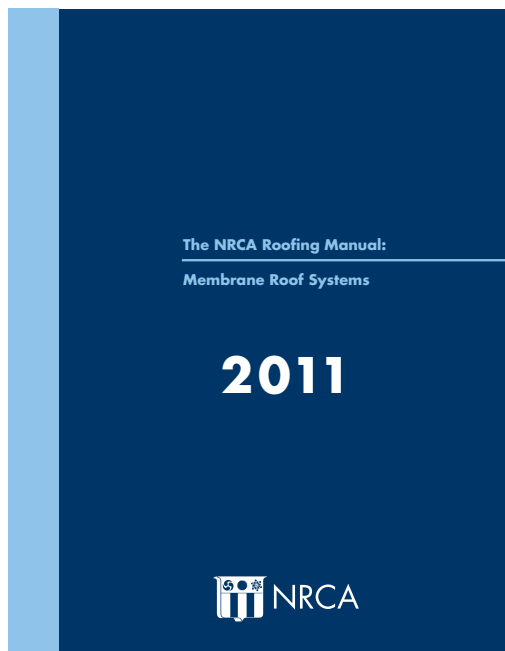




THE NEWEST EDITION

NRCA updates its membrane
roof systems manual

by Mark S. Graham



This month, NRCA published *The NRCA Roofing Manual: Membrane Roof Systems—2011*. This volume provides new and updated best practice guidelines applicable to membrane roof systems and replaces *The NRCA Roofing Manual: Membrane Roof Systems—2007*.

The NRCA Roofing Manual currently consists of *The NRCA Roofing Manual: Metal Panel and SPF Roof Systems—2008*, *The NRCA Roofing Manual: Steep-slope Roof Systems—2009*, *The NRCA Roofing Manual: Architectural Metal Flashing, Condensation Control and Reroofing—2010* and *The NRCA Roofing Manual: Membrane Roof Systems—2011*.

The 2011 volume contains significant revisions from the 2007 edition.

Development

The 2011 manual, similar to NRCA's other technical publications, was developed by roofing professionals who serve on NRCA committees.

NRCA's Manual Update Committee primarily was responsible for reviewing the 2007 edition of the membrane roof systems manual and developing the 2011 edition's text, figures and construction details. NRCA's Technical Operations Committee and Executive Committee provided essential input and guidance to the Manual Update Committee and periodically reviewed and suggested revisions to the 2011 edition. Overall, 34 NRCA committee members, as well as NRCA's Technical Services Section staff, participated in the new manual's development.

In developing the 2011 manual, NRCA maintains its longstanding position that the manual represent time-tested, best-practice guidelines for roofing buildings and other enclosed structures.

NRCA recognizes this approach may differ somewhat from building code requirements or manufacturers' recommendations.

Building codes provide minimum legal requirements for construction. Manufacturers' recommendations generally provide a level of quality construction necessary to obtain a manufacturer's warranty. NRCA's time-tested, best-practice guidelines approach generally is at a somewhat higher level than building codes' minimum requirements and is consistent with, or at a still higher level than, manufacturers' recommendations. For this reason, the 2011 manual should be viewed as a guide, not a design or installation standard or code.

Updates and revisions

The NRCA Roofing Manual: Membrane Roof Systems—2011 is divided into 10 chapters.

NRCA has revised its longstanding R-value recommendation for polyisocyanurate insulation

Chapter 1—Roof Decks provides considerations for roof decks commonly used in new construction roofing applications. It provides detailed information regarding cementitious wood-fiber panels; lightweight insulating concrete; steel; structural concrete; and wood panels, wood planks and wood boards roof decks.

NRCA classifies roof decks for membrane roof systems into three general classes—nailable, non-nailable and insulated—based on the membrane roof system installation method. Cementitious wood-fiber panels, lightweight insulating concrete, wood panels, and wood planks and boards are nailable roof decks that require a nailed base sheet or layer of rigid board insulation before membrane roof system application. Structural concrete roof decks are non-nailable, which necessitates direct adhesion of rigid board insulation or a membrane roof system. Steel roof decks are insulated, requiring installation of rigid board insulation before roof membrane application.

Although poured and precast plank gypsum roof decks are included in the 2007 edition, they are not included in the 2011 edition because NRCA no longer considers such decks to be common in new construction roofing applications. Information regarding poured and precast plank gypsum roof decks applicable to reroofing applications is included in *The NRCA Roofing Manual: Architectural Metal Flashing, Condensation Control and Reroofing—2010*.

Chapter 2—Air and Vapor Retarders is a new addition to the 2011 manual. This chapter provides information about air and vapor retarders used as components of membrane roof systems.

Detailed information about air retarders in membrane roof systems, whether for a specific material, assemblies or whole buildings, is provided. Air barrier information contained in the 2011 manual largely is based on air barrier requirements contained in ASHRAE 189.1, "Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings."

Considerations for designers, such as whether to include a vapor retarder in a roof system design, are included in the Condensation Control Section of the 2010 volume of *The NRCA Roofing Manual*. The vapor retarder guidelines provided in the 2011 volume's Chapter 2 apply once a decision has been made to install a vapor retarder. Application information for bituminous and nonbituminous vapor retarders is provided.

Chapter 3—Rigid Board Insulation provides considerations for the use of rigid board insulation in membrane roof systems. It provides information about cellular glass, expanded and extruded polystyrene, faced and fiber-reinforced gypsum, mineral fiber, perlite, polyisocyanurate, high-density polyisocyanurate and wood-fiber rigid board insulation. The information regarding fiber-reinforced gypsum and high-density polyisocyanurate rigid board insulation is new to the 2011 manual.

With the 2011 manual, NRCA has revised its longstanding R-value recommendation for polyisocyanurate insulation. NRCA now recommends designers specifying polyisocyanurate insulation conduct their thermal calculations using an in-service R-value of 5.0 per inch thickness in heating conditions and 5.6 per inch thickness in cooling conditions. Designers should use the

R-value for heating or cooling conditions based on the predominant condition for the climate where the specific building being considered is located.

Furthermore, NRCA recommends designers specify polyisocyanurate by its desired thickness—not its R-value—to avoid possible confusion.

Chapter 4—Roof Membranes provides considerations for the use of built-up, polymer-modified bitumen, single-ply and liquid-applied roof membranes; the information about liquid-applied membranes is new.

One notable change in Chapter 4 from the 2007 edition is NRCA now suggests designers specifying TPO membranes specify 60-mil-thick or thicker TPO membranes. It generally is understood thicker TPO membranes allow for formulations with larger quantities of ultraviolet and heat-aging stabilizers. Also, thicker TPO membranes generally provide for greater thickness-over-scrim measurements, puncture resistance and breaking strength.

The 2011 edition's Chapter 5—Fasteners is new and provides fastener information applicable to membrane roof systems. Specific information is provided regarding base sheet fasteners, insulation fasteners and membrane fasteners.

Chapter 6—Surfacings provides information about surfacing options for membrane roof systems. Specific information is provided for aggregate, ballast and coatings surfacings.

The coatings section within Chapter 6 has been significantly updated from the 2007 edition and includes information about bituminous and polymer-based primers and various coating types. A table is included that provides guidelines for primer and coating selection.

Chapter 7—Accessories is new to the 2011 manual and provides information about prefabricated accessories commonly used with membrane roof systems. Specific information is provided regarding

equipment curbs, expansion joint covers, prefabricated flashings and skylights, and roof/smoke hatches.

Chapter 8—System Configurations is a significant new addition to the 2011 manual and provides descriptions of how roof deck substrates, air and vapor retarders, rigid board insulation and roof membrane components are combined to design and construct membrane roof systems. Descriptions are provided for 33 membrane roof system configurations.

For example, the system configuration description for a mop-applied four-ply built-up roof system over a non-nailable deck includes information about roof slope limitations, non-nailable deck types, air and vapor retarders, membranes, flashings, surfacings and roof accessories. The individual components' descriptions provide specific references to the 2011 manual's previous chapters where more detailed information about these components can be found. Also, descriptive roof system illustrations are provided.

The system configurations will help designers select components for their specifications and contractors provide project submittals describing membrane roof system components.

Chapter 9—Roof Re-covering provides information regarding roof re-covering options. Although the 2011 volume primarily is intended to address new construction roofing situations, this chapter, in conjunction with the Reroofing Section of the 2010 volume, can help designers prepare drawings and specifications for re-covering existing membrane roof systems.

Thirteen roof re-covering system configuration descriptions, similar to those in Chapter 8, are included to assist designers in selecting components for their specifications and assist contractors with project submittals describing roof re-covering system components.

Chapter 10—Construction Details provides technical guidelines for standard construction details for quality, long-lasting

membrane roof systems. Isometric view illustrations are provided for built-up, polymer-modified bitumen, EPDM, single-ply (other than EPDM) and liquid-applied membrane roof systems. Overall, 179 construction detail illustrations are provided.

The illustrations of standard construction details in this chapter are best used as a basis for developing project-specific construction details. The manual's construction details are available in an AutoCAD®-compatible format, The NRCA Construction Details CD—2011, to assist with developing project-specific construction details.

The 2011 manual's construction details have two notable additions: construction details for liquid-applied membranes and liquid-applied flashings for built-up and polymer-modified bitumen membrane systems.


Use the manual

The NRCA Roofing Manual: Membrane Roof Systems—2011 is available in print and electronic formats.

The print version of the 2011 manual is best used with print versions of the 2008, 2009 and 2010 volumes. Each volume contains numerous references to information contained in the other volumes.

The electronic version of the 2011 manual, The NRCA Roofing Manual CD—2011 includes the 2008, 2009, 2010 and 2011 volumes. The CD allows users to search, view and print the manuals' contents.

NRCA members who have paid their 2011 membership dues, as well as new NRCA members, will receive a free copy of the CD this month.

I encourage you to use the 2011 manual for NRCA's most up-to-date guidelines applicable to membrane roof systems. For more information about the manual, go to shop.nrca.net. 

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