

ORDINANCE NO. 324-2018

[ARKANSAS ENERGY CODE]

AN ORDINANCE PROVIDING MINIMUM ENERGY STANDARDS FOR THE DESIGN OF NEW BUILDINGS AND STRUCTURES OR PORTIONS AND ADDITION TO EXISTING BUILDINGS THAT PROVIDE FACILITIES OR SHELTER FOR PUBLIC ASSEMBLY, EDUCATION, BUSINESS, MERCANTILE, INSTITUTIONAL, STORAGE, AND RESIDENTIAL OCCUPANCIES, AS WELL AS THOSE PORTIONS OF REGULATING THEIR EXTERIOR ENVELOPES AND THE SELECTION OF THEIR HVAC, SERIVE WATER HEATING, ELECTRICAL DISTRIBUTUION AND ILLUMINATING SYSTEMS AND EQUIPMENT FOR EFFECTIVE USE OF ENERGY.

Be in enacted by the City Council of Stephens, Arkansas,

Section 1. ADOPTION OF ENERGY CODE.

There is hereby adopted by the City Council of Stephens, Arkansas, for the purpose of establishing rules and regulations for energy efficient standards for new building construction, this code known as the 2014 Arkansas Energy Code, being particularly the 2014 Arkansas Energy Code edition thereof and the whole thereof, save and expect such portions as are hereinafter deleted, modified, or amended, of which no less than three (3) copies of this ordinance, as well as, three (3) copies of the 2014 Arkansas Energy Code, have been and now are filed in this office of the Clerk or Recorder/Treasurer of the City of Stephens, Arkansas, and the same ordinance is hereby adopted and incorporated as fully as set out at length herein, and from the date on which this ordinance shall take effect, the provisions thereof shall be controlling in the construction of all buildings and structures therein contained within the corporate limits of the City of Stephens, Arkansas.

Section 2. INCONSISTENT ORDINANCES REPEALED.

Ordinances or parts thereof in force at the time that this ordinance shall take effect, if inconsistent herewith, are hereby repealed.

Section 3. EMERGENCY CLAUSE.

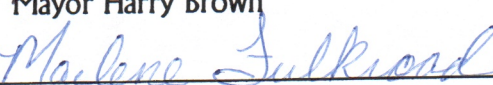
Whereas it is of the utmost urgency that the City of Stephens, Arkansas, have an up-to date Energy Code to protect the citizens of our city, therefore, an Emergency is hereby declared to exist and this ordinance being necessary for the immediate protection of the public shall take effect immediately on its passage and approval.

APPROVED AND PASSED this 16 day of April, 2018





Mayor Harry Brown



Recorder / Treasurer




[Faint, illegible handwritten text]

[Faint, illegible handwritten text]

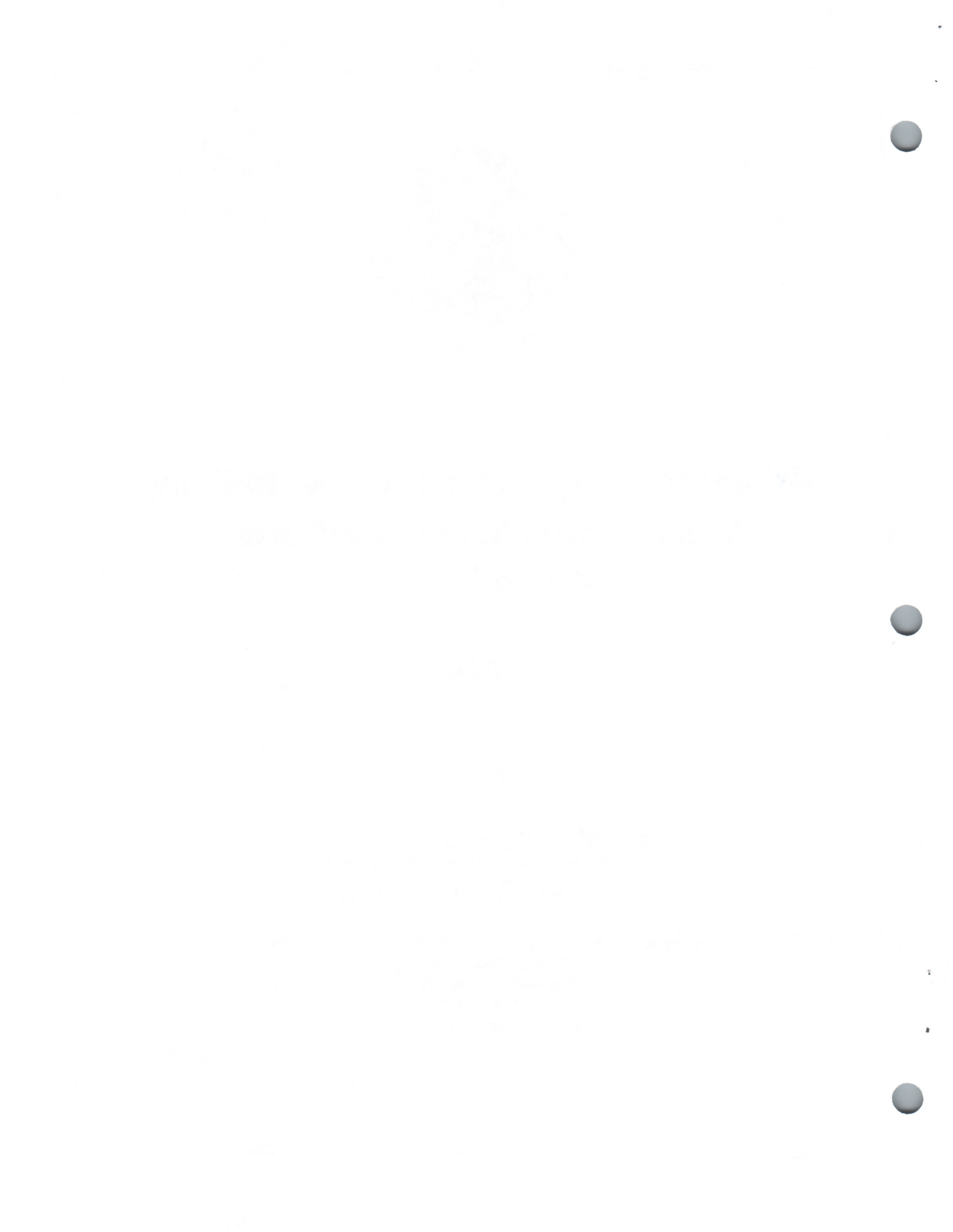


Arkansas Energy Code for New Building Construction Supplements and Amendments

2014

 **ARKANSAS**
Economic Development Commission
ENERGY OFFICE

Arkansas Economic Development Commission – Energy Office
900 West Capitol Avenue
Little Rock, Arkansas 72113
501-682-6103
www.arkansasenergy.org



Introduction

The Arkansas General Assembly authorized the Arkansas Economic Development Commission - Energy Office to promulgate these regulations in Section 3(B)(2)(c) of Act 7 of 1981. These rules and regulations are in adherence with the Administrative Procedures Act. The *2014 Arkansas Energy Code for New Building Construction* establishes minimum energy requirements for residential and commercial buildings in the State of Arkansas.

Residential and Commercial

For residential and commercial structures, Arkansas adopts the International Energy Conservation Code (IECC), 2009 Edition, published and copyrighted by the International Codes Council.

To order copies of the *International Energy Conservation Code 2009 Edition* contact:

International Code Council
900 Montclair Road
Birmingham, Alabama 35213-1206
Phone: 1-800-786-4452, Fax: 205-591-0775
Telecommunications Device for the Deaf: 205-599-9742
Copyright © 1996-1998 Southern Building Code Congress International, Inc. All rights reserved.
Web: www.iccsafe.org

Commercial

Chapter 5 of the IECC 2009 allows for an alternative compliance pathway for commercial structures through the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) ANSI / ASHRAE / IESNA Standard 90.1-2007 Energy Standard for Buildings Except Low-Rise Residential Buildings. Both standards are available separately or in a bundled edition from the International Code Council at the above address.

To order copies of *American Society of Heating, Refrigerating, and Air-Conditioning Engineers ANSI/ASHRAE/IESNA Standard 90.1-2007* contact:

American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.
1791 Tullie Circle, N.E.
Atlanta, Georgia 30329
Phone: 404-636-8400, Fax: 404-321-5478
Web: www.ashrae.org

Questions, inquiries or request for copies of the *2014 Arkansas Energy Code for New Building Construction Supplements and Amendments* may be addressed to:

Arkansas Economic Development Commission - Energy Office
Attn: *2014 Arkansas Energy Code for New Building Construction*
900 West Capitol Avenue
Little Rock, Arkansas 72201
Phone: 800-558-2633 or 501-682-6103, Fax: 501-682-7499
Email: EnergyInfo@ArkansasEDC.com



Arkansas Amendments

**Revise the International Energy Conservation Code, 2009 Edition, as follows:*

Chapter 1: Administration

CHAPTER 1 ADMINISTRATION

SECTION 101.1 SCOPE AND GENERAL REQUIREMENTS

***Delete 'Title' and replace with the following:**

101.1 Title. This Code shall be known as the *2014 Arkansas Energy Code for New Building Construction* and shall be cited as such. It is referred to herein as "this Code" or "the Arkansas Energy Code."

***Revise 101.5.1 'Compliance materials' to read as follows:**

101.5.2 Compliance materials. Compliance pathways for residential and commercial construction are those delineated in Chapter 4 and Chapter 5 respectively. Computer aided tools such as REScheck, RESNET Home Energy Rating System and COMcheck are also acceptable. Other tools and third-party services may be approved by the Arkansas Economic Development Commission – Energy Office.

A label as outlined in 401.3 is required to be posted on new residential construction.

REScheck and COMcheck are computer programs developed by Pacific Northwest National Laboratories for the U.S. Department of Energy (D.O.E.) to assist in demonstration of compliance with the IECC. They may be obtained free of charge from the D.O.E. online at www.energycodes.gov. When following the REScheck compliance pathway, select the appropriate version.

***Revise 101.5.2 "Low energy buildings' to add the following to the list of exempt buildings:**

3. Temporary use structures such as hunting and fishing camps, boat houses, remote cabins, etc. that do not meet the definition of "dwelling units" in Section 202; General Definitions.
4. Mobile homes and manufactured housing.



**SECTION 111
Adoption**

***Add Section 111 'Adoption' as follows:**

111.1 Adoption. Arkansas Code § 15-10-205(b)(3)(B) requires that any city or county in Arkansas which issues building permits for new building construction (referred to herein as "applicable cities or counties") shall adopt the Arkansas Energy Code as amended.

111.1.1 Date of adoption: Applicable cities or counties shall adopt the Arkansas Energy Code prior to 12/31/2014.

111.1.2 Acknowledgement of Adoption. Upon adoption of the Arkansas Energy Code, applicable cities or counties are required to submit a copy of the adoption ordinance to the Arkansas Economic Development Commission - Energy Office. If the applicable city or county has not adopted the Arkansas Energy Code by 12/31/2014 the mayor and/or county judge is required to submit a letter to the Arkansas Economic Development Commission - Energy Office, no later than 60 days after this deadline, describing why the city or county is not in compliance with Arkansas Code § 15-10-205(b)(3)(B).

**SECTION 112
EFFECTIVE DATE**

***Add Section 112 'Effective Date' as follows:**

112.1 The effective date for this Code shall be 1/1/2015.



Chapter 3: Climate Zones

CHAPTER 3
CLIMATE ZONES

SECTION 301
CLIMATE ZONES

*Replace Figure 301.1 with the following:

Figure 301.1 Arkansas Climate Zones

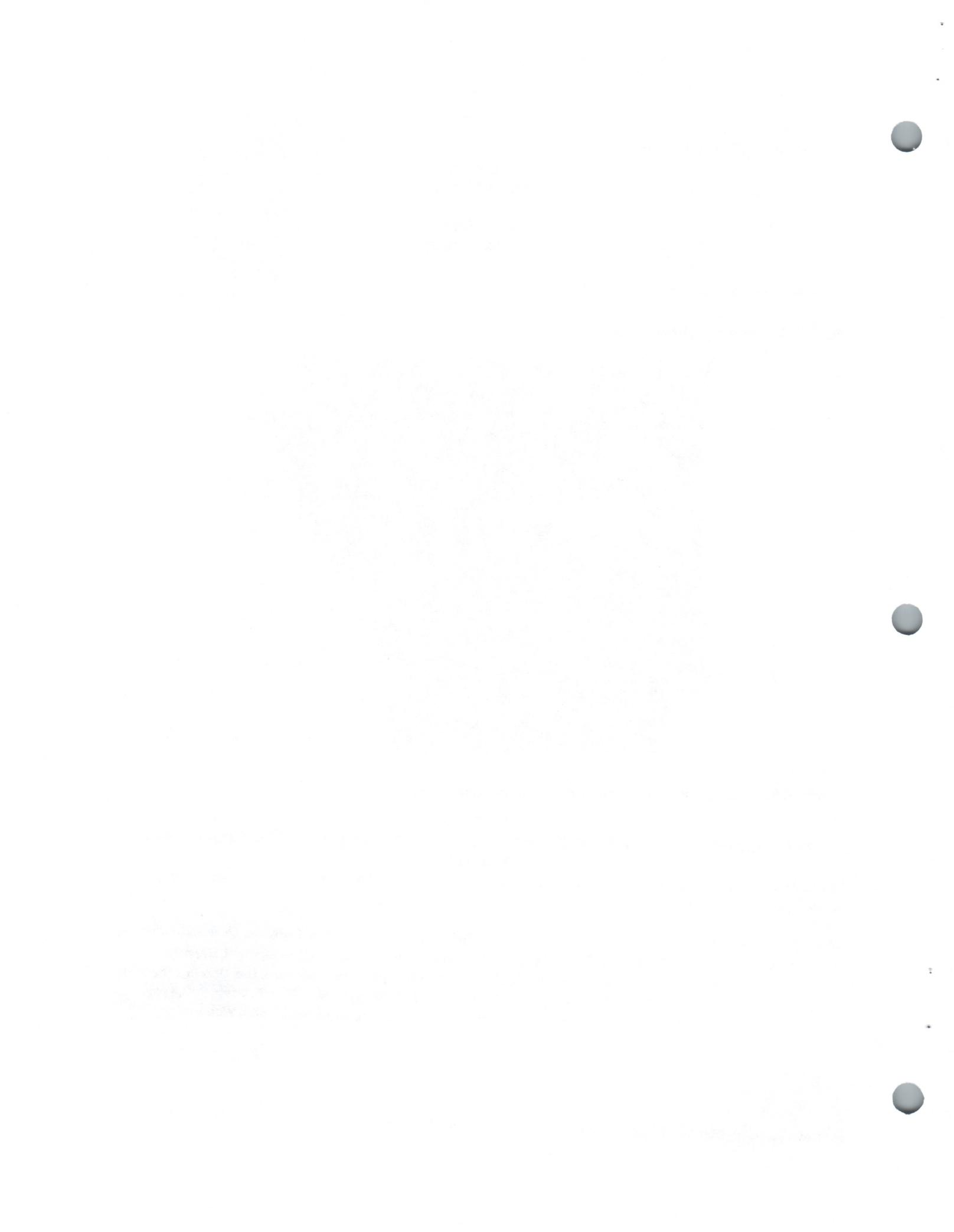


*Revise Table 301.1 to include on Arkansas-specific information as follows:

TABLE 301.1
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY

Climate Zone 4 contains counties of Baxter, Benton, Boone, Carroll, Fulton, Iard, Madison, Marion, Newton, Search, Stone and Washington.

Climate Zone 3 contains counties of Arkansas, Ashley, Bradley, Calhoun, Chicot, Clark, Clay, Cleburne, Cleveland, Columbia, Conway, Craighead, Crawford, Crittenden, Dross, Dallas, Desha, Drew, Faulkner, Franklin, Garland, Grant, Greene, Hempstead, Hot Spring, Howard, Independence, Jackson, Jefferson, Johnson, Lafayette, Lawrence, Lee, Lincoln, Little River, Logan, Lonoke, Miller, Mississippi, Monroe, Montgomery, Nevada, Ouachita, Perry, Phillips, Pike, Poinsett, Polk, Pope, Prairie, Pulaski, Randolph, Salline, Scott, Sebastian, Sevier, Sharp, St. Francis, Union, Van Buren, White, Woodruff and Yell.



**SECTION 402
BUILDING THERMAL ENVELOPE**

***Revise Table 402.1.1, 'INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT' as follows:**

Revise values for Climate Zone 4 with the values below.

CLIMATE ZONE	FENESTRATION U-FACTOR ^a	SKYLIGHT ^b U-FACTOR	SKYLIGHT GLAZED FENESTRATION SHGC ^{a,c}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE ^e	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^f WALL R-VALUE
4 except Marine	.50	.65	.30	30	13	5/10	19	10/13	0	5/13

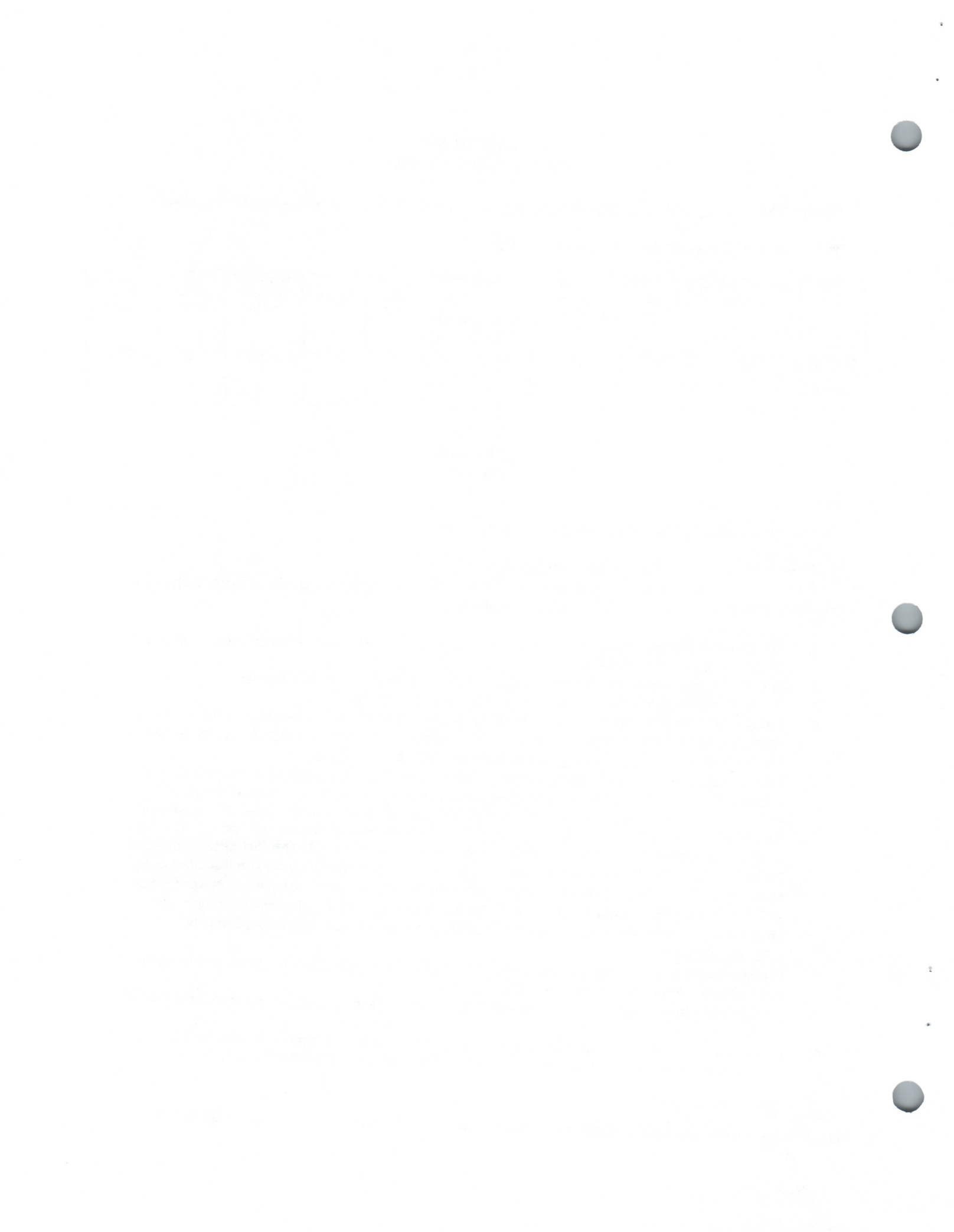
**SECTION 403
SYSTEMS**

***Delete Section 403.1.1, 'Programmable thermostat.'**

***Add new Section 403.2.1.1 'Spray foam insulation.'**

403.2.1.1 Spray foam insulation. Spray application of polyurethane foam to the exterior of ducts in attics and crawl spaces shall be permitted subject to all of the following:

1. The flame spread index is not greater than 25 and the smoke-developed index is not greater than 450 at the specified installed thickness.
2. The foam plastic is protected in accordance with the ignition barrier requirements.
3. The foam plastic complies with the requirements of Section R916.
4. Duct coverings and linings shall not flame, glow, smolder or smoke when tested in accordance with ASTM C 411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250°F (121°C). Coverings and linings shall be listed and labeled.
5. External duct insulation and factory-insulated flexible ducts shall be legibly printed or identified at intervals not longer than 36 inches (914 mm) with the name of the manufacturer, the thermal resistance R-value at the specified installed thickness and the flame spread and smoke-developed indexes of the composite materials. Spray polyurethane foam manufacturers shall provide the same product information and properties, at the nominal installed thickness, to the customer in writing at the time of foam application. All duct insulation product R-values shall be based on insulation only, excluding air films, vapor retarders or other duct components, and shall be based on tested C-values at 75°F (24°C) mean temperature at the installed thickness, in accordance with recognized industry procedures. The installed thickness of duct insulation used to determine its R-value shall be determined as follows:
 6. For duct board, duct liner and factory-made rigid ducts not normally subjected to compression, the nominal insulation thickness shall be used.
 7. For ductwrap, the installed thickness shall be assumed to be 75 percent (25-percent compression) of nominal thickness.
 8. For factory-made flexible air ducts, the installed thickness shall be determined by dividing the difference between the actual outside diameter and nominal inside diameter by two.



403.2.3 Building cavities (Mandatory). Building framing cavities shall not be used as supply or return ducts. All supply and return ducts must be lined with metal, ductboard or other material approved in AMC 603.

***Add new Section 403.2.4, 'Joints and seams', to read as follows:**

403.2.4 Joints and seams. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Without exception all closure systems shall have mastic applied that is at least 0.08 inches (2 mm) thick. Closure systems used with rigid fibrous glass ducts shall comply with UL181A and shall be marked 181A-P for pressure-sensitive tape used with mastic, 181A-M for only mastic or 181 AH for heat-sensitive tape used with mastic. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL181B and shall be marked 181B-FX for pressure sensitive tape used with mastic or 181B-M for only mastic. Duct connections to flanges of air distribution system equipment or sheet metal fittings shall use mastic and be mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B at least 1-1/2 inches (38 mm) and shall use mastic and be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint. Closure systems used to seal metal ductwork shall be installed in accordance with the manufacturer's installation instructions.

Exceptions:

1. Application of spray polyurethane foam insulation and mastic shall be permitted without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect. Mastic must be applied on all accessible sides.
3. Continuously welded or locking type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500Pa) pressure classification shall not require additional closure systems.

***Delete Section 404.1, 'Lighting equipment (Prescriptive)'**



Chapter 6: Referenced Standards

**CHAPTER 6
REFERENCED STANDARDS**

*Revise Chapter 6 'Referenced Standards' to include the following:

AFC

Arkansas Fire Prevention Code
State Fire Marshal's Office
1 State Police Plaza Drive
Little Rock, Arkansas 72209
(501) 618-8621

Standard reference number	Title	Referenced in Code section number
AFC	Arkansas Fire Prevention Code.....	103.6

AMC

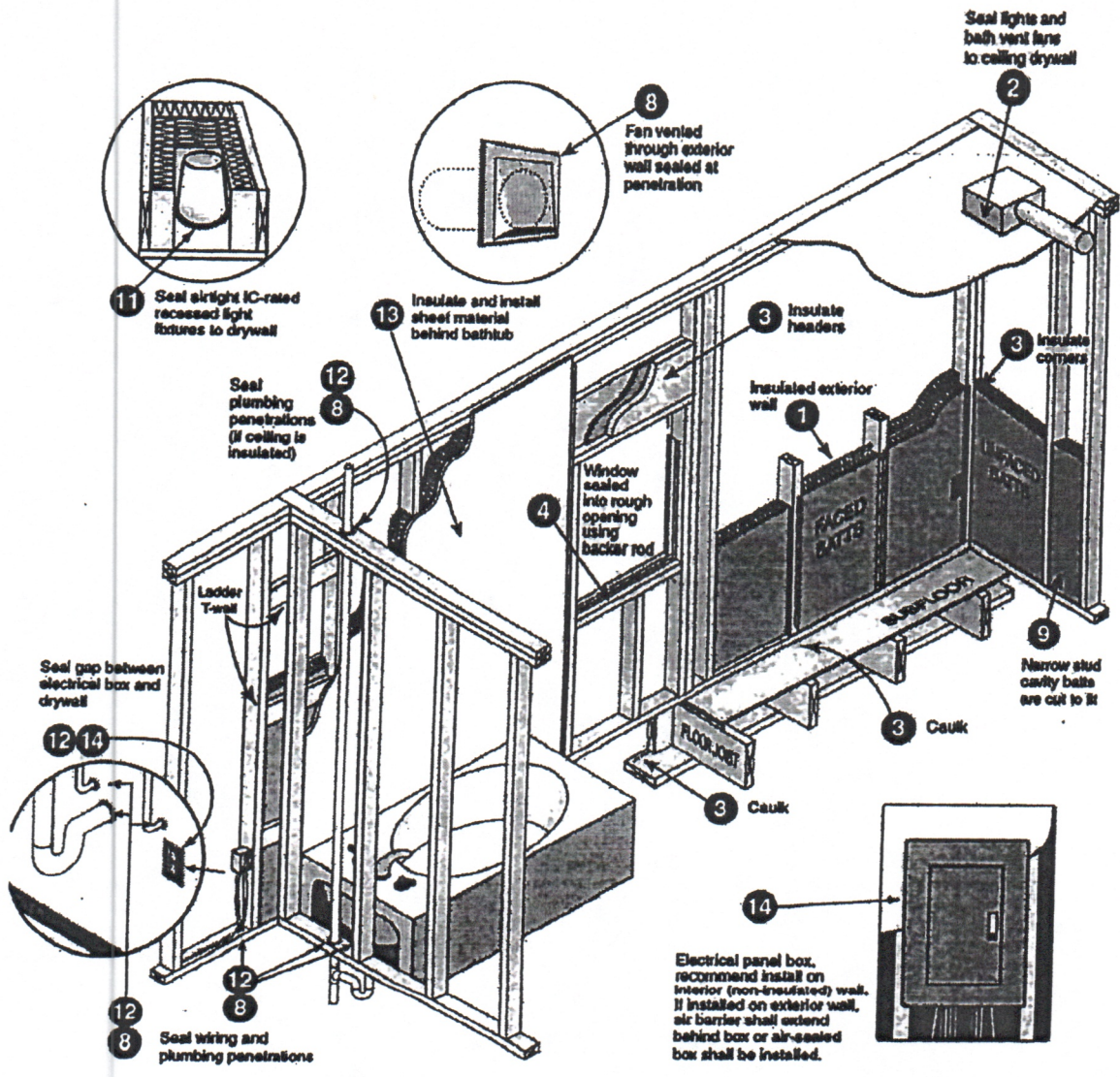
Arkansas Mechanical Code
Department of Health
Division of Protective Health Codes
4815 West Markham Street, Slot 24
Little Rock, Arkansas 72205-3867
(501)661-2642

Referenced in Code section number

AMC	Arkansas Mechanical Code.....	503.2.5, 503.2.5.1, 503.2.6, 503.2.7, 503.2.7.1, 503.2.7.1.1, 503.2.7.1.2, 503.2.9.1, 503.1 and 503.4.5
-----	-------------------------------	---

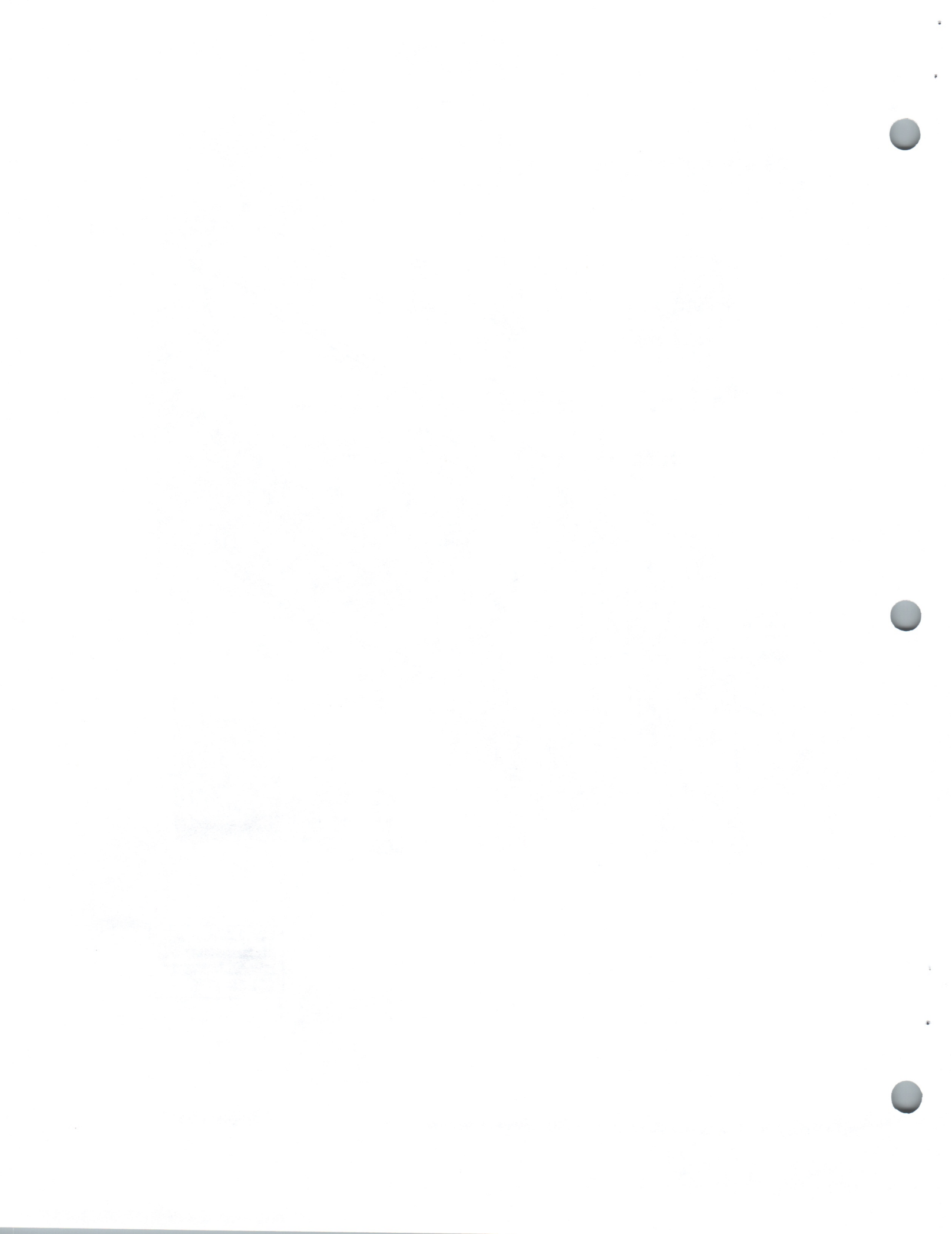


Air sealing key points

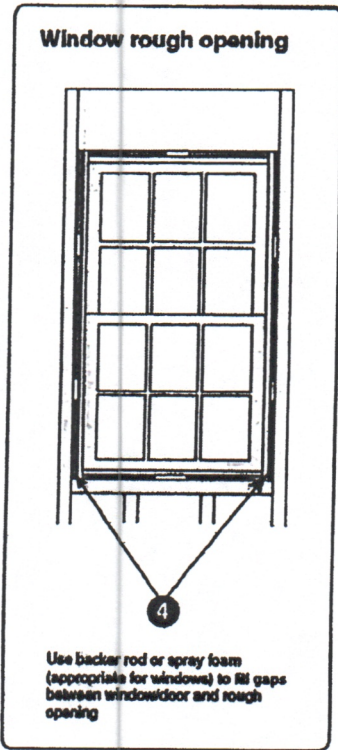


Electrical panel box, recommend install on interior (non-insulated) wall. If installed on exterior wall, air barrier shall extend behind box or air-sealed box shall be installed.

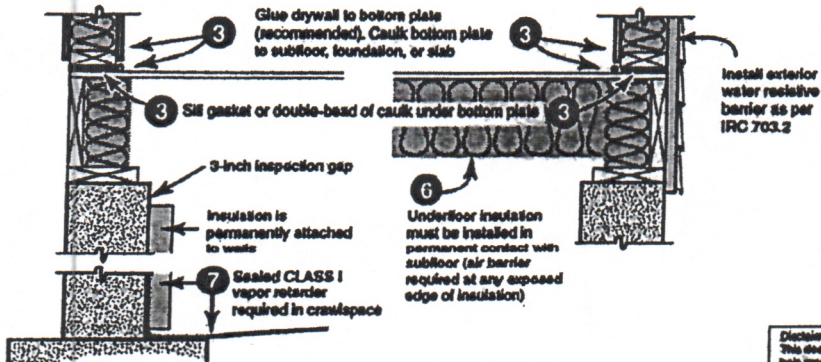
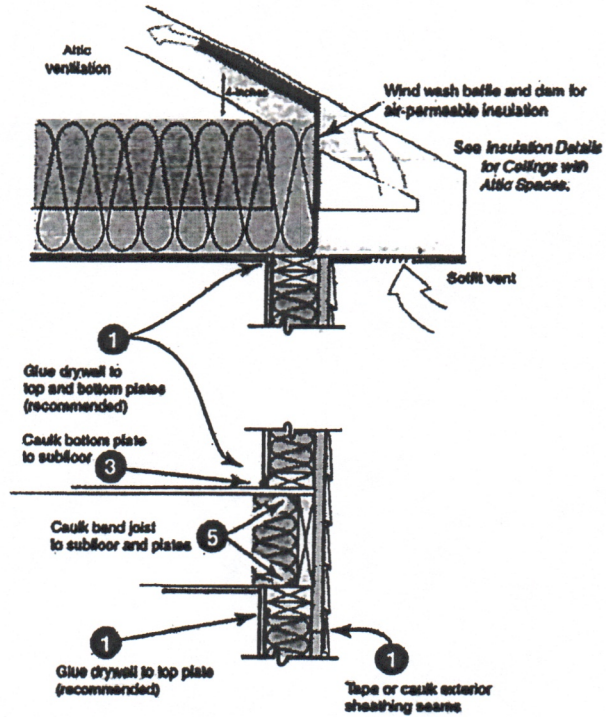
Disclaimer:
 This document is intended solely to help graphically demonstrate the air leakage provisions of section 402.4 of the 2008 IECC. It does not cover all airsealing locations or techniques. Other code provisions may be applicable as well.



Air sealing key points *continued*



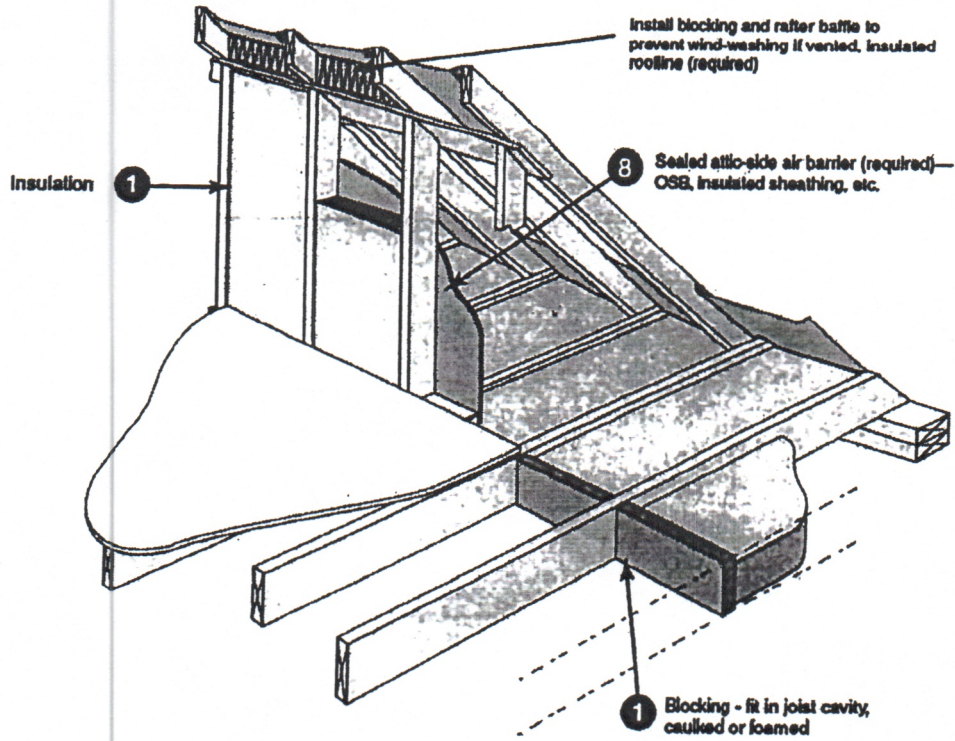
Wall cross-section



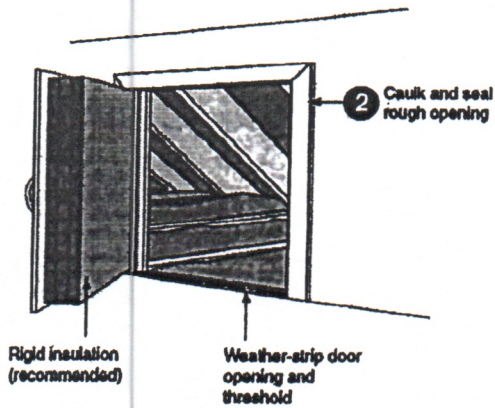
Disclaimer:
 This document is intended solely to help (specifically) demonstrate the air leakage provisions of section 402.4 of the 2009 IECC. It does not cover all airsealing techniques or techniques. Other code provisions may be applicable as well.



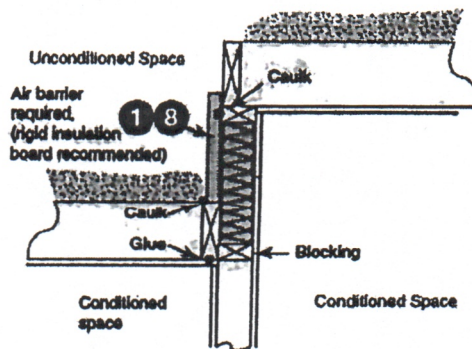
Air sealing key points *continued*



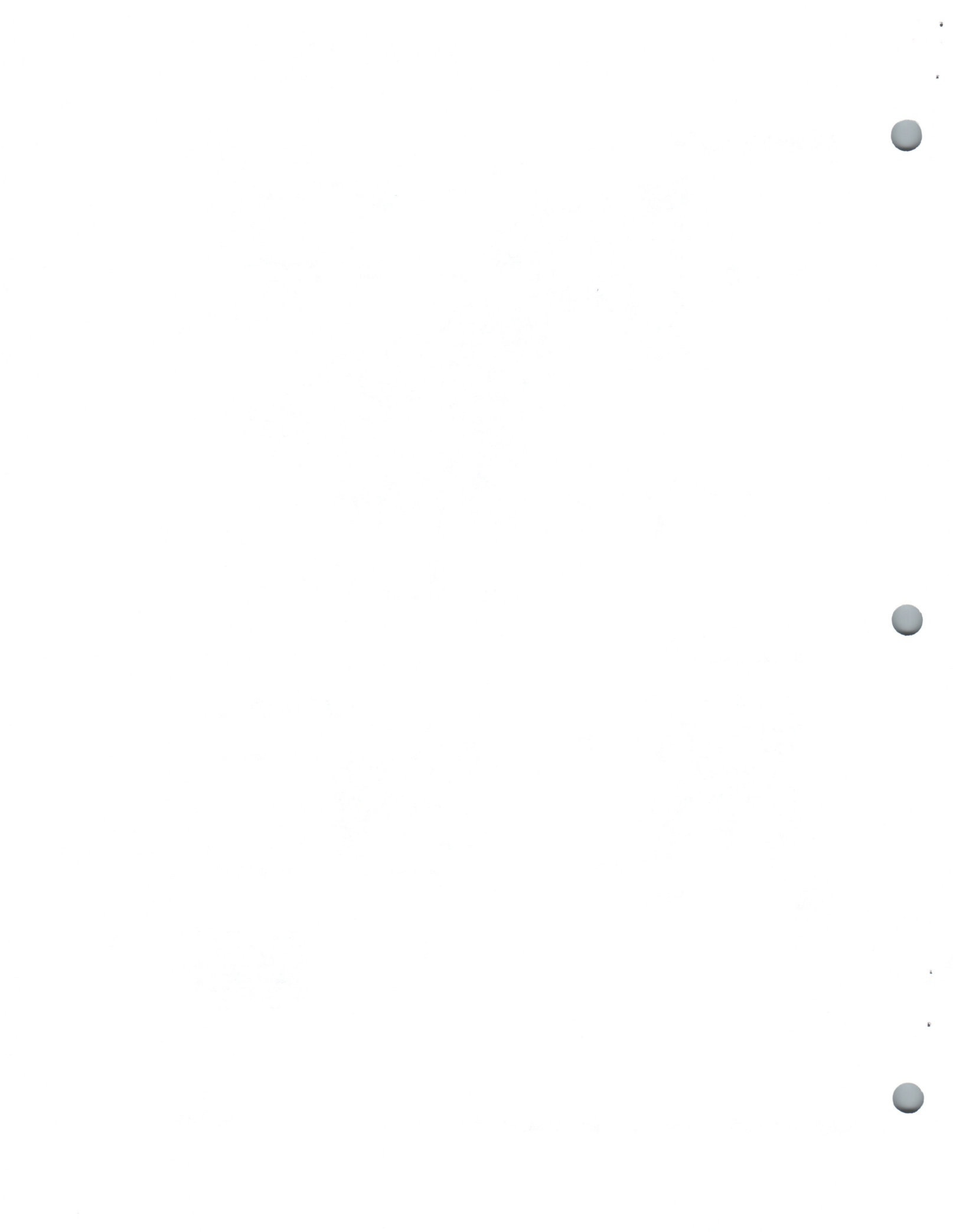
Attic knee-walls



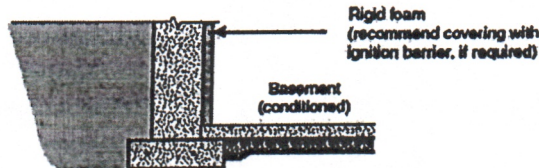
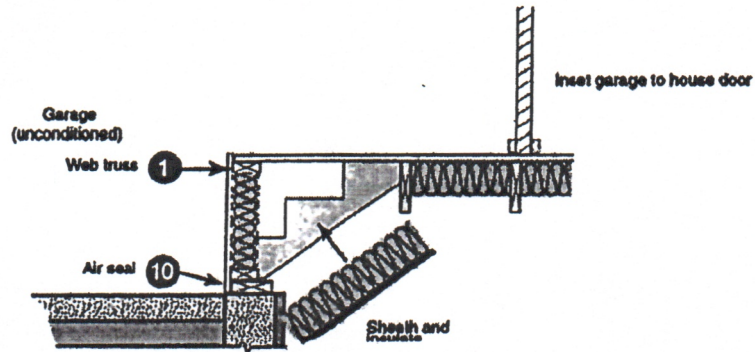
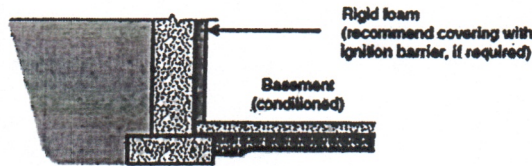
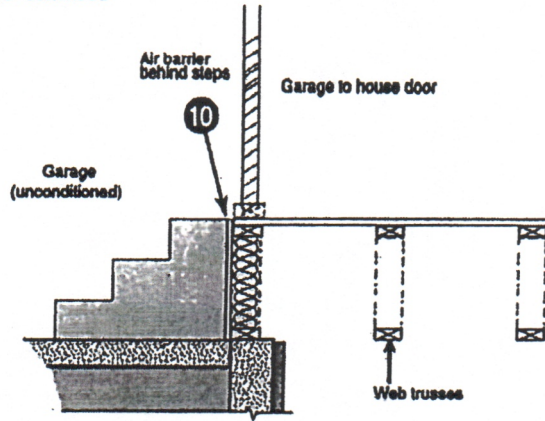
Two-level attic



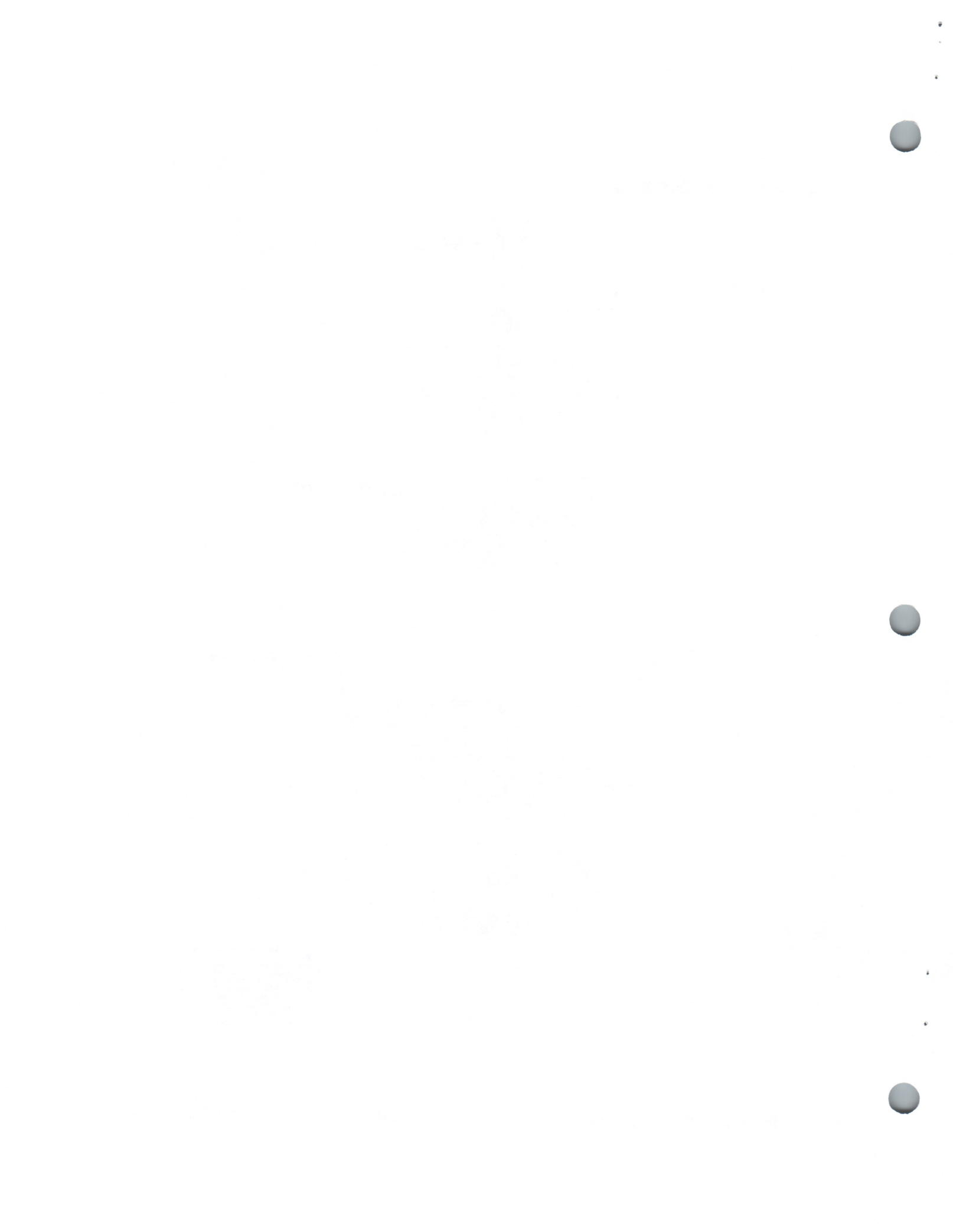
Disclaimer:
 This document is intended solely to help graphically demonstrate the air leakage provisions of section 602.4 of the 2008 IECC. It does not cover all abating locations or techniques. Other code provisions may be applicable as well.



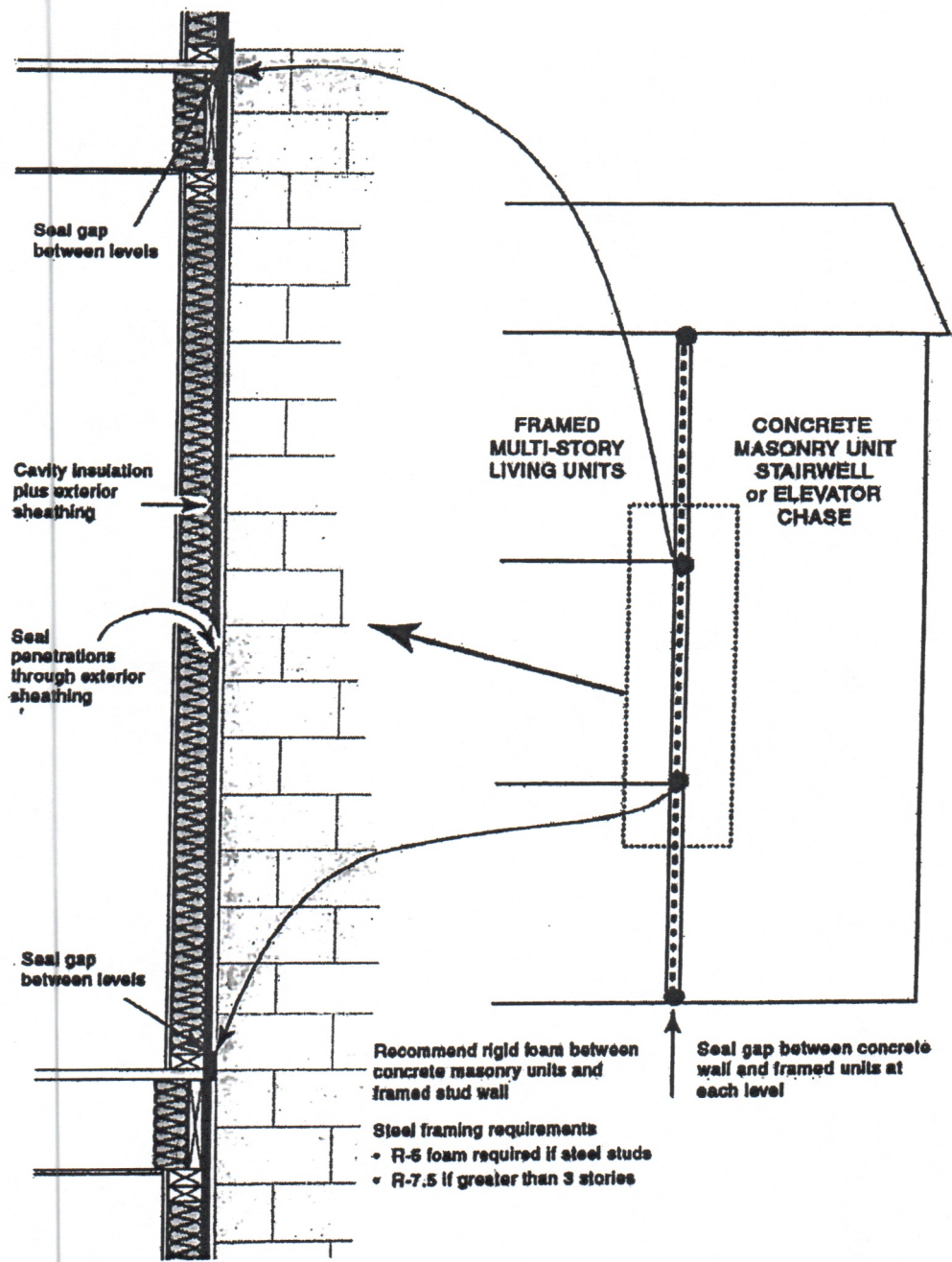
Air sealing key points *continued*



Disclaimer:
 This document is intended solely to help graphically demonstrate the air leakage provisions of section 602.4 of the 2009 IECC. It does not cover all detailing locations or techniques. Other code provisions may be applicable as well.



Air sealing key points *continued*
Multifamily

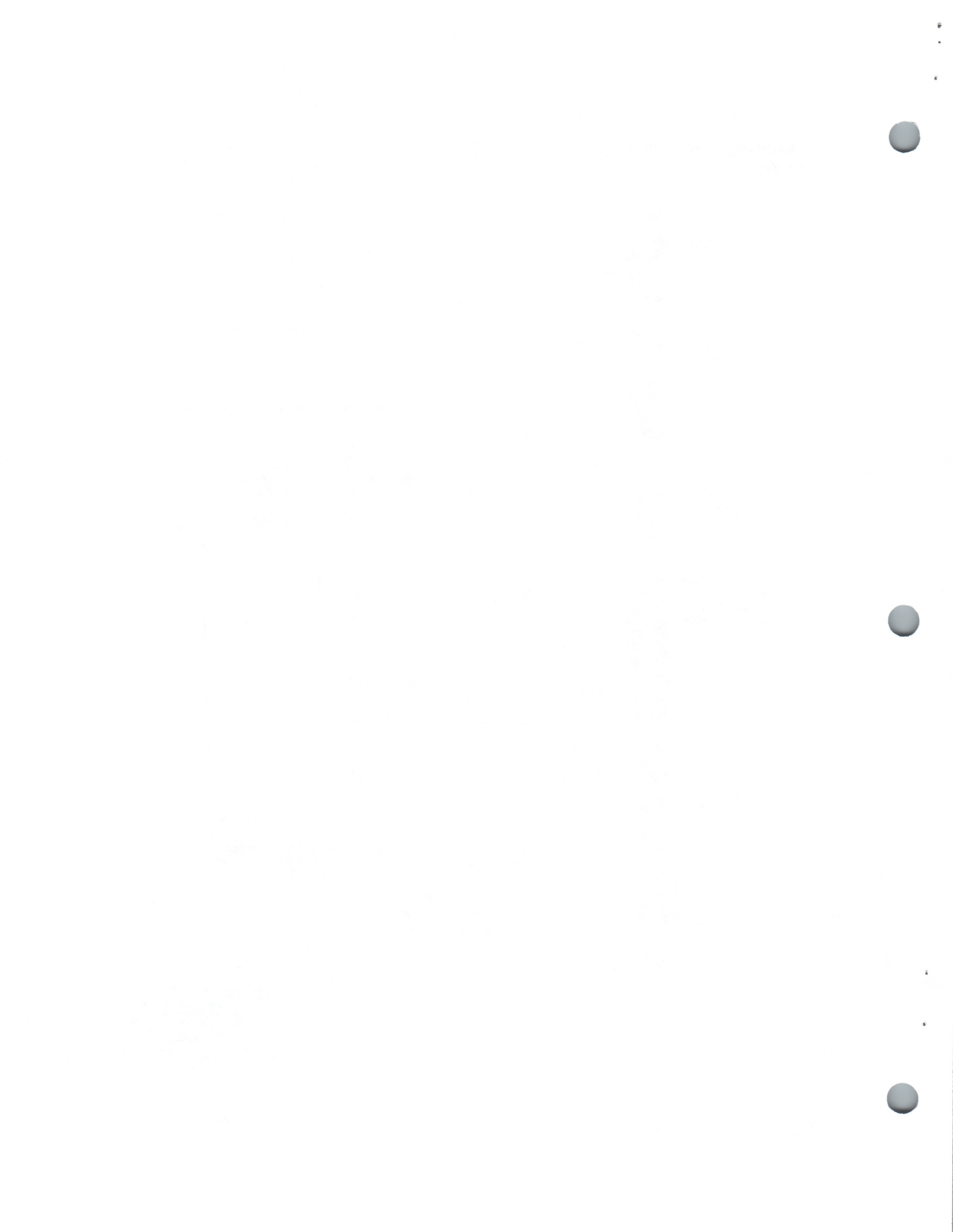


Recommend rigid foam between concrete masonry units and framed stud wall

Steel framing requirements

- R-5 foam required if steel studs
- R-7.5 if greater than 3 stories

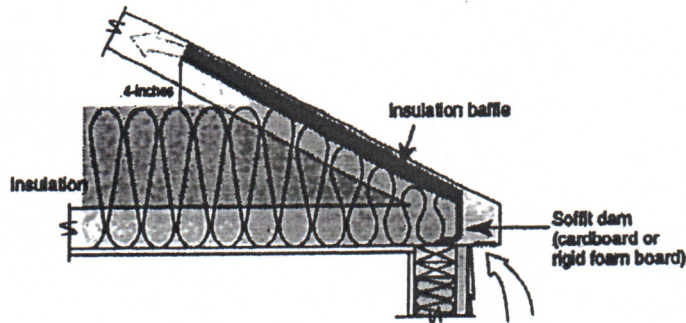
Disclaimer:
 This document is intended solely to help graphically demonstrate the air leakage provisions of section 402.4 of the 2009 IEBC. It does not cover all abatement locations or techniques. Other code provisions may be applicable as well.



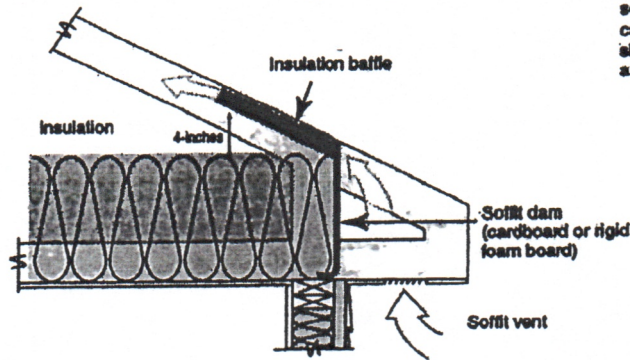
Insulation Details for Ceilings with Attic spaces

Rafter and Truss

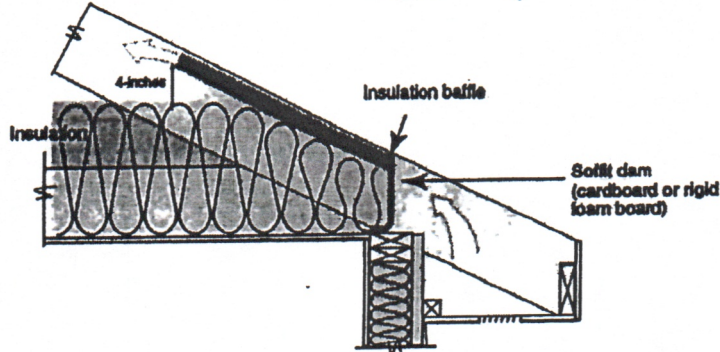
Standard Truss with tapered insulation depth



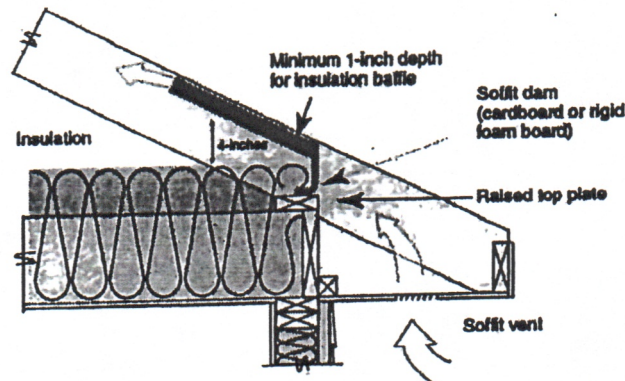
Energy Truss with full height insulation (recommended)



Standard rafter and top plate with tapered insulation depth



Rafter on raised top plate with full height insulation (recommended)



Note: Wind wash baffle and air-permeable insulation dam. For air permeable insulation in vented attics, baffles shall be installed adjacent to soffit and eave vents. A minimum of a 1-inch of space shall be provided between the insulation and the roof sheathing and at the location of the vent. The baffle shall extend over the top of the insulation inward until it is at least 4 inches vertically above the top of the insulation. Any solid material such as cardboard or thin insulating sheathing shall be permeable as the baffle.

Disclaimer:
This document is intended solely to help graphically demonstrate the air leakage provisions of section 602.4 of the 2008 IECC. It does not cover all detailing conditions or techniques. Other code provisions may be applicable as well.

