

# 1 FOOTINGS AND FOUNDATIONS

*Structure*

M O D U L E

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## ► 1.0 OBJECTIVES

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During this section you will learn –

- the various foundation configurations
- the different material types used for foundations
- the key components of a foundation and the basics of foundation construction
- the common problems found with foundations
- how to identify these conditions
- the causes and implications of these conditions

*Not The  
Last Word*

This program is not an in-depth Structure course and you should not assume that you have all the knowledge of a professional engineer, architect, designer, carpenter, mason, etc. after studying this material. This program does not qualify you to design or build homes. There are many places to go to learn more and we encourage you to continue expanding your knowledge.

# Structure

## MODULE

# STUDY SESSION 1

1. This Session covers the scope of the inspection as set out in the ASHI®/CAHI Standards of Practice.

Note: ASHI® stands for American Society of Home Inspectors

CAHI stands for Canadian Association of Home Inspectors

2. At the end of this Session you should be able to –

- List six structural elements that must be observed in a Standard inspection.
- List six structural elements that must be described in a report
- Describe in one sentence when probing is required
- Describe in one sentence when attics or crawlspaces should be entered

3. Before you start, watch the Footings and Foundations part of Structure Video. Don't worry if you don't understand everything. We just want to get you thinking about foundations for now. After you have watched it, rewind the tape to the beginning, we will ask you to watch it again.

Done with the Video? Okay, let's move on.

4. This is a short section and it should only take about 30 minutes to complete.
5. Quick Quiz 1 is at the end of the section.

### **Key Words:**

- |                            |                      |                        |
|----------------------------|----------------------|------------------------|
| • <b>Foundations</b>       | • <b>Attics</b>      | • <b>Significantly</b> |
| • <b>Floor structure</b>   | • <b>Crawlspaces</b> | <b>deficient</b>       |
| • <b>Columns</b>           | • <b>Probe</b>       | • <b>Engineering</b>   |
| • <b>Wall structure</b>    | • <b>Dangerous</b>   | <b>Service</b>         |
| • <b>Ceiling structure</b> | • <b>Readily</b>     |                        |
| • <b>Roof structure</b>    | <b>accessible</b>    |                        |

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## ► 2.0 SCOPE AND INTRODUCTION

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### 2.1 SCOPE

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These are the following components of the ASHI® Standards of Practice, effective, January, 2000 :

- Purpose and Scope
- Structural System
- General Limitations and Exclusions
- Glossary

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## ► THE ASHI® STANDARDS OF PRACTICE

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### 2.0 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.

### 3.0 STRUCTURAL SYSTEM

#### 3.1 The *inspector* shall:

A. *inspect*:

1. the *structural components* including foundation and framing.
2. by probing a *representative number* of structural components where deterioration is suspected or where clear indications of possible deterioration exist. Probing is NOT required when probing would damage any finished surface or where no deterioration is visible.

B. *describe*:

1. The foundation and *report* the methods used to *inspect* the *under-floor crawl space*.
2. the floor structure
3. the wall structure
4. the ceiling structure
5. the roof structure and *report* the methods used to *inspect* the attic

#### 3.2 The *inspector* is NOT required to:

- A. provide any *engineering service* or *architectural service*.
- B. offer an opinion as to the adequacy of any *structural system* or *component*.

### 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 the 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. shutoff 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 crawlspaces* 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 the 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

*Report*

To communicate in writing

*Representative Number*

One component per room for multiple similar interior components such as windows and electric outlets; one component on each side of the building for multiple similar exterior components

*Roof Drainage Systems*

Components used to carry water off a roof and away from a building

*Significantly Deficient*

Unsafe or not functioning

*Shut Down*

A state in which a system or component cannot be operated by normal operating controls

*Solid Fuel Burning Appliances*

A hearth and fire chamber or similar prepared place in which a fire may be built and which is built in conjunction with a chimney; or a listed assembly of a fire chamber, its chimney and related factory-made parts designed for unit assembly without requiring field construction

*Structural Component*

A component that supports non-variable forces or weights (dead loads) and variable forces or weights (live loads)

*System*

A combination of interacting or interdependent components, assembled to carry out one or more functions

*Technically Exhaustive*

An investigation that involves dismantling, the extensive use of advanced techniques, measurement, instruments, testing, calculations, or other means

*Under-floor Crawl Space*

The area within the confines of the foundation and between the ground and the underside of the floor

*Unsafe*

A condition in a readily accessible, installed system or component which is judged to be a significant risk of personal injury during normal, day-to-day use. The risk may be due to damage, deterioration, improper installation or a change in accepted residential construction standards

*Wiring Methods*

Identification of electrical conductors or wires by their general type, such as “non-metallic sheathed cable” (“Romex”), “armored cable” (“bx”) or “knob and tube,” etc.

## ► NOTES ON THE STANDARDS

The Standards ask us to inspect all of the basic foundation components with the exception of footings. Footings are excluded because, in most houses, you can't see the footings.

*Ceilings*

One of the items that has been included relatively recently in the Standards and one that confuses some people is **ceilings**. For many people, ceilings are not a structural component. Depending on your definition, ceilings may or may not contribute to holding up the house. In a house with a conventional steep roof and rafters, there are ceiling joists which serve to tie the outer walls and rafter ends together. They support the insulation and ceiling plaster or drywall, although these are not structural functions, according to some.

If there are cathedral ceilings or flat roofs, the **roof joists**, **rafters** or **trusses** may support finish ceilings. These are structural components.