



ARMA Spring Board of
Directors Meeting
May 24, 2017

*The Gwen Hotel
521 North Rush Street
Chicago, IL 60611*



*ARMA Spring Board of Directors Meeting
May 24, 2017
Chicago, Illinois*

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To: ARMA Members and Staff

From: Reed Hitchcock, Executive Vice President

Re: Antitrust Compliance - Quick Reference

The Asphalt Roofing Manufacturers Association (“**ARMA**” or “**Association**”) has in effect an Antitrust Compliance Policy (“**Policy**”). The Policy is intended for the guidance of ARMA member company representatives, officers, directors and staff, when engaged in any activity conducted in the name of, or on behalf of, ARMA. All such persons are expected to be familiar with the Policy and to follow it both in letter and spirit.

The following cautionary statements are taken from the full Policy and are intended to be used as a quick reference tool. This document is not a substitute for the full Policy, which is available from the Association’s office and with which all are expected to be conversant. At all Association meetings and events, including informal gatherings before, during or following such meetings and events, **ARMA** members, their representatives and guests will not discuss any of the following competitively sensitive topics:

1. Current or future prices, price levels, costs or profit margins.
2. What is a fair or rational profit level.
3. Actions which could lead to standardizing or stabilizing prices.
4. Pricing or bidding methodologies or procedures.
5. Pricing practices or strategies, including methods, timing or implementation of price changes.
6. Whether or how prices, warranties or other terms of sale are advertised.
7. Cash or any other discounts, rebates, service charges or other terms and conditions of sale.
8. Credit terms.
9. Product warranty terms.
10. Actual, planned or projected production, production capacity or capacity utilization.
11. Projected demand.
12. Confidential company plans for new products.
13. Dividing or allocating geographic or product markets or customers.
14. Whether or on what terms to do business with a supplier, competitor or customer.
15. Whether or on what terms to solicit other companies’ employees for employment.
16. The business practices of individual firms.
17. The validity of any patent or the terms of any patent license.
18. Ongoing litigation, unless being reported upon by ARMA’s General Counsel or discussed appropriately at ARMA’s Counsel Forum.

We hope the above rules will be helpful as you participate in ARMA meetings and other activities. If you have any questions about antitrust compliance, do not hesitate to contact ARMA’s General Counsel:

C. Michael Deese
ARMA General Counsel
Howe & Hutton, Ltd.
Tel: (202) 466-7252 x103
Email: cmd@howehutton.com

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ARMA Board of Directors Meeting Agenda

Wednesday, May 24, 2017

The Gwen Hotel

Chicago, IL

Chair Presiding: Brian Chambers, Owens Corning

Time	Topic	Presiding Chair/ Speaker
11:30 a.m. – 12:30 p.m.	ARMA Lunch	
12:30 p.m. – 12:45 p.m.	Introduction, Opening Remarks, Roll Call -Welcome and Introductions -Antitrust Policy Review (Deese) -Approval of Past Meeting Minutes (Chambers) -President's Report	Chambers
12:45 p.m. – 1:30 p.m.	ARMA Government Affairs Update	Brightup
1:30 p.m. – 2:30 p.m.	Asphalt Fumes and Silica Update Report -OSHA Silica Rule -California Prop 65	Sampson
2:30 p.m. – 2:45 p.m.	Break	
2:45 p.m. – 3:15 p.m.	Health, Safety, and Environment Committee -ARMA Accident Prevention Contest -Emission Factor Sampling Task Force -EPA MACT Residual Risk Review -NRCA Silica Exposure Study -OSHA Injury/Illness Reporting Rule	Szeto
3:15 p.m. – 3:55 p.m.	Codes Steering Group -Technical Resource Group Update -Ventilation Task Force Update -Cool Roof Task Force Update	Phillips / Fischer / Pazera
3:55 p.m. – 4:10 p.m.	Communications, Marketing, and Education Committee -2017 Communications and Marketing Plan	Burkett
4:10 p.m. – 4:30 p.m.	Technical Affairs Committee -Technical Review Task Force Update -Sustainability Task Force Update	Dinwiddie / Cote / Ferryman

4:30 p.m. – 4:45 p.m.	Treasurer's Update -2016 Audit Report -2017 Year-to-Date Financial Statements	Kersey
4:45 p.m. – 5:00 p.m.	New Business -Other Business -ARMA Counsel Report -Next Meeting of ARMA Board of Directors	Chambers / Deese
5:00 p.m.	Adjournment	



Fall Board of Directors
Meeting Draft Minutes
November 3, 2016



Asphalt Roofing Manufacturers Association
Board of Directors Meeting Minutes
November 3, 2016 – Dallas, Texas

Introductions & Antitrust Reminder

ARMA President Greg Malarkey, Malarkey Roofing Products, called the meeting to order at 8:30am CT. Malarkey welcomed meeting attendees, thanked members for their participation and support of the Association, and recognized sponsors of the meeting. Meeting attendees introduced themselves and Mike Deese, ARMA General Counsel, reviewed the ARMA Antitrust Compliance Policy, reminding all attendees to comply with the policies governing the meeting.

Approval of Meeting Minutes

MOTION: It was moved and seconded to approve the minutes of the May 19, 2016 ARMA Board of Directors meeting (Wamboldt / Farrish). The motion passed unanimously.

ARMA Government Affairs Update

Craig Brightup, ARMA Federal Lobbyist, provided an update on ARMA government affairs activities. Brightup reported that a number of previously temporary tax deduction and credit provisions of benefit to ARMA members had been made permanent and that others had been further extended. He noted that three Affordable Care Act taxes had been delayed. Brightup provided an update on the legal challenge to the Department of Labor's updated regulation governing overtime compensation. Brightup also discussed the 2016 election outlook for the U.S House of Representatives, Senate, and Presidency.

Asphalt Fumes & Silica Update

Art Sampson, ARMA Regulatory Counsel, provided an update on asphalt fumes and silica issues. Sampson discussed California Prop 65 prioritization proceedings for the classification of carcinogenic substances. ARMA submitted public comments as part of AREC regarding the classification and prioritization of asphalt, which noted that the labeling requirements for roofing products already report carcinogenic information and thus additional classification requirements would not generate additional warnings.

Sampson also provided an update on the final OSHA silica rule issued in March 2016, noting that the rule reduces the Permissible Exposure Limit (PEL), requires exposure monitoring and medical surveillance, and with one exception relating to medical screening, imposes a compliance deadline of June 23, 2018 for ARMA members. ARMA has continued to conduct reviews and report on any compliance issues affecting its members.

Sampson provided an update on NRCA's proposed study of silica exposure, noting that ARMA has been collaborating with NRCA on the scope and testing parameters for an RFP. ARMA may consider providing financial support for the study once the ARMA Executive Committee reviews the final proposed research scope.

An update was also provided on the ARMA Industrial Hygiene (IH) database. Sampson noted that the IH protocols have been revised and that a revised nondisclosure agreement has been executed by nearly all 14 participating companies. Data collection will continue again, and the

ARMA IH QA-QC Task Force aims to develop a scientific article on silica exposure in asphalt roofing plants.

Sampson also reported on the new anti-retaliation provisions of the revised OSHA injury and illness reporting rule, noting that a legal challenge to those provisions was scheduled to be decided by December 1, 2016.

Health, Safety, and Environment Committee Update

Bob Hockman, TAMKO Building Products, Inc., reviewed the objectives and activities of the ARMA Health, Safety, and Environment Committee, providing updates on ARMA Accident Prevention Contest trends, the Washington State Stormwater Runoff Study (the next phase to include a toxicology study), and OSHA Silica Rulemaking. Hockman also discussed the U.S. EPA's MACT/GACT Risk and Technology Review (RTR). The ARMA HSE committee plans to develop a strategy to engage the EPA regarding current emissions control requirements in MACT or GACT standards applicable to ARMA member facilities.

MOTION: It was moved and seconded to accept the ARMA Health, Safety, and Environment Committee report as presented (Chambers / Farrish). The motion passed unanimously.

Codes Steering Group Update

Aaron Phillips, TAMKO Building Products, Inc., provided an update on ICC code development activities that have taken place during the current "Group B" cycle. Phillips reported on the results of ICC Public Comment Hearings in October, discussing wind uplift resistance, attic ventilation, aggregate surfacing in hurricane prone regions, underlayment requirements, and other pertinent code change developments. Phillips also highlighted ARMA's state and local code activity, noting successful code modification proposals that were submitted to the Florida Building Commission.

Phillips also discussed ARMA's development of an in-situ reflectivity study, noting that the purpose of the study is to fill data gaps in real-world aged roofing reflectivity. A revised RFP was circulated to vendors, and the ARMA Cool Roof Task Force is collecting additional information from those who have responded to make a final recommendation to the ARMA Executive Committee on the scope of the study.

MOTION: It was moved and seconded to accept the ARMA Codes Steering Group report as presented (Koschitsky / Chambers). The motion passed unanimously.

Nominating Committee Update

Reed Hitchcock, ARMA Executive Vice President, provided the ARMA Nominating Committee recommended slate of proposed candidates for the ARMA Executive Committee for terms beginning January 1, 2017 and concluding December 31, 2018. Hitchcock reviewed the names of each of the candidates nominated, as follows: Bob Tafaro, Tom Smith, Ken Farrish, David Humphreys, Dave Lucchetti, David Koschitzky, Steve Ratcliff, Greg Malarkey, Bob Wamboldt (President), Brian Chambers (Vice President), Tim Kersey (Secretary/Treasurer).

MOTION: It was moved and seconded to approve the ARMA Nominating Committee's slate of recommended candidates for the ARMA Executive Committee (Farrish / Koschitzky). The motion passed unanimously.

MOTION: It was moved and seconded to approve the ARMA Nominating Committee's recommended candidates for the offices of President, Vice President, and Secretary/Treasurer (Farrish / Lucchetti). The motion passed unanimously.

Mr. Hitchcock noted that the Executive Committee had previously conditionally approved Greg Malarkey to serve as Executive Committee Chair for 2017-2018.

Membership Application Review

The ARMA Board of Directors reviewed the applications for ARMA membership and discussed the eligibility criteria for membership. The group confirmed that roofing contractors and distributors do not qualify for ARMA membership.

MOTION: It was moved and seconded to approve the application of Dolese Bros. Company for associate membership in ARMA (Lucchetti / Wamboldt). The motion passed unanimously.

Communications, Marketing, and Education Committee Update

Sue Burkett, Owens Corning, provided an update on the activities of the Communications, Marketing, and Education Committee (CMEC). Burkett discussed ARMA's social media activity, articles, publications, Fast Facts and other content developed in 2016. Burkett highlighted ARMA's collaboration with OSHA and NRCA in roofing safety promotion, the development of a whiteboard video on algae removal, and noting upcoming projects in 2017, including redevelopment of ARMA's website.

MOTION: It was moved and seconded to accept the ARMA Communications, Marketing, and Education Committee report as presented (Wamboldt / Chambers). The motion passed unanimously.

The Board of Directors recessed for lunch at approximately 11:50am and reconvened at approximately 1:00pm.

Technical Affairs Committee

Sid Dinwiddie, PABCO Roofing Products, reviewed the objectives, activities, and mission of the ARMA Technical Affairs Committee, noting the updated review process for ARMA technical bulletins and publications. Dinwiddie reviewed the priority list of guidance documents to be revised, noting that the ARMA Committee chairs collaborated to improve the process for prioritization.

Amy Ferryman, Malarkey Roofing Products, Provided an update on ARMA's five Environmental Product Declarations (EPDs), noting that the ARMA Executive Committee had approved the final documents. Ferryman explained the value of the EPDs (which will be considered valid until October 28, 2011 absent major production process changes) for ARMA member companies and thanked the members for their participation throughout the development process. She suggested that ARMA's Sustainability Task Force will require a new mission statement now that the EPDs have been completed.

Treasurer's Report

Brian Chambers, Owens Corning, provided an overview of year-end financial estimates for the association, noting that both revenues and expenses have tracked well with budgetary expectations throughout the year. Surplus from the current fiscal year (approximately \$100,000) will be added to ARMA's reserves, bringing the reserves to approximately \$600,000 (\$200,000 short of ARMA's reserve target of \$800,000). Chambers provided an overview of the 2017 budget, which had been approved by the Executive Committee, and noted that no dues increases for members were planned for the upcoming year.

ARMA Counsel Report

Mike Deese provided an update on the activities of the ARMA Counsel Forum, noting the Forum's positions regarding ARMA providing (a) roof damage assessment recommendations for the IBHS / RICOWI Best Practices Field Guide, and (b) a formal response to NRCA on its recently published article on shingle testing. Deese also provided an update on the revised NDAs for the IH data program and shipment report program, noting that nearly all participating companies in both programs have signed and returned the agreement. Finally, Deese summarized an issue raised in litigation pending in Arizona state court regarding whether an insurance company is excused from providing coverage for a claim against a modified bitumen adhesive manufacturer under the insurance policy's pollution exclusion.

Next Meeting

Reed Hitchcock reported that the next ARMA Board of Directors & Executive Committee Meetings would be taking place May 22-25, 2017 in Chicago, IL in conjunction with ARMA committee meetings. Malarkey encouraged the members of the Board to attend both parts of the combined meeting.

Adjournment

There being no further business to come before the group, the meeting was adjourned by general consensus at 1:45pm.



ARMA Codes Steering Group



**Asphalt Roofing Manufacturers Association
Codes Steering Group
Activity Report May 2017**

Updates on Key CSG Activities:

ICC Code Development

The 2018 International Codes are essentially complete. Committee and public comment hearing results are being reviewed by ICC staff for any necessary correlation, and updates to referenced standards that are already in the codes will be reviewed at the end of this year. Once those final steps have been completed, ICC will publish the codes, and we will begin the process of the 2021 I-Code development.

The 2021 ICC Schedule is attached below.

We will have several items to take forward in the next cycle, including:

- Air-permeable insulation in unvented attics. This new section in the 2018 IRC will include a “vapor diffusion port”, which will require definition and scoping language to clean up the code.
- Roofing aggregate. ARMA will continue with recent progress on this front to remove the arbitrary ban on aggregate for low-slope roof surfaces. We will work with SPRI, IBHS, and other stakeholders to develop appropriate code provisions and propose the inclusion of parapet design as a control feature to maintain safety without an across the board product ban.
- Reflective roofing. ARMA will consider revisions to the IECC in order to correlate the prescriptive and performance paths in the code; today they are inconsistent.
- Existing buildings. The update to ASCE7-16 creates an issue for roof replacements on existing buildings that would likely add onerous structural retrofits when doing a simple roof replacement. ARMA will work with NRCA and IBHS, among others, to clarify these provisions.

Florida Building Commission

The FBC 2017 code update process has been completed. The effective date is set for January 1, 2018, but there may be some delays depending on completion of the Florida Fire Code. ARMA completed a project working with Miami-Dade to update the HVHZ provisions; those updates are included in the new code. We will continue this working relationship moving forward to upcoming cycles.

The Florida legislature passed HB 1021 earlier this month. It contains revisions to the Florida Building Code process, including eliminating the use of the International Codes most recent editions as the base code for Florida. Earlier versions of the bill language contained an extension of the code cycles to 6 years; that provision would have been unfavorable to ARMA members due to disconnect from referenced standards such as ASTM, which would likely result in additional expense. That change was not included in the bill. We are coordinating our efforts with ICC to provide appropriate assistance. It is unclear if the governor will sign the bill or veto it. We will continue to monitor and will update the ARMA Board as the process continues.

Los Angeles County

L.A. County is considering the implementation of cool roof requirements as part of efforts to reduce the urban heat island effect in unincorporated areas. This effort could be similar to measures previously adopted by the City of L.A.

ARMA staff and volunteer leaders had a conference call with project leaders from L.A. County and expressed ARMA's desire to be engaged in the process going forward. The project has no set timeline, and no draft requirements. We will continue to monitor and engage as appropriate to help streamline any labeling requirements and assist the County staff in developing common-sense provisions.

California Energy Commission (CEC)

The CEC staff members have indicated that their upcoming revision cycle to CA Title 24 do not include any planned increases in cool roof requirements. We are aware that other stakeholders will continue to push against this plan, so ARMA will keep a close watch on the process. ARMA staff will be represented at an upcoming CEC Stakeholder Workshop; the agenda includes envelope provisions to the code- such as high-performance roof and walls. In addition to the cool roof provisions, the envelope requirements also impact attic ventilation.

Texas Department of Insurance (TDI)

ARMA members continue to voice concerns about the TDI product lists and long delays in processing updates to their website. These delays create an artificially slanted playing field and could potentially restrict trade. ARMA staff and volunteers met with TDI last week; we will update the Board during the May meetings.

2018/2019 ICC CODE DEVELOPMENT SCHEDULE

(February 10, 2017)

STEP IN CODE DEVELOPMENT CYCLE	DATE	
	2018 – Group A Codes IBC- E, IBC - FS, IBC -G, IFC, IFGC, IMC, IPC, IPMC, IPSDC, IRC – M, IRC- P, ISPSC, IWUIC, IZC	2019 – Group B Codes Admin, IBC-S, IEBC, IECC-C, IECC-R/IRC-E, IgCC (Ch. 1), IRC – B
2018 EDITION OF I-CODES PUBLISHED	Fall/2017 (except 2018 IgCC, see Group B Codes on page 2)	
DEADLINE FOR RECEIPT OF APPLICATIONS FOR ALL CODE COMMITTEES	June 1, 2017 for the 2018/2019 Cycle. Call for committee posted in February /2017.	
DEADLINE FOR cdpACCESS ONLINE RECEIPT OF CODE CHANGE PROPOSALS	January 8, 2018	January 7, 2019
WEB POSTING OF “PROPOSED CHANGES TO THE I-CODES”	February 28, 2018*	March 4, 2019*
COMMITTEE ACTION HEARING (CAH)	April 15 – 25, 2018 Greater Columbus Convention Center Columbus, OH	April 28 – May 8, 2019 Albuquerque Convention Center Albuquerque, NM
ONLINE CAH ASSEMBLY FLOOR MOTION VOTE	Starts approx. two weeks after last day of the CAH. Open for 2 weeks.	Starts approx. two weeks after last day of the CAH. Open for 2 weeks.
WEB POSTING OF “REPORT OF THE COMMITTEE ACTION HEARING”	May 30, 2018	June 11, 2019
DEADLINE FOR cdpACCESS ONLINE RECEIPT OF PUBLIC COMMENTS	July 16, 2018	July 24, 2019
WEB POSTING OF “PUBLIC COMMENT AGENDA”	August 31, 2018*	September 4, 2019*
PUBLIC COMMENT HEARING (PCH) ANNUAL CONFERENCE DATES NOTED BY AC	October 24 – 31, 2018 Greater Richmond Convention Center Richmond, VA AC: October 21 – 23	October 23 – 30, 2019 Clark County, NV AC: October 20 - 22
ONLINE GOVERNMENTAL CONSENSUS VOTE (OGCV)	Starts approx. two weeks after last day of the PCH. Open for 2 weeks.	Starts approx. two weeks after last day of the PCH. Open for 2 weeks.
WEB POSTING OF FINAL ACTION	Following Validation Committee certification of OGCV and ICC Board confirmation.	Following Validation Committee certification of OGCV and ICC Board confirmation.

* Web posting of the “Proposed Changes to the I-Codes” and “Public Comment Agenda” will be posted no later than scheduled. ICC will make every effort to post these documents earlier, subject to code change/public comment volume and processing time.

2018 Group A Codes/Code committees:

- IBC-E: IBC Egress provisions. Chapters 10 and 11.
- IBC-FS: IBC Fire Safety provisions. Chapters 7, 8, 9 (partial), 14 and 26. Majority of IBC Chapter 9 is maintained by the IFC. See notes.
- IBC-G: IBC General provisions. Chapters 3 – 6, 12, 13, 27 – 33.
- IFC: The majority of IFC Chapter 10 is maintained by IBC-E. See notes.
- IFGC
- IMC
- IPC
- IPMC (code changes heard by the IPM/ZC (IPMC & IZC) code committee)
- IPSDC (code changes heard by the IPC code committee)
- IRC-M: IRC Mechanical provisions. Chapters 12 – 23 (code changes heard by the IRC - MP code committee)
- IRC-P: IRC Plumbing provisions. Chapters 25 – 33 (code changes heard by the IRC - MP code committee)
- ISPSC
- IWUIC (code changes heard by the IFC code committee)
- IZC (code changes heard by the IPM/ZC (IPMC & IZC) code committee)

2019 Group B Codes/Code committees:

- Admin: Chapter 1 of all the I-Codes except the IECC, IgCC and IRC. Also includes the update of currently referenced standards in all of the 2018 Codes, except the IgCC.
- IBC-S: IBC Structural provisions. IBC Chapters 15 – 25 and IEBC structural provisions. See notes.
- IEBC: IEBC Non-structural provisions. See notes.
- IECC-C: IECC Commercial energy provisions.
- IECC-R/IRC-E: IECC Residential energy provisions and IRC Energy provisions in Chapter 11.
- IgCC: Chapter 1 of the IgCC. Remainder of the code is based on the provisions of ASHRAE Standard 189.1 *Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings*. The 2018 IgCC is scheduled to be published in the Summer/2018.
- IRC-B: IRC Building provisions. Chapters 1 – 10.

A 2020 Group C cycle is not scheduled.

Notes:

- Be sure to review the document entitled “2018/2019 Code Committee Responsibilities” which will be posted. This identifies responsibilities which are different than Group A and B codes and committees which may impact the applicable code change cycle and resulting code change deadline. As an example, throughout Chapter 9 of the IBC (IBC- Fire Safety), there are numerous sections which include the designation “[F]” which indicates that the provisions of the section are maintained by the IFC code committee. Similarly, there are numerous sections in the IEBC which include the designation “[BS]”. These are structural provisions which will be heard by the IBC – Structural committee. The designations in the code are identified in the Code Committee Responsibilities document.
- I-Code Chapter 1: Proposed changes to the provisions in Chapter 1 of the majority of the I-Codes are heard in Group B (see Admin above for exceptions). Be sure to review the brackets ([]) of the applicable code.
- Definitions. Be sure to review the brackets ([]) in Chapter 2 of the applicable code and the Code Committee Responsibilities document to determine which code committee will consider proposed changes to the definitions.
- Proposed changes to the ICC Performance Code will be heard by the code committee noted in brackets ([]) in the section of the code and in the Code Committee Responsibilities document



ARMA Technical Affairs Committee

Good Application Makes A Good Roof Better - A Simplified Guide

Installing Three-Tab Asphalt Shingles For Maximum Life & Weather Protection

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ARMA acknowledges and appreciates the assistance of the ARMA Technical Review Task Force members: Paul Casseri , Atlas Roofing; Jacques Martin, Building Products of Canada; Richard Snyder, CertainTeed Corporation; Bill Woodring, GAF; Lynn

Picone, GAF; Don Shaw, IKO Production, Inc.; Jay Keating, IKO Production, Inc.; Eileen Dutton, Malarkey Roofing; John Kouba, Malarkey Roofing; Greg Keeler, Owens Corning; Sue Burkett, Owens Corning; Sid Dinwiddie, PABCO Roofing Products; Steven Wadding, Polyglass, USA, Inc.; Jean-François Côté; SOPREMA, Inc.; Aaron Phillips, TAMKO Building Products, Inc.

Foreword

This brochure was prepared by the Asphalt Roofing Manufacturers Association (ARMA) as a general guide for the installation of three-tab asphalt roofing shingles.

For more detailed information on the installation of asphalt shingles and other types of asphalt roofing products, refer to the *ARMA Residential Asphalt Roofing Manual*, which can be ordered on ARMA's website: www.asphaltroofing.org.

IMPORTANT

Every type of asphalt roofing product has its own application requirements and use specifications; always follow the product manufacturer's application instructions to help ensure proper installation. Before undertaking any roofing project, be sure to research and comply with all building codes and other laws and regulations that may apply to your particular situation.

DISCLAIMER: ARMA assumes and undertakes no responsibility for any liability, economic or other loss, or injury or damage to persons or property that may result from the use of the information contained in this brochure or from the purchase, application, installation, or other use of roofing materials.

WARNING: It is dangerous to walk, climb or work on a roof. To help avoid injury or death, exercise extreme care and follow all applicable safety precautions and procedures, including but not limited to applicable building code requirements and manufacturer's instructions, labels, and warnings.

Key Points for Shingle Selection

Roof Slope

The slope of your roof is determined by the vertical “rise” in inches for every horizontal twelve-inch (12”) length (called the “run”). It is expressed with the rise mentioned first and the run mentioned second. For instance, if your roof has a four-inch (4”) rise for every horizontal foot, then it is said to have a 4” in 12” slope (4:12).

A fairly easy way to determine the slope is to use a 12” carpenter’s level. Set one end on the roof surface and level the carpenter’s level. Using a tape measure or a ruler, measure from the other end of the 12” carpenter’s level down to the roof surface. There are also free applications available for smartphones that include a slope indicator.

Color, Design & Exposure

Three-tab asphalt shingles are available in a wide array of colors to complement most architectural styles.

"Exposure" is that portion of the shingle exposed to the weather once installation is complete. The recommended exposure of a shingle creates its intended appearance. In addition, the offset from course to course may affect the appearance of the finished roof. Always follow the specified manufacturer's application instructions carefully.

Fire and Wind Resistance

Most building codes require that roofing materials conform to certain fire-resistance standards. Asphalt shingles have a Class A, Class B, or Class C fire classification, as defined by ASTM E108/UL790 Standards, which set forth required fire tests of roof coverings. Class A rated products meet the most stringent fire-resistance criteria.

All ARMA member roofing manufacturers submit their products to third-party laboratories for testing to ensure that they conform to the requirements of ASTM's/UL's fire-resistance standards. Asphalt shingles that have been independently tested and shown to conform to these criteria carry a label on their packaging indicating a Class A, B, or C fire-resistance classification.

Shingles also provide wind protection for roofs, typically through the use of a factory-applied tab sealant. The primary North American standards for measuring wind resistance of asphalt shingles are ASTM D7158 and ASTM D3161. Most building codes require asphalt shingles to be tested by a third-party laboratory and to carry a label certifying their wind resistance classification.

Key Points for Shingle Application

IMPORTANT – Follow the Shingle Manufacturer's Application Instructions and Comply with Local Building Codes

Do not assume all shingles (or their application procedures) are the same. This is especially true of three-tab shingles. To get the best performance and best appearance from any roofing product, read and follow all directions and specifications supplied by the manufacturer. To do otherwise may result in improper application, which could reduce or compromise roof performance and may affect the manufacturer's warranty.

Deck Preparation

A good roof requires that the entire roof structure be sound. The underlying structure should provide a rigid deck surface that will not sag, shift, or deflect under the weight of expected live or dead loads. Roof deck materials must be properly installed and free from excessive warps, knots, or resinous areas. The type, grade, thickness, and installation of roof decking materials should conform to all building code requirements.

Drainage

The primary function of a roof is to prevent water entry into the structure. This involves not only the main roof surface, but also all of the junctions and breaks created by valleys, gables, wings, dormers, chimneys, vents, etc. Such breaks are protected by flashings, and great care must be exercised to make all flashings watertight and water-shedding. Corrosion-resistant drip edges at the rakes and eaves and adequate gutter and downspout placement are necessary for proper drainage.

Ventilation

Proper ventilation allows air to circulate freely under the roof deck to reduce roof surface temperatures and to carry away water vapor before it can condense. Many complaints of apparent roof leakage and /or deck rot are actually the result of condensation from inadequate ventilation. Condensation can most often be diminished with sufficient ventilation in the attic space or under-roof area, along with proper use of vapor-retarders when needed. The code-required minimum amount of ventilation for typical attic spaces is one square foot of unrestricted airflow for each 150 square feet of attic floor space. Ventilation should be equally distributed between entry and exit points to allow for the flow or exchange of air.

Proper Nails and Nailing

Applying a good roof requires the use of proper nails and nailing techniques. Choosing the correct nails and applying them in the proper places with the appropriate methods will help to ensure a sound roof installation. Nails should be corrosion resistant, such as galvanized steel, stainless steel, or aluminum nails, and have a nominal shank diameter of 12 gauge and a minimum head diameter of 3/8".

IMPORTANT – Follow the shingle manufacturer's application instructions. Many shingles have special requirements regarding minimum nail length, nailing location, and number of nails per shingle.

On-Site Storage

Improper storage of asphalt roofing materials before installation can jeopardize the performance of the roof. Provisions must be made to protect roofing materials on site from water, cold, heat, and other weather-related exposures prior to their application.

Preparations for New-Roof Construction

Ensure Adequate Ventilation

Adequate ventilation and air circulation helps reduce unwanted humidity and condensation. If air is unable to circulate freely under a roof deck, moisture from cooking, bathing, and other sources inside the structure will condense upon reaching the colder roof sheathing. High humidity and moisture accumulation can lead to mold growth and deterioration of the roof's structural system and its component materials.

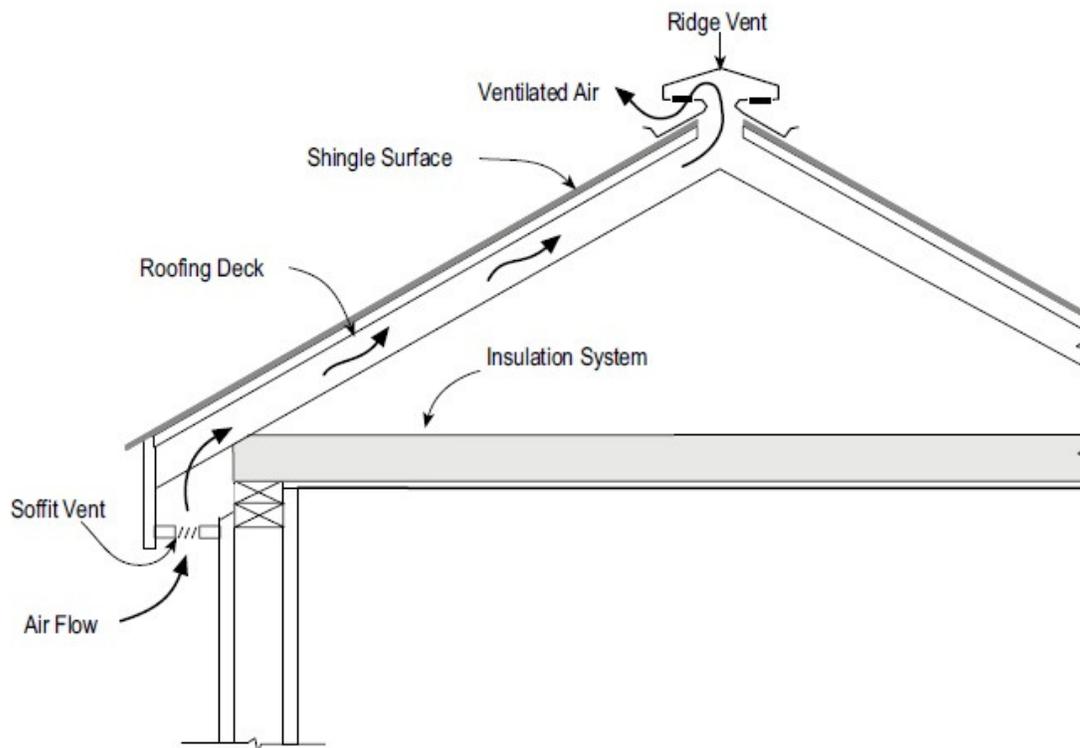


Fig. 1

Most building codes require a minimum ventilation ratio of 1 sq. ft. net ventilating area per 150 sq. ft. of attic floor space (1:150). This may be achieved by the proper installation of sufficiently sized gable louvers or exhaust vents high on the roof. When approximately half of the vents are located at eaves or soffits, and the other half near the roof's peak or along the ridge for maximum airflow, free vent area can often be further reduced (minimum 1:300). Vents and louvers should remain open in all seasons and be free from any obstructions that may inhibit airflow.

Always verify that the roof's ventilation area meets minimum code requirements before installing shingles. For more information on ventilation practices, refer to the ARMA *Residential Asphalt Roofing Manual*.

Prepare the Roof Deck

The first step to a good roofing job lies with a proper roof deck. The deck should be built with exterior grade structural-rated sheathing panels or equivalent non-veneer structural panels approved for such usage by an independent, third-party testing lab or agency. Actual type, grade, thickness, and installation techniques must conform to all building code requirements and manufacturer recommendations.

Install Drip Edge

A drip edge should be installed along the eaves and the rakes for efficient water-shedding at the roof's edges. It should be made of a corrosion-resistant material, and should extend a minimum 2" back from the roof edge and bend downward over the fascia (see Fig.2).

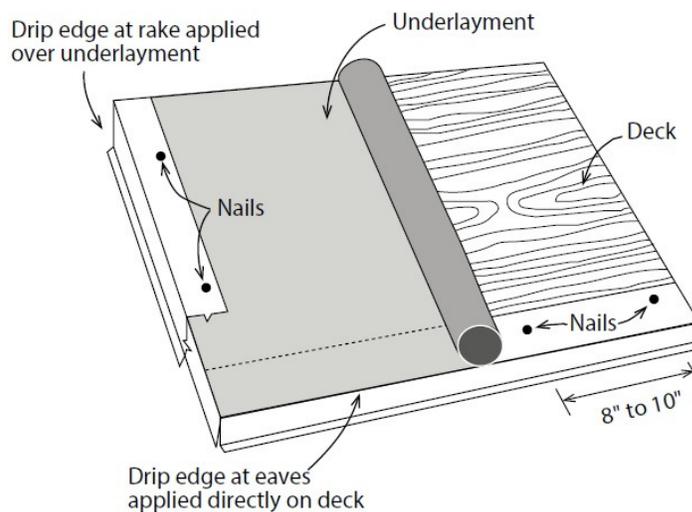


Fig. 2

Eaves Flashing for Ice Dam and Back-Up Protection

In climates where icing along the eaves is anticipated, eaves flashing should be installed to ensure maximum protection against possible damage from the back-up of water or slush in the eave trough due to ice dam formation. Eaves flashing may also be advisable in valleys, around dormers, above skylights, or in areas where the accumulation of leaves, pine needles, etc. in the eaves troughs may cause water back-up.

To install eaves flashing, a strip of self-adhering underlayment that complies with ASTM Standard D1970 should be applied directly to the deck. Underlayment width should be enough to extend up the roof from the eaves to a point at least 24" inside the interior wall line. If the underlayment is not wide enough to reach that point, install an additional course(s) of underlayment, overlapping the previous course as specified by the manufacturer (see Fig. 3). For additional protection in areas with heavy snow accumulation, it may be necessary to extend the underlayment to a point 36" or more inside the wall line.

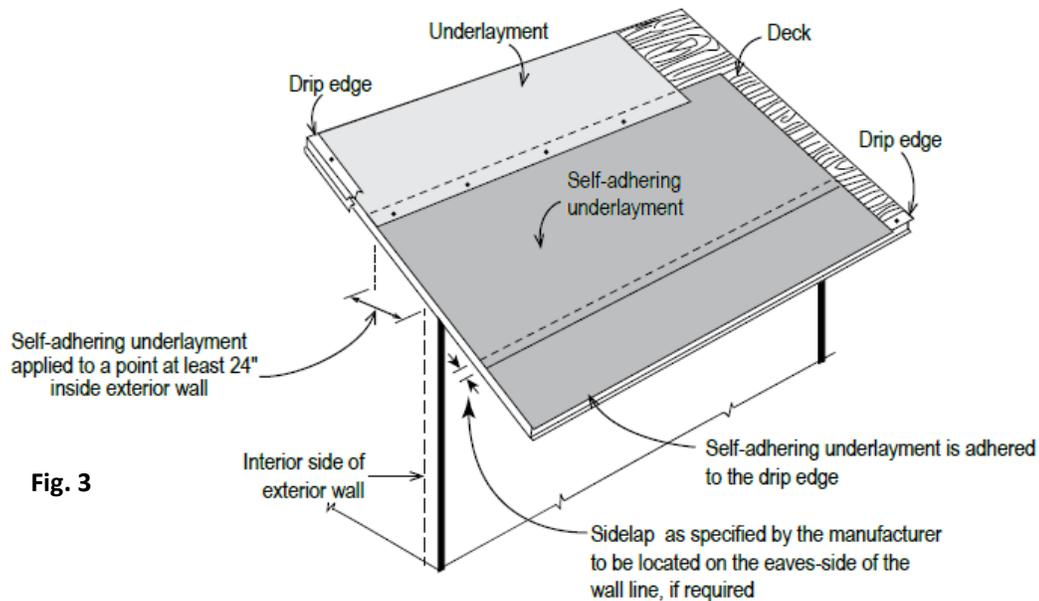


Fig. 3

Note: Because most self-adhering underlayments are vapor retarders, they should not be used beyond the recommended area without extra attention to attic ventilation. Be sure to follow the manufacturer's application instructions when using self-adhering underlayment.

Install the Underlayment

After the deck has been properly prepared and is dry, it should be covered with an appropriate asphalt-saturated underlayment felt that complies with ASTM D226, ASTM D4869, ASTM D6757, an alternative material recognized in a code compliance evaluation report, or as approved by the shingle manufacturer. Some local codes require specific underlayments.

If there are valleys, run a minimum 36" wide strip of manufacturer approved underlayment centered on each valley, and secure 1" from felt edges with only enough nails to hold in place (see Fig. 4a). If two or more strips of underlayment are required to cover the entire valley length, lap the upper piece 12" over the lower and bond with asphalt roofing cement.

With valley underlayments in place, begin installing the horizontal courses of underlayment felt parallel to the eaves, lapping each course at least 2" over the underlying course, in accordance with the manufacturer's application instructions (see Fig. 4b). Secure the felt with only enough nails needed to hold it in place. If two or more pieces are required to continue a course, lap the ends at least 4".

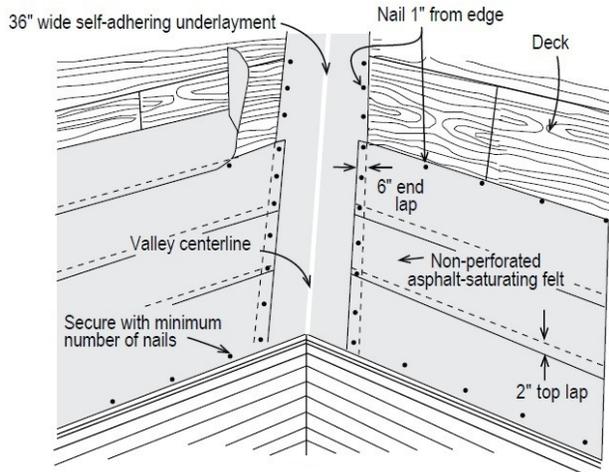


Fig. 4a

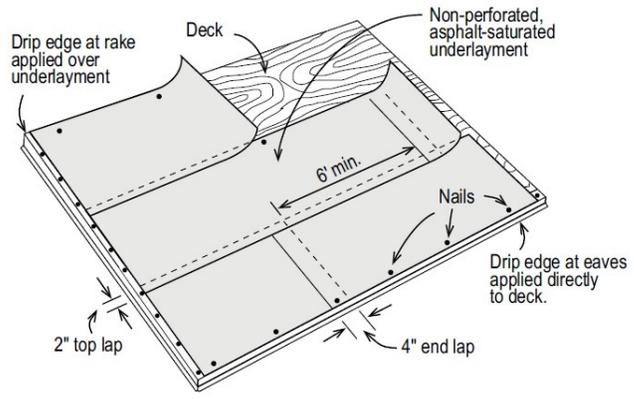


Fig. 4b

End laps in a succeeding course should be located at least 6 feet from the end laps of the preceding course. Extend the felt a minimum of 6" over hips and ridges. Where the roof meets a vertical surface, carry the underlayment at least 4" up the surface. After installing the underlayment, cover with shingles as soon as practical. **IMPORTANT** – Follow shingle manufacturer's application instructions. There are valley instructions specific to some products (e.g. open valleys required, self-adhering underlayment required).

Prepare Valley Flashings

To help ensure proper drainage and prevent water leakage along the valley joints, valley flashing is required. This procedure is a typical valley flashing preparation. The manufacturer's application instructions may require alternate methods. Center a minimum 36" wide strip of roll roofing (50# or heavier) or a strip of self-adhering underlayment that complies with ASTM D1970 over the valley underlayment and secure 1" from edges with only enough nails to hold it in place (see Fig. 5). If two or more strips of roll roofing are required to cover the entire length of the valley, lap the upper piece 12" over the lower, and bond with asphalt roofing cement or by using the self-adhering underlayment. The valley will be completed during shingling.

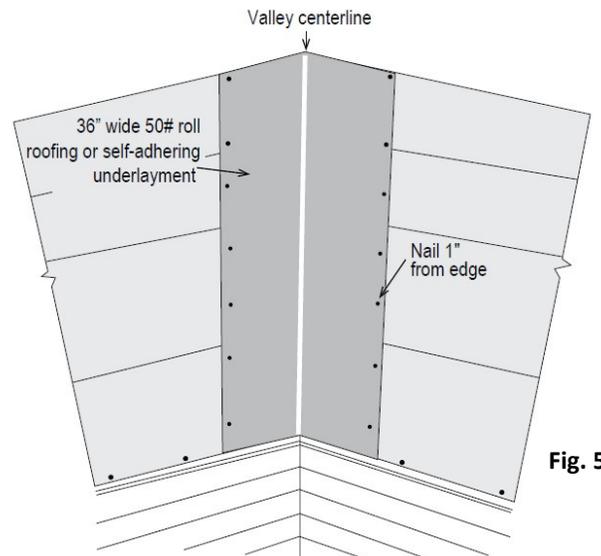


Fig. 5

Installing Shingles with New-Roof Construction

Use Proper Nails & Nailing Methods

Corrosion-resistant roofing nails should be used when affixing asphalt shingles. These nails should have a minimum nominal shank diameter of 12 gauge (0.105") and a minimum head diameter of 3/8".

Smooth- or rough-shanked nails are acceptable. Galvanized and aluminum nails generally have adequate corrosion resistance. Stainless steel nails are corrosion resistant. Nails shall be long enough to penetrate through the roofing materials and a minimum of 3/4" into the roof deck. Where the deck is less than 3/4" thick, the nail shall penetrate through the roof deck.

Drive nails straight and flush with the shingle surface; do not break the shingle surface with the nail head (Fig. 6). **IMPORTANT** – Follow the shingle manufacturer's application instructions regarding specified nail type, size, and grade, as well as special nailing procedures and proper positioning of nails on the shingle.

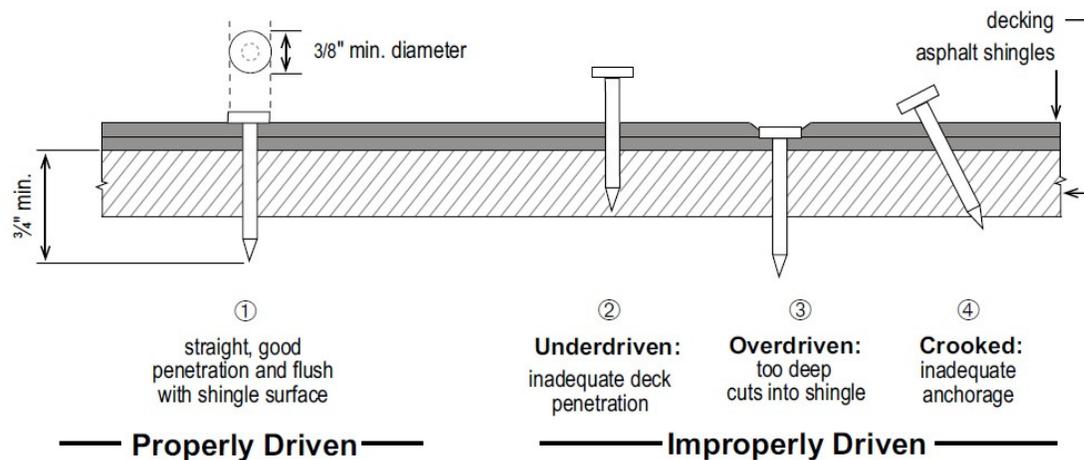


Fig. 6

If a nail does not penetrate the deck properly and cannot be tapped down into position, remove the nail, repair the hole with asphalt roofing cement that complies with ASTM D4586, and place another nail nearby. If necessary, replace the shingle.

With three-tab shingles, follow the manufacturer's application instructions. Use a minimum of four nails per shingle (See Fig. 7.). Always keep the shingle end joints of succeeding courses at least 2" away from the nails in the previous course. **NAIL PLACEMENT IS CRITICAL.** The manufacturer's application instructions must be followed for the number and placement of the nails. The nails must be placed so they penetrate through all the layers of the shingle. Please be sure to follow your local building codes.

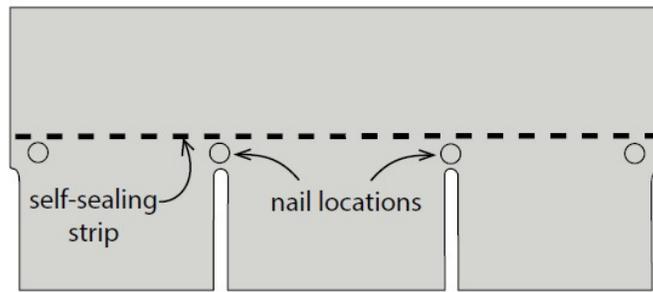


Fig. 7

EXAMPLE ONLY – Refer to manufacturer’s application instructions for exact nail placement requirements.

Where to Begin

The use of horizontal and vertical chalk lines can assist in providing good shingle alignment. Because minor variations in shingle dimensions occasionally occur, chalk-line usage can help ensure the proper horizontal and vertical alignment, exposure and coverage of shingles.

If the roof surface is interrupted by a dormer or valley, begin applying shingles from a rake and work toward the break. If the surface is uninterrupted, begin at the rake deemed most visible. If both rakes seem equally visible, or it is a hipped roof, start at the center and work both ways.

The Starter Strip

The application of three-tab asphalt shingles begins with a starter course (composed of “starter strips”) to back up and fill in the spaces under the shingle end joints of the first course of shingles (see Fig. 8).

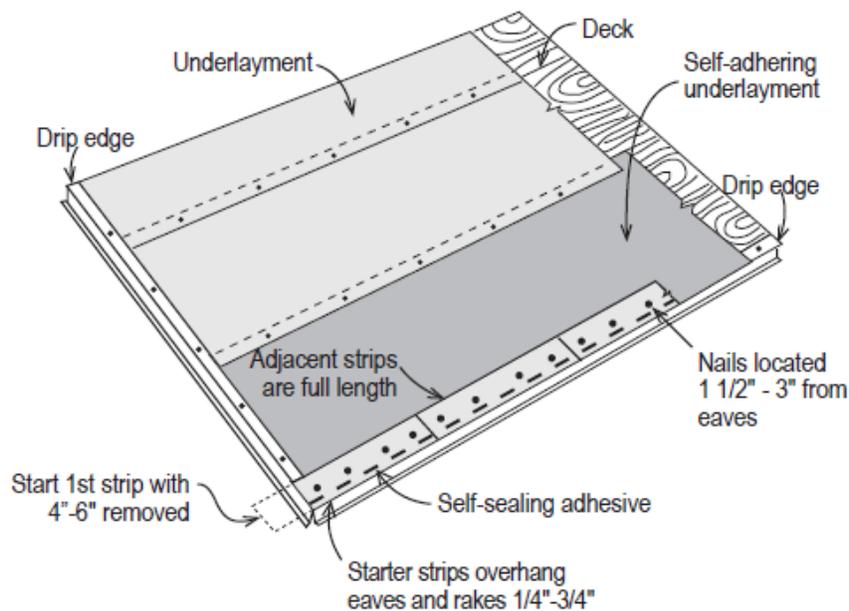


Fig. 8

If recommended by the three-tab shingle manufacturer, self-sealing strip shingles of the same horizontal width and vertical exposure as the three-tab shingles that are to be installed can be modified for use as starter strips by removing and discarding the exposed portion of each strip shingle and positioning the remaining piece along the eaves, with the factory-applied adhesive facing up and close to the eave’s

edge. Consult with the three-tab shingle manufacturer for alternative starter strip options, some of which may be factory-made.

The starter course should overhang the eaves and rake edges by $\frac{1}{4}$ " to $\frac{3}{4}$ ". If the drip edge extends out from the eaves and rake edges by $\frac{1}{4}$ " to $\frac{3}{4}$ ", the shingles can be applied flush with the drip edge.

Manufacturers may require different starter strip techniques or provide starter strip materials that require specific application instructions. Follow the manufacturer's application instructions.

Proper application of the first course of shingles is the most critical. Be sure it is laid out perfectly straight; check against the chalk lines to ensure proper alignment of subsequent courses. Shingles should be installed so that shingle ends are offset. The first course typically starts with a full shingle, but individual three-tab shingles will have specific instructions for beginning the course of shingles. Generally, shingle ends should be offset from the course above and below by at least 4". Make sure that no end joint is less than 2" from any nail in an underlying course. Begin nailing from the end nearest the shingle just laid and proceed across, aligning each shingle carefully.

For best appearance and shingle function, the manufacturer's application instructions for shingle offsets and repeat pattern must be followed as indicated on the shingle wrapper. Each manufacturer has determined the optimum application pattern (for function and appearance) for each of their products. (See Fig. 9 as an example of one method.)

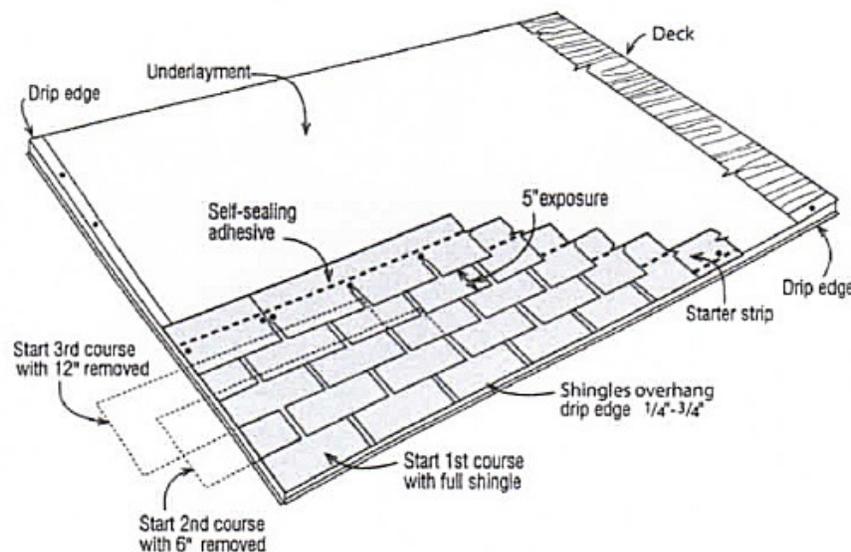


Fig. 9

Applying the Shingles

The first course starts with a full shingle, while succeeding courses start with progressively shorter pieces having portions removed, until the application pattern repeats. By removing different amounts from the first shingle in each course, tabs in one course will not line up with those in the course below, creating the desired water resistant arrangement and attractive visual pattern.

For ease of illustration, a method using a non-specified offset dimension is shown in Fig. 9. For directions and illustration on appropriate methods, it is important to consult the manufacturer's application instructions.

With the 6" method, the first course begins with a full-length shingle. The second course begins with a shingle that is 6" shorter, and the third course starts with a shingle having 12" removed. The pattern repeats itself beginning with the fourth course, when a full-length shingle is used.

Applying Shingles at Valleys

Three-tab shingles can be installed at valleys using the woven, open, or closed-cut method. Consult the *ARMA Residential Asphalt Roofing Manual* for detailed descriptions of these and other methods. The following is an overview of the closed-cut method.

Make sure the valley preparation is complete (see Figs. 4a and 5). Beginning with the lower-sloped roof plane, apply *only the first course* of shingles along the eaves, into and over the valley, with the last shingle extending at least 12" onto the intersecting roof and secured with two nails. Do not nail within 6" of the valley centerline. Never allow end-joints in the valley; add in a length of shingle so the end of the shingle extends at least 12" past the centerline.

Apply successive courses up the slope in the same manner, but to one roof plane only, starting with the lower-sloped roof. When the first plane is complete, snap a chalk line 2" from the valley centerline on the steeper-sloped side. Apply shingles to the steeper-sloped side, trimming the end shingles to the chalk line. Trim 1" on a 45-degree angle from the upper corner of all valley-abutting end shingles to direct water into the valley. Finally, embed the end of each end shingle in a 3" wide strip of asphalt roofing cement (see Fig.10).

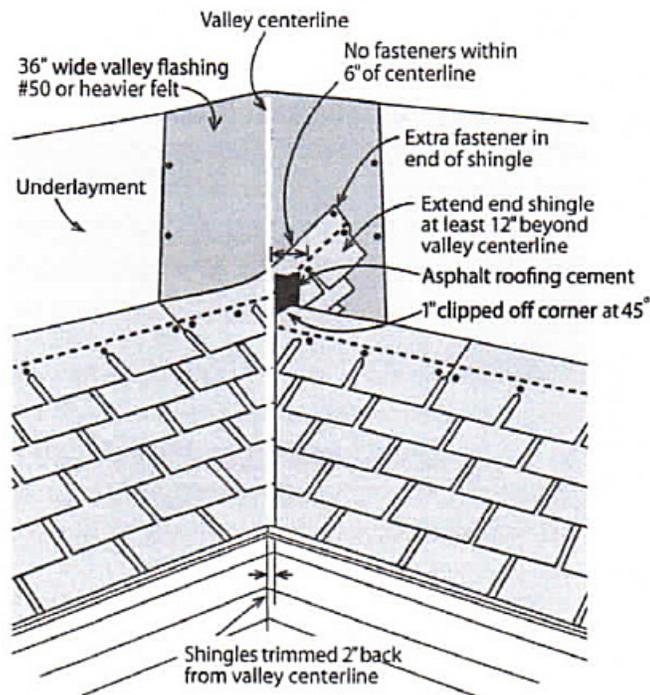


Fig. 10

Flashings

The following discussion is designed only to familiarize the reader with basic flashing concepts. For a more complete and detailed discussion of flashings and flashing application procedures, consult the *ARMA Residential Asphalt Roofing Manual*.

All intersecting roof planes and projections through the roof surface (vent stacks dormers, chimneys, etc.) require flashing to ensure these areas remain watertight. ***Metal flashings should be of at least 26-gauge G-90 galvanized steel, 16 oz. copper or 0.025" aluminum.***

Flashing Against Vertical Sidewalls (Step Flashing)

Step flashing is used when a sloping roof plane meets a vertical surface. Typical step-flashing units are metal rectangles that are a minimum of 2" longer than the shingle exposure by 10" in size and that can be easily bent (shown in Fig. 11a as 7 5/8" for a 5 5/8" exposure shingle).

To install step flashing, place the first flashing unit over the end of the starter strip so that the tab of the end shingle in the first course will cover the flashing rectangle completely. Cement tab to flashing. Position the second step-flashing unit over the end shingle in the first course, above the butt, so the cemented tab of the end shingle in the second course will cover the flashing unit completely. Repeat. (See Fig. 11a and Fig. 11b).

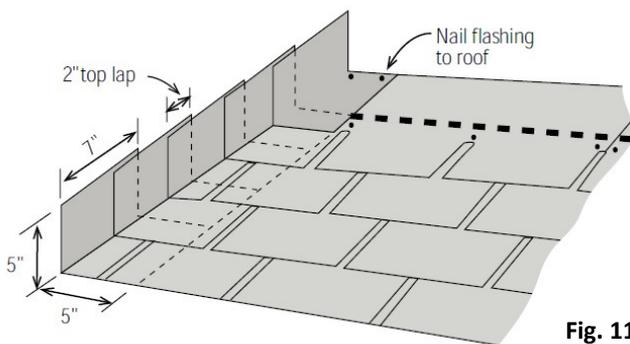


Fig. 11a

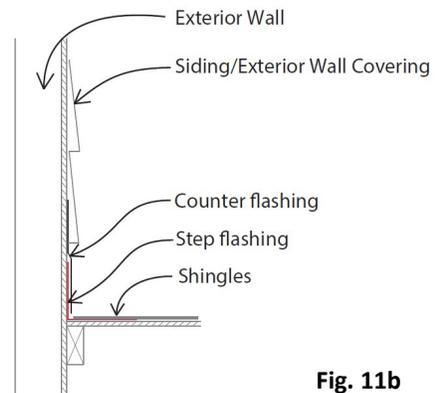


Fig. 11b

Bend each flashing unit to cover the roof deck by at least 5" and to run snugly up the wall surface for 5". Secure the flashing to the roof with one or two nails. Do not nail the flashing to the wall. To help prevent leakage, the step flashing must then be counter-flashed.

Flashing around Chimneys

Proper flashing installed around chimneys is a critical and important component in achieving proper water diversion. The components attached to the deck and the masonry must be able to move independently without allowing water leakage. Chimney flashings generally require metal apron flashings secured to the roof deck and metal counter-flashings secured to the masonry. This allows the counter-flashing to move independently from the apron flashing without affecting water runoff. Crickets

are recommended on chimneys over 24" wide, and are required by most building codes for chimneys over 30" wide. This section gives some basic details, but because of the wide variety of chimney details, the *ARMA Residential Asphalt Roofing Manual* should be consulted for further details.

Apron Flashing at Chimney Front: Apply shingles up to the front edge of the chimney and apply a thin coat of ASTM D41 asphaltic primer to the chimney brickwork. Make and place a metal apron flashing over the shingles at the chimney front. Bend the wings flush with the chimney side and set in asphalt roofing cement. The flashing should extend at least 4" over the shingles and 12" up the vertical face of the chimney (see Fig. 12).

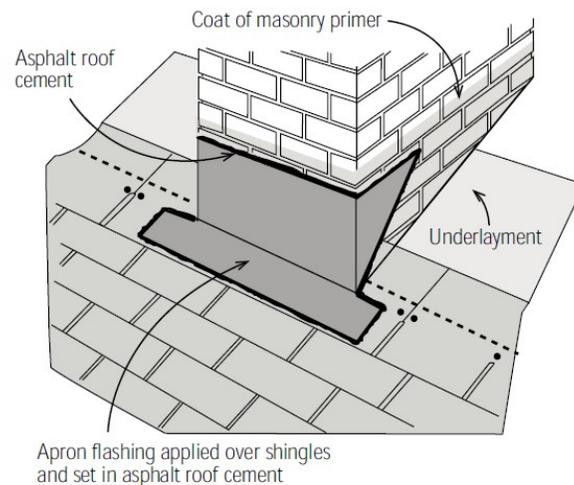


Fig. 12

Step Flashing at Chimney Sides: Place metal step flashing on the chimney sides. Secure step flashing to the masonry with asphalt roofing cement and to the deck with nails. Embed the end shingles in asphalt roofing cement, overlapping the flashing.

Flashing the Cricket: Place metal flashing over the cricket and back of the chimney, cutting and bending the metal flashing to cover the cricket and extend onto both the roof surface and up the brickwork by at least 6", and far enough laterally (2" minimum) to lap the step flashing on the sides. Cut another flashing strip to fit over the ridge of the cricket and extend onto the roof at the back of the cricket by at least 6". Bring the end shingles up to the cricket and cement in place (see Fig. 13).

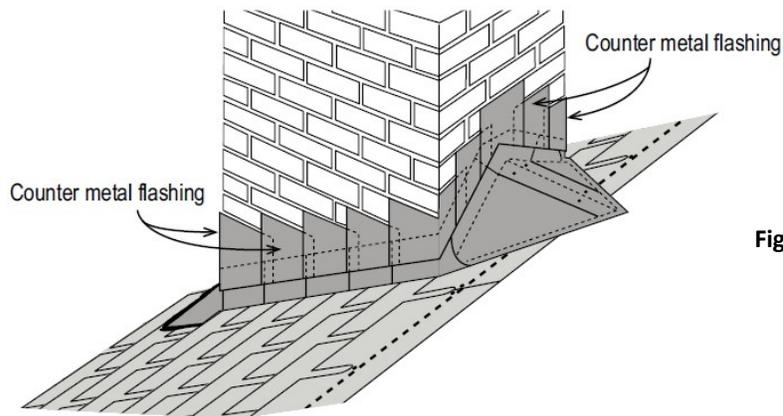


Fig. 13

Chimney Counter-Flashings: Place counter-flashing over all apron, cricket and step flashings. Set into brickwork by raking out a mortar joint to a depth of 1 ½" and inserting the bent edge of the counter-flashing into the cleared joint. Refill the joint with Portland cement mortar and bend the counter-flashing down to snugly cover the step flashing. Use a continuous piece of counter-flashing at the chimney front; use uniform pieces at the sides to match the brick joint and roof pitch, starting at the lowest point and overlap each by at least 3".

NOTE: Chimney flashings are complex so please refer to the *ARMA Residential Asphalt Roofing Manual* for complete details.

Flashings around Stacks and Vent Pipes

Apply shingles up to the pipe. Cut a hole in a shingle to fit over the pipe, and set the shingle in asphalt roofing cement. Place a preformed flashing flange snugly over the pipe and set in asphalt roofing cement. Resume applying shingles, cutting them to fit around the pipe, and embedding them in asphalt roofing cement where they overlay the flange. Avoid excessive use of cement, which can cause blistering. Do not drive nails close to the pipe. When completed, the lower part of the flange will overlap the lower shingles, while the upper and side shingles will overlap the flange (see Fig. 14a and Fig. 14b).

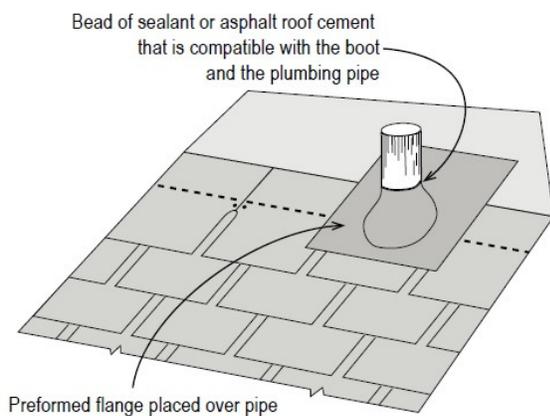


Fig. 14a

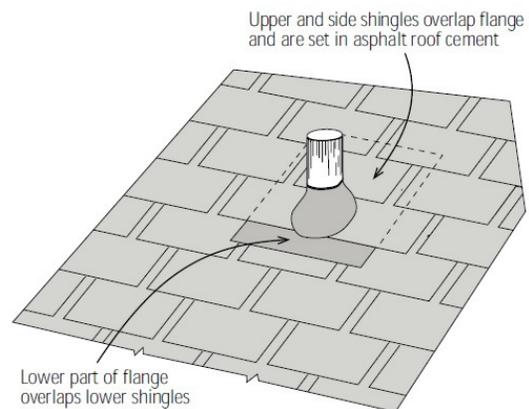


Fig. 14b

Hips and Ridges

Apply shingles up to the hip or ridge from both sides, adjusting the last few courses so that the ridge capping will adequately cover the top courses of shingles equally on both sides of the ridge.

If a manufacturer has supplied special hip and ridge shingles, install per instructions. Hip and ridge shingles may also be made from three-tab shingles. As three-tab shingles come in many sizes, cut the shingles down through the tab cutouts on three-tab shingles or to a minimum of 9" x 12" on two-tab, four-tab or no-cutout shingles. For a neat application, taper the headlap portion of each cap shingle slightly so that it is narrower than the exposed portion. Apply by bending each along its centerline to extend equally on either side of the hip or ridge, giving a 5" exposure (Fig. 15). Secure with one nail on each side, 5 ½" back from the exposed end and 1" up from the edge. Use nails ¼" longer than those recommended for shingles. Begin applying hip shingles at the bottom of the hip. On ridges, begin at the end opposite the direction of prevailing winds. If a ridge vent is used, install ridge vent and capping shingles per manufacturer's application instructions.

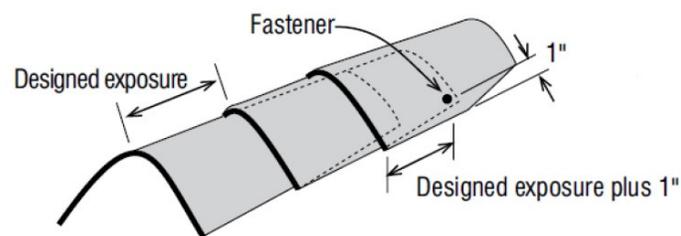


Fig. 15

Special Procedures for Low-Slope and Steep-Slope Roofs

Low-Slope Roofs

Three-tab asphalt shingles may be used on low-slope roofs ranging from 2" to 4". Do not use three-tab shingles on slopes less than 2" per foot. Check the manufacturer's application specifications that are printed on the shingle wrapper. Applications ranging from 2" to 4" are considered low-slope roofs and require special underlayment application practices.

Where allowed by the building code, the generally preferred practice on low-slope roofs is to cover the full deck with self-adhering underlayment that complies with ASTM D1970, applying the underlayment directly to the deck. Be sure to follow the manufacturer's application instructions when using self-adhering underlayment. Because most self-adhering underlayments are vapor retarders, confirm attic ventilation is adequate, balanced, and evenly distributed to assure proper airflow.

As an alternative practice, the "traditional" method of preparing a low-slope deck is to cover the deck with two layers of underlayment. Begin by placing and fastening a 19" wide underlayment starter course along the eaves. Place a full width sheet (36") over the starter course sheet with the long edge placed along the eaves and completely overlapping the underlayment starter course. All succeeding courses are 36" wide and should be positioned to overlap the preceding course by 19". Secure each course by using only enough fasteners to hold it in place until the shingles are applied. End laps should be 12" wide and located at least 6' from end laps in the preceding course.

Note: If the full width sheet of underlayment is not 36" wide, see the manufacturer's instructions for the correct overlap dimensions.

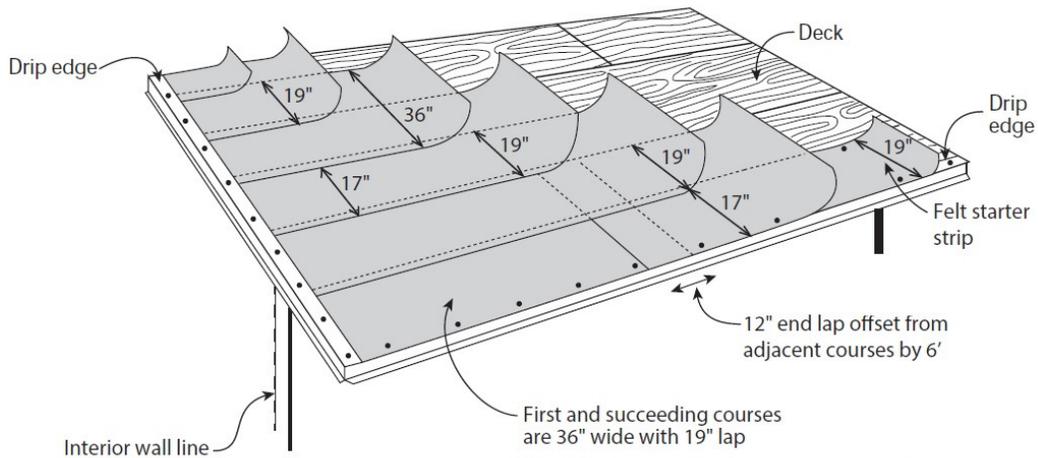


Fig. 16

Steep-Slope Roofs

Installation of shingles on roof slopes exceeding 21" per foot requires special application and fastening procedures. Upon installation of the shingles, immediately cement each shingle tab with two quarter-sized dabs of asphalt roofing cement near the lowermost corners of each tab or as recommended by the shingle manufacturer (see Fig. 17).

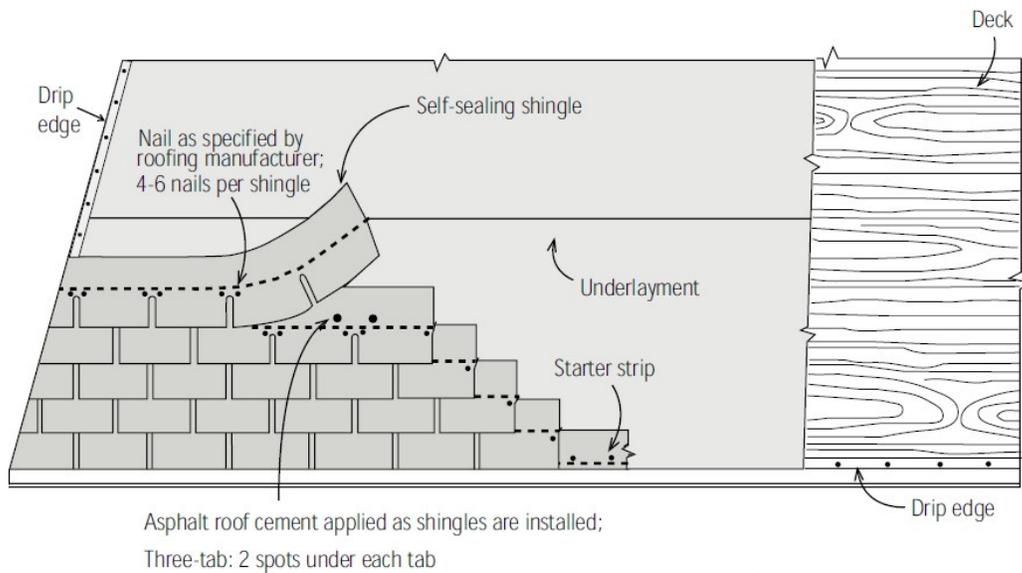


Fig. 17

Reroofing via Roof Replacement or Roof Recover

Overview

The first step in reroofing is to decide whether the existing roofing should remain in place or be removed. Roofs covered with asphalt shingles or asphalt roll roofing may be left in place if in good condition. However, local building codes often set the maximum number of roofs that may be installed before removal of the existing roofing, commonly referred to as a tear-off, becomes mandatory.

Because the new roof will add weight to the structure, the roof framing must be strong enough to support this additional weight, as well as the weight of the roofers and their equipment. It is also important that the existing deck be in good condition so that it can provide adequate anchorage for the new roofing nails. Finally, if old roofing is warped, curled, or badly weathered – or if the underlying structure is deteriorated or damaged to the point where providing a sound, level surface is difficult – the existing roofing should be removed and the underlying deck and roof structure repaired or replaced as necessary.

Before reroofing, whether recovering over an existing roof or with a tear-off situation, carefully inspect all adjacent areas of the building and make any necessary repairs to or replacements of deteriorating wood trim, chimney mortar joints, flashings, etc. Rebuild, replace, or reline and clean gutters and make sure there is adequate under-roof ventilation. After making all necessary repairs, clean all debris from the roof surface.

The following pages focus on the two most common reroofing situations: (1) roof replacement, in which asphalt shingles are applied where existing materials have been removed, and (2) roof recover, in which asphalt shingles are applied over existing asphalt shingles or asphalt roll roofing. For detailed instructions on the removal of old roofing and preparing for reroofing with asphalt shingles over a variety of existing roofing materials, refer to the *ARMA Residential Asphalt Roofing Manual*.

Preparations for Reroofing

Deck

When performing a roof replacement, the old roofing material must be removed as completely as possible down to the deck or, if previously installed, down to the self-adhering underlayment. Remove as much of the existing roofing as possible including fasteners, moving the debris out of the path of workers and sweeping all loose material off the roof. Extra care must be taken around chimneys and other roof penetrations. Replace any rotted or otherwise damaged roof sheathing. Remove or drive flush any remaining fasteners and sweep the deck surface clean a final time.

Underlayment

If the old roofing has been removed, cover the deck with new asphalt-saturated felt underlayment as for new construction. If the old asphalt shingles are to remain, no additional underlayment is generally required.

Eaves Flashing (If Needed)

If the old roofing has been removed, apply a self-adhering underlayment. If new shingles are being applied over the existing layer, a self-adhering underlayment is typically not required. If, however, there have been ice dam or leakage concerns with the old roof, it may be advisable to remove the old roofing, and reroof using a self-adhering underlayment as previously described.

Drip Edges

Remove any badly deteriorated metal drip edges and replace with new ones (see Fig. 2).

Smoothing the Surface Prior to Recovering

If installing asphalt shingles over existing asphalt shingles, remove or nail down any loose, curled, lifted, or broken shingles. Replace missing shingles with new ones for an unbroken nailing base. Hammer down all loose or protruding nails or remove them and refasten the shingle. Remove all existing hip and ridge shingles.

Additional Information

For further information, refer to ARMA's Technical Bulletins that deal with reroofing:

- "Self-Adhering Underlayment Removal Prior to Steep Slope Reroofing"
- "Reroofing: Tear Off vs. Recover"

Installing Shingles during Reroofing

If the old roofing has been removed and new underlayment installed, shingle application is the same as that for new construction.

Installing Three-Tab Shingles Over Existing 3-Tab Shingles during a Roof Recover

If applying three-tab shingles over existing three-tab asphalt shingles and both have the same exposure dimension (this will occur often), then the "nesting procedure" can be used. Nesting minimizes the unevenness that might result from the new shingles bridging over the butt edge of the old shingles.

If new shingles are of a different exposure than existing shingles, then the existing shingles should be torn off before proceeding. Directly applying shingles over uneven surfaces can cause the new shingles to deform, negatively affecting finished appearance and preventing the sealant from activating properly, thus decreasing wind resistance. It is not recommended to install three-tab asphalt shingles directly over existing laminated shingles of *any* exposure dimension due to the unevenness of the existing multi-layered shingles. In addition, if shingles are cut down in size in an attempt to "nest" into place, the sealant may shift away from the lowermost edge of the shingle, thus decreasing wind resistance.

Flashings and Reroofing

If the old roofing has been removed, flashing procedures for reroofing generally follow those outlined for new construction. If the old shingles are left in place when reroofing, some flashing application details may be different. Flashings in good condition may be left in place and reused if allowed by building codes. The following are general guidelines regarding flashings when reroofing over existing asphalt shingles. For specific instructions and illustrations, consult the *ARMA Residential Asphalt Roofing Manual*.

Valley Flashings: If the existing roof has an open valley, build up the exposed area of the valley with a mineral-surfaced roll roofing product to a level flush with the existing roofing. Then install new open valley flashing in the same manner as for new construction, overlapping the existing shingles. The preferred treatment, however, is to construct an open or closed-cut valley with the new shingles crossing over the valley filler strip.

Vertical Sidewall Flashings: Trim the new end shingles to within ¼" of the existing step flashing. Embed the last 3" of the end shingle of each course in asphalt roofing cement. Also apply a bead of cement with a caulking gun at the joint between the shingle ends and the sidewall.

Vent Flashings: If the existing flashing is in good condition, lift the lower part of the flange and install new shingles beneath it. Secure the flange back in place with asphalt roofing cement and apply additional cement around the outside of the pipe to protect the joint between the pipe and flange. Resume shingle application, cutting shingles in successive courses to fit snugly around the pipe, and embedding them in asphalt roofing cement.

Chimney Flashings: If the existing flashings are in good condition, lift the lower part of the front base flashing and install new shingles beneath. Cover the area under the flashing with asphalt roofing cement and set the flashing back in place. At the chimney sides, trim the new shingles to within ¼" of the existing step flashing, and embed the last 3" of each end shingle in a thin layer of asphalt roofing cement. Apply a bead of cement with caulking gun at the joint between the ends of the new shingles

and the flashings. If the existing cricket flashing is metal, apply new shingles up to the flashing and set the last 3" of each end shingle in asphalt roofing cement.

Hips and Ridges

If the old roofing has been removed, apply new hip and ridge shingles as if for new construction. If reroofing over existing shingles, remove the old hip and ridge shingles and replace with new shingles, using the same methods as outlined for new construction.

What Good Application Means to You

If You're a Dealer...

Good application will enable the roofing products you sell to give the kind of performance for which you want to be known.

If You're An Applicator or Roofing Contractor...

Good application is good business. You want to be known as a builder of good roofs. You also want to reduce the chance and cost of callbacks.

If You're an Architect, Builder or Contractor...

People who buy your homes or your professional or contracting services expect lasting values. Extra minutes spent on a job to ensure good application may save hours and dollars later.

If You're a Homeowner...

You have to live under the roof. You want the best roof for your money.

Product Specification References

Shingles:

ASTM D3018

ASTM D3462

CSA A123.5

Underlayment:

ASTM D226

ASTM D4869

ASTM D6757

CSA A123.3

Self-Adhering Underlayment:

ASTM D1970

CSA A123.22

Asphalt Roofing Cement:

ASTM D4586



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National Press Building
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Washington, DC 20045
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Algae Discoloration of Roofs

Roof discoloration caused by algae may be present throughout the United States and Canada. The discoloration usually has a brown to black appearance, and may be mistaken for fungus growth, soot, dirt, moss, or tree droppings.

Gloeocapsa magma is the most prevalent of several algae species that contribute to discoloration. All species are transported through the air and tend to collect and grow on exposed surfaces, including roofing structures. Natural pigments produced by these algae may cause a roof to gradually turn dark brown or black. Discoloration may appear uniform or as streaks. Algae discoloration should not be confused with moss or tree droppings, which typically produce only localized discoloration. It is important to note that algae discoloration is only an aesthetic consideration and will not damage the roof.

Roof discoloration caused by algae is most prevalent in warm, humid climates, although it is not confined exclusively to these regions. Algae growth occurs to varying degrees in all regions of North America. Almost all types of roofing systems are susceptible to algae discoloration. It is most readily visible upon light colored roofs, while it is not so visible upon darker shades of roofing.

While algae discoloration cannot be completely removed, it may be lightened by applying a solution of liquid household bleach (sodium hypochlorite) and water. A typical mixture consists of one part bleach and one part water. Other cleaning chemicals or methods should not be used without the approval of the asphalt shingle manufacturer as they could damage the asphalt shingles or the roofing system, or interfere with the manufacturer's product warranty. Instructions for cleaning, including the appropriate mixture to use, should be obtained from the roofing manufacturer.

The mixture application and rinse process will make the roof surface slippery and potentially hazardous to walk on during treatment. Follow all applicable safety precautions and procedures when working on or near the roof.

First, gently disperse this mixture on the roofing surface. Use normal precautions for handling bleach, including eye protection and rubber gloves. Be sure to apply it carefully to avoid bleaching of other parts of the building and the surrounding landscape. Avoid scrubbing the roofing surface and never use a high pressure sprayer, as this friction and high pressure may loosen and remove granules. If possible, always work from a ladder and/or walkboards to avoid direct contact with the roof surface. The mixture should be left on the roof for approximately 15 to 20 minutes. Finally, rinse the mixture from the roof by gently spraying the surface with water. The rinse water should be dealt with appropriately by thoroughly diluting the mixture or, if necessary, disposing of it according to the recommendation of the bleach or cleaning mixture manufacturer. The effectiveness of a cleaning technique is only temporary, and discoloration will likely reoccur.

Several types of algae resistant asphalt shingles have been developed and are commercially available. These asphalt shingle products are specifically designed to inhibit algae growth for extended periods of time.

IMPORTANT: High pressure washing systems and/or scrubbing are likely to damage asphalt roofing and should not be used on asphalt roofing for removing algae or for any other purpose.

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Recommendations for Application of Asphalt Shingles on Slopes Greater Than 21:12

The maximum slope considered by ARMA to be suitable for normal asphalt shingle application is 21:12, or 21" per foot. The use of asphalt shingles on slopes greater than 21:12 (e.g., mansard roofs) requires the use of special application methods because very steep slopes reduce the effectiveness of factory-applied self-sealing adhesives, especially in colder climates and shaded areas. If normal application methods are used for asphalt shingles on very steep slopes, problems can occur that are not a result of any weakness or defect in the product, but rather because special application methods for very steep slopes were not employed.

If a roof slope exceeds 21:12, the shingles should be applied by the following recommended method:

- Secure the shingle to the roof deck with fasteners as directed by the roofing manufacturer. Manufacturer directions may call for more than the normal number of fasteners per shingle and may provide specific fastener locations.
- Apply a manufacturer-recommended asphalt roof cement complying with ASTM D4586, *Standard Specification for Asphalt Roof Cement, Asbestos-Free*, or other cements approved by the roofing manufacturer under all shingle tabs in spots equivalent to the size of a quarter (about 1" diameter), immediately upon installation.
 - For standard laminated shingles (i.e., 'no cut-out' shingles) apply four spots of cement under each shingle near the lowermost edge, with two near the corners and two equally spaced between the corners.
 - For 'three-tab' shingles, apply two spots of cement under each tab near the lowermost corners.
 - For other specialty shingles, refer to manufacturer's recommendations.
- Over-application of adhesives is not recommended; follow manufacturer's recommendation for cement type and minimum and maximum quantities.
- An unvented space may be behind a mansard roof. It is important to provide a properly ventilated flow-through air space behind the roof sheathing to prevent the entrapment of moisture-laden air. Additional information is available on ARMA's website.

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Asphalt Shingle Reroofing: Replacement vs. Recover

When the time comes to reroof an existing asphalt shingle roof, a decision must be made whether to remove the old shingles or apply new shingles directly over the existing layer. Most building codes define the options as follows:

Reroofing: The process of recovering or replacing an existing roof covering.

Roof Recover: The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

Roof Replacement: The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

In some cases, local building codes will limit the available options—most do not allow more than two roof coverings on a building. However, there is no easy, universal answer if only one roof is in place. Although in many cases it is not necessary to tear off old shingles before installing new shingles, some roofing professionals will insist on replacement because it ensures that a completely new roofing system is installed.

Although each roof must be evaluated individually, general guidelines can help make an informed decision whether to replace or recover an existing asphalt shingle roof.

- If a roof has only one layer of shingles that lay flat and the decking is in good condition, a tear-off may not be needed. Not only will the existing layer provide a secondary back-up roof for the new shingles, but it will also save the cost and inconvenience of removing and disposing or recycling the old shingles.
- Before making a final decision to tear off or recover, check that local building codes are being followed.
- Adequate roof ventilation should be provided (See ARMA Technical Bulletin, “Ventilation and Moisture Control for Residential Roofing” for additional details and information).

The existing shingles will probably have to be removed if:

- An inspection of the roof deck reveals rotted or warped wood or large gaps between the deck boards. Any rotten or damaged boards must be replaced before applying new shingles. [Note: for best roof performance, consider re-decking “board” roof decks with a layer of APA (The Engineered Wood Association) Grade ½” plywood before installing new shingles.]
- There are more than two layers of existing shingles on the roof. Note that the local building codes may require removal of more than one layer.
- The roof structure shows signs of sagging across the ridge or truss lines. If the roof does not look straight and feel solid, have the structure inspected by a licensed structural engineer to check for structural defects.
- The condition of the existing shingles is so uneven and distorted that it would not be practical to flatten all raised areas enough for the new roof to lay flat.

Many factors may play into whether a roof can be recovered or replaced, so it is important to discuss the options with your roofing professional. Your decision can impact the curb appeal of your home and the performance of your roof.

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Use of Asphalt Shingle Underlayment

There are three basic types of underlayment used under asphalt shingles: asphalt-saturated felt, self-adhering underlayment, and non-asphaltic synthetics (polymers). The most common type of asphalt shingle underlayment is asphalt-saturated felt. There are a number of important reasons for installing underlayment on wood decks before asphalt shingle application. Among them are the following:

- Using the appropriate underlayment along with the proper roof deck material and asphalt shingles will ensure the required roof assembly fire-resistance classification, such as Class A, Class B and Class C, is met. An asphalt shingle by itself is not classified for fire-resistance, although it is a part of the fire-resistance-classified roofing assembly. In many municipalities, a Class A, B, or C fire rating is required by code or ordinance for all roofing assemblies.
- Asphalt shingle manufacturers direct the application of underlayment over wood roof decks.
- Underlayment helps protect the roof deck until asphalt shingle application is completed.
- Underlayment is water resistant. It provides secondary protection for the roof deck from wind-driven rain and other moisture penetrations.
- Installing underlayment helps minimize “picture framing,” which is the visible outline of roof deck panels caused by irregularities in roof deck panel thickness or moisture migration at the roof deck joints that may telegraph through asphalt shingles.
- Asphalt shingle underlayment helps protect the asphalt shingles from resins that may come from the wood roof deck.
- The use of laboratory tested asphalt shingle underlayment products complying with ASTM D226, D4869 and/or D6757 is recommended and may be required by the asphalt shingle manufacturer and/or building codes. Local building codes may have different or additional requirements for types of underlayment. The use of ASTM D1970 self-adhering underlayment may comply with manufacturer’s instructions and local building codes.

Follow printed instructions for application provided with the asphalt shingles and/or asphalt shingle underlayment to ensure optimum performance of the asphalt shingle underlayment and the asphalt shingle roof system.

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Attic Ventilation Best Practices for Steep Slope Asphalt Shingle Roof Systems

Ventilation is:

Attic ventilation is the flow of outside air through the space at the underside of the deck of an asphalt shingle roof system.

The benefits of ventilation are:

Ventilation moves heat and moisture out of an attic space. Ventilation helps to prevent premature shingle deterioration and roofing system failure by keeping the attic temperature closer to the outside temperature. Ventilation may also help reduce the risk of moisture-related problems by removing moisture-laden air that may collect in the attic space caused by day-to-day activities in the living space. Ventilation also helps to reduce the risk of ice damming.

Ventilation is achieved by:

Natural attic ventilation is effective because hot air rises. Outside air flows through an attic space when vent openings allow this hot air to rise out of the attic space at the top (exhaust) while cooler air is drawn in at the bottom (intake). To achieve the benefits noted above, there must be sufficient air flow. Ventilation systems that provide exhaust but no or inadequate intake (or intake but no or inadequate exhaust) severely limit air flow and are unlikely to be effective. Wind can increase air flow but an effective ventilation system assures air flow whether the wind is blowing or not.

The following practices are components of an effective attic ventilation system:

- Install intake vents at the eaves or in the lower portion of the roof or attic space.
- Install exhaust vents at the ridge or in the upper portion of the roof or attic space.
- Locate the intake and exhaust vents to assure air flow in all areas of the attic space. When using eave and ridge vents, they should be continuous and run the entire length of the eave and ridge. Do not allow blockages or restrictions to the air flow, such as by sky lights or incorrectly installed insulation. Maintain open air flow from eave to ridge between each rafter space. When using static vents, they should be equally spaced and close enough to each other to ventilate the entire attic. A combination of different types of intake vents and different types of exhaust vents may be necessary to properly ventilate each attic space. However, combining different types of exhaust vents on the same roof above a common attic space could cause short-circuiting of the attic ventilation system and does not follow vent manufacturers' installation instructions.
- Install a balanced system of intake and exhaust. Balance is achieved when intake vents provide 50 to 60% of the open venting area and exhaust vents provide 40 to 50% of the open venting area. The intake amount should always exceed the exhaust amount. This ventilation system balance is compatible with the requirements in the International Building Code (IBC) and the International Residential Code (IRC).
- Install sufficient ventilation. For many years, the standard recommendation has been to provide 1 sq. ft. of net free venting area for every 150 sq. ft. of attic floor area. The codes generally allow this to be reduced to 1 sq. ft. of net free venting area for every 300 sq. ft. of attic floor area when certain building features, such as balanced ventilation in combination with vapor barriers are incorporated into the attic space.
- When reroofing, replace ventilation devices within the field of the roof (e.g., static vents, ridge vents). It is possible to retain intake and exhaust vents not in the field of the roof (e.g., soffit vents, gable vents), provided they remain functional when reroofing is complete.

- Follow vent product manufacturers' installation instructions. Model building codes require that the product manufacturers' installation instructions be followed.

Please note that some building codes require ventilation to be updated to code required levels when reroofing.

See ARMA's "Ventilation" Fast Facts and ARMA's Residential Asphalt Roofing Manual for additional information.

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ARMA Financial Statements

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

AUDITED FINANCIAL STATEMENTS

DECEMBER 31, 2016

with

INDEPENDENT AUDITORS' REPORT

Audited Financial Statements

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

December 31, 2016

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Preliminary & Tentative

INDEPENDENT AUDITORS' REPORT

Board of Directors
Asphalt Roofing Manufacturers Association, Inc.
Washington, D.C.

We have audited the accompanying financial statements of Asphalt Roofing Manufacturers Association, Inc. ("the Association") which comprise the statements of financial position as of December 31, 2016 and 2015, and the related statements of activities and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

The Association's management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Asphalt Roofing Manufacturers Association, Inc. as of December 31, 2016 and 2015, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Atlanta, Georgia
 , 2017

Preliminary & Tentative

STATEMENTS OF FINANCIAL POSITION

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

	December 31	
	2016	2015
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	\$ 457,367	\$ 513,071
Certificates of deposit	265,894	215,268
Accounts receivable	163,088	6,754
Prepaid expenses	1,200	5,253
TOTAL CURRENT ASSETS	<u>887,549</u>	<u>740,346</u>
WEBSITE DEVELOPMENT COSTS, net of accumulated amortization of \$60,364 at December 31, 2016 and 2015	-0-	-0-
	<u>\$ 887,549</u>	<u>\$ 740,346</u>
LIABILITIES AND NET ASSETS		
CURRENT LIABILITIES		
Accounts payable and accrued expenses	\$ 108,860	\$ 88,867
Deferred revenues	151,860	144,361
TOTAL CURRENT LIABILITIES	<u>260,720</u>	<u>233,228</u>
NET ASSETS		
Temporarily restricted--Note C	18,501	18,571
Unrestricted--Board designated--Note B	608,328	488,547
	<u>626,829</u>	<u>507,118</u>
TOTAL LIABILITIES AND NET ASSETS	<u>\$ 887,549</u>	<u>\$ 740,346</u>

See notes to financial statements.

STATEMENTS OF ACTIVITIES

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

	Year Ended December 31	
	2016	2015
CHANGES IN UNRESTRICTED NET ASSETS		
Revenues and support:		
Membership dues	\$ 1,260,587	\$ 1,233,892
Program fees	450,029	550,002
Sales of publications	7,412	5,087
ARMA Industry Issues	546,237	-0-
Meeting sponsorships	22,450	20,400
Interest and other income	6,745	6,007
TOTAL UNRESTRICTED REVENUES	2,293,460	1,815,388
Net assets released from restriction--Note C	70	5,546
TOTAL UNRESTRICTED REVENUES AND SUPPORT	2,293,530	1,820,934
Expenses		
Program services:		
Committees and meetings	75,012	85,073
General public relations	108,155	85,684
Legislative/regulatory issues	190,722	81,667
Shipment report	21,200	21,200
Publications	2,326	1,668
Special projects:		
Asphalt Fumes	169,001	239,344
Codes and Standards	274,576	271,869
QARC	7,363	3,933
Roof Assembly Ventilation Coalition--Note C	70	5,546
Cool Roofing	19,508	52,532
Sustainability/LCA	7,250	28,450
PM 2.5 Research	5,886	-0-
ARMA Industry Issues	546,237	-0-
Management and general	746,443	857,265
TOTAL EXPENSES	2,173,749	1,734,231
INCREASE IN UNRESTRICTED NET ASSETS	119,781	86,703
CHANGES IN TEMPORARILY RESTRICTED NET ASSETS		
Net assets released from restriction--Note C	(70)	(5,546)
INCREASE IN NET ASSETS	119,711	81,157
Net assets at beginning of year	507,118	425,961
NET ASSETS AT END OF YEAR	\$ 626,829	\$ 507,118

See notes to financial statements.

STATEMENTS OF CASH FLOWS

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

	Year Ended December 31	
	2016	2015
CASH FLOWS FROM OPERATING ACTIVITIES		
Cash received from members and others	\$ 2,137,880	\$ 1,731,004
Cash paid to service and product providers	(2,149,703)	(1,769,408)
Interest and other income received	6,745	6,007
NET CASH USED IN OPERATING ACTIVITIES	<u>(5,078)</u>	<u>(32,397)</u>
CASH FLOWS FROM INVESTING ACTIVITIES		
Proceeds from matured certificates of deposit	140,217	215,297
Cash invested in certificates of deposit	(190,843)	(215,268)
NET CASH (USED IN) PROVIDED BY INVESTING ACTIVITIES	<u>(50,626)</u>	<u>29</u>
NET DECREASE IN CASH AND CASH EQUIVALENTS	(55,704)	(32,368)
Cash and cash equivalents at beginning of year	<u>513,071</u>	<u>545,439</u>
CASH AND CASH EQUIVALENTS AT END OF YEAR	<u><u>\$ 457,367</u></u>	<u><u>\$ 513,071</u></u>
RECONCILIATION OF INCREASE IN NET ASSETS TO		
NET CASH USED IN OPERATING ACTIVITIES		
Increase in net assets	\$ 119,711	\$ 81,157
Adjustments to reconcile increase in net assets to		
net cash used in operating activities:		
Amortization expense	-0-	5,000
Increase in accounts receivable	(156,334)	(2,941)
Decrease in prepaid expenses	4,053	8,000
Increase (decrease) in accounts payable and		
accrued expenses	19,993	(48,177)
Increase (decrease) in deferred revenues	7,499	(75,436)
	<u>(5,078)</u>	<u>(32,397)</u>
	<u><u>\$ (5,078)</u></u>	<u><u>\$ (32,397)</u></u>

See notes to financial statements.

NOTES TO FINANCIAL STATEMENTS

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

December 31, 2016

NOTE A--DESCRIPTION OF BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Asphalt Roofing Manufacturers Association, Inc. (“the Association”) is a not-for-profit organization whose purpose is to promote and further the sale and use of bituminous-based roofing products, defend and protect the asphalt roofing industry from actions that may restrict the sale of certain bituminous-based roofing products, provide a forum to coordinate activities that would benefit from group attention, provide liaisons with others having an influence on the industry, serve as a voice for the industry, present collective positions on issues of concern, and maintain a strong and active membership.

Any firm, partnership or corporation headquartered in North America that manufactures bitumen-based shingles, built-up roofing materials, modified bitumen roofing systems, or allied products is eligible for regular membership. Any firm, partnership or corporation engaged in supplying major components, equipment or services for the manufacture or installation of bitumen-based shingles, built-up roofing materials, or modified bitumen materials may be admitted to associate membership. Associate members have the rights, privileges and obligations of regular members, except for the right to vote.

The following accounting policies are presented to assist the reader in understanding the Association’s financial statements:

Accounting Standards Codification: The Association follows the Financial Accounting Standards Board (“FASB”) Accounting Standards Codification as its sole source of authoritative guidance.

Revenue Recognition: Membership dues and program fees are recognized during the period covered by the membership.

Financial Statement Presentation: The Association reports information regarding its financial position and activities according to three classes of net assets: unrestricted net assets, temporarily restricted net assets, and permanently restricted net assets. There were no permanently restricted net assets at December 31, 2016 and 2015.

In August 2016, the FASB issued Accounting Standards Update No. 2016-14 (“ASU 2016-14”), “Presentation of Financial Statements of Not-for-Profit Entities”, that will change how a not-for-profit organization classifies its net assets, as well as the information it presents in financial statements and notes about its liquidity, financial performance, and cash flows. ASU 2016-14

NOTES TO FINANCIAL STATEMENTS--Continued

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

NOTE A--DESCRIPTION OF BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES--Continued

requires amended presentation and disclosures to help not-for-profits provide more relevant information about their resources, which includes qualitative and quantitative requirements related to net asset classes, investment return, expenses, liquidity and availability of resources, and presentation of operating cash flows. ASU 2016-14 is effective for annual financial statements issued for fiscal years beginning after December 15, 2017, with early application permitted. The Association is currently evaluating the impact of the adoption of this accounting standard update on its financial reporting.

Contributions: Contributions received are recorded as unrestricted, temporarily restricted, or permanently restricted support depending on the existence and/or nature of any donor restrictions. Restricted contributions are recorded as unrestricted contributions if their restrictions are met in the year of receipt.

Functional Allocation of Expenses: The costs of providing the Association's programs and other activities have been summarized on a functional basis in the statements of activities.

Website Development Costs: Website development costs are stated at cost. Amortization is computed using the straight-line method over the websites' estimated useful lives of three to five years.

Income Taxes: The Association is a not-for-profit organization that is exempt from income taxes under Section 501(c)(6) of the Internal Revenue Code. However, the Association is obligated to report lobbying expenses incurred to its members, or pay a proxy tax. During the years ended December 31, 2016 and 2015, the Association incurred no taxes related to lobbying expenses.

The Association follows the current accounting guidance on accounting for uncertainty in income tax. It prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of uncertain tax positions taken or expected to be taken in a company's income tax returns, including taxes on unrelated business income earned by not-for-profit organizations, and also provides guidance on derecognition, classification, interest and penalties, accounting in interim periods, disclosure, and transition. The Association has concluded that there are no uncertain tax positions related to years open to examination that would require recognition in the financial statements.

Accounts Receivable: The Association extends unsecured, non-interest bearing credit to its members in the ordinary course of business. Accounts receivable are recorded at the amounts

NOTES TO FINANCIAL STATEMENTS--Continued

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

NOTE A--DESCRIPTION OF BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES--Continued

due to the Association. An allowance for doubtful accounts receivable is estimated and recorded based on management's evaluation of the uncollected balances and the Association's historical bad debt experience. At December 31, 2016 and 2015, the Association's management considered all accounts receivable to be collectible; thus, there were no allowances for doubtful accounts. The Association had no bad debt expense during the years ended December 31, 2016 and 2015.

Cash and Cash Equivalents: For purposes of reporting cash flows, the Association considers demand deposits and all unrestricted, highly liquid investments purchased with an original maturity of three months or less which can be readily converted to cash on demand, without penalty, to be cash equivalents. At times, bank balances may exceed federally insured limits.

Estimates: The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Subsequent Events: Subsequent events have been evaluated through , 2017, which is the date the financial statements were available to be issued.

NOTE B--BOARD DESIGNATED NET ASSETS

The Board of Directors has designated net assets as a reserve to be used for future programs or operating costs that are not covered by the future years' revenues. Board designated net assets totaled \$608,328 and \$488,547 as of December 31, 2016 and 2015, respectively.

NOTE C--TEMPORARILY RESTRICTED NET ASSETS

At December 31, 2016 and 2015, net assets that were temporarily restricted for the Roof Assembly Ventilation Coalition ("the Coalition") totaled \$18,501 and \$18,571, respectively. During the years ended December 31, 2016 and 2015, net assets of \$70 and \$5,546, respectively, were released from restriction by incurring expenses for the Coalition.

NOTES TO FINANCIAL STATEMENTS--Continued

ASPHALT ROOFING MANUFACTURERS ASSOCIATION, INC.

NOTE D--COMMITMENTS

The Association has made a commitment to a hotel for a conference to be held May 2017. If the conference is canceled, the Association will be contractually obligated to pay maximum liquidated damages of approximately \$43,000.

Preliminary & Tentative

**Asphalt Roofing Manufacturers Association
Statement of Financial Position
Preliminary and Unaudited
For the Three Months Ending Friday, March 31, 2017**

	March 2017	March 2016
ASSETS		
Current Assets:		
Unrestricted Cash Assets		
Checking - SunTrust	\$415,402	\$625,491
Money Markets/Investments	185,007	264,204
Total Unrestricted Cash Assets	600,410	889,695
Temporarily Restricted Funds		
Board Restricted	361,289	280,132
Total Temporarily Restricted Funds	361,289	280,132
Operations Receivables		
Accounts Receivable	110	166
Accrued Interest (Smith Barney)	292	292
Total Operations Receivables	402	458
Prepaid Expenses		
Fixed Assets - Website	25,000	0
Total Operations Assets	\$987,101	\$1,170,285
OPERATIONS LIABILITIES AND NET ASSETS		
Operations Liabilities:		
Accounts Payable	48,644	80,515
Industry Issues	(8,120)	113,637
Total Operations Liabilities	40,524	194,152
Net Assets:		
Beginning Net Assets	608,328	488,618
Beginning Temporarily Restricted Net Assets	18,501	18,501
Change in Net Assets	319,748	469,015
Total Net Assets	946,577	976,134
Total Operations Liabilities and Net Assets	\$987,101	\$1,170,285

Asphalt Roofing Manufacturers Association
Statement of Activity
Preliminary and Unaudited
For the Three Months Ending Friday, March 31, 2017

	March	YTD	2017 BUDGET	2017 YTD Actual/... % Variance
INCOME FROM OPERATIONS:				
Regular Dues	\$37,595	\$329,636	\$1,031,087	32%
Associate Dues	32,093	150,349	202,996	74%
Program Fee	16,408	143,678	450,000	32%
Interest Income	47	578	3,100	19%
Meeting Sponsorship	1,000	5,000	20,000	25%
Miscellaneous Income	0	0	1,000	0%
Total Income	87,143	629,241	1,708,183	37%
ASSOCIATION PUBLICATIONS:				
Sales of Publications	74	180	8,000	2%
Cost of Sales	(18)	(65)	0	0%
Net Income from Sales	56	115	8,000	1%
Total Income from Operations	87,199	629,356	1,716,183	37%
OPERATIONS EXPENSES:				
ADMINISTRATION:				
Legal	13,906	13,906	125,000	11%
Accounting/Audit	0	0	13,000	0%
Professional Liability Insurance	0	4,521	4,500	100%
Stationery & Printing	115	520	6,000	9%
Telephone & Fax	766	1,577	9,000	18%
Office Supplies	0	0	1,100	0%
Postage	238	544	2,500	22%
Dues & Subscriptions	159	3,948	8,200	48%
Interest/Miscellaneous Expense	158	735	1,500	49%
QARC Administration/Operations	1	1	0	0%
Total Administration Expense	15,342	25,751	170,800	15%

Asphalt Roofing Manufacturers Association
Statement of Activity
Preliminary and Unaudited
For the Three Months Ending Friday, March 31, 2017

	March	YTD	2017 BUDGET	2017 YTD Actual/... % Variance
GENERAL MANAGEMENT:				
Management Fee	27,672	83,016	332,066	25%
Support Services	13,994	37,118	265,653	14%
Total Management and Support	41,666	120,134	597,719	20%
COMMITTEES AND MEETINGS:				
Travel	3,348	6,863	30,000	23%
Board of Directors	430	525	33,000	2%
Executive Committee	0	153	18,000	1%
Technical Affairs Committee	0	0	24,500	0%
HSE Committee	0	0	12,000	0%
Communications Committee	0	0	8,000	0%
Total Committees and Board	3,777	7,541	125,500	6%
COMMUNICATIONS:				
Internet Development Maintenance	50	256	15,000	2%
Industry Trade Public Relations	7,863	24,864	125,000	20%
Total Communications	7,913	25,120	140,000	18%
BUDGETED ISSUES:				
Codes and Standards	21,319	61,270	281,500	22%
Asphalt Fumes Issue	28,323	35,623	157,500	23%
PM 2.5 Research	0	0	10,000	0%
Cool Roof Activity	2,848	6,306	75,000	8%
Sustainability/LCA Work	0	0	32,000	0%
Lobbying/Legislative Activity	1,000	3,000	13,500	22%
Environmental/Regulatory	9,165	24,863	75,000	33%
Total Budgeted Issues	62,655	131,062	644,500	20%
Shipment Report	0	0	26,000	0%
Total Operations Expenses	131,353	309,608	1,704,519	18%
Change in Net Assets	(\$44,154)	\$319,748	\$11,664	2741%



ARMA March 2017 **Preliminary Financial Statement Summary Overview**

(Please note that the March financial statements represent 25% of the ARMA fiscal year.)

Overview

Overall, ARMA remains in a solid financial position thanks to stable membership dues income and to the significant funds received in past years and set aside in association reserve accounts. From a cash flow standpoint, dues and program fee receipts have been coming in from Annual and First Quarter dues invoicing that took place at the end of December. As ARMA activity increases throughout 2017, budgeted expenses will also begin appearing in future financial statements.

Summary Income and Expense YTD and Estimate

1 – **Income** = Year-to-date income is \$629,356 against a budget of \$1,716,183 – or 37% overall.

2 – **Expense** = Total 2017 year-to-date expense is \$309,608 against a budget of \$1,704,519 – or 18% overall.

3 – **Net Income** = Based on the above year-to-date income and expense, we are showing a current net income of \$319,748 against a budgeted year-end net income of \$11,664 – or 2,741% overall. We anticipate the current net income to decrease as more expenses are incurred throughout the year.

Statement of Financial Position

1 – **Cash on hand** = \$600,410 of total unrestricted cash assets in March 2017, compared to \$889,695 in March 2016.

2 – **Accounts Receivable** = \$110 for March 2017

3 – **Board Restricted Funds** = Pending the completion of the 2016 audit, we estimate that our Board restricted funds, the ARMA financial reserve, to be \$361,289.

4 – **Accounts Payable** = \$48,644 for March 2017 which represents Kellen out of pocket pass-through expenses.

Statement of Activity

1 – **Membership** income collected is \$349,446 out of \$1,234,083 budgeted in 2017, or 39% overall. Regular Member Dues are at 32% of budget, and Associate Member Dues are at 74%. We expect additional income from membership dues in the next monthly financial statement in conjunction with second quarterly membership dues payments.

2 – **Program Fee** collected income is \$143,678 out of \$450,000 budgeted in 2017, or 32% overall. We expect additional program fee income in conjunction with second quarterly membership dues payments.

3 – **Sponsorship** income is \$5,000 out of \$20,000 budgeted in 2017, or 25% overall. We expect additional income from meeting sponsorships in the next monthly financial statements from payments received for the ARMA Spring Committee & Board of Directors Meetings.

3 – **Administration Expenses** are \$25,545, or 15% of the \$170,800 budgeted. Line items such as liability insurance and dues and subscriptions represent one-off expenses that typically only occur at the beginning of the year. YTD legal expenses are also tracking well within the amount budgeted for 2017.

4 – **Management Fees** are billed in 12 equal installments throughout the year, so are expectedly at 25% of budget, which represents \$82,016 in fees.

5 – **Support Services** are \$37,118 out of \$265,653 budgeted in 2017, or 14% overall.

6 – **Committees and Meeting** expenses year to date are \$7,541 or 6% of the annual budget of \$125,500. Additional expenses will be incurred throughout the year as we begin to account for ARMA's committee and Board of Directors meetings and staff travel.

7 – **Communications** expenses are \$25,326 or 18% out of a budgeted \$140,000. Most of the expenses are related to industry trade public relations activities, at \$24,864. \$463 in expenses has also been incurred for website development maintenance.

8 – **Budgeted Issues** expenses are \$131,062 or 20% of a budget of \$644,500. Of the budgeted issues, Codes and Standards activities (\$61,270), Asphalt Fumes Issues (\$35,623), and Environmental/Regulatory activities (\$24,863) have incurred the majority of budgeted issues expenses so far this year, though they are all tracking well within their itemized budgets.



ARMA Meeting Attendee List



**Asphalt Roofing Manufacturers Association
2017 Committee & Board of Directors Meetings
May 22-24, 2017
Chicago, IL**

3M
21520-G Yorba Linda Boulevard, #534
Yorba Linda, CA 92887
Randy Morgan

3M
3M Center; Building 0209-01-W-14
St Paul, MN 55144
Rebecca Everman
Frank Klink
Carrie Niezgocki

Atlas Roofing Corporation
116 Taylor Len Drive
Lagrange, GA 30240
Russ Addison

Atlas Roofing Corporation
2000 Riveredge Parkway, Suite 800
Atlanta, GA 30328
Paul Casseri
Ken Farrish

Bitumar Inc
11155 Suite-Catherine Est
Montreal Est, Quebec H1B0A4
Tom Lecorchick
Tom Lecorchick, Jr.

Building Products of Canada
3703-101 Avenue Northwest
Edmonton, Alberta T6P1X7
Yves Gosselin

Building Products of Canada
9500 Saint Patrick Street
LaSalle, Quebec H8R1R9
Jacques Martin
Regent Bedard

CertainTeed Corporation
20 Moores Road
Malvern, PA 19355
Mark Harner
Alexandre Pecora
Tom Smith
Kermit Stahl
Paul Benensky

CertainTeed Corporation
231 Ship Canal Parkway
Buffalo, NY 14218
Melissa Spittler

Crafco Inc.
6165 West Detroit Street
Chandler, AZ 85226
Jeff Stermer
Lisa Zentner

DERBIGUM Americas Inc.
4800 Blue Parkway
Kansas City, MO 66207
Richard Paradise

DPH Consulting LLC
PO Box 429
Monroe, MI 48161
Darrel Higgs

Firestone Building Products
2 Dell Parkway
Nashville, TN 37217
Michelle Benatti

Firestone Building Products
250 West 96th Street
Indianapolis, IN 46260
Walter McIntosh *

ARMA 2017 Committee & Board of Directors Meetings Attendee List

GAF
1 Campus Drive
Parsippany, NJ 07054
Adem Chich
Joan Crowe
Helene Hardy Pierce
Lynn Picone
Jason Pollack
Marty Ward
William Woodring

GAF
14911 Quorum Drive, Suite 600
Dallas, TX 75254-7012
Mark Klein

GAF
809 Redbud Lane
Wilmette, IL 60091
James Kirby

Haag Engineering Company
4949 West Royal Lane
Irving, TX 75063
Scott Morrison

Henry Company
999 North Sepulveda Boulevard, Suite 800
El Segundo, CA 90245
Laura Soder *

IKO Production, Inc.
120 Hay Road
Wilmington, DE 19809
Don Shaw

IKO Production, Inc.
235 South West Tec Drive
Kankakee, IL 60901
Jay Keating
Carol Perkins

IKO Production, Inc.
602 - 1 Yorkdale Road
Toronto, Ontario M3H 1H7
David Koschitzky

IKO Production, Inc.
80 Stafford Drive
Brampton, Ontario L6W 1L4
Annmeza Szeto

Infiana USA, Inc.
2400 Continental Boulevard
Malvern, PA 19355
Keith Fedewa
Vincent Fienberg

Johns Manville
14164 West Warren Circle
Lakewood, CO 80228
Kelly Sandin

Johns Manville
717 17th Street, Suite 900
Denver, CO 80202
Joe Smith*
Robert Wamboldt

Kirby Fiberglass Inc.
652 East Industrial Boulevard
Pueblo West, CO 81007
Naomi Dupre

Kraton Polymers, LLC
7425 South La Rosa Drive
Tempe, AZ 85283
Andrew Ford

Lomanco, Inc.
2101 West Main Street
Jacksonville, AR 72076
Dennis Mathes

Malarkey Roofing Products
3131 North Columbia Boulevard
Portland, OR 97217
Brendan Dineen
James Fagan
Amy Ferryman
Bobby Lambrix *
Gregory Malarkey
Tony Silva*

ARMA 2017 Committee & Board of Directors Meetings Attendee List

Mid-States Asphalt
PO Box 20348
Tuscaloosa, AL 35402
Robert Sheffield

MTi & Polyexe Corporation
27 Salt Spray Lane
Cape Elizabeth, ME 04107
Michael Sullivan

Owens Corning
2790 Columbus Road
Granville, OH 43055
Marcin Pazera

Owens Corning
3750 North West Yeon Avenue
Portland, OR 97210
Devlin Whiteside

Owens Corning
One Owens Corning Parkway 2A
Toledo, OH 43659
Sue Burkett
Brian Chambers
Edward Harrington
Bradley Link

PABCO Roofing Products
1476 Thorne Road
Tacoma, WA 98421
John Corbett
Sid Dinwiddie
Kevin Olson

Polyglass USA, Inc.
1111 West Newport Center Drive
Deerfield Beach, FL 33442
Todd Homa
Steven Wadding

Polyplex
261 South Main Street, #298
Newtown, CT 06470
Robert Hodge

Siplast, Inc.
1111 Highway 67 South
Arkadelphia, AR 71923
Kirk Goodrum

SOPREMA, Inc
310 Quadral Drive
Wadsworth, OH 44281
Husnu Kalkaglu
Todd Jackson
Sara Jonas
Tim Kersey
James Larke*
Barry Lee

SOPREMA, Inc.
1688 J-B Michaud St.
Drummondville, Quebec J2C 8E9
Jean-Francois Cote

Specialty Granules, LLC
13424 Pennsylvania Avenue, Suite 303
Hagerstown, MD 21742
Dennis Coker
Justin Dunlap
Jonathon MacBride
Robert Toth

TAMKO Building Products, Inc.
220 West 4th Street
Joplin, MO 64801
Robert Bradley
David Humphreys
Aaron Phillips
Tim Whelan

Tarco
One Information Way
Little Rock, AR 72202
Steve Ratcliff

Warrior Asphalt
3100 Warrior Road
Tuscaloosa, AL 35404
Jonathan Dietzel

ARMA Speakers

National Roofing Contractors Association

Mark Graham

Jason Wilen

Construction and Demolition Recycling Association

David Stanczak

Cool Roof Rating Council

Jeffrey Steuben

American Institute of Chemical Engineers

Louisa Nara

ARMA Staff, Counsel, and Consultants

529 14th Street NW, Suite 750

Washington, DC 20045

Reed Hitchcock

Chelsea Ritchie

Jared Rothstein

Ally Peck

355 Lexington Avenue, 15th Floor

New York City, NY 10017

Mike Fischer

Ron Gumucio

Tim McQuillen

James Hilyard, ARMA Consultant

Craig Brightup, ARMA Federal Lobbyist

Mike Deese, ARMA General Counsel

Arthur Sampson, ARMA Regulatory Counsel