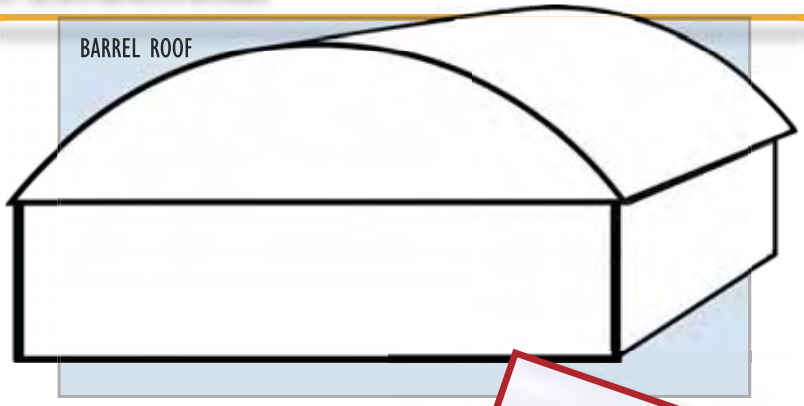
BLUEPRINT
EFFICIENCY, RENEWABLES & DEMAND ANALYSIS DIVISION

Special Bulletin

Questions and Answers

Nonresidential



Q. I have a barrel roof on a nonresidential conditioned building that needs to be re-roofed. Must I follow the 2005 Title 24 cool roof requirements?

A. Yes, but the requirements apply only to the portion of the roof that is low-sloped (2:12 or less). It may be awkward or impractical to put cool roofing on the low-sloped portions but not on others, so you may end up reroofing the entire roof with cool roof materials. Recall also that the 2005 Standards allow an energy-equivalent amount of insulation if you are reroofing with a noncool roof (using the Overall Envelope Prescriptive Approach or the Performance Approach). See the announcement at the bottom of page 3, for access to a calculator to help determine the appropriate level of insulation.

Update to Blueprint 83 on COOL ROOFS

on page 5

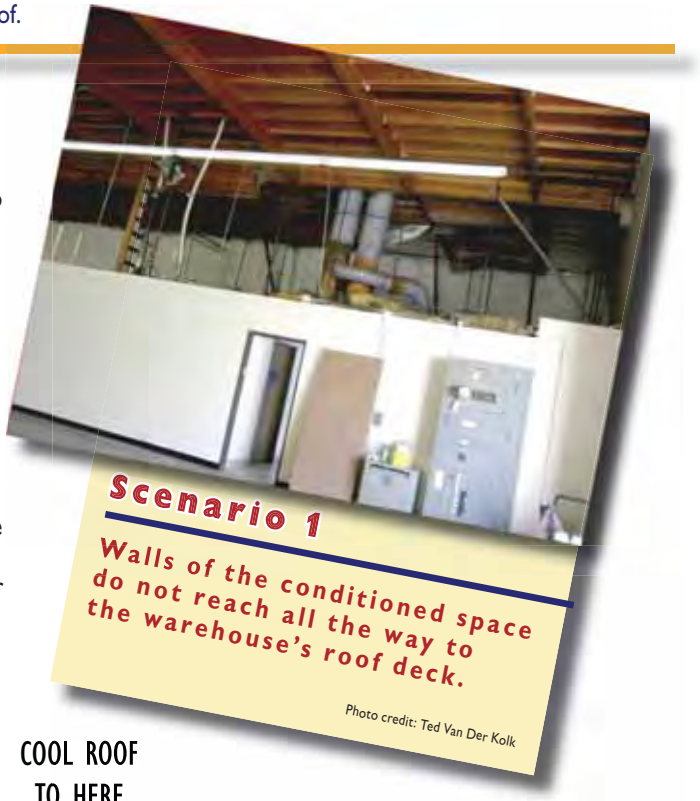
Q. What are the 2005 Title 24 Energy Efficiency Standards requirements for cool roofs when reroofing an unconditioned warehouse containing conditioned office space? The warehouse has a low-sloped roof.

A. Let's look at two scenarios and determine the answer for each.

Scenario 1. The walls of the conditioned space do not reach all the way to the warehouse roof (see photo at the right).

In this case, the cool roof requirements do not apply, because the space directly below the roof is unconditioned and communicates with the rest of the unconditoned portion of the warehouse.

Scenario 2. In this situation, we now have either directly or indirectly conditioned space under the roof. The cool roof requirements apply to just the portion(s) of the warehouse roof over the conditioned space(s). The rest of the roof (over unconditioned warehouse space) is not required to be a cool roof.



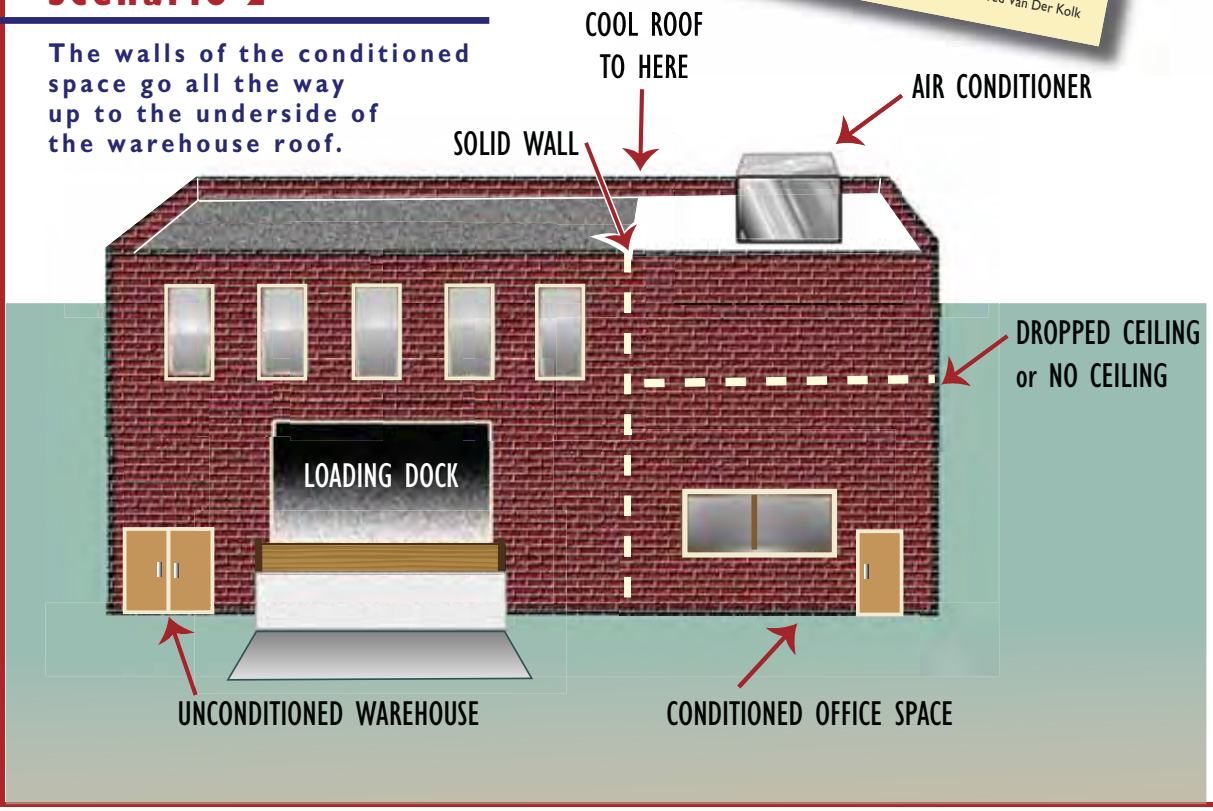
Scenario 1

Walls of the conditioned space do not reach all the way to the warehouse's roof deck.

Photo credit: Ted Van Der Kolk

Scenario 2

The walls of the conditioned space go all the way up to the underside of the warehouse roof.



Q. *I am a roofing contractor bidding on reroofing a building that has retail on the first floor and one floor of living space (apartments) above the retail. The building has a continuous low-sloped roof over the apartments, and both the retail spaces and apartments have heating and/or air conditioning. Since cool roofs are optional for residential occupancies and prescriptive requirements for retail spaces, must I bid based on the 2005 prescriptive cool roof requirements or not?*

A. No, in this case. The Nonresidential Compliance Manual states, in Chapter 1, Section 1.7.4, "Mixed Residential and Nonresidential Occupancies. These occupancies fall under different sets of Standards, [and] they are considered separately." The new roof is going over a residential occupancy, and the 2005 prescriptive cool roof requirements do not apply to residential occupancies. (Note that if the building owner wanted to put on a cool roof to increase the comfort of the apartment renters on hot days, s/he certainly could do so, but no energy credit or special consideration would be given under the energy standards.)

Q. *Let's assume that a building with a low slope-roof has only one story and contains both residential and nonresidential spaces. If I were reroofing and following the prescriptive requirement for cool roofs over the nonresidential spaces would I be allowed to put a non-cool roof over the residential spaces?*

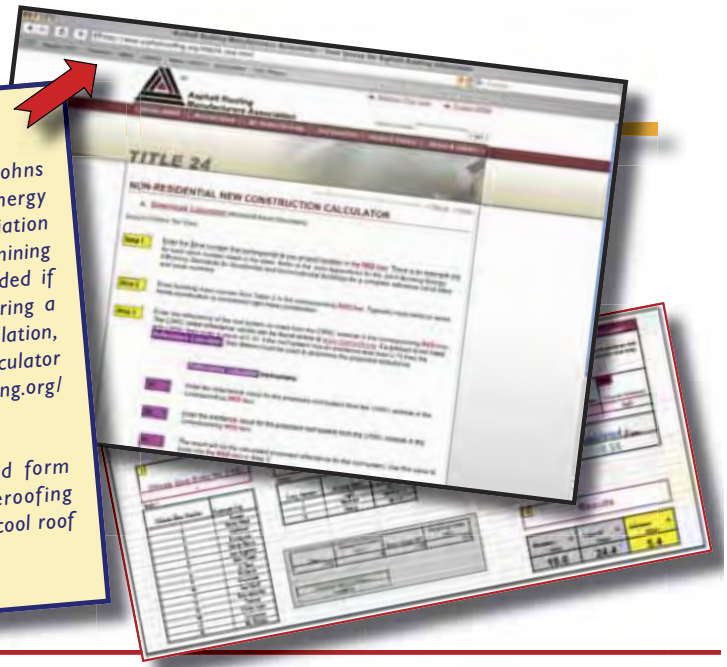
A. Yes. However, you might save in labor and material costs by putting the cool roof over the whole building. You also should realize that for buildings that contain residential and nonresidential occupancies directly under the same roof, when one of those occupancies is less than 10% of the total conditioned area, the building may optionally comply with the requirements for the major occupancy." In this case you would be allowed to put the same roof over the entire conditioned space (either a cool roof if the conditioned space is 90% or more nonresidential, or a non-cool roof if 90% or more of the conditioned space is residential).

For additional Blueprint questions on cool roofs:
http://www.energy.ca.gov/2005publications/CEC-400-2005-053/CEC-400-2005-053.PDF

Web-based Calculator is now available

In conjunction with Oak Ridge National Laboratory, Johns Manville, Pacific Building Consultants, Inc., and the Energy Commission, the Asphalt Roofing Manufacturers Association (ARMA) has developed a web-based calculator for determining quickly the energy-equivalent R-value of insulation needed if a building owner chooses to install a non-cool roof during a reroof. The R-value depends on the level of existing insulation, the climate zone, and several other factors, and the calculator allows inputs of these factors. Visit: www.asphaltroofing.org/title24.html.

The Energy Commission is developing a simplified form to accompany a building permit application for reroofing nonresidential low-sloped buildings covered under the cool roof standards.



Update to Blueprint 83 on COOL ROOFS

In 2005/2006 the Energy Commission conducted a proceeding to consider and adopt the following Section 118(i)3. These changes took effect September 10, 2006.

Changes to Title 24, Part 6, Section 118(i)3

The underlined text was added and is now in effect.

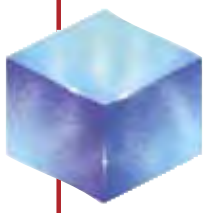
3. Liquid-applied roof coatings applied to low-sloped roofs in the field as the top surface of a roof covering shall:

A. be applied across the entire roof surface to meet the dry mil thickness or coverage recommended by the coating manufacturer, taking into consideration the substrate on which the coating is applied, and

B. meet the minimum performance requirements listed in TABLE 118-C or the minimum performance requirements of ASTM C836, D3468, D6083, or D6694, whichever are appropriate to the coating material.

EXCEPTION 1 to Section 118 (i) 3 B: Aluminum-pigmented asphalt roof coatings shall meet the requirements of ASTM D2824 or ASTM D6848 and be installed as specified by ASTM D3805.

EXCEPTION 2 to Section 118 (i) 3 B: Cement-based roof coatings shall contain a minimum of 20% cement; and shall meet the requirements of ASTM C1583, ASTM D822, and ASTM D5870.

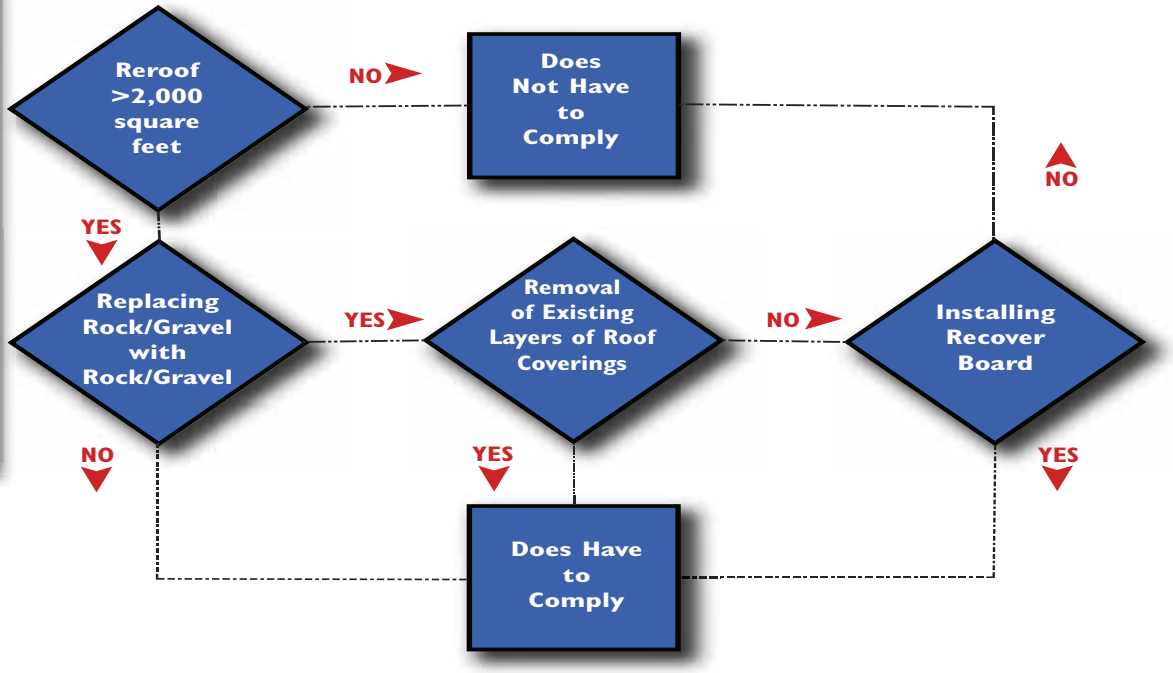


The revised chart on this page includes the changes to Title 24, Part 6, Section 118(i)3

TABLE 118-C

MINIMUM PERFORMANCE REQUIREMENTS FOR LIQUID APPLIED ROOF COATINGS for low-sloped roofs

Physical Property	ASTM Test Procedure	Requirement
Initial percent elongation (break)	D2370	Minimum 200% 73°F (23°C)
Initial percent elongation (break) OR Initial flexibility	D2370 D522, Test B	Minimum 60% 0°F (-18°C) Minimum pass 1" mandrel 0°F (-18°C)
Initial tensile strength (maximum stress)	D2370	Minimum 100 psi (1.38 Mpa) 73°F (23°C)
Initial tensile strength (maximum stress) OR Initial flexibility	D2370 D522, Test B	Minimum 200 psi (2.76 Mpa) 0°F (-18°C) Minimum pass 1" mandrel 0°F (-18°C)
Final percent elongation (break) after accelerated weathering 1000 h	D2370	Minimum 100% 73°F (23°C)
Final percent elongation (break) after accelerated weathering 1000 h OR Flexibility after accelerated weathering 1000 h	D2370 D522, Test B	Minimum 40% 0°F (-18°C) Minimum pass 1" mandrel 0°F (-18°C)
Permeance	D1653	Maximum 50 perms
Accelerated weathering 1000 h	D4798	No cracking or checking. Any cracking or checking visible to the eye fails the test procedure.



Changes to Question 9 from Blueprint 83.

Q. Are there any types of nonresidential low-slope reroofs that are not required to comply with the cool roof requirements?

A. Yes. Any roof over unconditioned space does not have to comply. (A cool roof will, however, increase the comfort level of persons working in unconditioned warehouses in many of California's climate zones.) Also, any reroof under 20 squares (2,000 square feet) or 50 percent of the roof — whichever is less — does not have to comply with the cool roof requirements. For reroofs that are larger than this, there is one special case. Rock or gravel roofs that meet specific conditions, that don't have to comply. Rock and gravel roof recoverings that are allowed by the CBC do not have to meet the cool roof requirements if all of the following conditions are true:

1. The existing roof has a rock or gravel surface; and
2. The new roof has a rock or gravel surface; and
3. There is no removal of existing layers of roof coverings; and
4. There is no recoating with a liquid applied coating; and
5. There is no installation of a recover board, rigid insulation or other rigid, smooth substrate to separate and protect the new roof recovering from the existing roof.

Did You Know?

Energy Code Training Online Website

http://www.energyvideos.com/

This site provides video training on a variety of energy code and related building science issues, and offers guidance on the design and construction of efficient, durable and sustainable buildings in California.

Energy Code Online Training is divided into "modules" for ease of navigation. These are organized first by Residential and Nonresidential. Under these two headings modules are organized by end use and key topics. Residential Code, Energy Code, HVAC, Building Envelope and more.

Each "Resource" module is comprised of training videos, plus additional related resource links, including the actual Code and other documents.

The Energy Policy Act of 2005

includes Federal tax credits and deductions for certain energy efficiency measures in homes and businesses. For details, visit any of the following websites:

- The American Council for an Energy Efficient Economy's website at: *www.aceee.org/press/0602tiap2.htm*
- The Florida Solar Energy Center's website at: *www.fsec.ucf.edu/en/*
- The California Energy Commission's website and look at the bottom of the page under "Special Links" at: *http://energy.ca.gov/efficiency/*

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Title 24
Energy Efficiency Standards Training

Links for training on issues relating to California Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6) are available on the Energy Commission's website at:

http://www.energy.ca.gov/title24/training

For training offered by the utilities and other organizations please see the following websites:

PG&E:
http://www.pge.com/stockton

SoCal Gas Co.
http://seminars.socalgas.com/int/default.asp

San Diego Gas and Electric
http://seminars.sdge.com/int/default.asp

SCE:
http://www.sce.com/RebatesandSavings/EnergyCenters/workshops.htm

SMUD:
http://www.smud.org/education/index.html

CALBO TRAINING INSTITUTE
http://www.calbo.org

BUILDING INDUSTRY INSTITUTE (BII)
http://www.consol.ws/bect.asp

CABEC:
http://www.cabec.org/cepetrainandtest.ph

Residential Lighting Design Guide
– Best practices and lighting designs to help builders comply with California's 2005 Title 24 energy code
http://www.cltc.ucdavis.edu/

Flex Your Power Newswire
http://www.fypower.org/news/enewswire.html

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Need Help? CALL THE ENERGY HOTLINE @ (800) 772-3300 or (916) 654-5106