NRCA, SPF and the Roofing Industry

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AED, Technical Communications
NRCA
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Topics

- The NRCA Roofing Manual
- RISE CSRP certification
- EnergyWise Calculator
- Rooftop Photovoltaics
The NRCA Roofing Manual

- SPF updated in 2012
- Reformatted
- Still includes reroofing details
- New system configurations
The NRCA Roofing Manual

- Reformatted for 2012
  - Roof Decks
  - Other SPF Substrates
  - SPF
  - Protective Surfacing
  - Roof Accessories
  - Roof System Configurations
  - Roof Re-covering
  - Construction Details
The NRCA Roofing Manual

- SPF updated in 2012
- Still includes reroofing details
Map-applied Four-ply Built-up Roof System Over Nonloadable Deck

Roof Slope Limitations
Refer to Chapter 1—Roof Decks for detailed information regarding roof slope.
Minimum slope: Positive drainage
Back-sloping for slopes > 2:12

Nonloadable Deck Types
Refer to Chapter 1—Roof Decks for detailed information regarding roof decks.
Structural concrete—Section 1.5

Air and Vapor Retarder Types (if applicable)
Refer to Chapter 2—Air and Vapor Retarders for detailed information regarding air and vapor retarders.

Membranes
Refer to Chapter 4—Membrane Systems for detailed information regarding membrane materials:
- Asphalt [ASTM D312, Type II, III, or IV]
- SBS [ASTM D6512]
- Coal tar [ASTM D650]
- Base sheet (select one, if applicable):
  - Asphalt-coated fiberglass mat base sheet [ASTM D4897, Type II]
  - Asphalt-coated fiberglass mat venting base sheet [ASTM D4897, Type III]
- Coal tar-imregnated fiberglass sheet [ASTM D4990]
- Base sheet Securitex (select one, if applicable):
  - Asphalt [ASTM D7312, Type II, III, or IV]
  - SBS [ASTM D6512]
  - Coal tar [ASTM D650]
- Interply Sheet (select one):
  - Asphalt fiberglass ply sheet [ASTM D2372, Type IV or V]
  - Coal tar-imregnated fiberglass ply sheet [ASTM D4990]

Flashings
Refer to Chapter 4—Membrane Systems and Chapter 10—Contraction Details for detailed information regarding membrane flashings:
- Backer Layer (select one):
  - APP polymer-modified asphalt-coated fiberglass mat base sheet [ASTM D6509]
  - SBS polymer-modified asphalt-coated fiberglass mat base sheet [ASTM D6613 or D6616]
  - Asphalt fiberglass ply sheet [ASTM D2372, Type IV or V]
  - Asphalt-coated fiberglass mat base sheet [ASTM D4901, Type II]
  - Self-adhering smooth-surfaced SBS polymer-modified bitumen shingles

Cap Sheet (select one):
- Foil-surfaced SBS polymer-modified bitumen cap sheet [ASTM D6298]
- Granular or smooth-surfaced APP polymer-modified bitumen cap sheet [ASTM D6232 or D6233]
- Granular or smooth-surfaced SBS polymer-modified bitumen cap sheet [ASTM D6162, D6163 or D6164]

Surface Coatings (select one):
- Reflective coating (select one):
  - Flood or glass coat [ASTM D312, Type II or III]
  - Coal tar [ASTM D450]
  - Gravel, slag, marble chips, crushed limestone [ASTM D1863]
- Cap Sheet (if chosen, select one):
  - Mineral-surfaced, organic roll-roofing [ASTM D6380]
  - Asphalt-coated fiberglass cap sheet surfaced with mineral granules [ASTM D3990]
- Coating (if chosen, select one):
  - Acrylic roof coating [ASTM D4083]
  - Aluminum emulsion [ASTM D6848]
  - Aluminum roof coating [ASTM D2824]
  - Bitumen emulsion [ASTM D1227]
  - Black roof coating [ASTM D4479]
  - Polymer-modified emulsion
  - Polymer-modified asphalt roof coating
  - Polyester roof coating
  - Polyester roof coating
  - Bituminous primer [ASTM D41]
  - Polyester-based primer

Roof Accessories
Refer to Chapter 7—Roof Accessories for detailed information regarding roof accessories.
RISE CSRP

Roof Integrated Solar Energy (RISE)

RISE evaluates and certifies solar energy installers for knowledge regarding critical roof construction and maintenance practices necessary to support successful rooftop solar energy installations based on principles regarding the installation and maintenance of rooftop solar energy systems without adversely affecting roof system performance and service life.

Individuals who successfully complete the requirements set out by RISE will receive the RISE Certified Solar Roofing Professional (CSRP) certification. The RISE CSRP certification is a voluntary certification for professionals who plan and oversee the installation of photovoltaic (PV) systems on roofs. The credential evaluates whether candidates have the underlying knowledge required for a successful roof-mounted PV system installation—one that recognizes the importance of both the roof system and the PV system for a building's value and uninterrupted use. Candidates will be asked to demonstrate basic knowledge about different PV system types and key components, benefits and risks applicable to building owners, PV systems' integration with electricity, installation guidelines, building codes and post-installation considerations.
RISE CSRP

- Founded by the Center for Environmental Innovation in Roofing (Center) and National Roofing Contractors Association (NRCA), Roof Integrated Solar Energy (RISE) Inc. was created to provide a means of evaluating and certifying solar roofing professionals to support the widespread use of rooftop solar energy.
RISE CSRP Mission

- RISE evaluates and certifies solar energy installers for knowledge about critical roof system construction and maintenance practices necessary to support successful rooftop solar energy installations based on principles regarding the installation and maintenance of rooftop solar energy systems without adversely affecting roof system performance and service life. RISE also provides the public with tools to identify skilled rooftop solar energy professionals.
RISE CSRP Job Task Analysis

- Domain 1: Planning and Implementing Safety Requirements
- Domain 2: Identifying Structural, Roof Assembly and PV System Design Issues
- Domain 3: Applying Basic Electrical System Principles and Practices
- Domain 4: Estimating, Contracting and Selling Roof-mounted PV Systems
- Domain 5: Managing and Directing Roof-mounted PV System Installations
RISE CSRP

- Exam dates:
  - December 10, 2010
  - February 18, 2011

- Next exam will be May 2011

- Study Guide is forthcoming

- www.riseprofessional.org
EnergyWise Calculator

Welcome to EnergyWise Roof Calculator

EnergyWise Roof Calculator Online is a Web-based application that provides a graphical method of constructing roof assemblies to evaluate thermal performance and estimated energy costs under normal operating conditions.


With ASHRAE 90.1, designers can demonstrate building envelope compliance using the following methods:

Energy Cost Budget Method—Designers determine the "design energy cost" and illustrate it does not exceed the "energy cost budget."

Prescriptive Method—Building components (e.g., envelope, HVAC, power, lighting) have to meet the minimum requirements set forth in ASHRAE 90.1. Under the prescriptive method, designers have two options:

Building Trade-off Option—The envelope performance factor of the "proposed" building is less than or equal to the envelope performance factor of the "budget" building.

Prescriptive Building Envelope Option—Roof assemblies shall meet a maximum U-factor and minimum insulation R-value as specified in ASHRAE 90.1. This option only can be used if the skylight fenestration area doesn't exceed 5 percent of the gross roof area.
## EnergyWise Calculator

### Roofs: 1 of 2

<table>
<thead>
<tr>
<th>System Description</th>
<th>existing N/A</th>
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</thead>
<tbody>
<tr>
<td><strong>Roof Name</strong></td>
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<tr>
<td><strong>Roof Reflectivity</strong></td>
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</table>

<table>
<thead>
<tr>
<th>R-Values</th>
<th>Annual Costs</th>
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<tbody>
<tr>
<td>Heating</td>
<td>Heating</td>
</tr>
<tr>
<td>Cooling</td>
<td>Cooling</td>
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<tr>
<td>Minimum ASHRAE 90.1-1999</td>
<td>Total</td>
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</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>R-value</th>
<th>Roof Cross Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDM (unsurfaced: p&lt;0.70, ε&lt;0.75)</td>
<td>0.24</td>
<td></td>
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<tr>
<td>Thickness: N/A</td>
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<tr>
<td>Polysisocyanurate, 1.0 in. Thickness: 1</td>
<td>LTR: 6</td>
<td></td>
</tr>
<tr>
<td>Metal Deck Thickness: N/A</td>
<td>R-value: Negligible</td>
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### Roofs: 2 of 2

<table>
<thead>
<tr>
<th>System Description</th>
<th>new roof N/A</th>
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<tr>
<th>Description</th>
<th>R-value</th>
<th>Roof Cross Section</th>
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</thead>
<tbody>
<tr>
<td>PVC (unsurfaced: p&lt;0.70, ε&lt;0.75)</td>
<td>0.24</td>
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<tr>
<td>Thickness: N/A</td>
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<tr>
<td>Gypsum board (faced) Thickness: 0.5</td>
<td>R-value: 0.56</td>
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<tr>
<td>Polysisocyanurate, 2.0 in. Thickness: 2</td>
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<tr>
<td>Polysisocyanurate, 2.0 in. Thickness: 1</td>
<td>LTR: 12.1</td>
<td></td>
</tr>
<tr>
<td>Metal Deck Thickness: N/A</td>
<td>R-value: Negligible</td>
<td></td>
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</table>

**Annual Costs**

- **Heating**: $3467.57
- **Cooling**: $379.55
- **Total**: $3847.12

**Lower Total Cost**

- **Heating**: $944.23
- **Cooling**: $107.47
- **Total**: $1051.70
EnergyWise Calculator

- Soon to be updated
  - ASHRAE 90.1 – 2010
  - IECC 2006
  - IECC 2009
  - ASHRAE 189.1

- energywise.nrca.net
Photovoltaic Systems
Photovoltaic Systems

- Roof system enhancements
- Fire, wind, impact concerns
- 2012 IBC, IRC, IFC will have specific requirements for PVs on rooftops.

Photo courtesy of Robb Smith
Photovoltaic Systems

- MRCA research about adhered thin-film PV modules is ongoing.
- www.mrca.org
Rooftop Photovoltaics: Energizing Your Business

• 3 upcoming classes
  ▫ February 15, Las Vegas (with IRE)
  ▫ March 24, Atlanta
  ▫ April 20, Baltimore

• Speakers
  ▫ Goeff Hagan, Tecta America
  ▫ Kris Sutton, Solar Energy International
  ▫ Jim Kirby, NRCA
2011 International Symposium

- Emerging technologies and roof system performance
- Sept 7-9, 2011
- Washington, DC
- JW Marriott Hotel
- 33 Papers
- www.roofingsymposium.org
Q + A

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