

technical bulletin

**Asphalt Roofing
Manufacturers Association**

National Press Building
529 14th Street, NW, Suite 750
Washington, DC 20045
Tel: (202) 591-2450 • Fax: (202) 591-2445
www.asphaltroofing.org

Decking Recommendations for Built-Up Roofing and Modified Bitumen Membranes

Introduction

The Asphalt Roofing Manufacturers Association (ARMA) recommends that the structural roof deck meet certain minimum requirements to be an acceptable substrate for the specified roofing system. Generally, all decks should be clean, dry, and securely fastened to the building structure with no abrupt level changes exceeding 1/8". Roof deck deflection should never exceed 1/240 of the span under total design loads — including roof top traffic. Insurance and/or code requirements must also be met when designing and applying the roofing system.

The following are specific guidelines ARMA suggests for various roof deck types:

I. Steel Decks:

Steel decks should be installed in a way that allows the rib spacing to be uniform and straight so that: (a) the roof insulation boards may be laid with side joints parallel (with end joints perpendicular to the ribs); and (b) the roof insulation edge is supported by the flanges.

Deck specifications shall comply with all applicable code requirements. They should also meet the requirements of the Underwriters Laboratories "Building Materials Directory" and, when applicable, the requirements found in Factory Mutual Global's Roof Nav and "Property Loss Prevention Data Sheet 1-28."

II. Wood Decks:

- (A) **Wood Planks:** Wood deck material should consist of kiln-dried, tongue and groove, ship-lapped, or splined boards. All boards must have a bearing on rafters at each end and be securely fastened. They should have a minimum of splits and knotholes, and under no circumstances can these boards be warped or cupped. All holes over 1/4" should be appropriately covered. Individual boards must not exceed 8" width, and must be no less than 1" thick (nominal). There should be an 1/8" space between boards to allow for expansion. Wood deck preservatives and/or treatments must be compatible with the type of bitumen used.
- (B) **Plywood and Oriented Strand Board (OSB) Decks:** Individual roofing manufacturers approve either or both plywood and OSB Performance Rated Panels for use as sheathing. These panels should be a minimum thickness of 7/16" for OSB and 15/32" for plywood. The panels must be manufactured with a water resistant adhesive and should be labeled "Exposure 1". There should be a minimum of holes and voids within and on the surface. The panels should also be marked properly as "Performance Rated Panels" by either APA – The Engineered Wood Association or another recognized testing agency. Install so that all edges are supported, or clipped to the adjacent sheet. *Fire treated plywood and particle boards are not recommended. 2 of 2 A member service provided by the Asphalt Roofing Manufacturers Association Revised July 2014

III. Concrete Decks:

- (A) **Poured Structural Concrete Decks:** These decks typically vary from 4" to 12" in thickness and must be properly cured prior to application of a roofing system (normally a minimum of 28 days). Curing agents must be checked for compatibility with the roofing system to be installed. After installation the underside of these decks must continue to remain unobstructed and should be exposed or they should be poured over vented metal forms to allow the escape of water vapor. A primer compatible with the bitumen or adhesive used to install the roof system should be used on these decks.
- (B) **Pre-Cast Structural Concrete Decks:** Joints must be filled with a masonry grout to correct imperfections between slabs and feathered to provide a slope of not greater than 1/8" per foot. When the membrane or roof insulation is adhered

directly to the deck, use a concrete bituminous primer that meets the membrane manufacturer's requirements and is compatible with the type of bitumen used.

- (C) Pre-stressed Concrete Decks: Because of variation in camber and thickness of pre-stressed concrete decks it is recommended that a minimum 2" lightweight concrete fill be installed over these decks.
- (D) Lightweight Structural Concrete Decks: Refer to ARMA's Lightweight Structural Concrete Roof Decks Statement, which can be found at <http://www.asphaltroofing.org/arma-lightweight-structural-concrete-roof-decks-statement>.

IV Lightweight Insulating Concrete Decks:

Lightweight insulating concrete decks, which are placed as a slurry, contain more moisture than many other roofing substrates. Retained moisture may contribute to problems with the roofing systems installed over such decks when proper precautions are not taken.

When these decks are used as a substrate for built-up or modified bitumen roofing, the following criteria are recommended:

- When lightweight insulating concrete is poured over a galvanized metal deck, the metal deck should be perforated to provide underside venting. Topside pressure relief is also suggested.
- The base ply of the roofing system should be attached using appropriate mechanical fasteners.
- Pull-through resistance for fasteners should comply with the membrane manufacturer's requirements.
- The deck applicator and deck manufacturer should certify, in writing, that the roof deck was installed in accordance with the deck manufacturer's recommendations, and is satisfactory to receive the roofing system.
- The roofing contractor should install the roof in accordance with the roofing manufacturer's recommendations for application over lightweight insulating concrete decks.

V. Cementitious Structural Wood Fiber Decks:

These decks should be bonded by binders that are not affected by water. The units should be attached to the building structure with mechanical fasteners to prevent movement, and to provide the required uplift resistance. The base ply should be attached using fasteners recommended by the structural wood fiber and base ply manufacturers.

Typically, manufacturers do not recommend insulation or a membrane be fully adhered to these decks. The roofing contractor should install the roofing system in accordance with the roofing manufacturer's recommendations.

DISCLAIMER OF LIABILITY: This document was prepared by the Asphalt Roofing Manufacturers Association and is disseminated for informational purposes only. Nothing contained herein is intended to revoke or change the requirements or specifications of the individual roofing material manufacturers or local, state and federal building officials that have jurisdiction in your area. Any question, or inquiry, as to the requirements or specifications of a manufacturer, should be directed to the roofing manufacturer concerned. THE USER IS RESPONSIBLE FOR ASSURING COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

Nothing contained herein shall be interpreted as a warranty by ARMA, either express or implied, including but not limited to the implied warranties of merchantability, fitness for a particular purpose or non-infringement. IN NO EVENT SHALL ARMA BE LIABLE FOR ANY DAMAGES WHATSOEVER, including special, indirect, consequential or incidental damages or damages for loss of profits, revenue, use or data, whether claimed in contract, tort or otherwise. Where exclusion of implied warranties is not allowed, ARMA's liability shall be limited to the minimum scope and period permitted by law.