



U.S. Department of Energy
Energy Efficiency and Renewable Energy



Building Energy Codes

U.S Department of Energy's Building Energy Codes Program Presents

Understanding the Vestibule Requirement in the 2003 International Energy Conservation Code

Instructor

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Overview of Vestibule Web cast

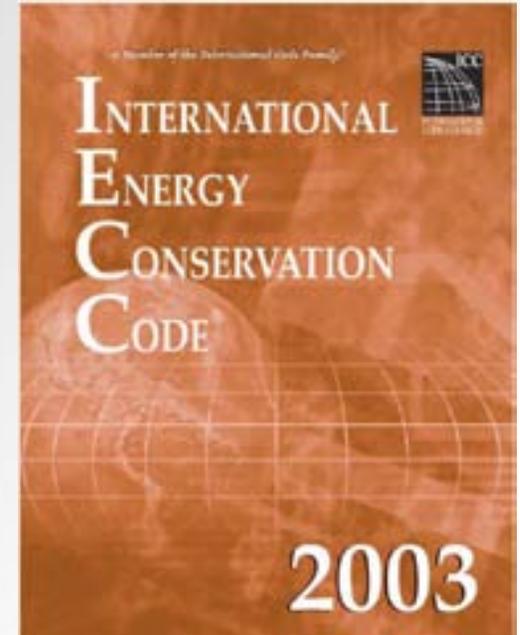
- Review IECC and ASHRAE/IESNA 90.1-2001 Vestibule Requirements
- Purpose Behind the Vestibule Requirement
- Basic Vestibule Requirements
- Definition of Space
- Which Doors Must Comply with the Vestibule Requirement
- Complying with the Building Envelope Requirements for Portions of the Vestibule
- Additional Vestibule Considerations
- Question / Answer Session

2003 IECC Vestibule Requirement

802.3.6 Vestibules. A door that separates conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time.

Exceptions:

1. Buildings in Climate Zones 1a through 4b as indicated in Table 302.1.
2. Doors not intended to be used as a building entrance door, such as doors to mechanical or electrical equipment rooms.
3. Doors opening directly from a guestroom or dwelling unit.
4. Doors that open directly from a space less than 3,000 square feet (298 m²) in area.
5. Revolving doors.
6. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.

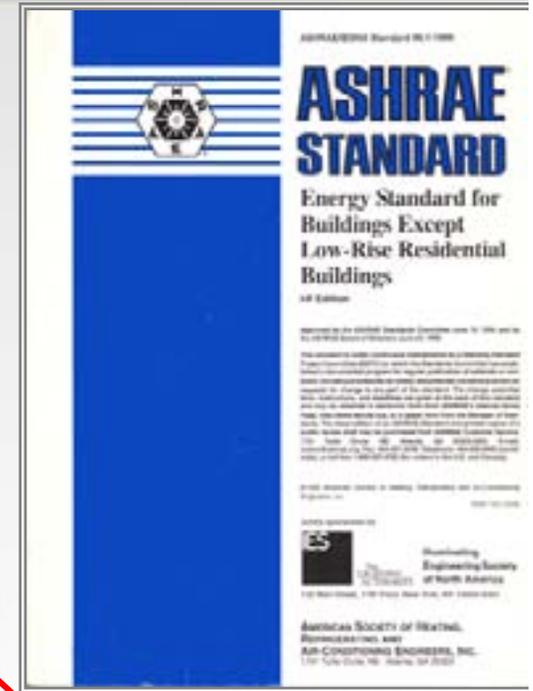


2001 ASHRAE/IESNA 90.1-2001 Vestibule Requirement

Section 5.5.3.4 Vestibules. A door that separates conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. Interior and exterior doors shall have a minimum distance between them of not less than 7 ft when in the closed position.

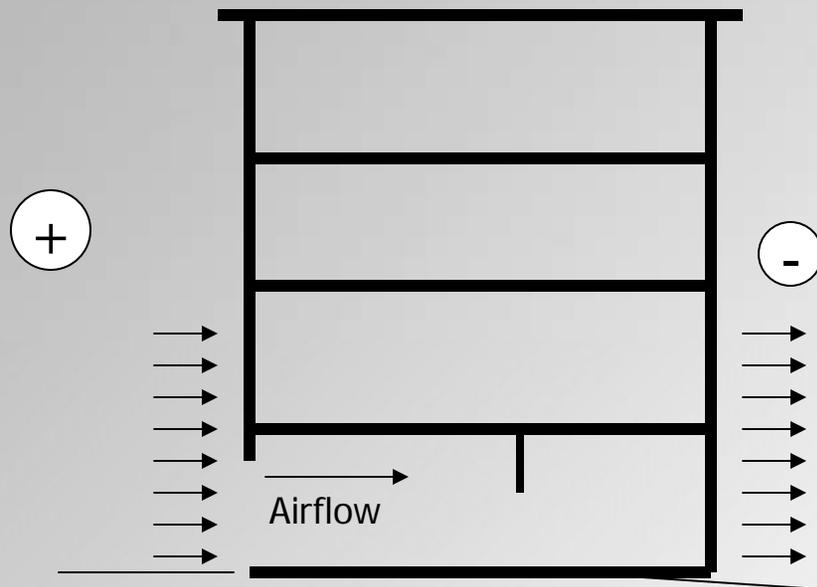
Exception to 5.5.3.4:

- (a) Doors in buildings in climates that have less than 1800 HDD65
- (b) Doors in buildings less than four stories above grade
- (c) Doors not intended to be used as a building entrance door, such as mechanical or electrical equipment rooms,
- (d) Doors opening directly from a dwelling unit
- (e) Doors that open directly from a space less than 3000 ft² in area
- (f) Doors in building entrances with revolving doors
- (g) Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.

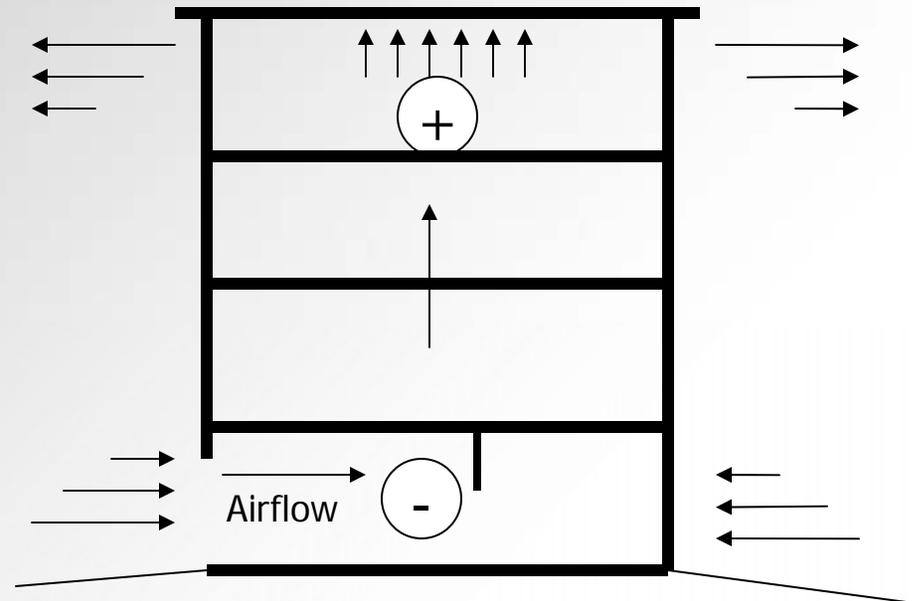


Major Difference

What is the Code Trying to Accomplish?



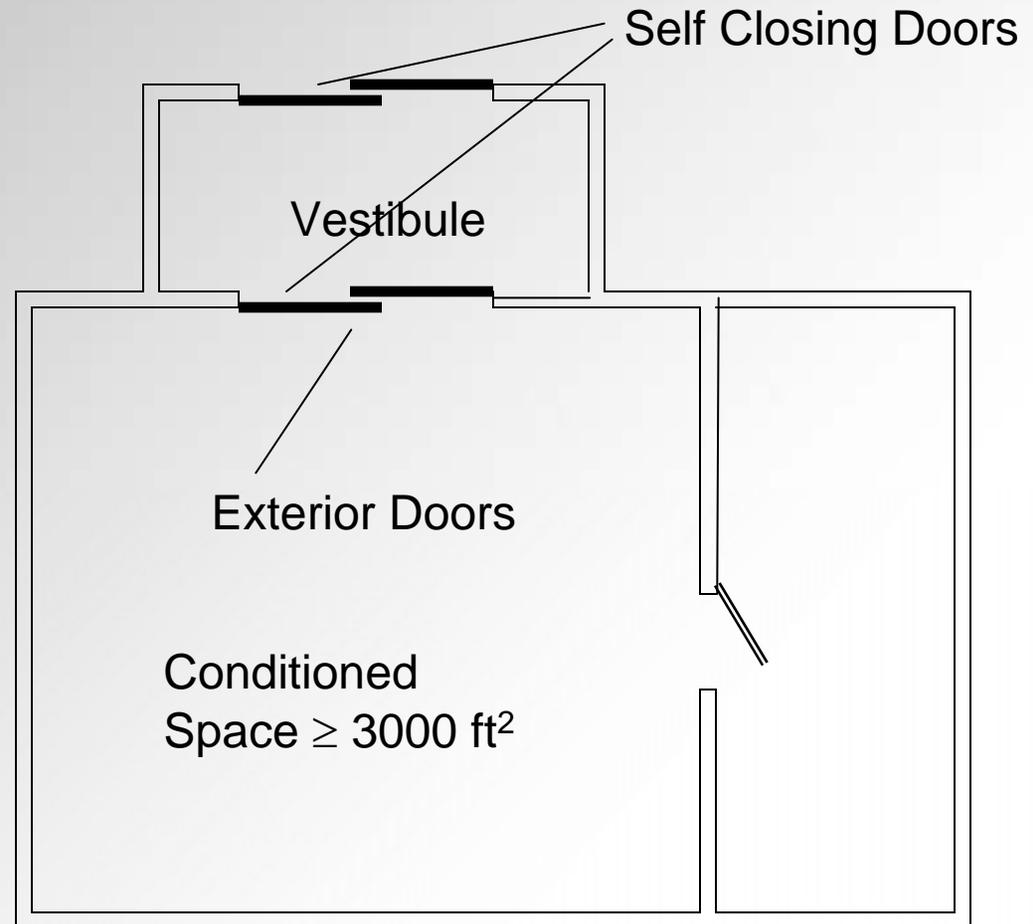
Wind



Stack

Basic Vestibule Requirements

- Entrance doors on spaces $\geq 3,000 \text{ ft}^2$
- Must have self-closing devices
- Must be able to pass through doors without needing to open doors at the same time

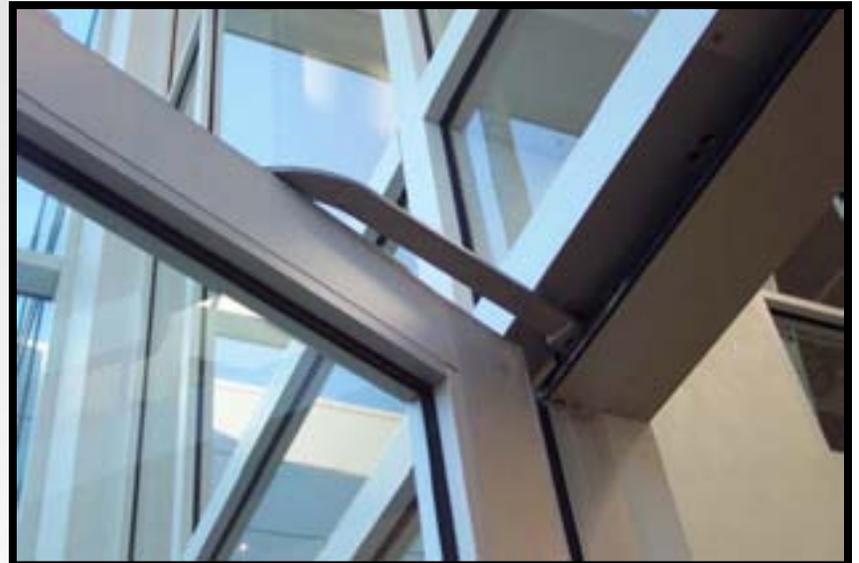


Basic Vestibule Requirement



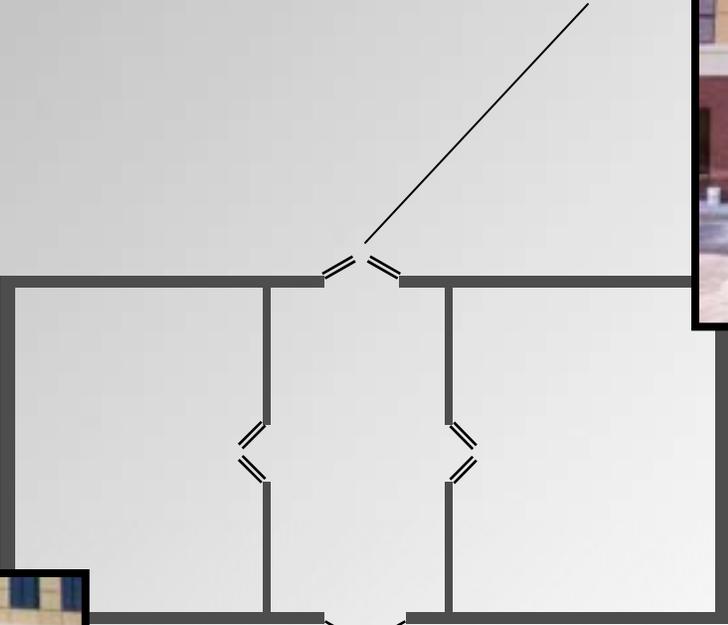
- Enclosed vestibule
- Ability to pass through without needing to open both doors at the same time

- Self closing device



Basic Vestibule Requirement

Two Entrances to Space

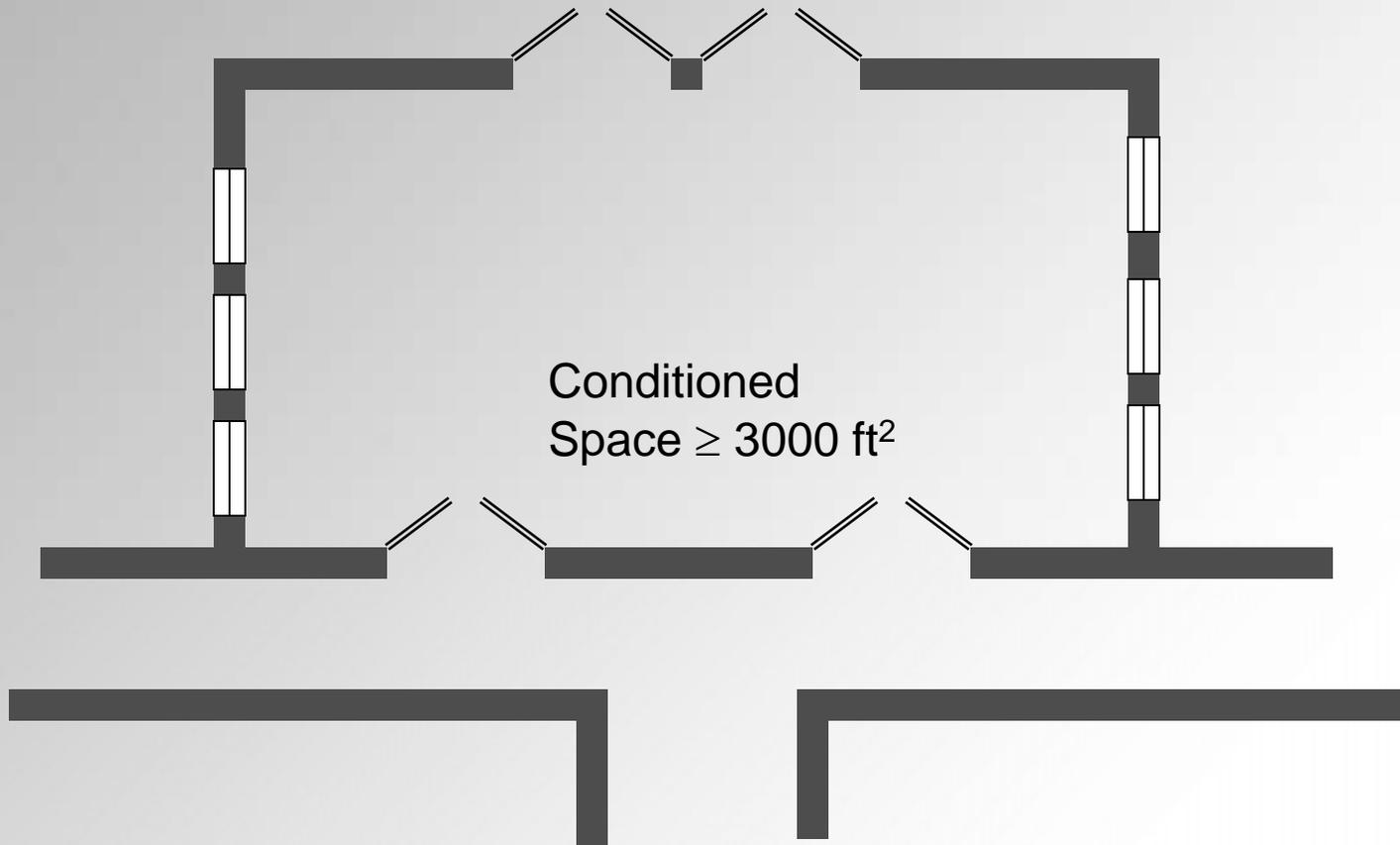


What is a Space?

ASHRAE/IESNA 90.1-2001 Definition

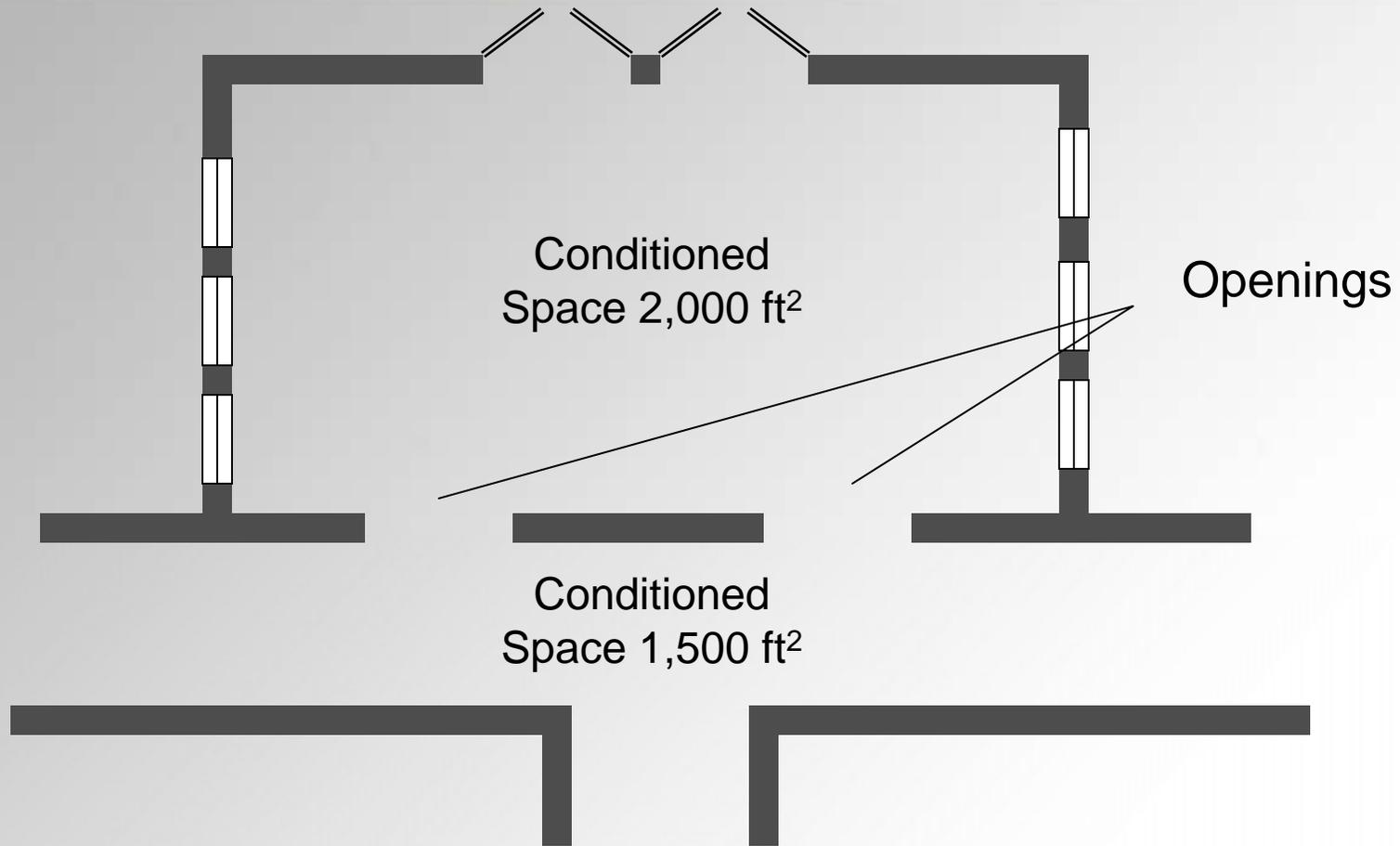
enclosed space: a volume substantially surrounded by solid surfaces such as walls, floors, roofs, and operable devices such as doors and operable windows

What is a Space?



Example 1

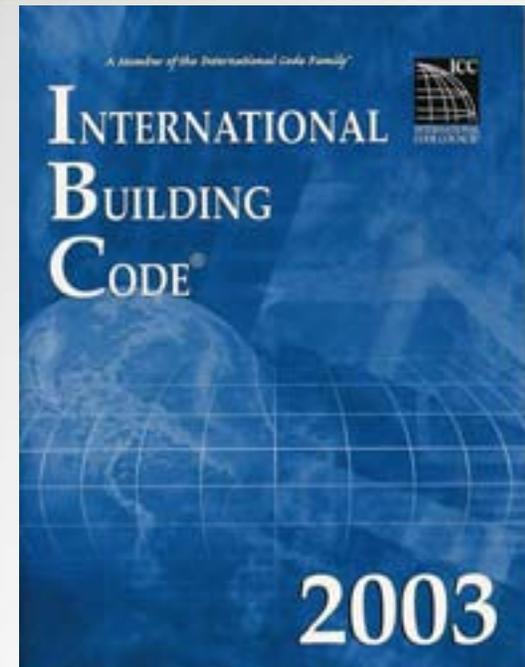
What is a Space?



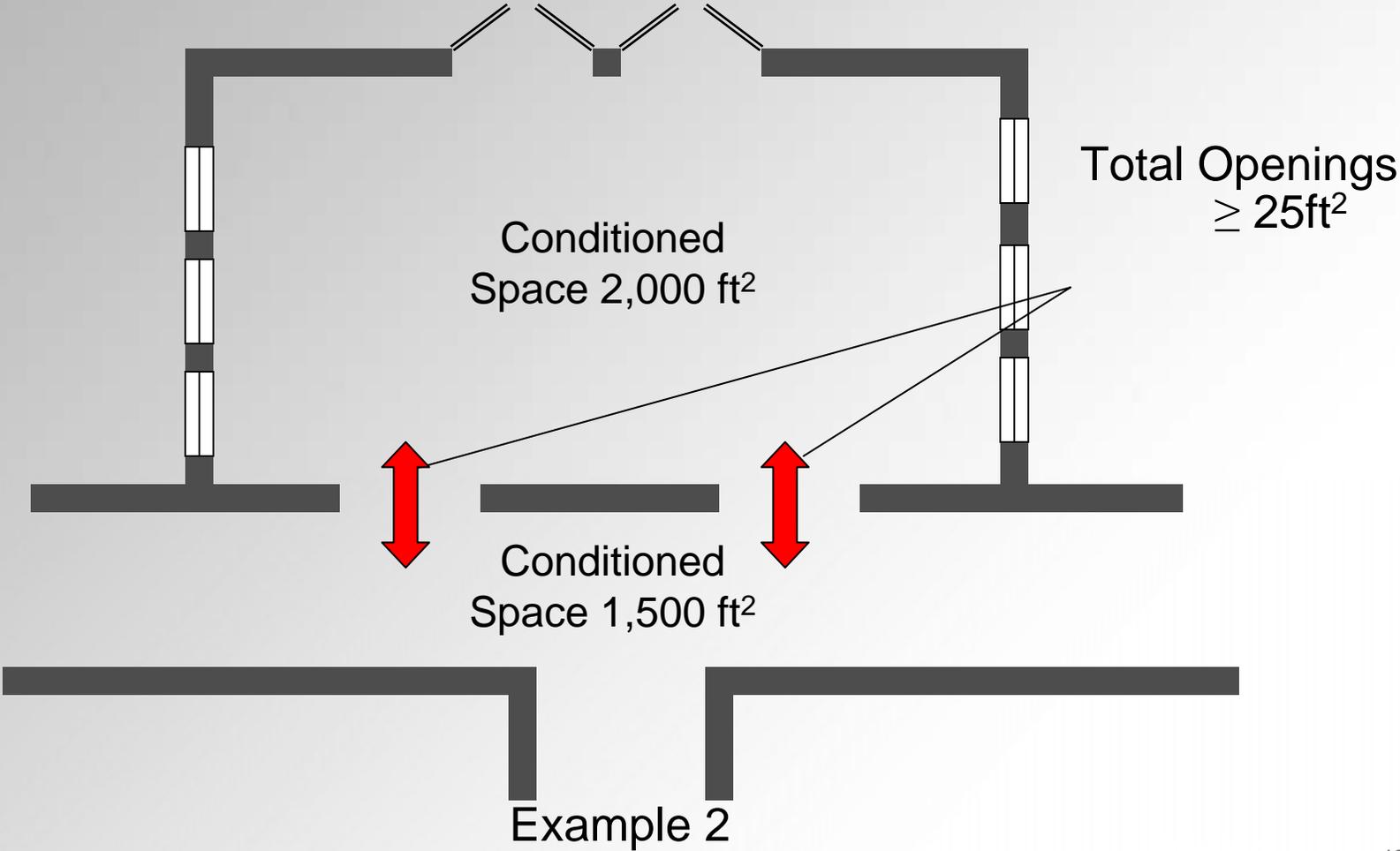
Example 2

2003 IBC Ventilation Requirement

Section 1203.4.1.1 Adjoining spaces. Where rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the opening to the adjoining rooms shall be unobstructed and shall have an area not less than 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.3 m²). The minimum openable area to the outdoors shall be based on the total floor area being ventilated.



Combine to Form One Space



Exceptions



Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.

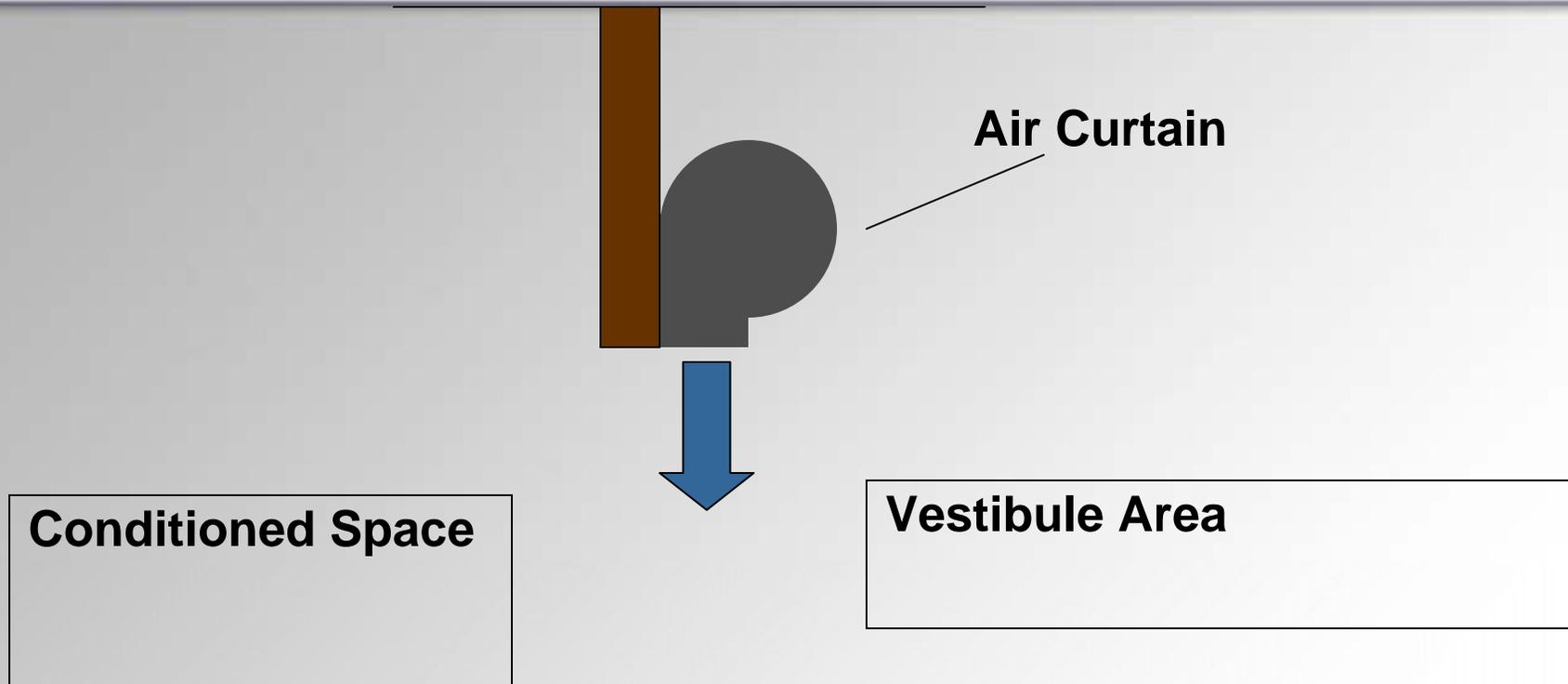


Door Requirements

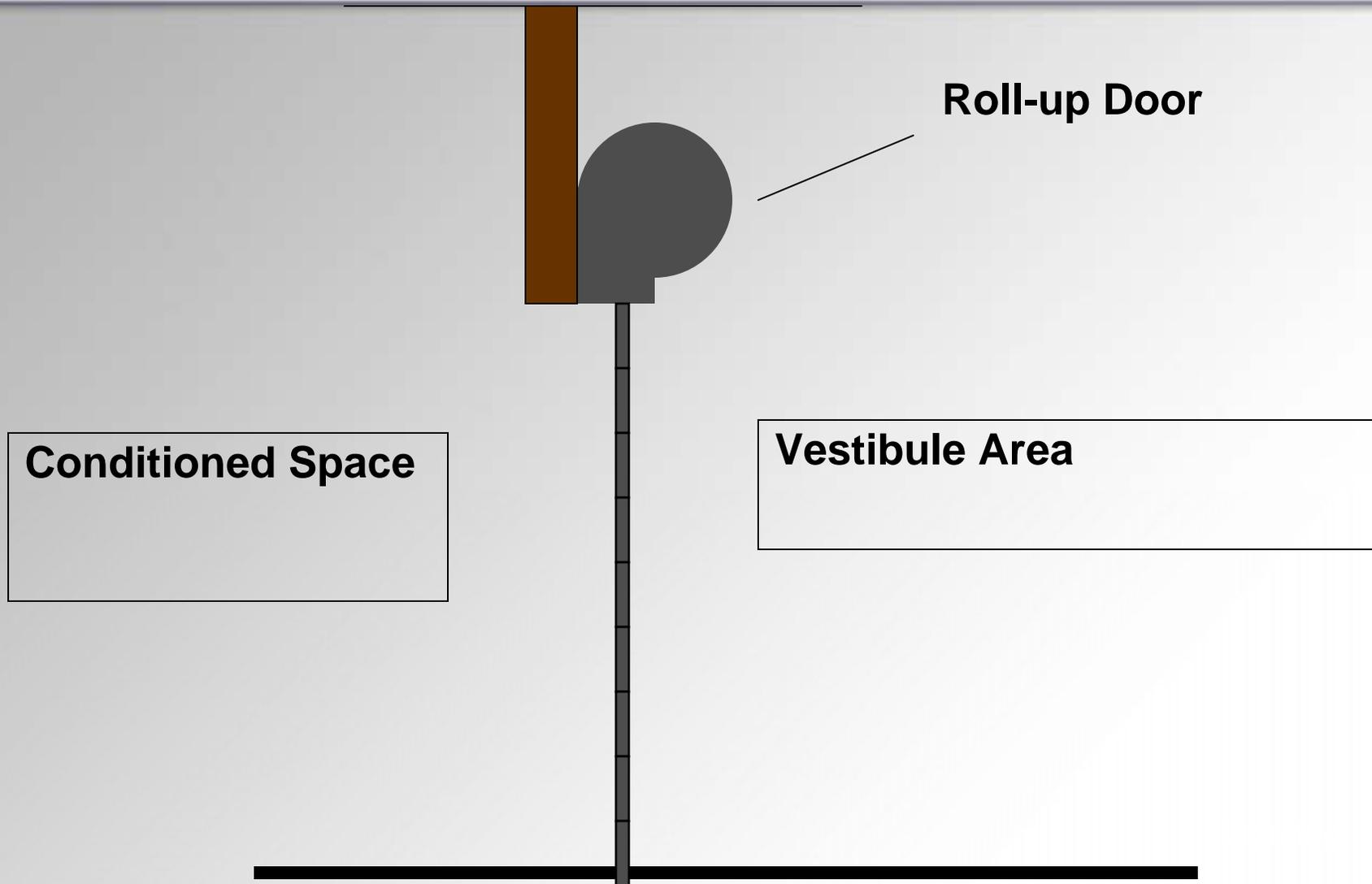


- Ability to pass through without needing to open both doors at the same time
- Self closing devices

Noncompliant Doors



Noncompliant Doors



Noncompliant Doors



Which Doors Must Comply?

Must Comply

Exempt

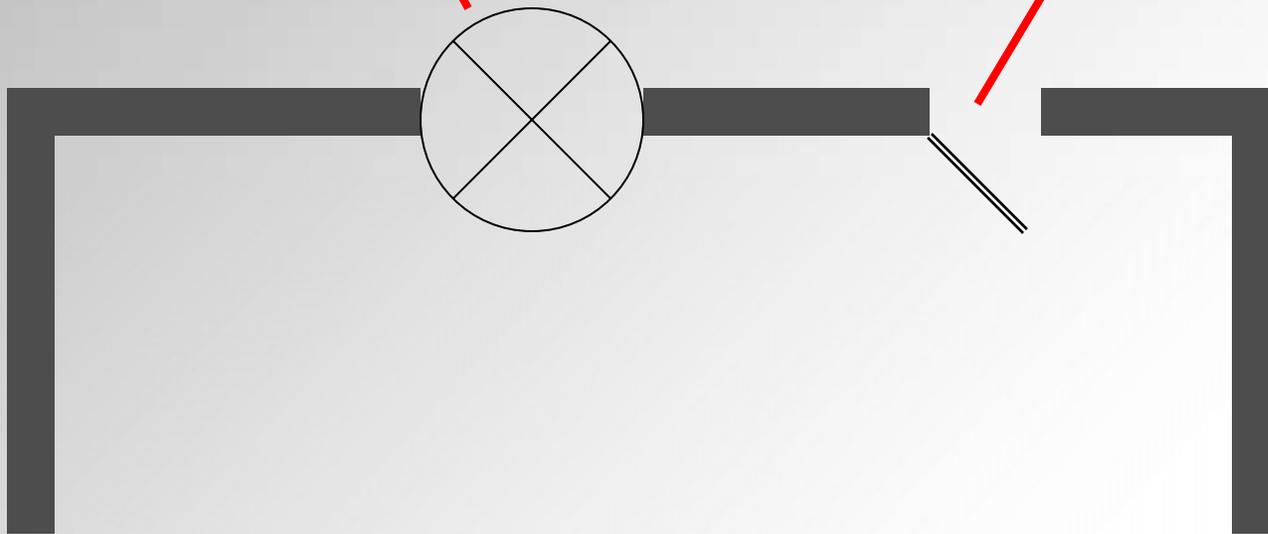


Which Doors Must Comply?

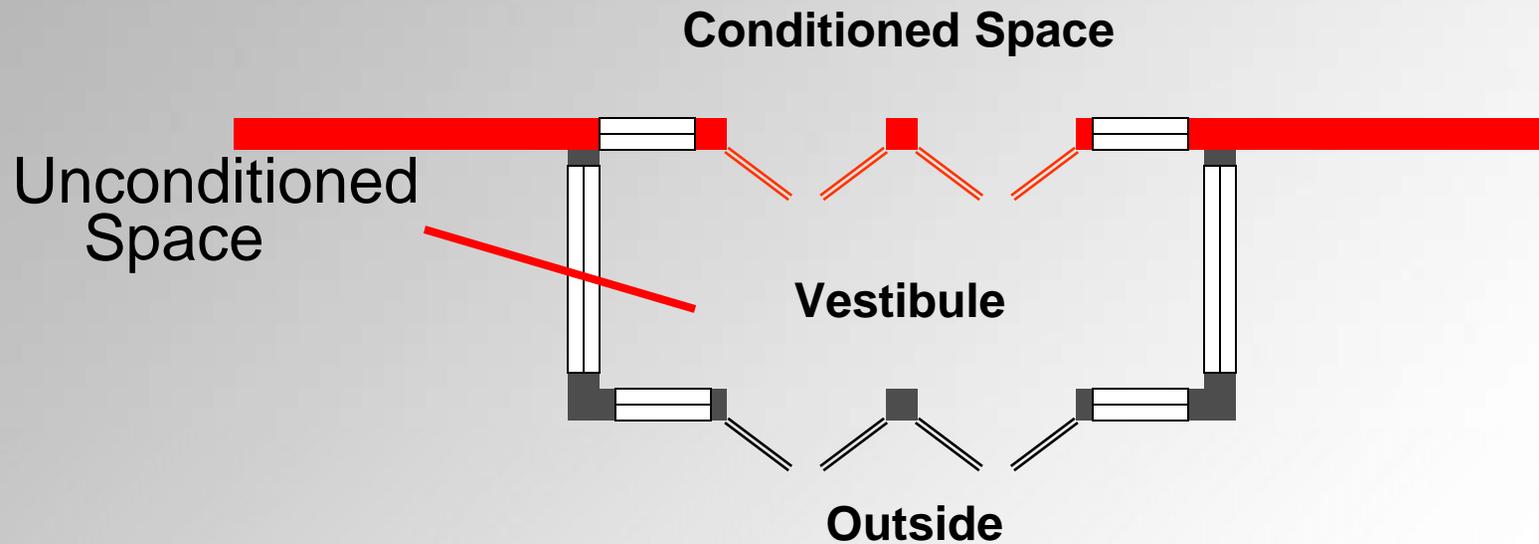
Revolving Doors
Exempt

IBC 1008.1.3.1

- ▶ Side-hinged swinging door
≤ 10ft from revolving door



What Must Comply With the Envelope Requirements?



- Comply with Section 802.2.9 Interior Walls Requirement

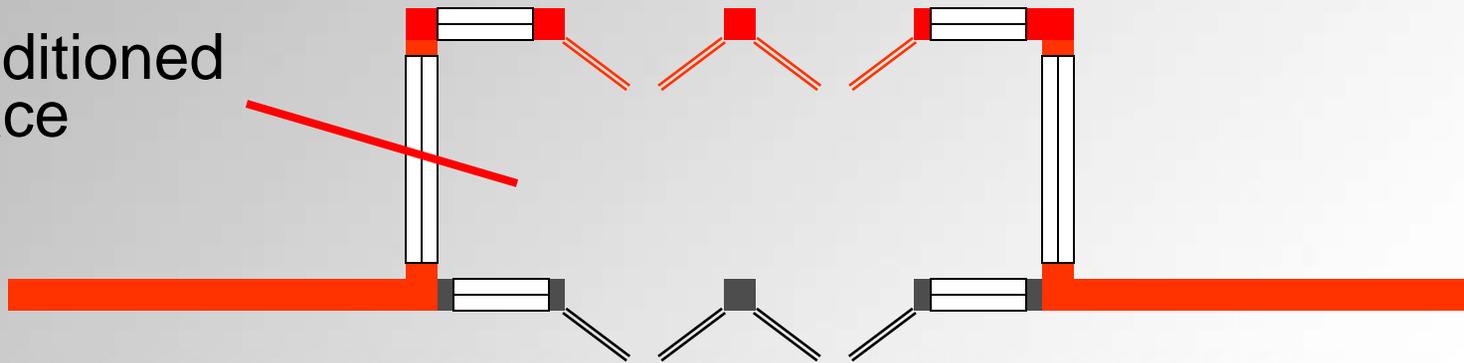
What Must Comply With the Envelope Requirements?



Unconditioned
Space

What Must Comply With the Envelope Requirements?

Unconditioned Space



- Comply with Section 802.2.9 Interior Walls Requirement

Other Vestibule Considerations

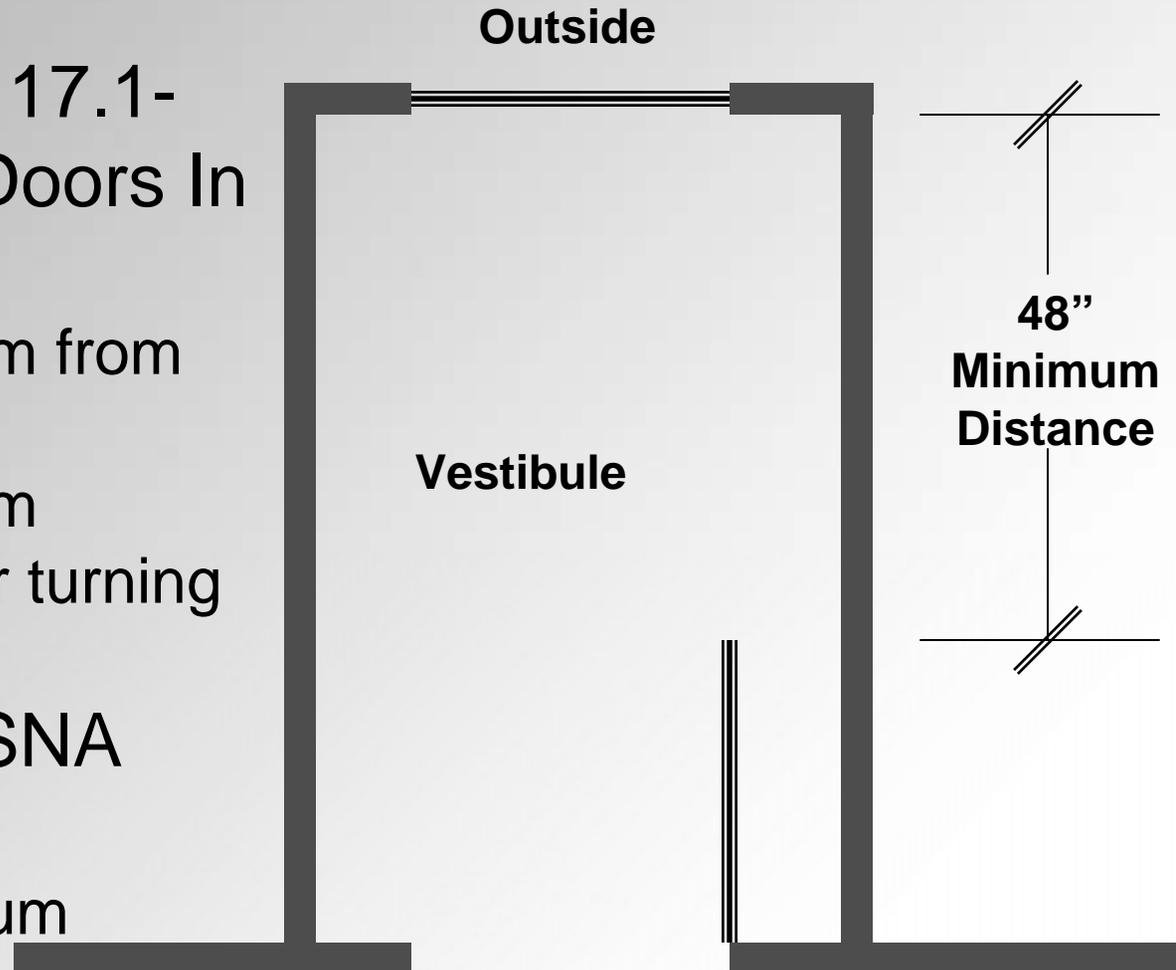
Minimum Depth

- ICC/ANSI A117.1-2003 - Two Doors In Series

- 48" minimum from door swing
- 60" minimum diameter for turning

- ASHRAE/IESNA 90.1-2001

- 7 ft minimum



Commercial Compliance Tools

Desktop Software Tools



Web-Based Tools



Printed Materials



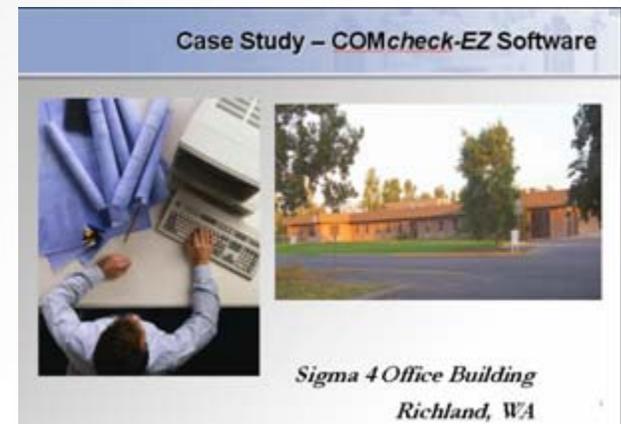
Compliance Guides

Prescriptive Tables

Free

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- PowerPoint presentations with faculty notes
- Case studies
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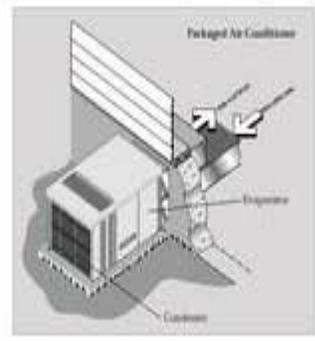
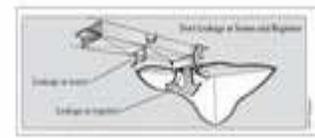
Keywords: *duct system approach HVAC*

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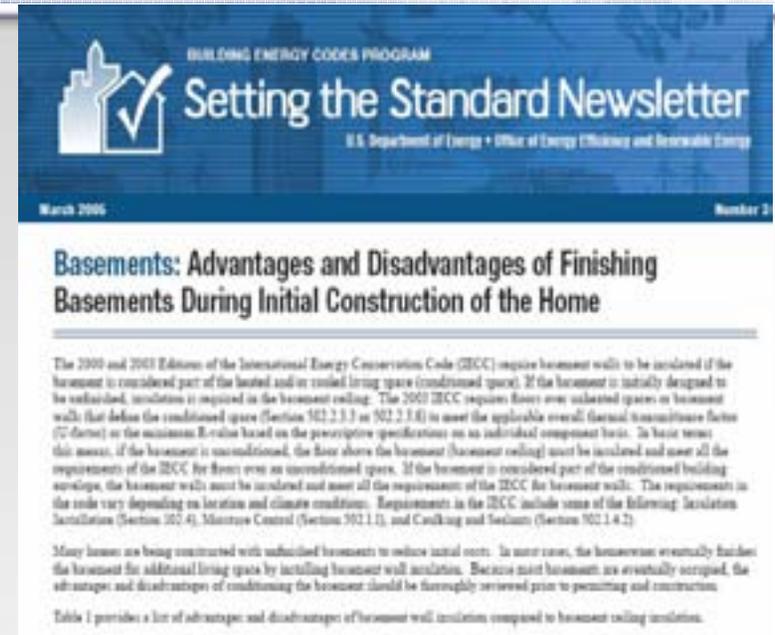


Setting the Standard Newsletter

- Register on-line to receive the latest up-to-date information on energy code related issues.

Newsletter

- <http://www.energycodes.gov/news/>



Building Energy Codes Program



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- State Training
- Consumer Education
- Energy Codes Glossary
- 2004 National Workshop

Implementation Tools

- DOE 2004 Proposals
- DOE Determinations
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- Resource Materials
- Status of State Energy Codes
- Setting the Standard

Technical Support/FAQs



DOE's Building Energy Codes Program is an information resource on national model energy codes. We work with other government agencies, state and local jurisdiction, national

The Program recognizes that energy codes maximize energy efficiency only when they are fully embraced by users and supported through education, implementation, and enforcement.



REScheck

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COMcheck

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2004 National Workshop on State Building Energy Codes
July 15-20, 2004



NEWS

REScheck Now Includes the 2003 IECC

Newly Released — *Setting the Standard* Update
July 2004

ICC Final Action Hearings
May 17-20, 2004

REScheck-Web™



COMcheck-EZ™ Package



Questions/Comments

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U.S. Department of Energy's Building Energy Codes Program

Live Question and Answer Session