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**INSULATION
AND VENTILATION**

*Insulation
& Interiors*

M O D U L E

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FIELD EXERCISE 1

► 1.0 OBJECTIVES

In this Module, you will learn how insulation, air/vapor barriers and ventilation systems work to keep houses comfortable and structurally sound. While the goal for most homeowners is reduced heating and cooling costs, the home inspector's goal on insulation, air/vapor barriers, and ventilation systems is to identify conditions that may ruin the house.

Insulation And Moisture Control

We'll discuss the basics of how insulation works and describe some of the common materials and their characteristics. We'll talk about moisture control, a very important and poorly understood component. We'll talk about ventilation in two different senses and put the whole package together to look at the house as a group of interrelated systems.

Insulating House Components

We'll discuss how roofs, walls, floors, basements and crawlspaces are typically insulated and ventilated, and we'll discuss where problems typically crop up.

Ventilation And Air Quality

We'll conclude by discussing some of the ventilation approaches that help maintain good air quality in buildings.

Inspection To The Standards

Our goal is to enable you to inspect insulation and ventilation systems according to our Standards.

Not The Final Word

This section is not technically exhaustive and won't qualify you to install or design these components. As always, there are many places to go to expand your knowledge, and we encourage you to do this throughout your home inspection career.

Problem Identification

By the time you have finished this section, you'll be able to spot common performance-related problems and understand their implications. You'll be able to make appropriate recommendations. The inspection of insulation and ventilation systems is challenging because so little of these systems can be seen. In many cases, you will rely on indirect or incomplete evidence.

Insulation & Interiors

M O D U L E

STUDY SESSION 1

1. This Session covers the ASH[®] Standards for inspecting insulation systems. It also covers a brief introduction to the Insulation inspection.
2. At the end of this Study Session you should be able to –
 - identify three components that have to be observed during the Insulation inspection.
 - identify two components that have to be reported as a result of your Insulation inspection.
 - define in one sentence the terms **insulation** and **vapor retarder**.
 - describe in one sentence the implications of inadequate insulation.
 - describe in one sentence the implications of inadequate air/vapor barriers.
 - define **degree-day** in two sentences.
 - name two house systems that affect moisture control in houses.
 - name two kinds of house ventilation.
3. Before starting this section, read the brief introduction to the Insulation chapter of **The Home Reference Book**.
4. This Session may take roughly one half hour.
5. Quick Quiz 1 is at the end of this Session.

Key Words:

- **Insulation**
- **Degree-days**
- **Vapor retarder**
- **Ventilation – unconditioned spaces**
- **Air/vapor barrier**
- **Ventilation – fresh air for occupants**
- **Moisture control**

► 2.0 SCOPE AND INTRODUCTION

2.1 SCOPE

THE ASHI® STANDARDS OF PRACTICE

The following are excerpted from the ASHI® Standards of Practice, effective January 1, 2000.

2. PURPOSE AND SCOPE

2.1 The purpose of these Standards of Practice is to establish a minimum and uniform standard for private, fee-paid home *inspectors* who are members of the American Society of Home Inspectors. *Home Inspections* performed to these Standards of Practice are intended to provide the client with information regarding the condition of the systems and *components* of the home as inspected at the time of the *Home Inspection*.

2.2 The inspector shall:

A. inspect:

1. *readily accessible systems* and components of homes listed in these Standards of Practice.
2. *installed systems* and *components* of homes listed in these Standards of Practice.

B. report:

1. on those *systems* and *components* inspected which, in the professional opinion of the inspector, are *significantly deficient* or are near the end of their service lives.
2. a reason why, if not self-evident, the *system* or *component* is *significantly deficient* or near the end of its service life.
3. the inspector's recommendations to correct or monitor the reported deficiency.
4. on any *systems* and *components* designated for inspection in these Standards of Practice which were present at the time of the *Home Inspection* but were not inspected and a reason they were not inspected.

2.3 These Standards of Practice are not intended to limit inspectors from:

- A. including other inspection services, systems or *components* in addition to those required by these Standards of Practice.
- B. specifying repairs, provided the *inspector* is appropriately qualified and willing to do so.
- C. excluding systems and *components* from the inspection if requested by the client.

11. INSULATION AND VENTILATION

11.1 The inspector shall:

A. *inspect*:

1. the insulation and vapor retarders in unfinished spaces.
2. the ventilation of attics and foundation areas.
3. the mechanical ventilation *systems*.

B. describe:

1. the insulation and vapor retarders in unfinished spaces.
2. the absence of insulation in unfinished spaces at conditioned surfaces.

11.2 The *inspector* is NOT required to:

A. disturb insulation or vapor retarders.

B. determine indoor air quality.

13. GENERAL LIMITATIONS AND EXCLUSIONS

13.1 General limitations:

A. Inspections performed in accordance with these Standards of Practice

1. are not *technically exhaustive*.
2. will not identify concealed conditions or latent defects.

B. These Standards of Practice are applicable to buildings with four or fewer dwelling units and their garages or carports.

13.2 General exclusions:

A. The *inspector* is not required to perform any action or make any determination unless specifically stated in these Standards of Practice, except as may be required by lawful authority.

B. *Inspectors* are NOT required to determine:

1. the condition of *systems* or *components* which are not *readily accessible*.
2. the remaining life of any *system* or *component*.
3. the strength, adequacy, effectiveness, or efficiency of any *system* or *component*.
4. the causes of any condition or deficiency.
5. the methods, materials, or costs of corrections.
6. future conditions including, but not limited to, failure of *systems* and *components*.
7. the suitability of the property for any specialized use.
8. compliance with regulatory requirements (codes, regulations, laws, ordinances, etc.).
9. the market value of the property or its marketability.
10. the advisability of the purchase of the property.

11. the presence of potentially hazardous plants or animals including, but not limited to wood destroying organisms or diseases harmful to humans.
 12. the presence of any environmental hazards including, but not limited to toxins, carcinogens, noise, and contaminants in soil, water and air.
 13. the effectiveness of any *system installed* or methods utilized to control or remove suspected hazardous substances.
 14. the operating costs of *systems* or *components*.
 15. the acoustical properties of any system or component.
- C. Inspectors are NOT required to offer:
1. or perform any act or service contrary to law.
 2. or perform *engineering* services.
 3. or perform work in any trade or any professional service other than home *inspection*.
 4. warranties or guarantees of any kind.
- D. *Inspectors* are NOT required to operate:
1. any *system* or *component* which is *shut down* or otherwise inoperable.
 2. any *system* or *component* which does not respond to *normal operating controls*.
 3. shut-off valves.
- E. *Inspectors* are NOT required to enter:
1. any area which will, in the opinion of the inspector, likely be dangerous to the *inspector* or other persons or damage the property or its *systems* or *components*.
 2. The *under-floor crawl* spaces or attics which are not *readily accessible*.
- F. *Inspectors* are NOT required to *inspect*:
1. underground items including, but not limited to underground storage tanks or other underground indications of their presence, whether abandoned or active.
 2. *systems* or *components* which are not *installed*.
 3. *decorative* items
 4. *systems* or *components* located in areas that are not entered in accordance with these Standards of Practice.
 5. detached structures other than garages and carports.
 6. common elements or common areas in multi-unit housing, such as condominium properties or cooperative housing.

G. Inspectors are NOT required to:

1. perform any procedure or operation which will, in the opinion of the *inspector*, likely be dangerous to the *inspector* or other persons or damage the property or its *systems* or *components*.
2. move suspended ceiling tiles, personal property, furniture, equipment, plants, soil, snow, ice, or debris.
3. *dismantle* any *system* or *component*, except as explicitly required by these Standards of Practice.

GLOSSARY OF ITALICIZED TERMS*Alarm Systems*

Warning devices, installed or free-standing, including but not limited to; carbon monoxide detectors, flue gas and other spillage detectors, security equipment, ejector pumps and smoke alarms

Architectural Service

Any practice involving the art and science of building design for construction of any structure or grouping of structures and the use of space within and surrounding the structures or the design for construction, including but not specifically limited to, schematic design, design development, preparation of construction contract documents, and administration of the construction contract

Automatic Safety Controls

Devices designed and installed to protect *systems* and *components* from unsafe conditions

Component

A part of a *system*

Decorative

Ornamental; not required for the operation of the essential *systems* and *components* of a home

Describe

To *report* a *system* or *component* by its type or other observed, significant characteristics to distinguish it from other *systems* or components

Dismantle

To take apart or remove any component, device or piece of equipment that would not be taken apart or removed by a homeowner in the course of normal and routine homeowner maintenance

Engineering Service

Any professional service or creative work requiring engineering education, training, and experience and the application of special knowledge of the mathematical, physical and engineering sciences to such professional service or creative work as consultation, investigation, evaluation, planning, design and supervision of construction for the purpose of assuring compliance with the specifications and design, in conjunction with structures, buildings, machines, equipment, works or processes

Further Evaluation

Examination and analysis by a qualified professional, tradesman or service technician beyond that provided by the home inspection

Home Inspection

The process by which an *inspector* visually examines the *readily accessible systems* and *components* of a home and which *describes* those *systems* and *components* in accordance with these Standards of Practice

Household Appliances

Kitchen, laundry, and similar appliances, whether *installed* or free-standing

Inspect

To examine *readily accessible systems* and *components* of a building in accordance with these Standards of Practice, using *normal operating controls* and opening *readily openable access panels*

Inspector

A person hired to examine any *system or component* of a building in accordance with these Standards of Practice

Installed

Attached such that removal requires tools

Normal Operating Controls

Devices such as thermostats, switches or valves intended to be operated by the homeowner

Readily Accessible

Available for visual inspection without requiring moving of personal property, dismantling, destructive measures, or any action which will likely involve risk to persons or property

Readily Openable Access Panel

A panel provided for homeowner inspection and maintenance that is within normal reach, can be removed by one person, and is not sealed in place

Recreational Facilities

Spas, saunas, steam baths, swimming pools, exercise, entertainment, athletic, playground or other similar equipment and associated accessories