maintained. Secure with fasteners.



Note: Shingles may be laid from either left hand or right hand side. Start at either rake edge and follow layout and cutting instruction as required for proper application. When fastening, butt ends together loosely to prevent buckling.

(Installation of shingles with an 8" offset is also acceptable. Offset should be no less than 4".)

Valleys - Closed-cut valley and metal valley applications are recommended. Center a valley liner of self-adhered underlayment or approved substitute and apply directly to the roof deck, then lace underlayment into and through the valleys from each side of the valley or tie onto self-adhered underlayment a minimum of 6" on each side. In closed-cut and metal valley installation, crop tops of each valley shingle at a 1" (25mm) 45° cut.



Metal Valley - Install metal valley over the underlayment and secure with fasteners no more than 1" (25mm) from the outside edges of the valley metal at a spacing of 10" (254mm) to 12" (305mm) on center. Set overlapping end end of the metal valley in a continuous bead of sealant achieving a lap of 4" (102mm).

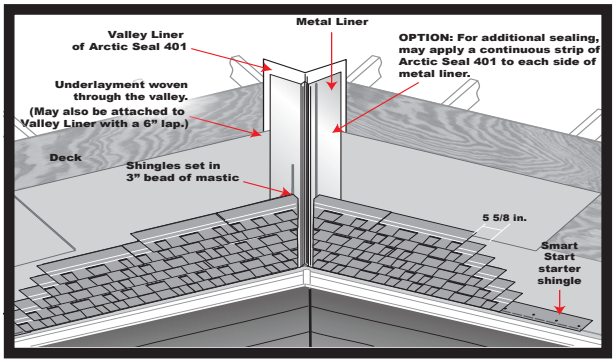
DO NOT FASTEN THE METAL LAP.

For additional sealing, a continuous strip of Arctic Seal 401 may be applied to each side of the metal liner.

Lay the first course of shingles along eaves of one roof area and over valley making sure the top of the shingle meets the centerline of the metal valley.

Complete the installation of shingles on the roof section.

After all shingles have been installed in the valley, snap a line that extends out of the center of the metal valley 2" (51mm) and trim.



Crop all tops of each shingle course at a 1" (25mm) 45° cut.

Embed the cut valley shingle in a 3" (76mm) wide bead of mastic.

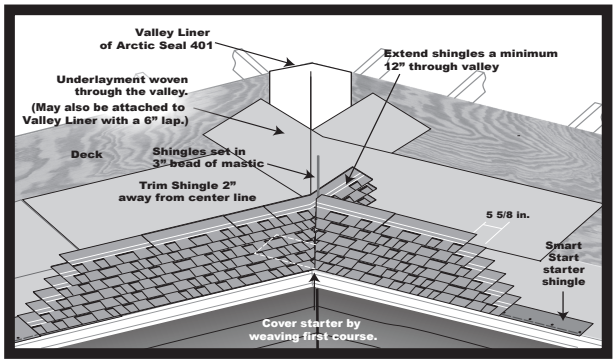
Continue installing the next section of the roof as described above.

Closed-Cut Valley - Lay first course of shingles along eaves of roof area and over valley, extending into adjoining section at least 12" (305mm).

Complete the installation of shingles on roof section.

Press shingles well into valley and nail no closer than 6" (152mm) to centerline.

Apply the second plane of shingles on the intersecting roof area, extending it over previously applied shingles. Trim 2" (51mm) up from the center line of the valley (first course needs to be woven).



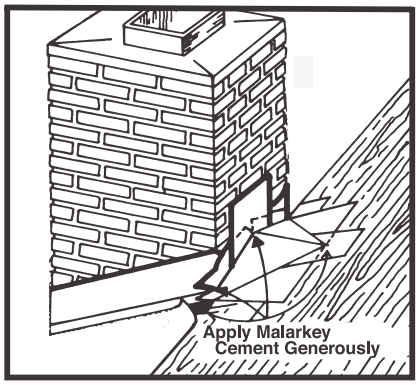
Crop all tops of each shingle course at a 1" (25mm) 45° cut.

Embed the cut valley shingle in a 3" (76mm) wide bead of mastic.

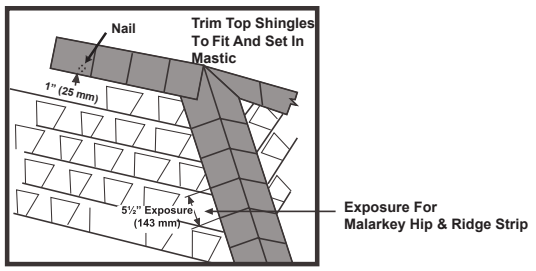
Note: When applying a closed-cut valley installation, shingles must be sufficiently warm and flexible to prevent damage. In cooler conditions and for applications less than 4" (102mm) per foot slope valley metal applications are recommended.

Roof-to-Wall Flashing - Where the roof butts the chimney or a vertical wall shingles must be flashed with metal step flashing pieces. Secure to the deck with two nails near the top corner. See Malarkey Specification Manual (www.MalarkeyRoofing.com) for additional details.

Cap (counter) & Chimney Flashings - The flashing for the front of the chimney shall be installed over the head lap of the last course of the chimney and extending up the chimney, as illustrated. The metal flashings of chimneys, skylights, vents, and adjoining walls must be counter-flashed with sheet metal cap flashing. The cap flashing must extend at least 1" (25mm) into the masonry mortar joints and be caulked with urethane sealant to ensure a watertight connection. Metal flashing shall turn down chimney extending 4" (102mm) over metal flashings or at all roof-to-wall details. Metal flashing or other membrane flashing covering cricket or saddle should be cut to cover the entire cricket and extend 4" (102mm) vertically up chimney.



Hip & Ridges - Malarkey ridge shingles are recommended. Apply Malarkey Hip and Ridge Strips, EZ Ridge or EZ Ridge XT beginning at the bottom of the hip or at the ridge opposite the direction of the prevailing winds. Use two nails per shingle with one nail on each side, 1" (25mm) from the edge so succeeding shingles conceal nail head.



Note: When applying in cold weather or a windy location, it is recommended that each ridge shingle be sealed down with a quarter-sized spot of shingle tab adhesive or face nailed. To avoid damage to hip & ridge shingles in cold weather, Malarkey recommends warming shingles sufficiently to prevent damage during installation. Shingles with the Scotchgard™ Algae Resistant Roofing System from 3M require ridge shingles with the Scotchgard™ Al-

gae Resistant Roofing System from 3M.

Re-Roofing Over Existing Asphalt Shingles - If building codes permit, it is generally not necessary to remove old roofing, if: (1) the square butt asphalt shingles and the existing framing will support the workers, new roofing and required deadloads; (2) the old wood deck is sound and will provide good anchorage for nails. Make the surface as smooth as possible by replacing missing shingles and securely nailing all buckles, raised tabs or curled shingles. Additional ventilation should be added. For smoother appearance Malarkey recommends applying a layer of Malarkey Right Start UDL over old shingles and then continuing with new shingles as though applying a new roof [as described in "Application 5⅝" (143 mm) Offset - Diagonal Pattern" section]. Local Code may require use of underlayment in re-cover roofing. Malarkey is not responsible for objectionable appearance of the new surface from any irregularity of the substrate or remaining roofing.

Special Applications - CSA-A123.1/123.5 - Requires shingles applied in Canada between Sep. 1st and Apr. 30th be adhered with a field-applied adhesive as outlined by the manufacturer.

Enhanced Wind Warranty - An Enhanced Wind Warranty is available when additional installation requirements are met. See Malarkey Roofing Products' Shingle Warranty "Enhanced Wind Warranty" section for details.

These Instructions are meant to act as a general guide. There are alternative installation methods for the installation of this product. Please contact Malarkey for details.

Malarkey Roofing Company, 3131 N. Columbia Blvd., Portland, OR 97217-7472 • PO Box 17217, Portland, OR 97217-0217
Telephone: (503) 283-1191 • (800) 545-1191 • FAX: (503) 289-7644 • www.MalarkeyRoofing.com

GRACE

GRACE ICE & WATER SHIELD®

Self-adhered roofing underlayment

Product Description

Grace Ice & Water Shield® is a premier membrane composed of two waterproofing materials—an aggressive rubberized asphalt adhesive backed by a layer of high density cross laminated polyethylene. The rubberized asphalt surface is backed with a foldless release paper that protects its adhesive quality. During application, the release paper is easily removed, allowing the rubberized asphalt to bond tightly to the roof deck. In addition, embedded in the membrane is a split release on demand feature called Ripcord®.

The membrane is supplied in two roll sizes. See the Product Data chart for product information.

Membrane strips are also available in 75 ft (22.9 m) long rolls at widths of 6 in. (150 mm), 9 in. (225 mm), 12 in. (300 mm) and 18 in. (450 mm).

Features & Benefits

Easy to handle and apply—The self-adhesive membrane bonds firmly to the roof deck without heat or special adhesives.

Ripcord is a unique, patented feature that makes Grace Ice & Water Shield easier to apply by giving the applicator a split release on demand. Faster application of the membrane in the straightaways, as well as ease of membrane positioning in detailed areas (valleys, around dormers, etc.), are just some of the benefits.

Foldless release paper—The foldless release paper provides multiple performance enhancements: fewer edge catches, 180° pull-back, ease of membrane cutting (single cuts) and membrane positioning, quicker "one-man installs" resulting in an easier, more productive release.

Seals around nails—The rubberized asphalt layer in Grace Ice & Water Shield seals around roofing nails, resisting leakage caused by water back-up behind ice dams, or from wind-driven rain.

Dual barrier protection—Rubberized asphalt and polyethylene are combined to form two waterproofing barriers providing maximum protection.

Membrane will not crack, dry out or rot—Grace Ice & Water Shield resists attacks from fungus and bacteria; maintains its integrity for long lasting protection.

Protects under all standard sloped roof coverings—Grace Ice & Water Shield protects under slate, tile, cedar shakes or metal, as well as under conventional asphalt shingles.

Slip resistant surface—Grace Ice & Water Shield has a slip resistant embossed surface to maximize traction and safety for applicators.

Proven track record—Grace Ice & Water Shield is the name brand in roofing underlayments with a 30-year track record of protecting roofs from ice dams and wind-driven rain.

Reroofable—Unlike some granular surfaced membranes, Grace Ice & Water Shield will not adhere to the underside of the exposed roof covering. Grace Ice & Water Shield can be applied over the old Grace underlayment (except over Grace Basik® except over Grace Basik®, Grace Tri-Flex® and Grace Tri-Flex®Xtreme™). in retrofit applications, making reroofing easier, less costly (since there is no need for removing the existing underlayment), more durable and environmentally friendly (as the structural deck remains intact avoiding the need to purchase additional wood decking).

Grace technical support—Grace Ice & Water Shield is backed by a team of local technical support personnel that help ensure every application goes smoothly.

Guidelines for Use

Grace Ice & Water Shield is used as an underlayment for sloped roofs to resist water penetration due to water back-up behind ice dams or wind-driven rain. Grace Ice & Water Shield also offers leak protection in trouble prone spots like valleys, skylights, protrusions and other flashing areas.

Ice Dams

Grace Ice & Water Shield should be used in conjunction with designs which minimize ice dam formation. In cold climates, it is particularly important to provide proper insulation and ventilation to reduce the size of ice dams and to avoid interior condensation. Cathedral ceilings must include ventilation between rafters to allow for air flow to a ridge vent. Well ventilated cold roof designs are particularly important in alpine regions to reduce the size of ice dams which could contribute to structural damage.

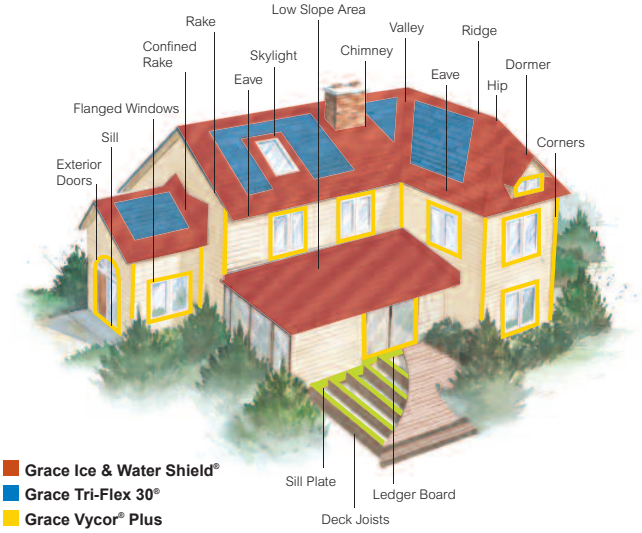
Several variables will influence the height of ice dams and the membrane coverage required.

1. **Climate**—The annual snow fall will affect the amount of membrane needed.
2. **Slope**—On a low slope, ice dams will extend farther inward from the roof edge.
3. **Overhang**—A wide overhang will require more membrane to reach the appropriate point on the roof.
4. **Insulation and ventilation**—A very well insulated building with a cold, well ventilated attic will have smaller ice dams.
5. **Valleys**—Any valleys formed by projections such as dormers or roof direction changes are likely to trap more snow and cause larger ice dams.
6. **Exposure**—A northern exposure or shaded areas will generally contribute to larger ice dams. While gutters may make it easier for an ice dam to start, large dams can occur on roofs with no gutters.

   Removing snow from a roof edge or installing heat cables may not prevent ice dam formation, but may shift the location of the ice dam. Under certain conditions, a dam can form at the edge of the remaining snow.

   Local building codes should be consulted for specific requirements.

Use Grace Ice & Water Shield on all of these critical areas



Installation Procedure

Surface Preparation

Install Grace Ice & Water Shield directly on a clean, dry, continuous structural deck. Some suitable deck materials include plywood, wood composition, wood plank, metal, concrete, or gypsum sheathing. Remove dust, dirt, loose nails, and old roofing materials. Protrusions from the deck area must be removed. Decks shall have no voids, damaged, or unsupported areas. Wood planks should be closely butted together. Repair deck areas before installing the membrane.

Prime concrete, masonry surfaces and DensGlass Gold® with Perm-A-Barrier® WB Primer. Prime wood composition and gypsum sheathing with Perm-A-Barrier WB Primer if adhesion is found to be marginal (refer to Technical Letter 12, *Use on Oriented Strand Board (OSB) Roof Sheathing*). Apply Perm-A-Barrier WB Primer at a rate of 250–350 ft²/gal (6–8 m²/L). Priming is not required for other suitable surfaces provided that they are clean and dry.

Membrane Installation

Apply Grace Ice & Water Shield in fair weather when the air, roof deck, and membrane are at temperatures of 40°F (5°C) or higher. Apply roof covering material at temperatures of 40°F (5°C) or higher.

Cut the membrane into 10–15 ft (3–5 m) lengths and reroll loosely. Peel back 1–2 ft (300–600 mm) of release liner, align the membrane, and continue to peel the release liner from the membrane. Press the membrane in place with heavy hand pressure. Side laps must be a minimum of 3.5 in. (90 mm) and end laps a minimum of 6 in. (150 mm). For valley and ridge application, peel the release liner, center the sheet over the valley or ridge, drape, and press it in place. Work from the center of the valley or ridge outward in each direction and start at the low point and work up the roof.

Alternatively, starting with a full roll of membrane, unroll a 3–6 ft (1–2 m) piece of membrane leaving the release liner in place. Align the membrane and roll in the intended direction of membrane application. Carefully cut the release liner on top of the roll in the cross direction being careful not to cut the membrane. Peel back about 6 in. (150 mm) of the release liner in the opposite direction of the intended membrane application exposing the black adhesive. Hold the release liner with one hand and pull the roll along the deck with the release liner, leaving the applied membrane behind. Use the other hand to apply pressure on the top of the roll. Stop frequently to press the membrane in place with heavy hand pressure. When finished with the roll go back to the beginning, reroll and pull the remaining release paper from the material, finishing the installation.

For successive membrane courses, align the edge of the release liner with the dashed line provided on the surface of the membrane to achieve the 3.5 in. (90 mm) side lap.

Consistent with good roofing practice, install the membrane such that all laps shed water. Always work from the low point to the high point of the roof. Apply the membrane in valleys before the membrane is applied to the eaves. Following placement along the eaves, continue application of the membrane up the roof. The membrane may be installed either vertically or horizontally.

Use smooth shank, electro-plated galvanized nails for fastening shingles to get the best seal. Hand nailing generally provides a better seal than power-activated nailing. If nailing of the membrane is necessary on steep slopes during hot or extreme cold weather, backnail and cover the nails by overlapping with the next sheet.

Extend the membrane on the roof deck above the highest expected level of water back-up from ice dams and above the highest expected level of snow and ice on the wall sheathing on vertical side walls (dormers) and vertical front walls for ice dam protection. Consider a double layer of membrane in critical areas, such as along the eaves or in valleys and in climates where severe ice dams are anticipated. Apply the membrane to the entire roof deck for wind-driven rain protection. Apply a new layer of Grace Ice & Water Shield directly over the old Grace underlayment in retrofit applications following the standard membrane application procedure.

Precautions & Limitations

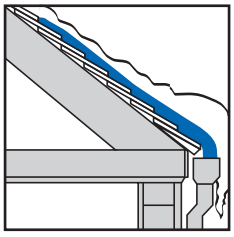
- Slippery when wet or covered by frost.
- Consistent with good roofing practice, always wear fall protection when working on a roof deck.
- Release liners are slippery. Remove from work area immediately after membrane application.
- Do not leave permanently exposed to sunlight. Cover within 30 days.
- Place metal drip edges or wood starter shingles over the membrane.
- Do not fold over the roof edge unless the edge is protected by a drip edge, gutter or other flashing material.
- Do not install on the chamfered edges of wood plank.
- Do not install directly on old roof coverings.
- Certain product applications are prohibited in hot desert areas in the southwestern United States. Check with your Grace Construction Products representative.
- Check with the manufacturer of the metal roofing system for any special requirements when used under metal roofing. Do not install directly under roof coverings especially sensitive to corrosion, such as zinc, without providing proper ventilation.
- Do not install under copper, Cor-Ten®, or zinc metal roofing in high altitudes. These roofs can reach extremely high temperatures due to the low reflectivity, high absorption, and high conductivity of the metals. Use Grace Ultra for these roof types. Check with your Grace Construction Products representative.
- Provide proper roof insulation and ventilation to help reduce ice dams and to minimize condensation. Grace Ice & Water Shield is an air and vapor barrier.
- Repair holes, fishmouths, tears, and damage to membrane with a round patch of membrane extending past the damaged area 6 in. (150 mm) in all directions. If fasteners are removed leaving holes in the membrane, they must be patched. The membrane may not self-seal open fastener penetrations.
- Do not install fasteners through the membrane over unsupported areas of the structural deck, such as over the joints between adjacent structural panels.
- Due to its slight asphaltic odor, do not apply where the membrane is exposed to interior living space. Refer to product literature for more complete information.
- Not compatible with EPDM or TPO; use Grace Ultra for tie-ins (refer to Technical Letter 5, *Chemical Compatibility*).
- Not compatible with polysulfides, flexible PVC, or high concentrations of resin (pitch). For more information, refer to Technical Letter 5.

Code Compliance

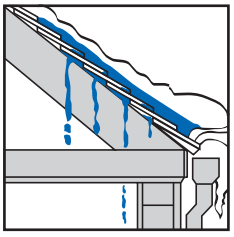
Grace Ice & Water Shield meets the following standards:

- Underwriters Laboratories Inc. Class A fire classification under fiber-glass shingles and Class C under organic felt shingles (per ASTM E108/UL 790)
- Underwriters Laboratories Inc. Classified Sheathing Material Fire Resistance Classification with Roof Designs: P225, P227, P230, P237, P259, P508, P510, P512, P514, P701, P711, P717, P722, P723, P732, P734, P736, P742, P803, P814, P818, P824
- International Conference of Building Officials (ICBO-ES) Report No. 3997
- Southern Building Code Congress International (SBCCI PST & ESI) Report No. 94133C
- Building Officials and Code Administrators (BOCA-ES) Evaluation Report No. 94-33
- Miami-Dade County Code Report NOA 09-0107.08.
- Canadian Construction Materials Centre (CCMC) 12693-R
- U.S. Department of Housing and Urban Development (HUD) Materials Release 1056f
- City of Los Angeles RR 25330
- Florida State Approval Report No. FL298-R1

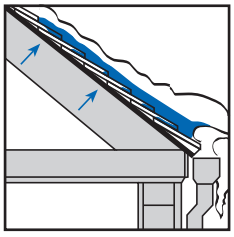
Ice Dams



Water from melting snow over the heated portion of the house runs down the roof. It freezes at the cold eave and an ice dam begins to form preventing drainage.

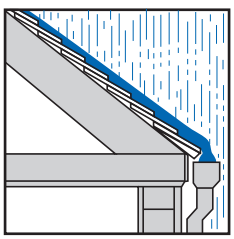


As the ice dam grows, water is trapped behind it and backs up under the shingles. Eventually it reaches the roof deck and leaks through, damaging the interior of the structure.

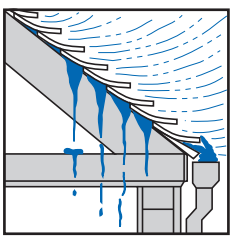


Grace Ice & Water Shield resists this leakage because of the seal around the fasteners, ability to make watertight laps, and the membrane's bond to the deck.

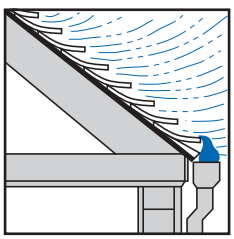
Wind-Driven Rain



Sloped roofs are not waterproof. They protect structures by shedding rain water.



Storm-driven winds can cause sloped roof coverings to lift. Rain can then be easily driven under the roof covering directly to the unprotected roof deck where it causes leaks and damage to the interior of the structure.



Grace Ice & Water Shield applied beneath the sloped roof covering helps prevent wind-driven rain from entering the structure.

Product Data

Roll length	75 ft (22.9 m)	66.6 ft (20.2 m)	36 ft (11.0 m)
Roll width	36 in. (914 mm)	36 in. (914 mm)	36 in. (914 mm)
Roll size	225 ft^2 (20.9 m^2)	200 ft^2 (18.6 m^2)	108 ft^2 (10.4 m^2)
Packaging	Corrugated cartons	Corrugated cartons	Corrugated cartons
Roll weight	61.4 lbs (27.9 kg)	55 lbs (24.9 kg)	33.6 lbs (15.3 kg)
Rolls per pallet	35	35	25

Performance Properties

Property	Value	Test Method
Color	Gray-black	
Thickness, membrane	40 mil (1.02 mm)	ASTM D3767 method A
Tensile strength, membrane	250 psi (1720 kN/m^2)	ASTM D412 (Die C modified)
Elongation, membrane	250%	ASTM D412 (Die C modified)
Low temperature flexibility	Unaffected @ -20°F (-29°C)	ASTM D1970
Adhesion to plywood	3.0 lbs/in. width (525 N/m)	ASTM D903
Permeance (max)	0.05 Perms (2.9 ng/m^2s Pa)	ASTM E96
Material weight installed (max)	0.3 lb/ft^2 (1.3 kg/m^2)	ASTM D461

www.graceathome.com
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For technical assistance call toll free at 866-333-3SBM (3726)

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GRACE

Worker Safety on Pitched Roofs

Worker safety is important on any construction job site. Pitched roofs are no exception. There are several factors that contribute to avoidable accidents while installing structural wood panel roofs. This Builder Tip from *APA – The Engineered Wood Association* describes those factors and simple precautions that can improve the safety of working conditions on roofs.

First, it is important to understand the factors that can contribute to accidents.

1. Pitch of roof. The steeper the pitch, the more difficult it is for workers to maintain their footing without additional safety protection.

2. Moisture. Rain, snow or frost may cause slippery surface conditions on roofs.

3. Sawdust and dirt on the roof surface. If workers cut and trim panels on the roof, they may leave sawdust on the roof surface. Sawdust or dirt particles may cause slippery conditions on roof surfaces.

4. Footwear. The traction of shoes or boots varies with the type of material used on the soles. A worker who wears shoes or boots with poor traction is at greater risk of slipping on the roof deck.

5. Tripping Hazards. Tools, electric cords, articles of clothing, etc., can contribute to a tripping hazard.

Safety Recommendations

You can address these roof safety factors with the following precautions:

1. Tie-off. On steeply pitched roofs, make sure that roof workers wear an approved safety belt and that they are securely tied off to a fall-resistant device. Even a roof which is not steeply pitched may require such safety devices if the risk of serious injury or death is present because of the distance of any fall or for other reasons.

2. Avoid working on wet roofs. If a roof is slippery from rain, snow or frost, the best precaution is to wait until the roof surface is dry. If work must continue, consider additional safety precautions, such as tieing off workers and using special roof shoes with skid-resistant cleats.

3. Keep the roof surface clean. Keep a dust brush or broom handy to sweep the roof to remove any loose sawdust, particles, or dirt.

4. Wear rubber-soled shoes or boots. Rubber-soled boots typically provide better traction than leather-soled boots. Some crepe-soled boots also have good traction. Regardless of sole type, workers should not wear shoes or boots that have worn soles or heels. Special roofer's boots with small, skid-resistant metal cleats are also available.

5. Use skid-resistant side of APA Performance Rated Panels. Frequently, Oriented Strand Board (OSB) panels are textured or splatter-coated on one side to increase traction on the panel surface. When installing OSB panels on a roof, make sure that the skid-resistant side is up.

6. Install asphalt shingle underlayment or roofing felt. Cover the roof sheathing as soon as possible to minimize exposure to weather. Asphalt shingle underlayment and roofing felt also increase slip resistance on sloped roofs.

7. Install temporary wood cleats for toe-holds. Nail 2x4 wood cleats to the roof deck to provide temporary toe-holds for workers. The cleats can be removed as roofing is installed.

8. Inspect for and remove tripping hazards. Tools, electric cords and other loose items can all pose hazards and should be removed from the roof.

In addition to following these precautions, **comply with OSHA fall-protection standards and always check your local and state worker-safety requirements.** Builders are responsible for following code and safety requirements and providing safe working conditions for their crews. It's also important to always be alert to potential hazards and practice common sense.

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THE ENGINEERED WOOD ASSOCIATION

We have field representatives in most major U.S. cities and in Canada who can help answer questions involving APA trademarked products. For additional assistance in specifying engineered wood products, contact us:

APA – THE ENGINEERED WOOD ASSOCIATION
HEADQUARTERS
7011 So. 19th St. • P.O. Box 11700
Tacoma, Washington 98411-0700
(253) 565-6600 • Fax: (253) 565-7265

(International Offices:
Bournemouth, United Kingdom;
Mexico City, Mexico; Tokyo, Japan.)

Web Address:
www.apawood.org

PRODUCT SUPPORT HELP DESK
(253) 620-7400
E-mail Address: help@apawood.org

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