Exterior Inspections, Part 1

THE IMPORTANCE OF THE EXTERIOR INSPECTION

Introduction

This study unit begins your in-depth diagnostic inspection of a home. A thorough home inspection is a detective process that moves from the general to the specific. This means that you start by looking at the big picture, then move in closer to examine the fine details. From your visual inspection of the exterior you'll be able to anticipate other existing conditions within the house.

For example, your examination of the foundation and site may cause you to suspect a water leakage problem. When you proceed into the house to check the basement, you'll be able to confirm your suspicions by checking the interior basement walls for cracks and stains. Thus, the information you gather during your exterior inspection is very important to your final analysis and conclusions.

ASHI Standards for Exterior Inspections

In this study unit, we'll occasionally refer to the American Society of Home Inspectors (ASHI) standards that apply to various parts of the exterior inspection process. This review of ASHI standards is designed to familiarize you with these standards, and place you on the track leading to acceptance by this organization. You should learn to apply ASHI standards in all your work in order to gain acceptance as a

Make sure you're familiar with ASHI standards so you get in the habit of working according to their inspection guidelines. Refer to your copy of the full Standards of Practice in *The Inspection Process, Part 2.*

nationally recognized and qualified home inspector. By equipping yourself with the best possible professional skills and practices, you can expect to be successful in the home inspection field in the years ahead.

ASHI standards for exterior inspections require you to inspect and report on the following:

- Exterior wall covering, flashing, and trim
- All exterior doors
- Attached decks, balconies, stoops, steps, porches, and their associated railings
- Eaves, soffits, and fascias when they're accessible from the ground level
- Vegetation, grading, surface drainage, and retaining walls on the property when they're likely to adversely affect the building
- Walkways, patios, and driveways leading to dwelling entrances
- Type of exterior wall covering

ASHI excludes several items from their exterior inspection standards. This doesn't mean that the excluded items aren't important—just that home inspectors aren't expected to be responsible for them. However, you may choose to observe and report on any of the following items if you feel it's necessary or if your client requests it:

- Screening, shutters, awnings, and similar seasonal accessories
- Fences
- Geological, geotechnical, or hydrological conditions
- Recreational facilities
- Outbuildings
- Seawalls, breakwalls, and docks
- Erosion control and earth stabilization measures

The Focus of the Exterior Inspection

Your job as a home inspector is to provide your clients with an overall perspective on property conditions so that they can develop a strategy for ownership. Information on the nature and extent of defects is an important part of that strategy. Once you've gathered the information from the exterior inspection and analyzed it, your report should clearly differentiate between serious structural defects and damage that's merely the result of minor neglect. If you have any question about the severity of structural defects, recommend a review by a structural engineer or a qualified building contractor in your inspection report.

As you've learned, a home inspector is not an official code inspector and is not responsible for pointing out building code violations. However, it's a part of your job to understand the general requirements for safe housing in your area and to be able to inform your clients of those requirements. You should be aware of the required standards for electrical and plumbing installations; fire resistance of walls; energy efficiency; safety railings; the width of doorways, hallways, main stairs, and secondary stairs; the number of fire exits; minimum ceiling heights; and minimum room sizes.

Our discussion of the exterior inspection will begin with a focus on the following topics:

- The inspection site: soil and drainage
- Foundations
- Roofs
- Gutters and downspouts
- Chimneys

Now take a few moments to test your knowledge by completing *Self-Check 1.*

Self-Check 1

At the end of each section of *Exterior Inspections, Part 1,* you'll be asked to pause and check your understanding of what you've just read by completing a "Self-Check" exercise. Answering these questions will help you review what you've studied so far. Please complete *Self-Check 1* now.

Indicate whether each of the following statements is True or False.

_____ 1. The home inspector isn't responsible for pointing out building code violations.

_____ 2. Fences and outbuildings are excluded from ASHI requirements for home inspections.

_____ 3. As a home inspector, your job is to give your clients specific instructions and an overall plan for managing their property.

_____ 4. ASHI standards don't require you to report on retaining walls or grading.

_____ 5. Home inspectors should work according to ASHI inspection guidelines.

Check your answers with those on page 75.

THE INSPECTION SITE

Slope and Grading

The first two conditions you should check when performing an on-site home inspection are the slope of the land and the condition of the soil that the foundation rests on. The land surrounding a house may provide important clues to long-term conditions affecting the structure. Site conditions can warn the home inspector of an imminent catastrophe. These warnings may be revealed in a variety of ways—the slope of the ground, the way trees grow, cracked pavement, or mildewed basement walls.

Proper grading around the home structure is a primary concern from the outset of home construction. *Grading* is the leveling or scraping of the land at a home site to prepare the ground for construction. A properly sited house should rest on a slight knoll or rise. The builder may create an artificial rise using grading equipment, or the home may rest on the slope of a natural hill. In either case, a proper slope will divert water runoff away from the house, protecting it from moisture damage.

The amount of grading needed at a home site depends on the present slope of the land. On a level lot, the amount of grading needed for water diversion will be minimal. A slope of one inch per horizontal foot, continuing for at least six feet away from the building, is usually satisfactory.

It's important to avoid excessive grading in a building site, that is, an excessively steep slope. Sometimes, grading at a construction site will go beyond natural limits, leaving an unstable bank that will tend to cave in or slide. The natural slope that soil can maintain is called its *angle of repose.* This angle can be illustrated by pouring granular material into a pile and observing the slope (Figure 1).

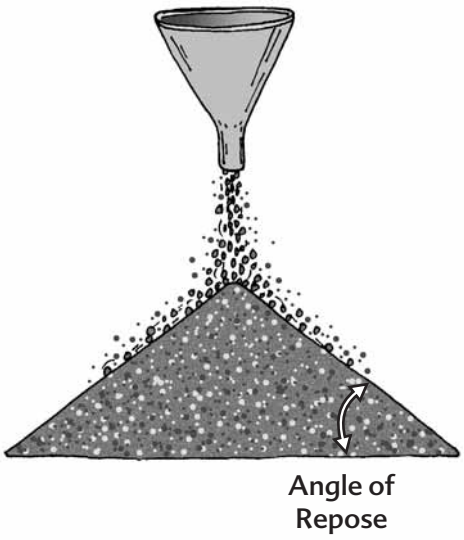

FIGURE 1—By pouring sand into a pile and observing the slope, you can see the pile's natural angle of repose. If you scoop some sand away from the side of the pile, the pile will immediately shift to return to its original angle of repose.

Soil tends to return to its natural angle of repose due to the forces of gravity and soil adhesion. Because of this tendency, soil on a steep slope near a building should be controlled by *retaining walls.* These walls are placed on hillsides or steep slopes to hold soil in place and prevent the slope from collapsing. However, their design and construction will determine the limits of what the retaining walls can support (Figure 2). House construction on a slope of more than 12 percent generally isn't considered good practice.

When you're performing an exterior inspection, note the slope of surrounding hills and terraces. If they slope toward the house, runoff water controls are essential, especially with clay-based soils. The grading around all structures diverts water away from the house. For example, the grading around the house may be excellent, but the grading around a detached garage on a rise near the house may result in runoff directly toward the house.

When you check retaining walls for cracks, heaves, or deterioration, make sure you look behind vines or other vegetation—the plants may be covering the very crack from which they're growing.

Soil Conditions

As a home inspector, you should understand the nature of the earth found in your local area—what type of soil is most common; whether your area is prone to flooding, mud slides, or other natural disasters; and the strength of prevailing winds. Before you begin an inspection, it's helpful to know the type of soil you're dealing with at that particular inspection site. Information on the stability, permeability, depth, and erosion rate of local soil is available from your government's soil conservation offices (at either the local or national level).

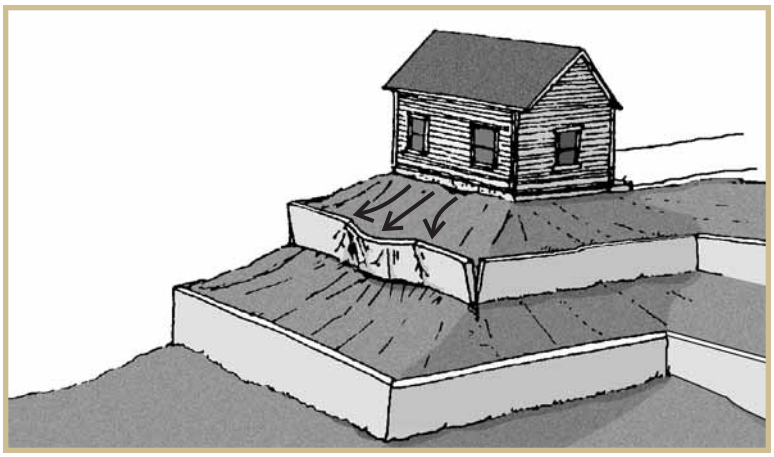

FIGURE 2—The design and construction of a retaining wall will determine the limits of what the wall can support. The arrows in this illustration show how the upper retaining wall is being pushed beyond its limits.

There are two major soil groups:

1. Coarse-grained soils (gravels and sands)
2. Fine-grained soils (silts and clays)

Within the two major soil groups are the three common types of soil: *clay, sand,* and *silt.* Clay is sticky when wet, and saturated clay soil can exert great pressure. Sand is porous and tends to shift as water moves through it. Silt is very fine and dusty, and can blow away in the wind. Most ordinary soil consists of a combination of at least two of these different types. The type of soil that a house rests on will affect both the stability of its foundation and water drainage.

For example, fine-grained silts and clays tend to expand dramatically when wet, and can exert tremendous pressure on the foundation. If the soil were to suddenly dry out, the shrinkage could cause a foundation structure to collapse. These soil characteristics are typical in certain regions (like the Southwest), so homes in these areas may have a soil irrigation system installed at the perimeter of the house. These irrigation systems pipe water into the foundation bed to keep the moisture level of the soil in balance, preventing the sudden shrinkage mentioned above.

Soil erosion is another serious problem at home sites. Coarse soils tend to erode readily, and water passing through and over the soil can dislodge rough grains and particles and wash them away. If a house foundation is laid on a bed of coarse soil, adequate runoff controls must be provided to keep the soil from washing away from the foundation, or from shifting and resettling around or under the foundation. These conditions could lead to instability or cracking in the foundation.

The best house foundations are laid on a mixture of coarse and fine soils with the footing resting on undisturbed virgin soil. Some experts specify the ideal soil depth as at least five feet. The soil should be moderately porous, free from flooding and high water tables, and level to gently sloping.

When you're inspecting a new home, be aware of what changes or additions have been made to the natural terrain to prevent soil erosion—plantings, runoff diversions, or man-made waterways. An important part of any inspection job will be a check of the soil around the house for clues that indicate changes in the contours of the land. If you're inspecting a very old home, carefully check the grading since natural soil settlement, driving rains, flooding, or poor landscaping practices may have destroyed the original grade (Figure 3). In general, however, if a house is less than 50 years old and it appears to be stable and resting on settled land, odds are that no drastic changes will occur in the foundation bed as long as it's properly maintained.

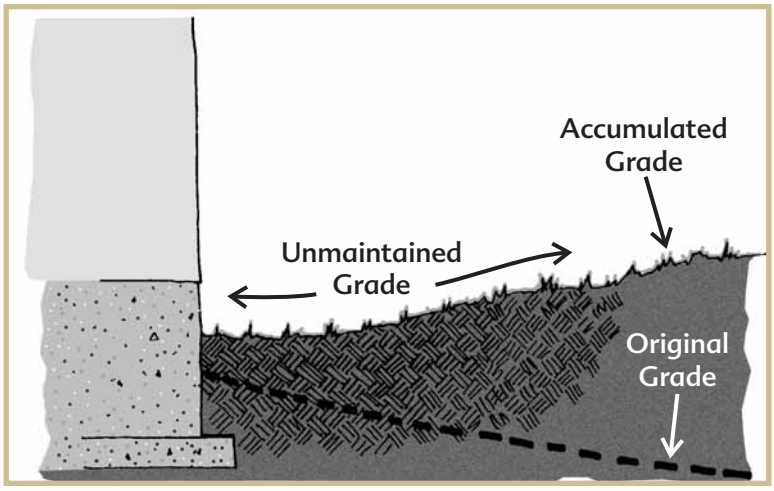

FIGURE 3—Improper maintenance, past flooding, or soil settlement can destroy a home's original grade. This can be corrected, however, by careful regrading.

The vegetation on the property can also provide clues to important soil conditions. Bare areas away from the house could point to erosion problems (that is, uncontrolled runoff water could have washed soil away). Consider whether there are sufficient plantings of trees and shrubs to hold soil in place, especially sandy or silty soils. A layer of vegetation can help keep coarse soil stable.

Pay particular attention to the following clues of past, present, or future changes in the land:

- Radial cracks in the earth opposite slopes in a hilly area. Large cracks in a steep hillside indicate that the soil is attempting to maintain its natural angle of repose. This may signal the potential for mud slides, especially if the soil is composed mostly of clay (Figure 4).

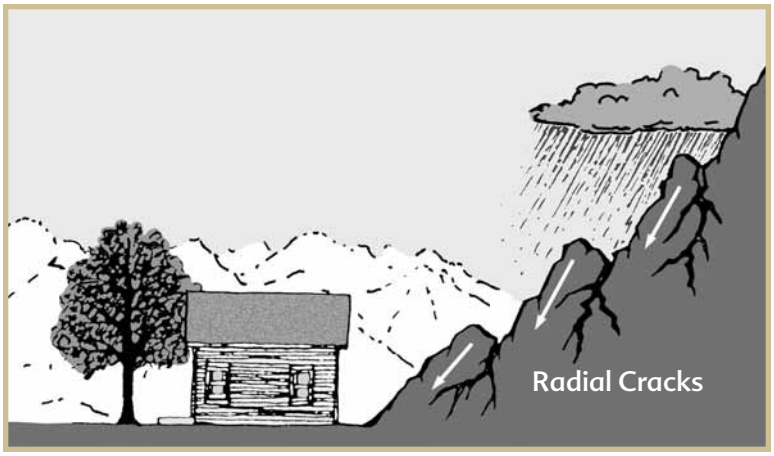

FIGURE 4—Radial cracks in a hillside can indicate a potential for mud slides during heavy rainstorms.

- Soil erosion indicated by waves and swirls on the ground's surface. This could be a sign of past mud slides, flooding, or damage caused by prevailing winds (Figure 5). Serious erosion may also present the threat of *sinkholes* (deep surface depressions) in some areas.

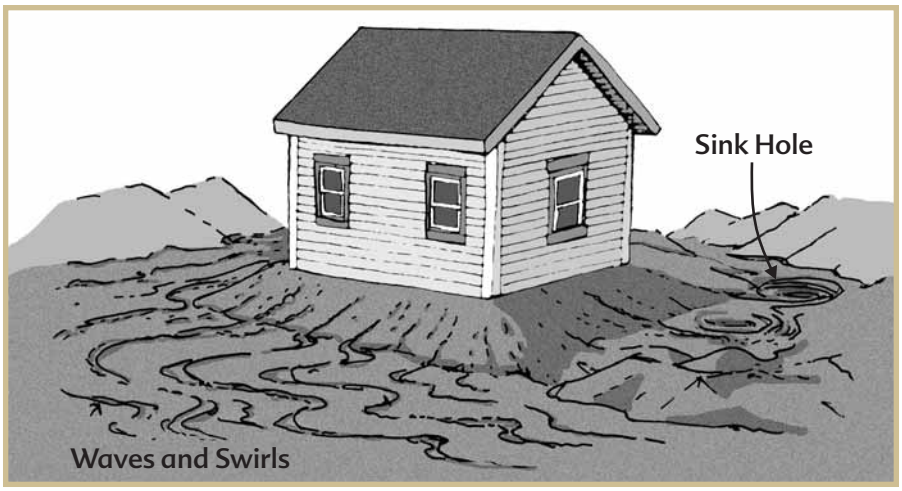

FIGURE 5—Waves and swirls on the ground's surface may indicate soil erosion caused by past wind or water damage.

- Uneven settlement of the soil, particularly around the foundation. This settlement may have resulted from flooding or from a change in the flow and depth of the water table or underground springs (Figure 6). Severe soil settlement may even expose the foundation footing, a particularly dangerous condition (we'll be discussing footings shortly).

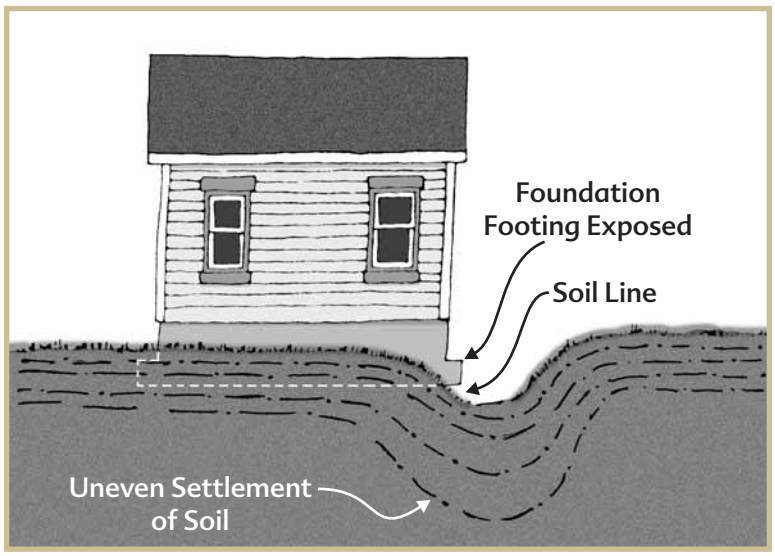

FIGURE 6—Uneven soil settlement at foundations can be the result of past flooding, and is dangerous if the footing is exposed.

- Curves in nearby tree trunks. This could indicate that the trees, at one time, grew upward in a different direction (Figure 7), and that soils have shifted dramatically since that time.

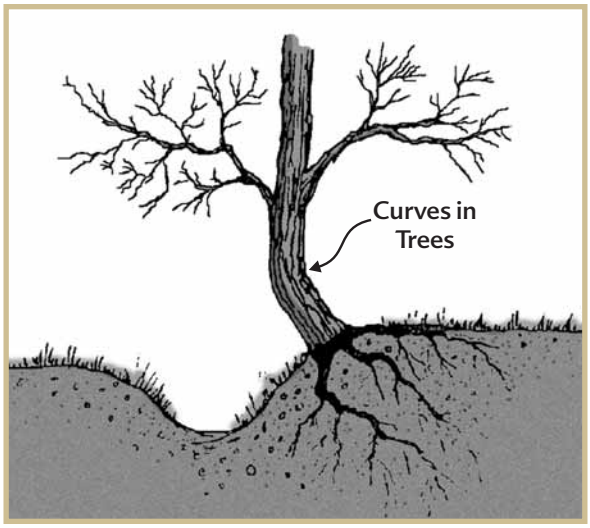

FIGURE 7—Curves in tree trunks can hint at extreme shifts in soil.

It's important to keep your perspective when examining site conditions. Remember, elegant gardens have been created out of deserts and bogs! Don't write off a site as hopeless just because it has a few problems. On the other hand, you could be looking at a disaster waiting to happen. Be careful to record signs of trees growing crookedly, horizontal cracks or faults in the earth above or below the house site, leaning terrace walls, and heaving walkways and driveways. These conditions are

the most serious indicators of big problems. If you spot any of these conditions, point them out immediately to your client in person, and recommend further evaluation in your report summary.

Water Sources

The various water sources surrounding a house can have a significant impact on the home's future structural stability. Groundwater and rainwater are the main water sources affecting a typical home. *Groundwater* is simply water found naturally underneath the earth's surface. The term *water table* is used to refer to the level at which groundwater is found below the earth's surface. The earth below the water table is called the *saturation zone.* In the saturation zone, tiny spaces between granules of sand and soil are filled (saturated) with water. The earth above the water table is called the *aeration zone.*

Falling rain filters down through the earth to join groundwater at the water table. The water table, therefore, rises with each fresh rainfall. The depth of the water table after an extensive rainy spell and the existence of any underground springs or pools are important—especially to the condition of the foundation and basement. A crack in a basement floor or foundation could become a serious leak if the water table rises after a heavy rainfall (Figure 8).

When water soaks into the ground, it eventually reaches an impervious layer, usually rock, after which it moves laterally. This is the *groundwater.* The top surface of the groundwater is the *water table.*

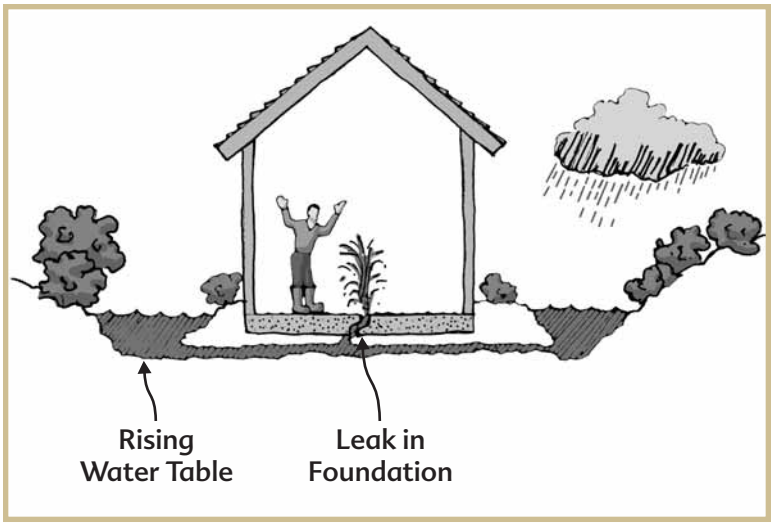

FIGURE 8—A crack in a foundation or a basement floor could become a serious leak if the water table rises after a heavy rainfall.