

27 Dollar Home Inspections



A Comprehensive Guide For

**Home Sellers
Real Estate Professionals
Real Estate Investors**

Pocket More Cash at the Close of Escrow

www.27DollarHomeInspectionProject.com

27 Dollar Home Inspections

Authors: David A. Frederick and Rick Daniel

P.O. Box 1076

P.O. Box 1058

Arnold, CA 95223

Arnold, CA 95223

Email: admin@27dollarhomeinspections.com

All rights reserved

No part of this eBook may be reproduced or transmitted in any form by any means, electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without written permission from the authors, except for the inclusion of brief quotations in a review and expect for a single printed copy generated by the end user for personal use only.

Disclaimer

This manual is designed to provide information in regard to the subject matter covered. It is distributed with the understanding that the publisher and authors are not rendering specific trade or other professional services. It is not the purpose of this manual to reprint all the information that is otherwise available on the subject matter but is merely to complement, amplify and supplement other related bodies of work. Every effort has been made to make this manual as complete and as accurate as possible based on the experience of the authors, however, there may be mistakes both typographical and in content. Therefore, this manual should be used only as a general guide and not as the ultimate source of information. Furthermore, this manual contains information only up to the printing date. The authors and publisher shall have neither liability nor responsibility to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the information contained in this manual. Any similarities between this work and any other informational product on the subject matter are purely coincidental due to the generalness of the information and the limited nature of the home inspection industry itself. We have created this document completely from our personal experience and knowledge of the process. All the "Photo Gallery" items contained herein were collected during the course of our professional inspection career and are actual samples from real experiences. The use of the masculine herein shall be deemed to include the feminine and the use of the singular shall be deemed to include the plural where the context would so require.

Copyright © 2007-2008 by 27 Dollar Home Inspections
First Edition. Published in the United States of America

Table of Contents

Introduction. The Purpose of the 27 Dollar Home Inspection -----	4
Important Points to Remember -----	5
How to Use This Book -----	7
Chapter 1 How to Morally and Ethically Influence an Inspector to Report in Your Favor -----	9
Chapter 2 Inspecting Windows -----	15
Chapter 3 Inspecting Doors -----	26
Chapter 4 Inspecting Interior Walls -----	40
Chapter 5 Inspecting Interior Ceilings-----	55
Chapter 6 Inspecting Interior Floors -----	63
Chapter 7 Inspecting Interior Electrical -----	71
Chapter 8 Inspecting Kitchen/Bath Plumbing & Fixtures -----	89
Chapter 9 Inspecting Kitchen/Bath Cabinetry & Countertops -----	109
Chapter 10 Inspecting Kitchen Appliances -----	117
Chapter 11 Inspecting Laundry Areas -----	127
Chapter 12 Inspecting Garages -----	132
Chapter 13 Inspecting Water Heaters -----	143
Chapter 14 Inspecting HVAC Systems -----	160
Chapter 15 Inspecting Service Utility Equipment & Exterior Electrical -----	176
Chapter 16 Inspecting Exterior Siding Materials & Exterior Walls -----	191
Chapter 17 Inspecting Chimneys & Fluepipes -----	209
Chapter 18 Inspecting the Perimeter Grade -----	214
Chapter 19 Inspecting Stairs, Steps, Walks & Decks -----	219
Chapter 20 Inspecting the Roof -----	229
Chapter 21 Inspecting the Attic -----	231
Chapter 22 Inspecting Sub-Areas and Crawl Spaces -----	245
Chapter 23 Pools, Spas, Alarm Systems, Telephone Service, etc. -----	271
Chapter 24 What about Permits Before You Do Repairs -----	273
Chapter 25 Additional Comments & Some Over and Over Again Notes -----	274
Chapter 26 Conclusion & Resources -----	277
27 Dollar Home Inspection Worksheet -----	283

The Purpose of the 27 Dollar Home Inspection

The 27 Dollar Home Inspection provides a valuable tool that serves a variety of users including Homeowner/Sellers, Real Estate Professionals and Real Estate Investors.

For the Homeowner/Seller:

The 27 Dollar Home Inspection provides a step-by-step process that will help a Homeowner/Seller pocket more cash at the close of escrow. By knowing in advance what home inspectors are looking for, the homeowner can eliminate many potential problems prior to a professional home inspection.

Eliminating problems outside of escrow allows the homeowner to leverage time and control expenses in their favor. Having time to collect competitive bids from qualified persons for repairs, utilizing free services often available from local agencies, doing the repairs themselves and having the time to shop for the best price on materials are ways this eBook helps Homeowner/Sellers keep more money when the property sells.

For Real Estate Professionals:

The 27 Dollar Home Inspection is a value added program for the Real Estate Professional's service portfolio. The main reason for Real Estate Professionals to recommend this eBook is to help homeowners understand and properly prepare their property before a formal home inspection is conducted.

A Realtor who has a more complete picture of a property's condition can more effectively advise a seller prior to and during the course of the listing and sale. The Realtor can also help prioritize repair items that most affect the sale of the property. The non-technical information the homeowner collects using this eBook assists the Realtor by creating a more proactive seller.

For the Real Estate Investor:

Real Estate Investors are taught that the profit is made at the purchase and realized at the sale. Having a more specific way to look at a piece of property prior to making an offer, purchasing a foreclosure or bidding at auction can have a significant impact on the decision to purchase or pass.

Investors who learn from this eBook will be able to more effectively recognize a building's true condition. This ultimately means greater control of costs, which results in more profit when the property sells.

Important Points to Remember

There are a few points to be aware of regarding the reports of professional home inspectors. The information a report contains could have a direct impact on the sale and sales price of the property.

HOME INSPECTORS ARE NOT BUILDING INSPECTORS

Home inspectors are not required to be licensed in many states and they may not have any hands on construction experience. The report is a visual inspection made by a generalist who is not representing himself as a licensed contractor.

Home inspectors make mistakes like anyone else and all parties are free to get second opinions.

A HOME INSPECTION IS NOT A CODE INSPECTION

Home inspectors need a basis for the report findings. One of the many sources is the uniform building codes. Home inspectors use other sources of information including local building codes and ordinances, manufacturer's installation instructions and the Business and Professions code.

When the home inspector requests information regarding year built or when additions or remodeling construction is conducted, they do so because construction only needs to comply with the building codes in force at that time the permits are pulled.

A HOME INSPECTION IS FOR A SPECIFIC LOCATION AT A SPECIFIC MOMENT IN TIME

After the inspector has left the site, if a window is broken, the furnace stops working or a toilet overflows causing damage, he obviously cannot report these situations.

THE HOME INSPECTOR IS A GUEST IN THE HOME

Inspectors are guests in the home and as such are not authorized to disassemble any fixture or appliance or remove any personal belongings, furniture, rugs or carpets. They should, however, be authorized to operate all the usual components of the home including lights and switches, stoves, ovens, dishwashers, compactors, disposals, spa tubs, hot tubs, generators, fans, garage doors, furnaces etc.

WHAT AUTHORITY DOES A HOME INSPECTION REPORT CARRY?

The homeowner does not have to fix any items just because they were listed in the report unless such repairs are required due to law or regulation established elsewhere. Common sense would dictate that hazardous conditions are addressed immediately but a home inspection report carries no authority requiring any person to take any specific action. However, the information collected during a home inspection could be used by the buyer to ask the seller to lower the asking price or repair or replace certain items.

Repairs or replacements that are conducted prior to any inspection will almost always be less expensive than those requested to be done by the perspective buyer.

PASS OR FAIL?

The home inspection is a visual inspection of the property's condition at the time of the inspection. A pass or fail concept is purely subjective and not an aspect of the process.

VERY IMPORTANT. IF THE INSPECTOR DOES NOT SEE IT OR FIND IT, IT WILL NOT BE ON THE REPORT

HOWEVER, this does not release the homeowner from the legal responsibility of disclosing everything they know about the property. The homeowner should not attempt to hide anything they find in their own investigation. That is not only wrong, it is against the law.

In the disclosure process the term "material facts" means anything about the property that could effect the buyer's decision to purchase. These facts must be disclosed by the owner, including any problems that have been repaired. There may be nothing evident to any person who looks at the property but a neighbor could disclose the previous problem for you, and that could lead to a lawsuit.

FINALLY

The terms "Notes" "Issues" and "Findings" each refer to the same thing. They are aspects of the property that are potential hazards, flaws, defects or any condition that significantly affects the value, desirability, habitability, or safety of the dwelling. A responsible home inspector will look for and report on these items.

How to Use This Book

This eBook was designed after hours of intensive research and over 3,300 home inspections conducted in the past 10 years.

The *27 Dollar Home Inspection* eBook is provided in a downloadable Adobe PDF format, so print a copy of it. Take it with you on this interesting journey throughout your home. I recommend you print out one chapter at a time, read the entire section and review the photos at the end of each section before you begin your inspection. You can write notes in the margins as you proceed.

Since our home inspection reports were written for the layman, so is the *27 Dollar Home Inspection* eBook. Any technical jargon printed in this book will be explained within parenthesis. For example: HVAC (**Heating, Ventilation and Air Conditioning**).

Any inspection item or process considered potentially dangerous or hazardous will be clearly printed in **bold red font** and identified as a **HAZARD**.

During the course of your inspection, you can record your findings on the worksheet provided at the end of this book. Print out a couple of copies of the worksheet before you start. Finding 20 or 30 items is not unusual so print additional copies as needed. Here is a sample section of the worksheet you will be using:

Component: <i>Bay window, right slider window</i>	Order of Priority:
Location: <i>The right side of the master bedroom.</i>	
Findings: <i>The right slider window latch is broken.</i>	
Remedies: <i>Contact window installation company or look online for a replacement part.</i>	

After you have completed your inspection and have noted all the items to be addressed,

it will be time to organize your findings from the worksheets. Prioritize as to their importance. Any item that you have identified as a **HAZARD** will have priority status when deciding what should be repaired first.

I advise you to draw upon the knowledge and expertise of your realtor. He or she will be able to help determine those items that are most important and cost effective for increasing the odds of a successful sale.

Once you and your realtor have completed this priority list the next step will be to consider who will conduct the repairs or replacement of the items you found.

VERY IMPORTANT. This eBook will not make anyone a general contractor or a professional home inspector. I do not advise that you do any work related to electrical, plumbing, HVAC, roofing or structural repairs unless you are a qualified and licensed contractor in these trades. **Serious and possibly fatal injury could result.**

I also want to establish that the remedies provided herein are merely suggestions based on personal experience and common sense. Remember, as a home inspector, I am not representing myself as licensed contractor.

Experience suggests that remedies for items discovered will be as simple as replacing light bulbs, tightening doorknobs and installing cover plates.

During the inspection process, some tools you will need are an awl, a flashlight, an electrical outlet tester and a thermostat. Some of these tools are included as part of the **Premier Package**. Access the Webpage where you downloaded this eBook by logging into your free www.27DollarHomeInspections.com membership account. The upgrade packages are available there at discounted prices.

Home inspections are not rocket science. I believe you will find this process to be highly informative and fun. Men and women alike will be amazed at what they will learn.

Additional suggestions will be presented during the inspection process.

Now, let's start to use your eyes and our knowledge to inspect your home.

Dave Frederick & Rick Daniel

Chapter 1- How to Morally and Ethically Influence an Inspector to Report in Your Favor

I began this discussion in the “Preferred Members Area” of the 27 Dollar Home Inspections Website. I am pleased to be able to expand on the concept even more than I did there because this represents the foundation of this project and is so easily implemented it just makes me smile.

In fact, it will make any home inspector smile, and when YOU know how to do that, you've got the power my friend.

Let's review the information you may have read before.

Professional Home Inspectors are a varied and independent group of men and women who have a really difficult job.

They have a high ethical standard to follow. Their work is technical and complex. They must have a broad base of understanding in a variety of fields. They are usually self-employed and almost always work alone. They have to be able to write effectively, communicate clearly and market themselves directly to the community.

They have been and are still called "Deal Killers" by some people in the real estate industry. Even in the face of this disparity they press on. Why? Because all the home inspectors I have ever met really liked their work.

Do you know what makes a home inspector really happy? They get really excited when it looks like another home inspector prepared the house for sale.

If you plan to morally and ethically influence an inspector to write the report in your favor, it is critical to understand why the property needs to look like it was prepped by a home inspector. This is the basis of this entire project.

Let me explain further.

Nearly all home inspectors deliver a computer-generated report. The software packages they use are capable of building vast libraries of information containing sentences and paragraphs they often have to write over and over again.

These libraries are essentially digital copies of the same notes that come up day in and day out, month after month, year after year. Using these libraries reduces the typing needed to create the written report.

After several thousand inspections, inspectors begin to look in the same areas of the property because the same issues show up all the time.

This is the basis behind the statement on the home page of the Website when I said:

"I can't tell you how many times we inspectors commented on how easy it would have been to correct so many of the findings."

Home inspectors feel this way because we see the same thing over and over again.

Simple, easily repaired stuff.

Stuff that makes our reports "Mentally Heavy." You already know the consequences of that from the "Preferred Members Area" of the Website.

Do you remember the dangerous secret I shared with you on the Website?

If the inspector cannot see it, the inspector cannot write about it.

Here is the reverse effect of that statement.

For the seller, what an inspector DOESN'T see will always have a greater impact on the final report than what the inspector does see.

Inspectors are human beings who can be influenced like anyone else.

Here is an example of what I mean.

When I inspected a home where those issues I see over and over again had been repaired, I would think to myself, "does a home inspector live here?"

I'm not sure how to explain this but the more I saw nothing wrong, the better I felt.

Does that make sense?

A clean report makes buyers, sellers, realtors and home inspectors all happy. For an inspector, happy sellers, happy buyers and happy referring agents can mean more work in the future.

Another point that will influence the inspector that was not mentioned on the Website is this:

The most difficult aspect of doing a home inspection is the same aspect over which the homeowner has the greatest control.

That aspect is:

Maneuvering around people's personal property while trying to do an inspection.

Working around boxes packed with belongings while people were getting ready to move was certainly a common and normal event. Everywhere I went, people were moving. Makes sense right?

The issue for the inspector is how difficult will it be to actually do the inspection.

The code of ethics and standards of practice most inspectors are required to adhere to states that they not move furniture or people's personal belongings. They have to work around them.

This can be frustrating for a home inspector. It limits their ability to perform the work they were hired to do. This is also not good for the home seller.

Here's why...

The inspector often has to completely **disclaim fixtures or entire areas** if they cannot be accessed.

This generates a report that could actually **INCREASE** the buyer's questions and doubts, not reduce them, which can lead to the potential "Run for the hills" effect mentioned on the Website.

A good home inspection report will provide information that will turn the buyer's questions and doubts into clear and manageable facts. Facts can be dealt with. Fear and doubt will crush your sale.

Home inspectors *generally* do not concern themselves with house keeping or normal wear and tear to walls and floor coverings.

I say *generally* because there are exceptions. Inspecting an unkempt property is difficult and frustrating. Properties where the residents were not prepared for me (or could care less) got hammered in my reports. Such conditions increased my sensitivity to minor issues that I might have otherwise passed over.

I have photos in my archives of rooms, garages and crawl spaces so full of stuff that I couldn't get in.

Countertops with days and days of unwashed dishes, toilets that aren't flushed, piles of garbage and general disorder will turn a calm, collected home inspector into a cranky miserable wretch and the report will reflect that.

It doesn't happen often but there are times when the property cannot be inspected. The inspector has to literally walk away, much to the frustration of the parties concerned.

The point to recognize here is the inspector has to work around the stuff. It slows them down and makes the job more difficult. However, a well kept home is a delight to inspect, even if there are things in the way. A really nice house can actually lull an otherwise diligent inspector into a sense of complacency. It is not unusual for an obvious defect to practically disappear from plain sight. It seems to be human nature for a home inspector to "overlook" things that probably should have been stated in the report.

Without compromising your responsibility to disclose, you can use this aspect of human nature to "Morally and Ethically Influence an Inspector to Write a Report in Your Favor." Make him happy and he will be less critical.

Suggestion. Read this book, do your inspection work and get the property ready.

If you follow my instructions I guarantee you will be better prepared to utilize the value of this eBook.

Your goal is to **"Detect it, get it fixed for less (or free) and forget about it."**

As you begin working with the *27 Dollar Home Inspection* material you will quickly recognize the purpose you are working towards and appreciate the clear path that has been created for you to follow.

By putting some effort and a little time into the process of inspecting your home you will automatically be transformed into thinking like a home inspector.

You will recognize the physical challenges they encounter and will automatically know how to be prepared before they arrive.

You won't be a home inspector, but you will think like one.

By knowing what they are looking for, by helping them easily gather the information they need to report on and by having eliminated the silly and redundant notes they see over and over again, you will cause them to think...

"Does a Home Inspector live here?"

That is how you will win the inspection game and that means money in your pocket! Plus, you are selling a really nice house and that should make you feel good.

A few points about the inspection process before we begin.

Home inspectors observe systems and components from three points of view. Macro, micro and intuitive. As a homeowner, you will be primarily using the macro and micro perspectives.



As a general rule, the macro view is inspecting an item or component by standing back and looking at it from a distance.

As you get closer to the item, you will lose some perspective. The macro view will reveal general aspects that might not be easily observed otherwise. The general fit and finish of a component is usually observable from a macro perspective.

The micro view is where you will see the minor damage, flaws and the details that may need repair.

The intuitive view is a subjective sense that home inspectors use to determine what might be going on in a particular situation that is otherwise unclear. Things they observe cause them to ask themselves questions.

An example would be: "I wonder why there is a toilet bowl plunger readily available? Is this an indication of a problem with the toilet?" The home inspector will spend extra time on that toilet to see if there is something wrong.

Experienced inspectors are like detectives. A seasoned one will search out and find hidden problems. Remember, they have done this work many times and see the same issues over and over again.

As the homeowner, you may not be aware of these issues. Over the years our living spaces become subjectified and we become oblivious to conditions that might be obvious to someone else. There are doors we never close, windows we never open and locks we never engage. Some of these things could be broken without our knowledge.

Something else to consider are possible conditions you do not realize are a problem.

This eBook will educate you, focus your attention and turn the unseen into clear and manageable action items. Your decision to explore this material helps put you back in charge of the sale of your home.

VERY IMPORTANT. Do not disregard what you do know about your property. It is your responsibility to disclose what you know. If there are problems you are aware of, get them taken care of. Remember, your goal is to eliminate issues before the inspector arrives. That is the point of this project.

One final point. The **Companion Video Series** available with the **Deluxe Package** and **Premier Package** provides additional insight into the inspection process. You can access these products by logging in to your free membership account at:

www.27DollarHomeInspections.com

Chapter 2- Inspecting Windows

We will begin our inspection with windows.

Remember to read the entire chapter, review the photos and then proceed with your inspection.

There are a multitude of types, designs and operations of windows including sliders, single hungs, double hungs, hinged, awning, casement, jalousie, fixed, block, skylights and others.

The glazing (the glass) may be single pane, double or multiple pane, etched, beveled, leaded, tempered, safety, plastic or acrylic.

The frames may be made of wood, metal, vinyl or a combination of these materials.

Don't get distracted by window descriptions. All you have to be concerned with is their physical condition and operation.

As you approach the window take a general look at the overall appearance. Is anything so obvious that it jumps out at you?

Write down things like broken, damaged or missing window coverings and screens. Make a quick note on a worksheet or note pad of these items for future replacement or repair. Home inspectors report when screens are missing or damaged.

Inspect the condition of the sill and framing around the window. Is it water stained, deteriorated, cracked or broken?

Deterioration is also called "dry rot" by termite inspectors. A sharp instrument like a scratch awl can be used to gently probe in the corners of the windowsill to determine if the wood is damaged from possible water intrusion. You will be using the awl in other locations during your inspection. Purchasers of our **Premier Package** received an awl in the tool kit.

Purchasers of the **Deluxe Package** and the **Premier Package** can view the videos where we describe and demonstrate how we use the various tools during an inspection.



Scratch awl

Is there evidence of organic growth (also known as molds, mildew or fungus) in the sill or frame around the window?

Is the paint and texture at the top of the window frame ok?

Inspect the glazing. Is it cracked, broken, missing or have holes?

If it is a multi-pane window, has it lost its seal? A dual pane window is a manufactured product where two pieces of glass are assembled onto a 1/2 inch or 3/4 inch frame. The glass is sealed to the frame and an inert gas such as neon or argon is injected into the space between the glass panes. The space creates a thermal barrier that helps control the movement of heat into or out of the conditioned living space.

Lost dual pane seals can be identified by hazing, halo effects at the edges or streaks on the interior surface (inner sealed side) of each pane. Moisture or condensation may collect on the inside of the window between the panes.

Such symptoms happen when the expansion and contraction of air during a normal day draws dirt and moisture into the space between the panes through a hole in the sealing material.

When a window has lost its seal, the problem is mostly cosmetic. However, a buyer will probably want to have the window replaced or receive credit for the cost of replacement.

Dual pane windows cannot be repaired, only replaced.

Occasionally I would find a piece of glass has been replaced with plastic. This happens in doors with multiple glass sections where the homeowner may have done a repair on their own.

Finally, see if the window operates properly. Does it open and close smoothly and does the lock work?

After you have completed your inspection of a window, list anything that needs attention on a 27 Dollar Home Inspection Worksheet for later prioritization.

Congratulations! You have completed your very first inspection step. Yes, it really is that simple. As you move through the building, you will become more proficient and the process will become faster and more interesting.

Now inspect each window in your home and complete a 27 Dollar Home Inspection Worksheet on those that need attention.

Do not get discouraged if you find issues you had no idea existed.

Most people become oblivious to the true condition of the home where they reside. This is the very reason why most home sellers lose money at the close of escrow. They had no idea what the inspector would find. By knowing, you are on your way to saving money.

WINDOW FINDINGS: REMEDIES AND SOLUTIONS

FRAME & SILLS

Stains



Stains on aluminum or vinyl window frames can usually be cleaned with normal household cleaners. Stains in wood could be deeper and harder to remove. Refinishing would be the last resort. Check with your Realtor for its priority value.

Deterioration

Deterioration is generally found in wood materials. It can be the result of water intrusion, insect infestation or sun damage. A qualified handyman or tradesman should conduct repairs. Such damage generally does not extend into the frame behind the sill, but, if further deterioration is suspected, have it checked.

Organic Growth (Mold & Mildew)

For some people, exposure to certain types of mold can be very dangerous due to allergic reactions. Superficial or small amounts of surface mold or mildew can usually

be removed with normal household cleaners designed for this purpose. An Industrial Hygienist should inspect large areas of organic growth. Wiping moisture off windowsill surfaces where mold can live and grow during the winter months will help prevent its occurrence.

GLAZING (GLASS)

Cracked, broken or missing

Replace broken windows yourself or hire a qualified person to do the work.

Lost dual pane seals

Windows with lost seals cannot be repaired. The glazing will have to be replaced.

WINDOW OPERATION

Sticking Windows

HAZARD

Use care and caution. Forcing a stuck window could break the glazing, necessitating additional repairs and most importantly, you could be injured by broken glass.

Windows frames can become sealed during house repainting. Take a knife and run it between the window frame and the channel of the sash **(the fixed frame around the window) to** release excess paint that is binding the window. Once the window is again operable, make sure the excess paint is removed from the window frame. Then clean the window tracks and apply a little shot of silicone to the tracks for ease of operation.

ADDITIONAL WINDOW INFORMATION

Fire Egress and Security Bars

Modern building standards require that windows in bedrooms be a specific size and be installed at a specific height above the floor.

The Universal Fire Code, The Universal Building Code and City & County Building Codes mandate fire egress capability. Egress windows are required in bedrooms that have no doors that exit directly to the outside of the house.

To qualify as an egress window it must meet the following requirements:

“Basements in dwelling units and every sleeping room below the fourth story shall have at least one operable window or door approved for emergency escape or rescue which shall be open directly into a public street, public alley, yard or exit court.”

The window shall be operable from the inside to provide a full clear opening without the use of additional tools.

All escape or rescue windows shall have a minimum net clear operable area of 5.7 square feet. The minimum net clear operable height dimension shall be 24 inches. The minimum net clear operable width dimension shall be 20 inches. When windows are provided as a means of escape or rescue, they shall have a finished sill height not more than 44 inches above the floor.

Bars, grills, grates or similar devices may be installed on emergency escape or rescue windows or doors, provided: 1.) The devices are equipped with approved release mechanisms which are operable from the inside without a key or special knowledge or effort. 2.) The building is equipped with smoke detectors installed in accordance with section 1210."

Source: 1991 Uniform Building Code

Safety Glass

Tempered glass is one of two kinds of safety glass regularly used in applications in which standard glass could pose a potential danger. Tempered glass is four to five times stronger than standard glass and does not break into sharp shards when it fails. Tempered glass is manufactured through a process of extreme heating and rapid cooling, making it harder than normal glass.

The brittle nature of tempered glass causes it to shatter into small oval-shaped pebbles when broken. This eliminates the danger of sharp edges. Due to this property, along with its strength, tempered glass is often referred to as safety glass.

Explaining the many variables related to tempered glass is complex and exceeds the scope of this project. In general, the following glazed areas should have tempered glass: glass in operable doors; windows in stairways and along walking paths; windows

over bath tubs; enclosure doors on the shower or tub; windows greater than 9 square feet that are less than 18 inches above the floor and generally anywhere a person might

accidentally push through a glazing and break the glass.

Tempered glass is identifiable by an etched mark in a corner of the glazing and is often referred to as a “bug.” The marks look like this graphic but are usually white.

ACME	
TEMPERED SAFETY	
ANSI 297.1	1984
16 CFR 1291	CII
SGCC 1494	1/4 U

Windows and doors with encased wire are no longer considered to be viable as a safety glazing.

PHOTO GALLERY

The photographs presented throughout this eBook were collected during the course of my professional inspection career and are actual examples from real experiences. Obviously they represent some of the worst-case scenarios for both the dramatic effect and the visual impact.

The damage displayed in these photos probably required the seller and/or the realtor to either pay full price for repairs to a licensed contractor or give a credit towards the sales price of the home. A qualified handyman, tradesman or even the homeowners themselves could likely have done many of the repairs needed. The ramification of having these issues revealed during a home inspection is the home seller is under the pressure of a pending close. In this game time is money and the less time you have the more it is likely to cost. Probably the most difficult aspect the seller must endure is the stress caused by the additional energy that will be required before they can get on with their life.



Missing window trim and caulking equals water intrusion and additional damage to inner walls.



Missing window trim.



Broken latch. Hard to unlock if an individual needs to exit in a hurry.



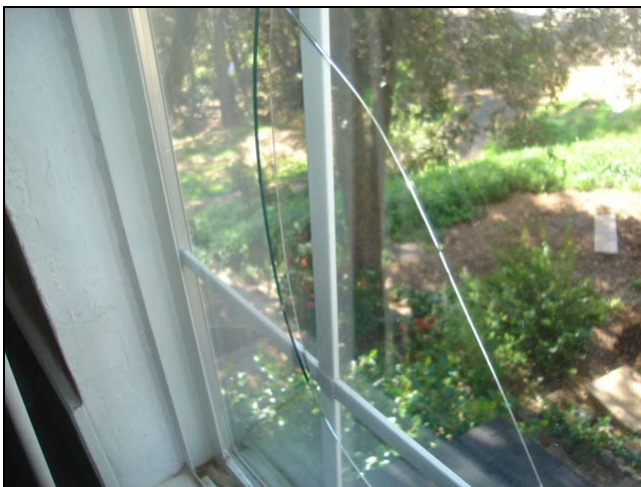
Window loose in the frame.



Loose casement mechanism. This window was impossible to secure unless someone was at the exterior and pushed the window closed.



Installation error. Notice the nail sticking up from below. Why did the installer force the window in this hole without bending down the nail first???



Broken pane



BB gun hole or weed eater thrown rock chip.



Cracked inner pane of a dual pane window.



Stain in the sill possibly due to condensation.



Water stain due to condensation.



Skylight water stains.



Water leaks over the window. Possible damage at the header in the wall. Water intrusion at the exterior trim from poor flashing.



Organic growth in the sill.



Organic growth and deterioration.



Organic growth and deterioration.



Wood frame deterioration, interior.



Wood frame deterioration, exterior.



Wood trim deterioration, exterior.



Deterioration and stains, interior.



Halo effect, blown dual pane seal.



Halo effect, blown dual pane seal.



Condensation between the panes of glass.



Condensation in a blown window.



Low proximity to the floor. Tempered glass required.



Low proximity to the floor. Tempered glass required.



Non-tempered single pane window from floor to ceiling in this stairway. Children's toys were on top of the low cabinet in front of this second story window. Is this a potential HAZARD? There was a broken pane of glass at the bottom right as well.



This was the only window in this room addition. How difficult would it be to exit through this window in the event of an emergency?



The photo at the left shows a crack in a shower door made from wire encased safety glass. The material is no longer considered appropriate because the wire had a tendency to "capture" body parts when someone accidentally broke through the glass.

Chapter 3- Inspecting Doors

We will continue our inspection with doors.

Remember to read the entire chapter and view the photos provided before actually starting your inspection.

As with windows, doors come in many different sizes and materials.

Examples of materials are wood, metal, fiberglass, glass, acrylic and composite.

Styles include solid core, hollow core, raised panel, flat panel, louvered, bifold, bypass, accordion, pocket, hinged, tracked, fire, pet, garage, patio, “French”, “Dutch”, double and so forth.

Each door has specification requirements for its use. With their many components and functions, doors are a bit more complicated than windows but some of the information you learned about in Chapter 1 will be applicable to doors.

Don’t get distracted by door descriptions. When inspecting you will be looking for the physical condition and operation of the door and also making sure that the proper door is being used.

Requirements for interior doors are less restrictive than for exterior doors. Exterior doors may be used on the interior of the building but an interior door should not be used for an exterior application.

In other words, a hollow core door should not be used for an exterior exit door. This is not only for security reasons but also hollow core doors do not provide adequate insulating properties and resistance to weathering.

In addition, a solid core fire rated door is required between the living space and the attached garage. I will elaborate more on the fire door requirements below.

Begin your inspection at the front door, which is usually the first door encountered when entering the home.



Look at the front door. Is there anything that jumps out at you?

Is it a solid core exterior door?

How do you determine if it is a solid core door?

Knock on the face of the door with your knuckles to hear if it sounds solid. If you are not sure, try comparing the sound made by knocking on an interior hollow core bypass closet door. The solid core door will create a dull noise and the hollow core door will sound like a wooden drum. Purchasers of the **Deluxe Package** and **Premier Package** have access to the **Video Companion Series** where we demonstrate the difference.

As you approach the door, look at the way it hangs in the jamb (**the trim material that makes up the frame surrounding the door**).

Check the reveal (**the space between the door and the frame or jamb**).

Is the gap in the reveal relatively even? An eighth of an inch variance in this area is common. Any more than that could be due to loose hinges, deterioration or poor installation.

Next, inspect the condition of the door face or surface. Is it deteriorated, scratched or damaged in any way? Hollow core doors and even solid core doors with a veneer skin may delaminate when subjected to severe weather conditions.

Are there any cracks in the door edge around the latch? The photos below will show you what I am talking about.

Front exterior wood doors often have panels. Check to see if any of the panels are cracked or damaged.

Front exterior doors may also have glazing (glass) panels. Check to see if any of the glazing is cracked, broken or has lost its seal. Is the glass tempered?



Next, open the door, straddle the front edge of the door and grab hold of the knobs. Gently lift up using your legs (**NOT your back or arms**) to determine if the doorknob is tight and the hinges are well secured to the jamb.

If you notice a lot of play or movement at the hinge area, it may simply mean that the screws are loose. Tightening them with the proper screwdriver may resolve this symptom. Sometimes the hinge screws are fine but the hinge pin may be worn. In that case the hinge may need to be replaced.

Once you have made certain the hinges are secure recheck the reveal around the door. Securing the hinges may correct some if not the entire reveal problem. If the door did not latch properly before, that problem may also be corrected by tightening the hinges.

Next, check to see if the door will actually latch.

You would be amazed how many times I encountered doors that did not latch. The homeowners were often surprised and commented, “We never close that door.” I replied, “Well I can certainly understand that but the new owners might want it to latch for some reason.

Doors that do not latch could indicate a number of issues discussed below. Make a note at this point if the door does not latch.

Does the door stick in the frame at any point, drag on the floor covering or bind at the striker plate of the latch? The striker plate is the metal plate screwed into the doorjamb where the latch catches to secure the door. Does the door swing open or close on its own?

Is there any unusual noise or squeaks when the door is opened, closed or latched?

Do the knobs and door lock operate properly or do they need some lubrication or possible adjustments? Sometimes just tightening the screws of the hardware will eliminate problems.

I often noticed that when the doorknob screws were positioned top to bottom instead of side to side, the privacy lock would not work properly. Check the orientation of the doorknob screws. They should be parallel with the floor.

Check to see if the deadbolt latches are able to fully extend into the mortise hole in the jamb. If the deadbolt latch does not fully extend, the bolt can be pushed back into the unlocked position.

Try this if you have access to a deadbolt lock. With the door open, engage the deadbolt part way. Stop before you hear the “click” of the lock mechanism. Push on the bolt. You will actually be able to push the bolt back into the door with your finger. Push on the bolt after you hear the “click.” The bolt will not move.

If you are not able to hear or feel the “click” when locking the deadbolt, the lock is not properly engaged. The mortise hole in the jamb is not deep enough to allow the bolt to travel far enough to fully engage. It is not secure.

Home inspectors will report on the presence of double deadbolt locks. Some will report them as a hazard. Double deadbolts are those locks that can only be opened from the outside or the inside with a key. My reports used to say this:

FYI: A locked double deadbolt lock could be a hazard in the event of an emergency if the key is not available.

I recommend double deadbolt locks be replaced before the home inspector arrives.

Check the striker plates in the jamb. If the striker plates are loose, damaged or missing, repair or replace them.

Check the jamb itself. Is it split, damaged, deteriorated or water stained? Make a note on any of these conditions.

Home inspectors and termite contractors carefully investigate water stains found around doorframes. Water intrusion is a serious issue

discussed in greater detail in the chapters on inspecting walls and exterior siding.

Exterior doors will need to be weather-stripped. There should not be any light passing in around the door from the exterior.

Pay particular attention to the sweep at the bottom of the door.

Weather-stripping is inexpensive and easy to install. The bottom sweep can usually be adjusted downward to sweep the threshold properly.

Is there a doorstopper preventing the knob from hitting the wall?

As you move into other areas of the building, check the condition and operation of any bifold, bypass and accordion closet doors. Along with the considerations mentioned above, they should slide in the tracks and operate with ease without coming off the track or dragging the floor covering. Broken mirrors on bypass closet doors should be replaced.

When checking any interior or exterior double doors, determine if the pins of the secondary door can be properly secured at the top and bottom. Do they operate and engage smoothly?

Check patio doors and screen doors for smooth operation and proper locking. Home inspectors will report missing or damaged screen doors.

Patio doors often have window coverings. Many home inspectors do not report on window coverings but you should check and note their condition to be sure they operate properly. Your realtor will usually not recommend replacing window coverings unless the home shows badly. The buyer will probably want to select their own.

On many of my inspections the buyers were present. I could hear them discussing how they would redecorate the building to reflect their own personality. New floor and window coverings were almost always on the list for replacement. Realtors often suggest cleaning or removing these items but not replacing them.

The glazing in patio doors should be tempered. Check for lost dual pane seals in dual pane patio doors and the fixed glazing.

Fire doors are an important consideration. Such doors are located between the living space and an attached garage. They may also be located at the stairway to the basement or any other area that may contain flammable materials, a water heater or furnace.

Fire doors should have an operable automatic closer that will cause the door to self close and latch when it is released. If the fire door has an automatic closer but does not latch when it is released, the closer should be adjusted or replaced. Sometimes the floor covering can obstruct the proper operation of the closer causing the door to drag.

Fire doors are installed to suppress fire from entering into a living space but only for a limited amount of time. Any modifications to these doors create a possible hazard.

Pet doors installed in a fire door compromises its fire suppression function. I realize we need to help our pets get in and out of our buildings for obvious reasons. I have pets too, but you need to know the home inspector will write up a fire door that has a pet door installed.

Some home inspectors will write up a fire door that has a door stop installed because it overrides the purpose and proper function of the door.



The swing direction of a door is also **VERY IMPORTANT**. The code requires a 36” landing if a door swings out over a step.

HAZARD

A door should not swing out over a step as a person could trip and fall.

This error is common when homeowner alterations are conducted.

Keep in mind that we are primarily concerned with the appearance and operation of the doors. Interior hollow core doors with holes larger than a nail or screw should probably be replaced.

Exterior doorjambs that are deteriorated at the threshold may also have to be replaced. Probing with an awl or screwdriver in these areas will help you determine if deterioration is present.



Scratch Awl

Check the all the remaining doors in the house using the same procedures stated above.

Again, do not be discouraged when you find an item. That is the reason for the work you are doing.

DOOR FINDINGS: REMEDIES AND SOLUTIONS



HARDWARE OPERATION

If you notice a lot of play or movement at the door hinge area, it may mean that the screws are loose. If so, tighten them with a screwdriver.

A screw that will not tighten could mean that it is stripped. A longer screw may be required to secure the hinge into the jamb. Be sure to use a screw with the proper bevel and head size or it could interfere with the hinges ability to close properly.

Doors that do not latch could indicate a number of issues.

A very common occurrence is a door that will latch during one part of the year or season and not during another. This is an indication of normal changes in the shape of the building during temperature or humidity variations.

The design of the striker plate will usually account for these variations unless the plate was not installed in the proper position during construction.

The door may be warped or the doorframe may be out of plumb (**a plumb bob or a plummet is a weight with a pointed tip on the bottom that is suspended from a string and used as a vertical reference line. This instrument has been used since the time of the ancient Egyptians by bricklayers, masons and carpenters to ensure that their constructions are "plumb", or perfectly upright.**)



Doors that bind, stick, open or close by themselves may do so for the same reason the doors do not latch. The hinges might be loose, the striker plate may need to be adjusted or the doorjamb may need to be repositioned.

A qualified handyman should be able to adjust or repair a door or jamb that is out of alignment or not plumb. You could also hire a licensed contractor to refit the door.

Although a bit more complicated, secondary doors that do not secure properly are usually adjustable provided the internal hardware is operating properly.

Knobs and locks that do not operate properly may require lubrication. Dry graphite is recommended rather than oil based lubricants. Oil will accelerate the problem by attracting more dirt. A locksmith can help with fussy knobs and locks.

Install any missing or damaged striker plates.

CONDITION

Jambs and Frame

Cracks in the jamb and around the hinges can be filled with putty or caulking if not too badly damaged. Repainting the trim will be optional, depending on your particular situation and realtor's recommendation.

Door

The door surface itself is often difficult to repair if badly damaged or worn. Cracks in the door edge can be filled with putty or caulking if not too badly damaged.

If the door drags the floor covering or binds in the casement frame, it may have to be shaved to allow for more clearance. This can happen when new thicker flooring materials like hardwood, tile or carpet are installed.

If simple repairs can bring a door back to serviceability that's good. However, if the door is damaged so badly that repairs would cost nearly as much as a new door, replace it. This is particularly true of a front door.

PHOTO GALLERY

The photographs presented throughout this eBook were collected during the course of our professional inspection career and are actual examples from real experiences.



Reveal issue at the top of a door.



Reveal issue.



A pocket door reveal exposed at the inside edge. The frame must be oversized as compared to the door. The door did not fully fill the doorway.



A pocket door that did not fully close at the top may need the track repaired.



An air gap. Needs weatherstrip.



No weatherstrip at the door sweep.



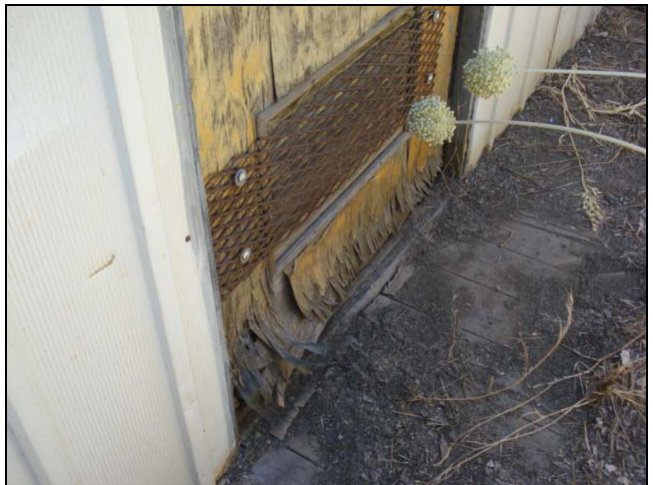
An air gap.



Crack in a raised panel exterior door.



Deterioration in the door.



Delaminated exterior door.



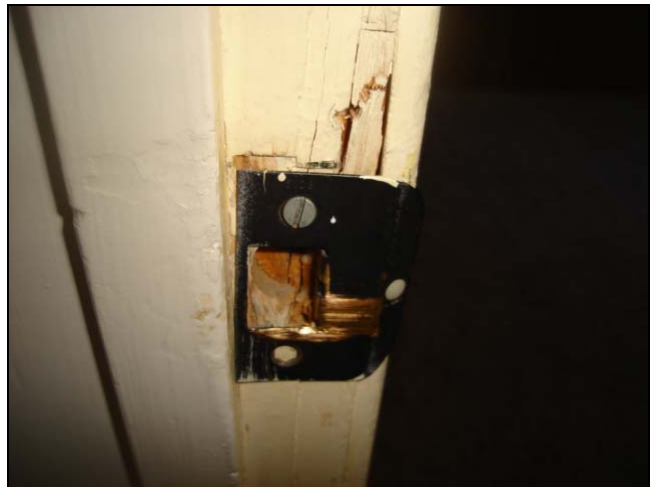
Damaged lower panel will be noted by a termite inspector as well as the home inspector.



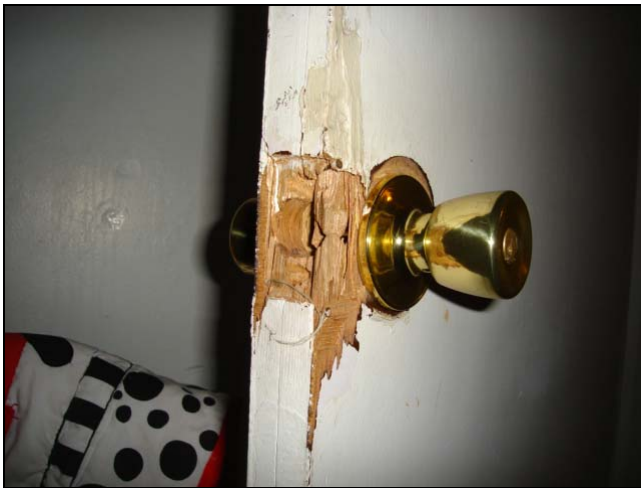
Cracked doorjamb at the hinges.



Cracked doorjamb at the hinges.



Cracked doorjamb at the striker plate.



Damaged door edge. This is also why a hollow core door is not recommended for an exterior application.



Cracked door edge at the deadbolt latch. This is often caused by not pre-drilling a pilot hole before running in the screws for the latch.



Jamb split open.



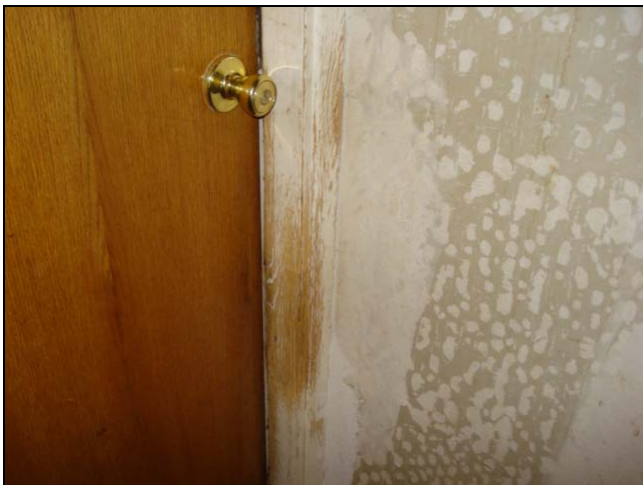
Jamb split open.



Missing striker plate.



Missing striker plate.



Pet damage to the casement trim.



A scuffed pocket door. The door drags at the inside of the frame.



No doorstopper. The knob hits the wall.



The closet doors do not quite reach.



This door latch is installed backwards.



Missing finger pull on this closet door.



Cracked plastic window trim around the glazing in a full light "French" door.



Deterioration in the jamb.



Deterioration in the jamb.



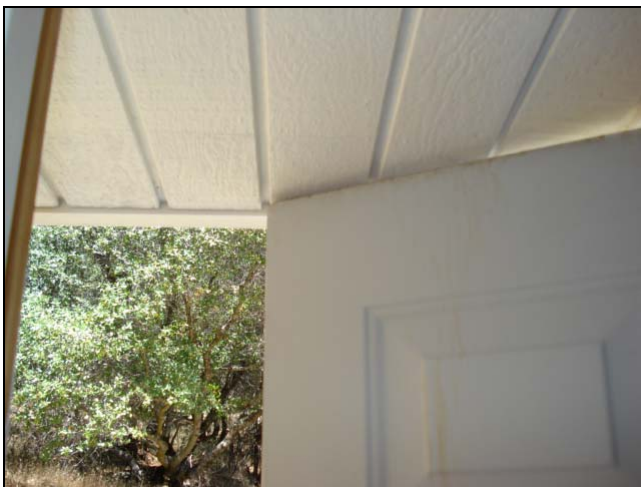
Deterioration in the threshold.



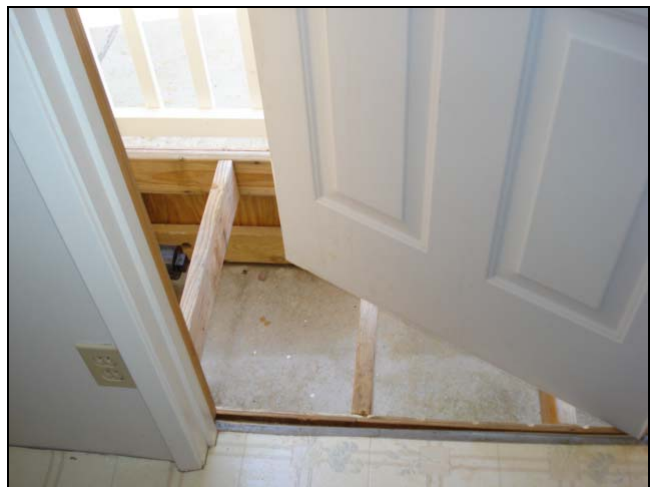
Deterioration in the jamb under the carpet.



A repair gone amiss.



This door did not open fully. I'm not sure how this happened. Perhaps it's just as well, the door opened out over an incomplete deck.



A future landing.

Another ramification of having issues revealed during a home inspection is the home seller may feel the report is a reflection of their personal habits and their ability to properly care for a home. I found the men were particularly sensitive to the notes and findings.

I was constantly reassuring them by explaining that many of the items I find are common and that people are simply unaware of what a home inspector is capable of. Having a man running around the house fixing items as I discovered them was also common. The number of notes on his report did go down as a result. Too bad he didn't have this eBook before I got there, but then, that's the whole point, right?

Chapter 4- Inspecting Interior Walls

FYI: As you get deeper into the materials of this eBook you may find yourself trying to inspect multiple items simultaneously. This is not recommended.

Make reminder notes if you see something else, but do not let it distract from your focus.

Getting distracted caused me to miss things, and it will happen to you as well.



We will continue our inspection with interior walls.

The interior walls may be made of: drywall (Sheetrock); lath and plaster; wood paneling or planks; exterior siding materials; logs and masonry products including brick, concrete, concrete blocks or adobe.

Each material has its own unique characteristics, but our primary concerns are cracks, holes, stains, deterioration, deflection and the presence of mold or mildew.

Walls always have a story to tell. They may seem to be just flat surfaces but they can be the first indicators of larger structural problems. The primary indicators are cracks so we begin our inspection by looking for the obvious.

In drywall material there are basically two kinds of cracks; settlement cracks and stress cracks.

The difference between a settlement crack and a stress crack.

Settlement cracks are those cracks that may be caused by the settlement of a new home into what we call its “foot print” which is the drying of the green wood of the building’s framing.

Temperature and humidity variations, as mentioned in the chapter on Doors, change the shape and size of a building during different seasons and can contribute to the appearance and reappearance of settlement cracks.

Settlement cracks are usually straight and run along the joints where two pieces of drywall (Sheetrock) butt up against each other. The crack is actually in the mud and tape between the two pieces of drywall. The tape and mud have split open slightly due to movement in the wall.

The tape and mud compounds under the texture are not strong enough to hold the joint together as the wall moves or “settles.”

Such cracks are usually incidental in their size or width but can be annoying in their appearance. Some people will try many different ways of hiding or eliminating them and usually the more they try the worse they look.

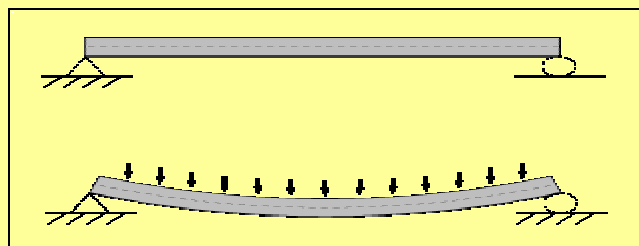
Many factors are considered during the inspection and have to be taken into account before concluding that settlement cracks are symptoms of a more serious problem.

Stress cracks are looked at with a more critical eye.

Stress cracks tell a deeper story as they may indicate the possibility of structural movement in the building or foundation. Earthquakes cause this type of crack as well.

Stress cracks always raise a red flag and cause a home inspector to look thoroughly at the underpinning and foundation of the building. These types of cracks may also point to over spanning of structural beams or other framing components.

The term span refers to the distance between two intermediate points where a beam, joist or board traverses over an open space. An over spanned board will bend significantly from the weight of the load it must support and the deflection will show up in the surfaces above it. The figure below illustrates the effects on an over spanned beam.



Stress cracks will not follow the joint of the drywall but rather tear across the drywall. The drywall is literally broken.

You will usually find stress cracks radiating diagonally from the corners of wall openings like windows, doors and hallways. The crack will be wider at one end and taper off as it disappears into the field of the wall.

If a professional has to be called in to repair settlement or stress cracks the cost for repair can soar to several hundred dollars.

To repair a crack in drywall, a joint rasp is used to cut down through the paper of the drywall into its gypsum body and then several thin coats of taping mud and webbing are applied to refill the hole. This process requires several days to allow each layer to dry. The final task is to attempt to match the existing texture (which by design is almost as individualistic as a fingerprint.) Sometimes it is actually easier to retexture the whole surface from wall to wall.

With all that work most people just don't bother with the small cracks.

Before having work done on a stress crack you may want to consult with a licensed structural engineer to make sure further cracking or movement is not expected and the overall integrity of the building and foundation is sound.

Like I said, the walls can be the first indicator of larger problems. However, I always reserved my opinion about cracks until I had looked over the entire building. In most cases, even the smaller stress cracks were old and not a problem, just a nuisance.

Identifying holes in the walls are also a part of your inspection process.

Make notes on your inspection sheet of the location of holes in the walls for later repair.

Makes notes if you see any stains or discoloration in the walls.

Water stains are a big “red flag” for home inspectors. Water intrusion is one of the primary sources of damage to any structure. If you include the water used to put out a house fire, insurance claim statistics make it

the leading cause of structural damage. Water ruins wood framing materials, attracts wood destroying insects, wrecks wall coverings, and is the primary source of stimulating organic growth and dry rot.

Be sure to look behind the washer and dryer for signs of water stains.

Check to see if the wall is caulked at the top of the shower stall. There should be no crack in the caulking where moisture could enter the wall. This is one of those findings that show up over and over again. Fix this and your home inspector will wonder if a home inspector lives here.

Look for signs of stains and organic growth in the cabinets under sinks in the kitchen and bathrooms. Look around the tub and shower and at the wall behind the toilet.

Inspect carefully around the baseboards near exterior doors. Your inspection of the windows and doors may already have revealed issues around these components.

As you get deeper into your inspection you will recognize that many aspects overlap. Issues created by the natural movement of a building and problems due to water intrusion reoccur throughout.

The key is for you to recognize all of the issues you can and find ways to repair them economically.

VERY IMPORTANT. Be sure to check closets from top to bottom. This area is commonly missed by homeowners and is where home inspectors find stains and evidence of organic growth.

The general rule of thumb is; look everywhere that water could be present via plumbing fixtures or around exterior doors and windows.

Any old stains whose source has been repaired should be cleaned or painted over. Remember, if the inspector can't see it, it won't be in the report.

If you are aware of any plumbing leaks inside the walls they must be

disclosed.

Home inspectors have moisture detection tools that are able to detect moisture in the walls and underlayment of floors. The tools are also used to determine if there is active moisture at a stain. Our video on this chapter in the **Deluxe Package** shows one of these detection tools in action.



A new technology called infrared thermography is now being used to detect water and mold intrusion in buildings. It is a remarkable science that uses infrared cameras to “see” into walls, ceilings and floors. Thermography equipment is very expensive so it is not likely to be a part of the home inspector’s tool kit. However, as prices drop on these cameras more of them may be used by home inspectors.

Where there is moisture, there may be organic growth.

As stated before, organic growth (mold and mildew) has become a concern for many people and although a definite problem, has been largely over hyped by the media.

Mold is everywhere. It is lying dormant in the drywall and wood components of the building. It exists at the exterior of the building.

The question is whether a person is sensitive to any specific species of mold. If they are it could be a serious problem.

Mold grows where moisture is persistent. If organic growth has been observed at the exterior surface of a wall inside the building, it is unknown if there is mold inside the wall without further investigation. Exploring into the interior of a wall is outside the scope of a home inspection but if the home inspector is suspicious, he will recommend further evaluation.

If you suspect that there is a larger problem, be sure to contact an industrial hygienist for further investigation and testing. Eliminating mold can be an expensive process, but it is far cheaper than a law suite.

**DO NOT TRY AND COVER UP EVIDENCE OF A
POTENTIAL MOLD PROBLEM.**

If a wall appears to be severely bowing or twisted, a licensed structural

engineer should be consulted. There may be issues related to the foundation, underpinnings or soils around the building.

Simple bowing of wood paneling may be due to settling of the building. An oversized sheet of paneling could be removed and trimmed to fit correctly.

Wood trim work around paneling should be checked for gaps and missing pieces.

Lath and plaster was a building process used for interior walls until the late 1950s. Thin pieces of cedar (called lath) were nailed on the 2x4 framing of the wall. One to three applications of wet plaster was then applied to the lath. In some cases, layers of wallpaper were applied on top of the plaster for decorating purposes. This actually added to the stability of the wall.

Inspect the lath and plaster for the same issues as found in drywall.

Cracks in masonry walls are also to be carefully inspected. There are two different types of cracks - those that have cracked in a “Z” pattern within the mortar and those that have actually broken the stone or brick.

If there is any water penetration through a masonry wall, the paint will peel from the surface. This is common with subterranean walls in basements and garages.

A more thorough discussion on masonry wall cracks and issues will be presented in the chapter on exterior siding and walls. You may want to read **Chapter 15- Inspecting Exterior Siding Materials and Walls** before continuing with your interior inspection.

WALL FINDINGS: REMEDIES AND SOLUTIONS

Cracks

As stated above, repairing cracks in the walls can be a complex and daunting task. Cracks filled with spackling compound have a tendency to reoccur. The filler is not able to expand or contract as the building changes shape through normal temperature and humidity variations.



A paintable, pliable silicone caulk can be applied with a finger to fill settlement cracks. Its elasticity will expand and contract allowing for slight changes in the crack without allowing it to reopen. The paint you use has to have an elastic quality as well.

Holes

Small holes such as those left by hanging pictures are easily filled with filler such as Spackle, taping mud or caulk. Use hard drying filler compounds such as Spackle or mud very sparingly. Excessive filler on a textured wall around a repair looks bad.

More obvious are holes or minor dents where a doorknob has hit the wall because of a missing or damaged doorstop. If the hole left by the doorknob is minor, simply apply a thin coat of filler to the hole, let it dry and then add a little more each day until it is flush to the wall surface.

If the doorknob punched through the wall, the repairs will take more work. There are several kits available at the local hardware store designed to repair holes left by doorknobs. There are several sites on the Internet that provide a variety of techniques for repairing holes in drywall.

The real trick is not repairing the hole as much as matching the texture. A good drywall technician can match texture very closely. Get a few bids from different sources if you have a large area that needs to be repaired.

If you have to remove damaged drywall that covers two or more framing studs it would probably be a good idea to contact a professional. Get at least two bids for the repair.

Water Stains

If you find water stains, eliminate the source of the water intrusion and then seal and paint the affected surface. If there is any evidence of organic growth further investigation and remediation may be necessary. Do not cover or disguise areas where mold is present. The ramifications of doing so can be quite extreme.

Local companies who restore buildings after fires are probably the best resource to quickly locate water intrusion problems. They have the equipment and expertise to trace the entry points of moisture. Look for a company that has the thermography equipment mentioned.

Organic Growth (Mold, Mildew and Fungus)

Surface mold and mildew can usually be removed with products designed for such

applications. Contrary to popular belief, using a mixture of water and bleach is **NOT** a good cleaning solution. Laundry bleach is primarily made up of water and small amounts of chlorine. Mixing bleach with water to dilute it creates a solution that is mostly water.

Do you remember what must be present for mold and mildew to grow? Moisture! Diluted bleach is mold food.

If there is evidence of visible mold in areas larger than a few square inches, you will have to have a professional evaluate what further action should be taken. As with water intrusion issues, companies that do fire restoration are great sources for information about dealing with mold problems.

There are several Websites that discuss mold issues. I even found one that provides free kits for testing by the homeowner. You can find that link on our Website at:

<http://www.27dollarhomeinspections.com/index.php?page=links>

or go to the Website and click on “Links” at the bottom of the home page to find the link.

Deterioration

Some of the most common causes of deterioration are water intrusion, condensation and insect infestation. As with water and mold problems, the course of action is to determine the cause, eliminate it and repair as needed.

A qualified handyman is capable of these repairs. There are usually several listed in the phone book. Get multiple bids and ask for referrals. Do not hire the first person that shows up. If they fidget at your request for proof of the quality of their work, look elsewhere. If they are reputable, they will welcome your inquires.

Bowing Issues

If you have walls that are not straight up and down or appear to be out of whack, contact a structural engineer to determine why. These professionals usually charge a small fee for their inspection.

I can't even begin to tell you how many times I was asked if a wall was a "bearing wall." My standard answer was "Every wall is a bearing wall unless a licensed structural engineer says it isn't."

PHOTO GALLERY



A common settlement crack.



A stress crack.



A settlement crack.



A stress crack.



A classic stress crack.



A stress crack.



Cracked wood paneling.



A gouge and a hole.



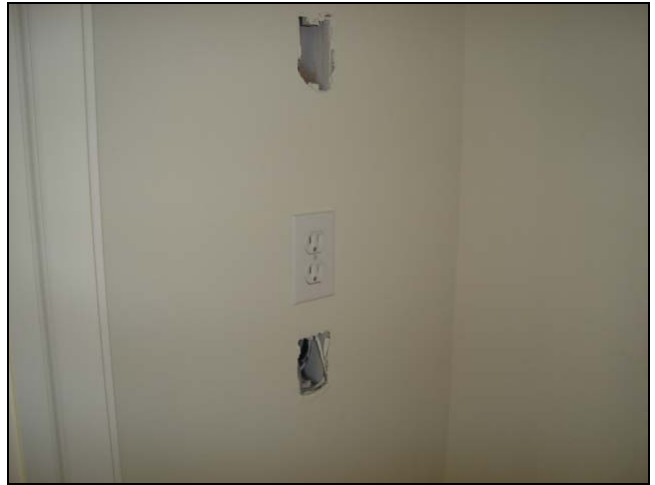
A hole in the paneling.



Big ugly hole in the wall.



Cut out under a bathroom sink.



Cut outs for junction boxes.



Cut outs in the paneling behind the washer and dryer.



Hole in the wall behind the washer in a garage. These will be discussed in greater detail in the chapter on garages.



Doorknob damage in a bathroom.



Masonry wall with water stains.



Water stain.



Water stain and possible mold where a window was left open.



Stains and possible mold.



Discoloration over a bathroom doorway. The source of moisture was a damaged grommet at a plumbing vent pipe that penetrated the roof. You will see an example of this in the chapter on roofs.



Water stains in wood plank interior siding.



Water stains under a window in a log cabin.



Damaged texture is easily repaired. The question is what caused the problem?



Severe deterioration and possible mold at this laundry room wall.



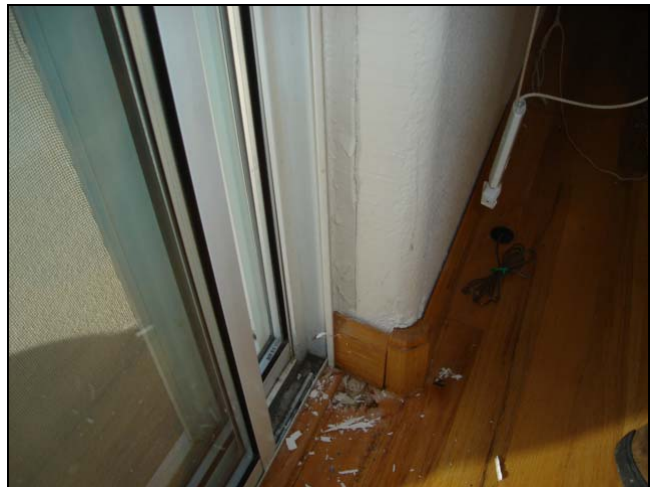
Deterioration at a shower door. The shower door leaked and water soaked into the wall.



Deterioration at an exterior door.



Deterioration in a bathroom.



Damaged texture and peeling paint at a patio door due to moisture penetrating a poor stucco treatment at the exterior.



Possible mold and deterioration in a garage due to a leaking roof.



Scorch marks under a bathroom sink. Not a problem, just unsightly.



Possible mold.



Possible mold.



Possible mold.



Possible mold.



Possible mold.



Possible mold. I have to say “possible mold” because I am not licensed or qualified to say that it is mold. This goes back to the information I gave you about how home inspectors have to use the proper verbiage to stay out of trouble.



Loose crown molding wood trim.



This is interesting. The excellent texture work did not quite cover this blank cover plate completely.

Chapter 5- Inspecting Interior Ceilings

We will continue our inspection with interior ceilings.

Your inspection of the ceilings will be very similar to the walls. The ceilings and walls are usually constructed of the same materials.



As the walls can indicate potential problems with the foundation, ceilings are a great source of information about the roof. Water stains provide clues about past or present roof leaks.

During my inspections I have encountered taped and painted textured drywall, wood veneer and “Masonite” type paneling, lath and plaster, “V” grooved decking, insulated sheets and panels, foam drop ceilings, plywood ceilings, blown-in “popcorn” acoustical textured drywall, milled planks, ornamental tin and copper plates and probably others I have forgotten.

You have attained a measure of experience by now. Use your new skills to look for, identify and record the presence of stains, peeling paint, settlement and stress cracks, holes, sagging ceilings, organic growth, evidence of possible insect infestation and low overhead clearance.

Regarding ceilings, one important thing to be aware of is the presence of materials possibly containing **ASBESTOS**.

Remember back in the sixties and seventies when the rage was to have sparkling blown-in acoustical ceilings? Well if it is sparkling, there’s a possibility it contains asbestos.

Although using materials containing asbestos was banned, contractors were allowed to use up supplies they had in stock. Products containing asbestos could appear in buildings as late as the mid 1980's. Common products containing asbestos besides ceiling acoustics included flooring tiles and pipe insulation.

The only way to know if a material contains asbestos is by laboratory testing. Having a ceiling with asbestos content is not a problem unless the material is disturbed and the asbestos fibers become airborne.

According to the US Occupational Safety and Health Administration (OSHA), more than 40% of the land area and much of the drinking water of the US contains some level of naturally occurring asbestos.

Asbestos has qualities that set it apart from any other material. It exists in microscopic fibers of varying sizes. It is virtually indestructible. It does not decompose or decay. It is a poor conductor of electricity. It is resistant to heat, chemicals, and water. When mixed with other materials, it passes on its insulating properties while adding its fibrous strength.

You can't tell whether a material contains asbestos simply by looking at it. If in doubt, treat the material as if it contains asbestos. Only a professional should take samples for analysis, because if done incorrectly, sampling can be more hazardous than leaving the material alone.

Material suspected of containing asbestos that is in good condition and will not be disturbed (by remodeling, for example) should be left alone. Only material that is damaged or will be disturbed should be sampled and considered for remediation and professional removal.

Other locations where asbestos might be present will be discussed as needed in this eBook.

Let us now discuss insect and pest infestation. Unless we actually see bugs and critters crawling around, the only way to identify their presence is by what they leave behind.

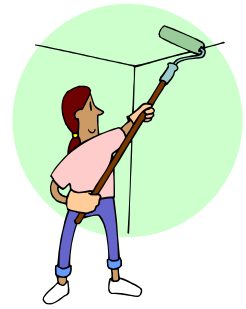
Spiders and cobwebs do not count. Sawdust and small piles of dirt and debris that appear to generate on their own are a pretty good indication of active insects. Small rodents like mice will leave feces and bats will leave guano.

One indicator of insect infestation would be sawdust that collected in spider webs located in corners and around exposed beams near the top of the walls. Additional information and photos will be provided as we discuss attics and the exterior siding materials.

Record any signs of pest and insect infestation and consider a pest abatement contractor or termite contractor for remediation.

CEILING FINDINGS: REMEDIES AND SOLUTIONS

If you had a leak that was repaired but the stains are still present, get rid of them before the home inspector arrives. The same is true of stress and settlement cracks. Remember, you still have to disclose the “material fact” that there was a water leak at one time. However, most buyers will accept this and the issue will likely become a mute point. They may ask their home inspector to take a careful look into the area in question, but if he doesn’t see a problem, there won’t be a note.



Removing water stains in the ceiling can be done very easily. Seal the area with a lacquer and then repaint the entire surface. If you just paint over the stain with regular latex paint it might bleed through.

Settlement cracks, stress cracks and holes in the ceiling should be repaired the same way as wall cracks.

ASBESTOS is a HAZARD if inhaled. A licensed Hazardous Material Abatement Contractor should be consulted for any work done with this material. Severe health issues and harm may be experienced if you disturb asbestos. You could also be fined for working with HAZARDOUS MATERIALS without a license.

PHOTO GALLERY



Severe stains and some deterioration.



Old water stains appear to be “bleached.”



Stains from condensation in a bathroom.



Active water stains are usually dark in color.



Stains around a light fixture in a wood paneled room.



Stains around a fireplace usually indicated a problem with the flashing around the chimney.



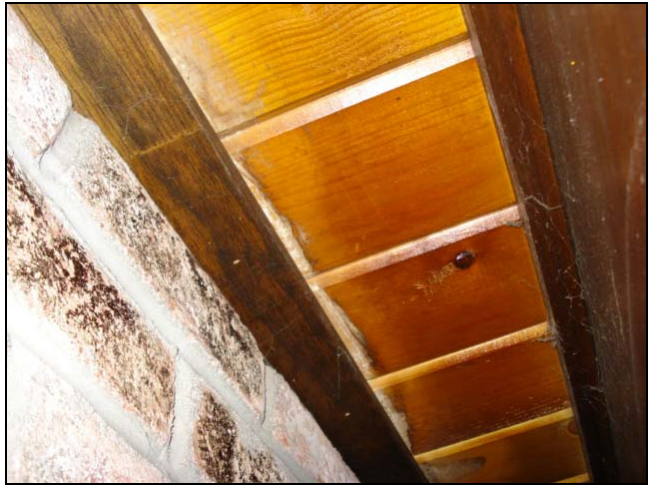
Active water intrusion at a skylight.



Water intrusion in the acoustical ceiling panels in a manufactured home.



A water stain in a closet.



Water stains above the fireplace.



Water stain in a lower floor. This problem was from a sink leak in a room above.



A red light on this moisture tool indicates an active water leak.



Peeling paint and water stains.



Peeling paint.



Peeling paint in a skylight



Peeling paint and water stains at a heater register.



Peeling paint under a bathroom ceiling heater.



A stress crack at this ceiling patch.



Patching, cracks, rusting nails and organic growth.



Patching after a water leak repair.



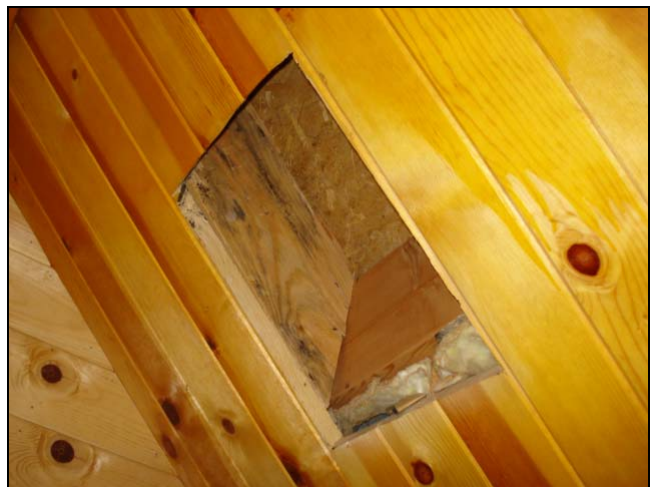
Patching over a patio door.



Patching for a former flue pipe.



Patching for a former stove pipe.



Don't ask me why. I just report what I see.



This roll up garage door rail is less than 8 inches from this man's head as he exits into the garage. The reflectors actually did make a difference! This is an example of low overhead clearance.



Sagging ceiling material.



Organic growth and stains.



Organic growth over a shower.

Chapter 6- Inspecting Interior Floors

We will continue our inspection with interior floors.

Floors take more abuse than any other surface in a house. Many things get dropped or spilled and children and pets cause a great deal of wear and tear.



Flooring materials include hardwoods and laminates, tile, rolled vinyl, vinyl tiles, carpet, painted concrete and the baseboards around the perimeter of the room.

When inspecting the floor, your primary concerns will be the condition of the floor covering and potential water intrusion in areas very similar to those discussed in the former chapter on walls.

Look for stains and worn or damaged areas. Look for missing baseboards and carpet transition strips. Carpet strips are where the carpet meets another type of material such as linoleum, wood or tile.

Transition strips are usually made of metal or wood, are generally found in doorways and if loose can become a tripping **HAZARD**.

There are many other **HAZARDS** found in the floor area. Worn carpet, worn or cracked linoleum, broken and raised tiles are a few examples of things that could cause a person to trip or fall.

Fireplace hearth bricks that are sticking out in an area where people walk are a **HAZARD**. Pathways should always be clear of objects that could cause tripping or falling. This is especially true if there are children or elderly folks in the home.

Another dangerous condition is an uneven floor. When a homeowner adds on to their existing home, converts a garage to a living space or simply changes the flooring materials, it can leave a slight difference in the level of the floor. Any change in the level of the floor that is more than ½ inch can cause a person to trip or fall. This is truly a potential **HAZARD**.

REMEMBER, HAZARDS ARE A PRIORITY WHEN IT COMES TO REPAIRS AND/OR REPLACEMENTS.

Hazards high lighted in bold print on a home inspection report could influence a prospective buyer’s decision to purchase your home.

Tripping hazards from a sudden change in the floor surface is not the same as an irregularity in the overall level of the floor. Irregularities are caused by changes in the floor joists or foundation where sagging or sinking may have occurred. A “crown” or bump in a floor is an irregularity.

Older buildings often have floors that have sagged from the natural dip of the wood sub floor materials. Inspecting this condition will require a careful look in the crawl space to be sure there isn’t damage to the foundation or underpinnings of the floor.

If you have a sagging floor, a floor that appears to dip in a corner or you notice a crown, make a note to look for obvious damaged when you venture under the building. This becomes particularly important when a homeowner cut a hole in a floor to provide a stairway to a lower level and has not properly supported the cut floor joists.

I live in an area where there are a considerable number of mountain cabins. Many of them were built on the side of a mountain and have large open spaces under the building. It is common for homeowners to turn the spaces into recreational areas. The obvious question would be “Were permits pulled?”

One of the most scrutinized areas for floor damage is in the bathroom around the tub, the shower and especially around the toilet.

Loose or discolored linoleum in such locations is usually a sign of water intrusion and possible deterioration in the underlayment or in the sub floor.

This is another area where the home inspector will use a moisture detector to look for water intrusion. Most of the termite inspectors I have met do not have one of these tools. They rely on discoloration, uneven or spongy flooring, obvious dampness and evidence of moisture when looking at the sub floor in the crawl space area.



Taking an awl and gently poking around in an area may reveal soft underlayment. Be careful not to damage the floor covering. We provide an awl in the **Premier Package**.



Scratch awl

Check and see if the toilet is properly secured to the floor.

This can easily be done by standing with the calf of your leg under the front of the toilet bowl and giving it a slight lift. This procedure should only allow you to move the toilet up and down very slightly. More than slight movement means that the hold-downs are loose. A demonstration of this procedure is demonstrated in our videos.

If the toilet is very loose it will cause the "Wax-Ring" between the toilet and the plumbing flange to leak. Water leaking from under the toilet will soak into and swell the underlayment of the floor and discolor the linoleum. If the toilet is over a concrete slab the potential for wood deterioration is eliminated but organic growth and deterioration of the floor covering will still be an issue.

Another common finding that you can easily eliminate is cracked or loose caulking at the base of tubs and showers. Caulking the edges will eliminate an inspection note and cause the home inspector to nod his head in approval.

Another place where water intrusion is often found is at exterior door thresholds. This is not only true for hinged front or back doors but also for sliding patio doors. Water will seep through poor or missing flashing and soak the underlayment and sub-flooring.

Usually less pervasive areas will be around the dishwasher or possibly behind the clothes washer. If you have a water dispenser in the refrigerator this area should also be inspected.

Keep in mind that if there is water available in an area, there is a possibility of water damage.

Record any loose, stained or missing baseboards.

Another item that is reported over and over again is the gap between floor coverings and the thresholds of exterior doors. Moisture and debris from the bottom of shoes could eventually create problems in the

sub floor, particularly in rain and snow areas.

Fill the gap between the threshold and grouted tile, vinyl or wood and the home inspector will wonder if a home another inspector lives here.

FLOOR FINDINGS: REMEDIES AND SOLUTIONS

Worn or damaged floor coverings may have to be repaired or replaced.



Repairing is not common because most repairs look like repairs. I am sure that is why most people, including flooring contractors, replace instead of repair.

If there is obvious underlayment or sub floor damage under the floor covering, replacement may be your only choice.

A qualified tradesman should only do repairs on damaged underlayment.

At times a realtor will recommend cleaning the floor coverings rather than replacing them. As with window coverings, the new owners may want to pick their own colors and styles.

Do not allow any repairperson to replace or lay new linoleum over damaged or deteriorated flooring. Deteriorated wood should always be removed before laying new linoleum.

Broken or missing ceramic tile pieces can be replaced but the tile pattern or color batch may no longer be available. Changing the pattern with contrasting tiles may be less expensive than replacing the entire floor.

Repairing stained and deteriorated hardwood flooring will usually require the skills of a professional flooring contractor. Small spots can sometimes be colored or bleached as needed. I would recommend having a professional give you an estimate for repairs.

Caulk or fill gaps between the door threshold and adjacent flooring materials and you will eliminate a note.

PHOTO GALLERY



A gap at the threshold that should be sealed. Seal this gap and guarantee a report note is eliminated.



Cracked tile.



Flooring material shorted at a cabinet. A piece of trim could have solved this.



Flooring shorted at a closet door. Do it yourself job that wasn't quite done.



Cracked and swelling baseboard.



Discoloration and evidence of water intrusion.



Loose vinyl.



Loose vinyl at the base of a shower. Fix and seal this area and guarantee a note is eliminated.



Curled vinyl under a dishwasher. Small brads or finish nails could be used to secure the vinyl.



Loose and stained vinyl tile in a laundry room.



Water intrusion in a utility room.



Water intrusion in a manufactured home closet.



Soaked carpet and deterioration at an exterior door.



Soaked carpet and wet sub floor at a patio door.



Water intrusion in the plywood subfloor at a patio door.



Old water stains at a patio door.



Standing water and organic growth in a baseboard.



Deterioration in the vinyl and underlayment at a toilet.



Water stains and chipped vinyl tile at the base of a toilet.



Cracked and deteriorated vinyl tile behind a toilet.



Water stains, loose vinyl and organic growth at the base of a tub and shower.



Moisture detector picking up the presence of a water leak from the wax seal. Discoloration was also present. The tool just verifies an active leak.



Damaged subfloor was being covered with new laminate wood floor. Opps.



A slipped wood plank.

Chapter 7- Inspecting Interior Electrical

We will continue our inspection with interior electrical.

HAZARD

If you are not a licensed electrician or electrical contractor, do not try to repair or replace any electrical fixtures, outlets, switches or wiring.

The most screwed up items I found during my inspection career were electrical wiring issues. It is amazing to me that more people are not injured from attempting home repair electrical jobs and alterations.

You should not do any repair work on electrical items unless you are qualified. However, you can check the operation of your electrical fixtures, outlets and switches.

From the macro point of view jot down any electrical items that you are aware of like fixtures, outlets and switches that are giving you trouble.

Let's stay on course and check out all electrical issues starting at the front door.

Does your doorbell work?

Do all of the exterior lights work?

An issue that always drove me nuts was trying to figure out what switch was for what light. There is nothing more frustrating for the home inspector than trying to figure out what the various switches in a building do. If the bulbs are burned out, it is nearly impossible.

Home inspectors do not have the time to install a light bulb to make sure a light fixture is working. Bulbs that are burned out will create an automatic note in the inspection report. In the Remedies and Solutions section of this chapter you will find this recommendation: **REPLACE ANY AND ALL BURNED OUT LIGHT BULBS.** I am stating it here in advance to make sure you get the message.



If you really, REALLY, want to impress the home inspector, you can temporarily label any switches whose operation is not obvious. Such as switches for interior plugs, exterior lighting and accessories like pumps, ponds, attic fans and so forth.

Anything you do to help the inspector get the job done easily and quickly will influence the final report. Make them smile and make them wonder, “Does a home inspector live here?”

How difficult is it to install a few bulbs? I guarantee you will eliminate a report note for every bulb you replace.

This is one area where the homeowner has more control than they realize. It alludes to comments I’ve previously made about how easy it is for a homeowner to lower the negative impact of the home inspection report.

When a report says: “*Note: The fixture did not illuminate. The bulb may be burned out,*” the buyer will wonder, “*Is it the bulb or is it the wiring?*”

The home inspector doesn’t know so he disclaims the switch, the wiring and the fixture. Now the report has created a question in the buyer’s mind.

You, the homeowner, can very easily lower the chance of your buyer running for the hills in terror by doing the easy, simple stuff.

If you have purchased the **Premier Package** you will find an outlet tester included in the tool kit. Take the outlet tester and check every outlet in the house. Don’t forget the switched outlet under the kitchen sink for the dishwasher and disposal.



Outlet tester

HAZARD: If there is a water leak or spills under the sink, have them repaired or cleaned before testing the outlet.

As you test each outlet, the tester will indicate if an outlet is dead, has reverse polarity, has ground and neutral reversed, etc. Read the instructions so you know how to use the tester and take readings. The

Photo Gallery will show the various readings and what you should see.

While plugged in the outlet wiggle the tester a little to see if the indicator lights blink on and off. This may indicate loose wiring or a worn receptacle.

An outlet may not be dead if turning on a switch activates it.

The tester will check to see if the G.F.C.I. (**ground fault circuit interrupter**) outlets are functioning properly. Pressing the test and reset buttons on the face of the outlet can also test G.F.C.I. outlets.

G.F.C.I. protected outlets rule of thumb

The following (unofficial) chart is an approximation of the proper locations of G.F.C.I. receptacles or G.F.C.I. breakers that serve these locations. This is a complex issue with several variations. The chart is a good basis to determine where the device is required based on the year construction permits were pulled.

It is recommended that G.F.C.I. protected outlets be installed in all of these locations regardless of the year built. Some home inspectors will make such a recommendation in their reports.

1971	Receptacles within 15 feet of interior pool walls; all equipment with storable pools; pool lights (where a G.F.C.I. receptacle or breaker was one method of protection.)
1973	Outdoor receptacles
1975	Bathrooms; pool lights; fountain equipment
1978	Garages; spas; hydro massage tubs (whirlpool tubs)
1987	Kitchen countertop receptacles within 6 feet of the sink; unfinished basements
1990	Crawl spaces
1993	Wet bar countertop receptacles within 6 feet of a sink
1996	Unfinished accessory buildings accessible from grade; all receptacles serving kitchen countertops.

A whirlpool/spa tub in a bathroom must be plugged into a G.F.C.I. outlet and access to the outlet must be provided.

Once you have checked the outlets, check all the switches in the house

and see if they work properly. Check the operation of any rheostats.

Check all ceiling fans including any built-in fans in the bathrooms and laundry room. Make note of any ceiling fan that wobbles and built-in fans that are noisy or do not operate.

Check all electric heaters including ceiling heaters and baseboard heaters for proper operation.

Check for loose, cracked or missing cover plates on the switches and outlets. Missing light fixture lenses will be noted in the home inspection report.

Note any junction boxes that do not fit properly in the wall.

Another very common problem that is always written up is exposed wiring. When a report note says: “**Note: Exposed wiring was noted at...**” it is an automatic concern for your buyer.

Household wiring used inside the walls is not armored. That means the outer covering was not designed to withstand an impact that could cut into the outer covering and expose the wire and electricity.

Any wiring that is visible in any area that is habitable, including garages and basements, is supposed to be installed inside a wall or within a conduit or raceway that IS designed to withstand an impact.

Garages are notorious for exposed wiring. The cabinet over the stove exhaust fan hood is an area where exposed wiring shows up over and over again.

Another common error is the use of extension cords as permanent wiring. This is often found in garages and workshops where people wanted more light and more plugs.

These cords, commonly referred to as “zip cords”, are not proper and should be removed before the home inspector arrives. This also includes the heavy orange and yellow cords.

Homemade extension cords of “Romex” house wiring material are not proper and should be removed.

You will need to record any wire splices that are not contained within a fixed junction box.

Be sure to record any deficiencies and the locations of the lighting, outlets and switches on your worksheets.

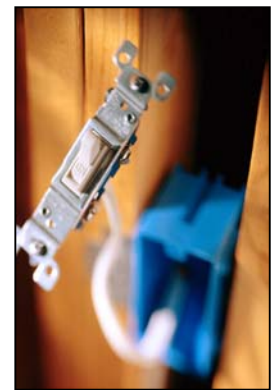
Being able to tell the electrical contractor where the problems are will save you time and money. That way he won't have to charge you for the time it takes to look for them.

ELECTRICAL FINDINGS: REMEDIES AND SOLUTIONS

REPLACE ANY AND ALL BURNED OUT LIGHT BULBS

There. I said it again. Replace missing light fixture lens covers as well.

Lights that don't work may only need a new bulb. If that doesn't work it may be a wiring problem. This should be noted for your electrical contractor to evaluate and repair. An electrical contractor should also check out any outlet or switch that does not seem to be operating properly.



Junction box cover plates are inexpensive and you should be able to replace them yourself. However, be careful. When you remove a switch or outlet plate you expose HOT wires.

Remove all extension cords and zip cords being used for permanent wiring. Remove all homemade extension cords made from house wiring material. These are not proper for use and will get you more negative notes in your home inspection report.

Most people are afraid of electricity. Electrical issues will raise flags and could crush your deal.

PHOTO GALLERY

This photo gallery will be very large to emphasize the necessity of having a good list of items prepared for your electrical contractor to evaluate. This is one area where you might have to spend some money.

The first few images show various readings that the electrical tester provided in the **Premier Package** will indicate. The normal state is what you want to see. Any variations should be noted and marked for easy identification when the electrical contractor arrives.



The two orange lights indicate a normal grounded outlet. This outlet happens to be a G.F.C.I. outlet. (FYI: Pressing the black button on the top of the tester should trip the outlet open. Pressing the red button on the outlet itself should also trip the device and cut off the power.)



This single lamp indicates an Open Neutral condition.

All electrical issues should be referred to a licensed electrical contractor for repair.



This indicates a Hot/Neutral reversed condition.



This indicates a Hot/Ground reversed condition.



This indicates an Open Ground condition.



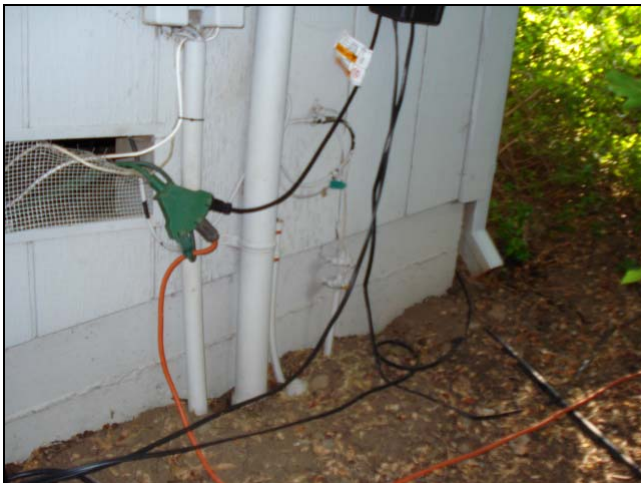
No one ever told me what it means when there appears to be current at all three legs of an outlet, but it can't be good.



Missing cover on an exterior weather proof cover.



Missing cover plate on a junction box.



Extension cord managerie. These ran a series of fountains. Nice yard, spooky electrical service. The crawl space vent has been compromised too.



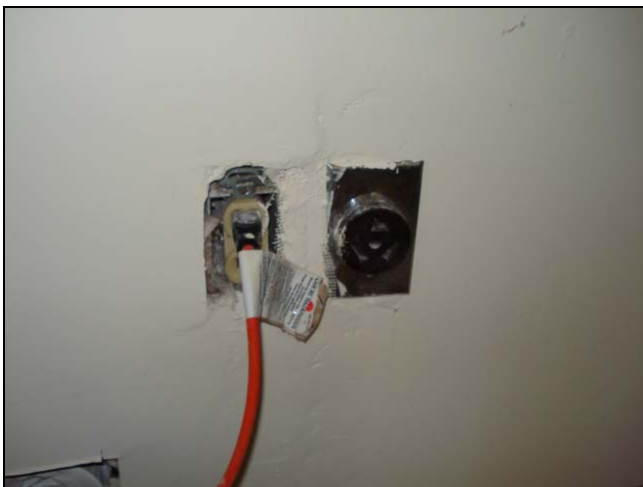
Here is a look from the other side of the vent.



The all too common exposed wiring.



Exposed wiring.



Missing cover plate in a laundry room.



Very dangerous outlet.



Cracked cover plate.



An open splice should be enclosed in a junction box.



This is not good. The outlet itself is damaged.



Extension cords being used for permanent wiring.



Electrical wiring being used as an extension cord.



Electrical wiring being used as an extension cord. Probably shouldn't run through a door jamb either.



This extension cord was run through a wall and was plugged into the light fixture.



Missing cover plate.



Interesting wiring configuration in this closet.



These splices didn't quite reach the box.



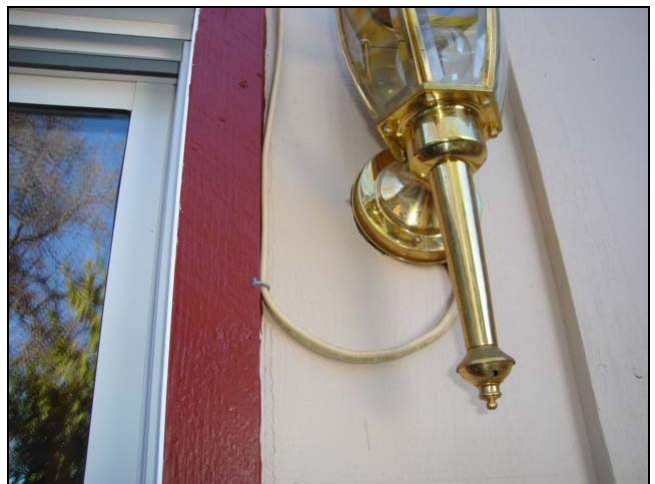
Open splice over a garage door.



Rather obvious.



This splice was for a light fixture in a closet. The loose copper wire is the ground wire. I wonder why the ground wasn't hooked up?



Exposed wiring should be in conduit or behind the wall.



A tap into the back of an outlet to power something in the wall. Not good.



Here is a nice, clean open splice. Splices should be inside junction boxes.



Exposed wiring in the cabinet over the stove exhaust fan.



Exposed wiring at an exterior switch.



Almost correct.



Another open splice.



Exposed wiring in the cabinet over the stove exhaust fan.



Let's see. Zip cords for permanent wiring, wiring being used as an extension cord, no ground for whatever this thing goes too. Fun.



Un-terminated wiring was HOT! The tool shown at the right is provided in the **Premier Package** and is used to determine if the wires are hot without touching them.



Non-contact voltage sensor included in the **Premier Package** tool kit.



Loose conduit clamp at an exterior light switch.



The sheetrock guy missed on this one.



Exposed wiring under a stove hood fan.



Exposed wiring under a sink.



Exposed wiring in the cabinet over the stove exhaust fan. By the way, the vinyl duct tape is not the proper material for sealing a heated metal pipe.



I know it's hard to tell, but there was a missing cover plate on this outlet junction box. I guess the air freshener was there to mask the smell of melting wires. Extension cords in use for permanent wiring too.



Exposed wiring under an electric cooktop cabinet.



This box will probably never get secured. Hic



Loose clamp at the base of the garbage disposal.
More about this in a coming chapter.



I guess the light fixture just wasn't high enough...



...and this one wasn't low enough.



Exposed wiring at an exterior light fixture.



Exposed wiring in a closet of the kids room.



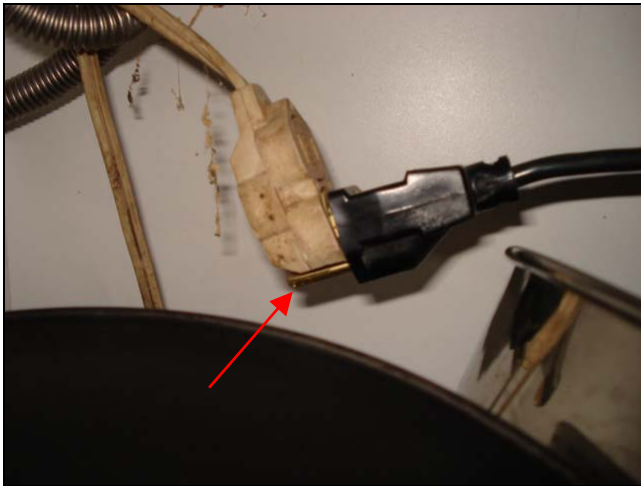
Open splice thingy in a closet.



The conduit will eventually fill up with water. A junction box needs to be installed here.



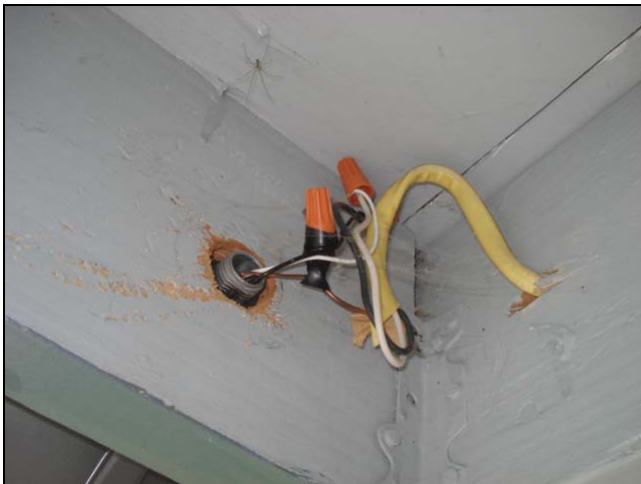
Open junction box, non utilized ground wire and exposed wiring at the beam of this cabin's loft.



Not recommended. The ground for an appliance is there for a reason. This was for the dishwasher.



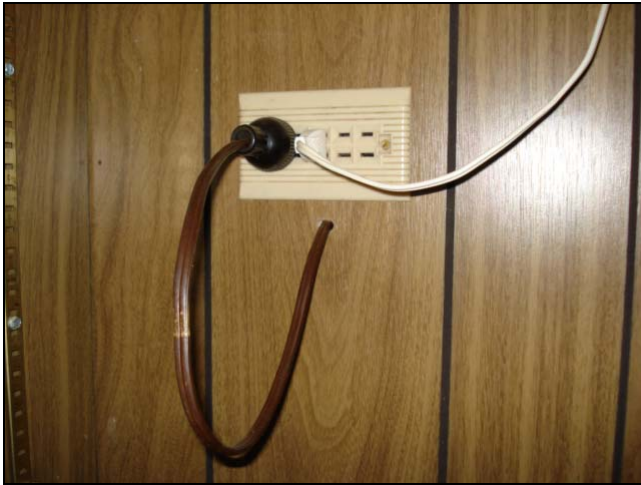
Let's see. Hot wires, open conduit, metal pipe. Not good.



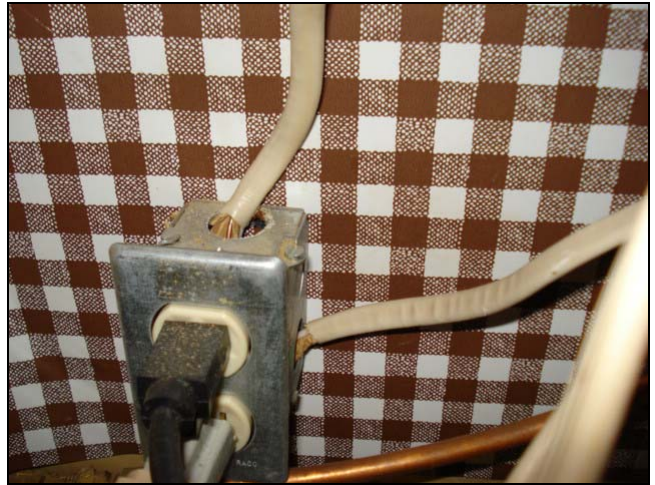
Are you beginning to understand? These are just a few of the thousands of images on electrical issues seen from over the past couple of years.



Are you kidding? Trim board installed over an outlet. How could this happen?



Another extension cord through the wall.



This box was under a sink. Exposed wiring and improperly secured wiring into the box.



I guess we have to make exceptions for log cabins.



Looks scary but all that was needed were the covers.



That light just won't fit there anymore.



Oh for cryin out loud! Not even any wire nuts on this hot splice over the metal stove fan hood?



Classic extension cords for permanent wiring case.



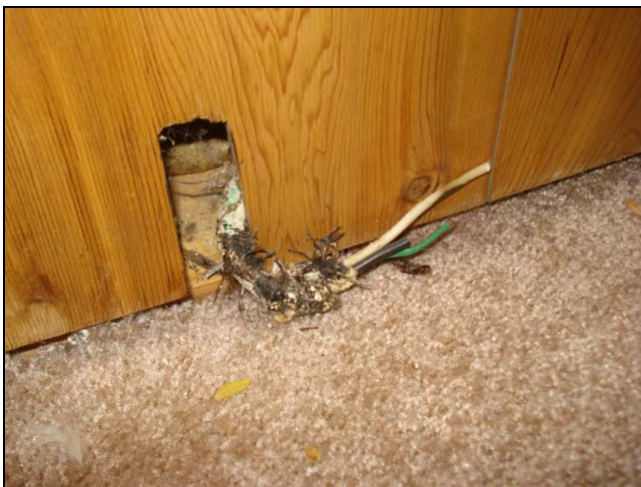
Your guess is as good as mine.



Loose light fixture.



Loose junction box.



Probably hungry mice did this.



Knarley open splice dude...



This electric bathroom heater worked but the blower fan didn't.



DIY central vacuum system. Hey, it worked.



Note: The bathroom ceiling fan was not operable at the time of this inspection.



The exterior door was notched to provide a clear path for this exposed wiring to exit the building.



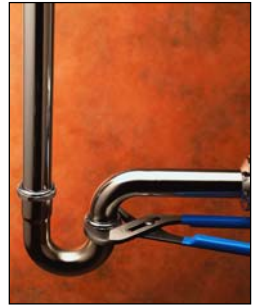
Homemade splice job for a 220-volt cord.

There will be several more photos of electrical issues when we discuss garages, attics and crawl spaces. Please stay tuned...

Chapter 8- Inspecting Kitchen/Bath Plumbing & Fixtures

We will continue our inspection with kitchen and bath plumbing and fixtures.

Modifications and do-it-yourself repairs to plumbing components are very common. Although it may not seem as potentially dangerous as playing around with electrical fixtures, plumbing installations and repairs improperly done can lead to devastating problems due to water intrusion, flooding and bacterial exposure from leaking sewer pipes.



Directing the flow of contaminated wastewater away from the building for proper treatment is important to you and the health of your family. It is my understanding that water borne disease from sewer leaks has made many home inspectors sick and even resulted in death. Proceed with care.

There are several plumbing locations throughout your home. In this chapter we will address the kitchen and bathroom areas.

When checking plumbing pipes and water valves I would run my hand along the pipes and valves feeling for moisture. Feeling for moisture was necessary because it wasn't visible from the location where I was standing or kneeling. I would also gently tug on the pipes, particularly at the junction fittings and connections to determine if they were tight. Many times there was a loose tailpipe fitting or collar nut that was just waiting for a chance to leak.

KITCHEN

The dishwasher and refrigerator are covered in a later chapter but you may want to start your dishwasher in order to inspect its water supply and drain for leaks. If you choose to start the dishwasher, please read the information about the dishwasher door and securing brackets on page 119 before proceeding.

Inspect the plumbing valves of the faucets at the sink(s). You will recognize them as the HOT and COLD knobs. The hot water valve should be on the left. If not, the plumbing supply lines are reversed.

Sometimes there is only one lever to turn on the water. Moving the lever

to the left should provide hot water and right for cold water. If hot water is not produced from the left, the plumbing supply lines are reversed and should be corrected. People naturally expect this left/right orientation so a scalding hazard exists if the valves are improperly plumbed.

Record water leaking from around the water control valve handles or out of the spout swivel base. Leaking faucets should be repaired or replaced. Grasping a swivel spout and gently lifting up and down should not result in a leak at the fixture. The videos demonstrate this procedure.

When you first open the sink base cabinet doors, you may react as we do: "Where did all this stuff come from?" The space under the sink is a convenient place to hide things you do not want on the counter.

This brings us back to an old issue.

If the areas under the kitchen sink, bathroom sink, in the closet, the laundry room or in any other space are so cluttered that they cannot be inspected, the home inspector will report: ***"Note: Unable to inspect due to storage or personal property."***

Do you remember the home inspector's creed we discussed in the "Preferred Members Area" of the Website?

"Detect it, describe it, defer it."

In this case, the home inspector has deferred to you, the homeowner.

The result is that **Dreaded Buyer's Doubt**. In some cases the prospective buyer may want to have those areas reinspected and ask for an addendum to the original report.

It may be your responsibility to pay for this additional inspection. A reinspection could also mean additional repairs because bumped plumbing joints and valves have a tendency to loosen, deteriorate, crack or break. This could lead to dripping and eventually a bad leak.

Since these small leaks may be hidden, they can do a lot of damage before they are noticed.

Once you have cleared out the stuff from under the sink, you will be able

to view the supply lines and valves, the waste lines and “P” or “J” traps.

As I have stated before, as you continue to work with this information, you will know what a home inspector contends with to complete an inspection. Remember, the goal is to get them to think: “Does a home inspector live here?”

Under the sink waste pipe plumbing materials will include metal, plastic, copper and ABS (**Acrylonitrile Butadiene Styrene, or the recognizable black waste pipe**), and should be properly configured with a “P” or “J” trap. The photo gallery will show the different configurations.

The “P” or “J” traps have two functions. First, the water that remains in the saddle of the pipe provides a seal that prevents sewer gasses and odors from venting into the living space. Second, the trap will catch items that might accidentally drop down the drain.

“S” traps are not considered appropriate because the trap could siphon if there is enough velocity in the water passing through the drain.

After running the water for a few moments, inspect for leaks in the drainpipe and the connection between the sink and the pipe. Grasp the drainpipes below the sink and make sure they are secure. Check for loose or cracked collar nuts. I always tightened the plastic ones by hand when I found them loose.

The corrugated plastic pipe available from the local hardware store is not recommended waste pipe material. The waste drainpipe should have a smooth, continuous inner surface so that debris cannot collect in the grooves and accelerate the chance for blockage. This also prevents bacterial breeding. Corrugated pipe was designed for emergency repairs, not permanent installation.



Corrugated pipe

If a particular sink drains slowly compared to the others in the house, the home inspector will make a note in the report.

Check for leaks in the waste lines from the garbage disposal and the connection between the disposal and sink.

FYI: The garbage disposal may also be referred to as a “Food Grinder.”

WARNING: The disposal is an electric appliance and loose, open or improper wiring could be a **HAZARD**. This is especially true if the floor of the sink base cabinet is wet from a leak or spilled liquids. The outlet in this area for the disposal, dishwasher and possibly other electrical appliances should have been checked in the previous chapter.

If you started the dishwasher at the beginning of your kitchen plumbing inspection, it should be well into its cycle by now. Inspect the water supply line, control valve, drain pipe and air gap for leaks. **(AIR GAP - The purpose of an air gap is to prevent contaminated wastewater from siphoning from the disposal or drainpipe back into the dishwasher).**

An air gap is a small fixture that attaches to the top of the sink or countertop that breaks the flow of wastewater as it moves from the dishwasher to the drainage system. Two lengths of drainpipe extend from the bottom of the air gap fixture. One is the hose from the dishwasher. The second connects to the garbage disposal or waste drainpipe.

Depending on local codes, installing an air gap fixture may not be necessary. Another method allows the drainage hose to be installed and secured with a large loop between the point where it discharges from the dishwasher and enters the drain. Think of a bell-shaped curve.

When the dishwasher stops pumping the water out, water in the drain hose before the air gap or loop will drain back towards the appliance. Water that has been pumped past the air gap or loop will flow towards the drainpipe. This “breaking” action of the flow of water prevents a condition called “Cross Contamination.” Cross contamination of fresh and wastewater supplies are considered a hazard and are reported in the home inspection report.

It is not normal when water from your dishwasher drains out of the air gap device installed on the countertop or sink. Some people think this is how it is supposed to work. Not so. This condition may be occurring if a knockout plug on the disposal is still present or the drain line is plugged.

The water “angle stop” valves under the sink need to be checked for slight leaks around the handles. I do not recommend that you turn the handles if they haven’t been operated for a long time. You may create a

Air gap device



leak. Experienced home inspectors do not turn these valves. A leak could cause damage to the cabinet floor and wall.

Bad leaks can cause severe damage and could result in organic growth in the wall behind the sink, the wall plate and the floor.

If you have additional appliances such as an instant hot water dispenser or water filter system, check their operation and check for leaks.

Check to see that the kitchen sink is secured to the base cabinet.

BATHROOMS

The same approach used in the kitchen will now be applied for the bathroom sinks, faucets and drains.

During my inspections I would close the drainstopper and fill the basin halfway to three quarters full of water. By the way, do not walk away from the sink if you do this!

Opening the drainstopper puts a load on the drainpipe connections which helps identify small leaks at the trap and waste drainpipe. A leak will occur if the small nut that secures the drainstopper actuator rod in the sink tailpipe is loose.

Next, take hold of the sink and countertop and insure it is secured to the base cabinet. Check wall mounted or porcelain pedestal sinks to see if they are securely mounted to the wall and the components are properly fastened to each other.

The next item to check will be the toilet.

The toilet has a cold water supply line that is attached to the bottom of the toilet tank and to an angle stop valve at the lower part of the wall behind the toilet. Check both connections for leaks.

Inspect the tank, lid and bowl for cracks. Does the toilet run on after flushing? Does it have backing up problems? We checked to see if the toilet was securely mounted in the chapter on flooring.

Condensation under the toilet tank will create an ideal environment for

the growth of mildew. Inspect the bottom of the toilet tank for mildew.

I mentioned that I live and work in a resort community where there are a lot of mountain cabins. Many times these buildings were vacant for months between visits by the owners. Water condensation dripping off cold pipes and porcelain toilet tanks was common. This moisture was often the reason mildew began appearing around the toilet and tank.

Next we will inspect the tub and shower.

Shower stalls and tubs can be grouted tiles, marble, onyx or cultured marble panels, granite, fiberglass, plastic, porcelain over steel, cast iron, fiberboard and so on.

Look for cracked, chipped or broken pieces which could indicate a potential leak area. Check the caulking or grout between the tub rail and shower sides for gaps, spaces or deterioration.

Check the caulking and sweep around the shower doors for possible leaks.

Bypass or enclosure type shower doors and partitions should be made of tempered glass. Look for the “bugs” you learned about in the chapter on windows.

Inspect the shower and tub water control valves for leaks, loose handles and hot and cold orientation. I have often found the hot and cold valves reversed on large fiberglass tubs where the valves are on the tub rail. The hot water valve should be on the left for the person who is **IN** the tub.

If you have a spa tub, check its jet and air injection operation. Some home inspectors will not fill a spa tub and check it if they have to reach into the water to open the drain.

Another issue that shows up over and over again is a gap between the tub spout and wall. The gap should be sealed. Check for missing drain grates in the tubs and showers.

Look for loose escutcheon plates around water pipes that penetrate through walls. The photo gallery shows examples of loose escutcheon plates.

While in the bathroom, tighten any loose towel bars.

KITCHEN/BATH PLUMBING & FIXTURES FINDINGS: REMEDIES AND SOLUTIONS

If you are not experienced with plumbing repairs or replacements, I recommend that you contact a licensed plumbing contractor or a handyman to do any needed repairs, particularly with the waste drain lines. Bacteria and other little nasties live and grow in these lines and can create serious health issues for the do-it-yourselfer.



Caulking is easy to do but may look very messy if not done correctly.

Tightening loose pipes is not difficult on plastic and ABS components. However, metal pipes usually require wrenches. Many times the ABS products are glued in place and will require saws to remove.

Water leaks at angle stop valves and supply pipes can turn into big problems if you are not careful. I do not recommend you attempt repairs unless you are experienced.

Get rid of corrugated plastic pipes. Such pipes will generate an automatic note.

Water faucets that leak are usually cheaper to replace than repair. Care must be taken to insure the hot and cold orientation is correct.

Run the spa tub with disinfectant and give it a good rinse afterwards. Many home inspectors will not fill and run a whirlpool tub, but if he does, you want to be sure the tub's internal pipes have been rinsed thoroughly.

Clean all mildew. Clear out as much of your personal belongings as you can from under the cabinets to provide easy access for the home inspector.

Home inspectors and termite inspectors will report damaged cabinet bases.

PHOTO GALLERY

Like the electrical systems, plumbing issues generated a lot of photos. I believe these photos provide an excellent way to communicate and provide the recognition necessary to help you identify trouble spots.



Leaking faucet at the swivel base. Grasping hold of the faucet, knobs of control levers and lifting or twisting them should not produce a leak.



Leaking faucet swivel base.



A leaking control lever.



A leaking cold water control valve.



Leaking shower control valve.



Leaking shower control valve.



Leaking tub control valve.



Water leak control program, version 1.0. I made a note in my report on this. So would you.



Water leak control program, version 2.0.
That's funny.



A cracked collar nut.



A cracked collar nut.



Slipped gasket on the sink connection. Rust on the steel sink bowl. Porcelain on steel sinks will eventually rust out.



A leaking sink drain.



A cracked sink tailpipe and missing collar nut.



A loose garbage disposal connection.



The leaking drain is damaging the cabinet base.



Organic growth in the cabinet base.



Rust under the angle stop valve. Water may have leaked into the wall.



A leaking water supply line.



Severe deterioration under the kitchen sink. This may have been picked up while you were inspecting the walls as well.



A leaking drain stopper control rod nut.



A leaking angle stop valve. Notice the ABS and galvanized waste line plumbing materials.



A leaking angle stop valve.



A leaking dishwasher supply line has damaged the cabinet base and stained the wall.



A twisted supply line. Probably will not be a problem but it should be corrected.



A loose escutcheon plate at an angle stop valve.



A loose escutcheon plate at the showerhead.



Severe organic growth under this sink from a water leak.



Deterioration under a kitchen countertop at the faucet connections. You have to look towards the faucet connections to see these problems.



Corrugated plastic pipe is not a proper material for this application. The drainpipe should have a smooth continuous inner surface.



More corrugated plastic pipe.



Corrugated plastic pipe and electrician's tape do not comply with modern building standards.



Automotive radiator pipes do not comply either.



Is this a "U" trap? The radiator hose should have a smooth continuous inner surface. Yeah right.



A typical "P" or "J" trap. This is what we want to see.



A chrome "S" trap.



A plastic "S" trap.

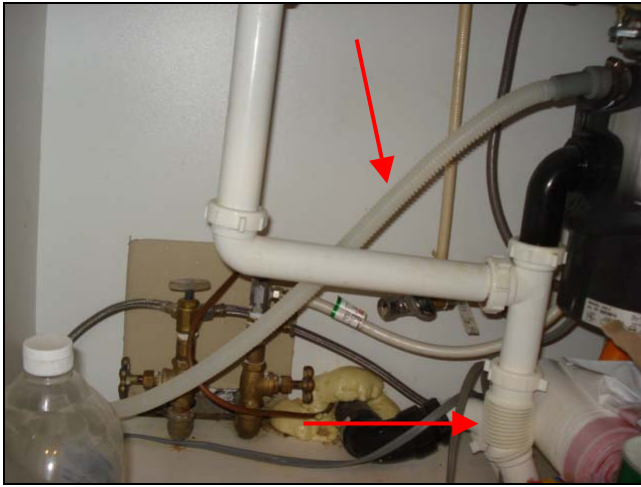


No trap was present.



Leaking dishwasher air gap.
Is it just me? Why does this thing remind me of an Imperial Storm Trooper's helmet?





The dishwasher drain pipe has no air gap nor was it high looped to create a water break. A corrugated plastic pipe was also present.



This corrugated material comes in all sizes. Do you think waste from the disposal will eventually clog this pipe? The dishwasher drain pipe did not have an airgap or high loop. Do you see a 3rd issue? Think electrical.



Water leaking out of the air gap fixture.



The bypass shower door track was loose.



Leaking tub spout, and, eh, other stuff.



Organic growth in the shower stall.



Hairline cracks in a fiberglass tub. They are surface cracks that do not penetrate or leak but are unsightly.



Gaps in the caulking at the top of the shower should be sealed. This may have been picked up while you were inspecting the walls.



Leaking tub spout.



Recommend sealing the spout at the shower wall.



Mildew from condensation under the toilet tank.



Cracked toilet tank lid.



The toilet bowl supply line was loose. The toilet kept on running.



A loose bowl supply line hose was worn and could not be reinstalled.



The gasket between the tank and bowl was leaking.



Appears to have a leaking wax seal. The toilet will have to be pulled and the sub floor needs to be checked.



Moisture dripping off the toilet connections due to condensation.



Corrosion under this instant hot water dispenser.

Ok, it's time to test your knowledge now that you are beginning to think like a home inspector. I have put up four photos. You write down the issues you see. The answers are on page 108. Zoom in with your PDF file reader for a closer look.



Photo A



Photo B



Photo C



Photo D

Photo A

Corrugated waste pipe and no “P” trap. The gray color on the wall was spray paint. If it looked like organic growth to you, that’s good thinking. As inspectors we have to look at everything, consider what it is and identify the ramifications of its presence.

Photo B

Corrugated waste pipe and no trap. Damage in the wall at the rear of the cabinet and stains in the cabinet base. If I remember correctly the white substance in the lower left hand corner was spilled detergent. However, it could be possible fungus.

As a home inspector I cannot write up personal belongings that are in the way, but as the homeowner you can do something about it before I arrive. Remember what you are trying to achieve.

Photo C

Corrugated waste pipe and an “S” trap.

Photo D

Corrugated waste pipe that appears to be leaking at the collar nut where it connects to the metal pipe; no air gap or high loop for the dishwasher drainpipe and a big hole in the wall where the waste pipe exits. The stains on the cabinet base were incidental.

How did you do? Don’t worry if you missed some stuff. It takes practice. Did I miss something? Send a comment through the Website “Contact Us” page and let me know what you think.

Chapter 9- Inspecting Kitchen/Bath Cabinetry & Countertops

We will continue our inspection with kitchen and bath cabinetry and countertops.

Cabinetry and countertops have their own idiosyncrasies and come in many shapes and sizes. They come in a variety of materials. They may or may not have pulls or knobs. We will discuss floor mounted, wall mounted and ceiling mounted cabinets and their respective countertops. The countertop surfaces include veneer, laminates, wood butcher block, cultured and molded materials, granite, grouted tile, metal, concrete and just about any other material under the sun.



We rarely find loose base cabinets. They are usually secured to the floor and adjacent walls. Give them a gentle nudge to make sure they do not move. Pay particular attention to peninsula and island base cabinets. If a base cabinet has plumbing fixtures installed and is not secured, movement could cause the plumbing lines to leak or break.

Wall mounted cabinets in the kitchen are usually suspended over the base cabinets. Gently pull the bottom of the cabinet towards you to make sure they do not give.

WARNING: Do not pull too hard or you may have an armful of hardware and dishes coming down on you. Believe me, it can happen.

Ceiling only cabinetry are those cabinets that are hung over islands and peninsulas. Their only support is the fasteners that secure them to the ceiling. These cabinets have the capacity to hold a lot of weight and their attachments to the ceiling are very important. Gently pull on the base of the cabinets to see if they are secured.

The cabinet countertops should be properly secured to the base cabinets, the adjacent walls, in good condition and sealed against water intrusion at the backsplash. Gently lift upwards on the edge of the countertop. It will not move if properly secured to the base cabinetry. Examples of this procedure are demonstrated in the videos.

If they are not properly secured, the rigid materials some countertops are made of could crack and leaks could occur around the backsplash corners. If the countertop supporting the sink is not properly secured, it could also cause plumbing leaks.

Check the drawers to make sure they slide smoothly with no restriction. Check the doors to see if they swing and are aligned properly. Make sure the hinges are not loose, broken or missing.

Do any of the appliances or light fixtures obstruct the opening of a door or drawer?

Look at the miter joints of laminated (Formica) countertops for swelling or separation. Check for cracked tiles or gaps at any joints where missing caulking allows water intrusion. Spilled water on a countertop needs to be contained so it does not leak between the walls or under the cabinet.

Look at the base of the cabinets for missing toe kick plates.

Finally, check the finish of the cabinetry for deterioration, scratches or a buildup of cooking oils.

It might be a good idea to take another look under the sinks or in the cabinets to see if you missed any leaks or stains when you were inspecting the plumbing. Home inspectors often go back over areas they previously inspected to make sure they did not miss something so obvious that it vanished from plain view the first time around.

KITCHEN/BATH CABINETS & COUNTERTOP FINDINGS: REMEDIES AND SOLUTIONS

Most loose or unsecured cabinetry can easily be secured with screws. Any good handyman should be capable of securing loose cabinets.

Hinges and knobs are easily secured. Do not tighten them so much that you strip the screws and create another problem. If they are already stripped, a slightly longer screw might work.



Replace missing knobs. You might consider replacing all of the knobs to dress up the cabinets.

If the cabinet finish is slightly discolored or scratched try repairing with “Finish Crayons” or a similar product. Take a small drawer from the cabinetry you plan to touch up to the hardware store. The professional there will be glad to help you decide the best method for the repair.

Spaces and gaps between the cabinets and the ceiling or wall can be covered by installing “Scribe” material (5/8” to 3/4” flat to 1/4 round strips) over the gap.

Replacing cracked tiles is best left to a tile craftsman. Repairing a single tile will make a huge difference in the overall appearance of the cabinet. Even laminated materials can be repaired if the material can be matched. Repairing cracked grout could be tricky. There are products available to fix minor grout cracks. It could be as simple as applying a bead of colored, sandy caulking that matches the original grout. More information on this product is available in the “Additional Resources” chapter.



PHOTO GALLERY

How much trouble can cabinets cause? You would be surprised.



Warped and stained shelving.



The underside of a cabinet (looking up view.)



Water or soap spill.



Damage from a water leak. This problem was largely obstructed from view until the pullout drawer was extended.



Cabinet pulling away from a wall. These reason for this problem can be very complicated. Call for information if this is your issue.



Mismatched crown molding.



Missing crown molding.



Mismatched laminate and swelling at a miter joint.



Warped granite countertop.



Missing tile grout.



Cracked grout at a backsplash.



Cracked grout at a side splash.



Possible organic growth in the basin grout.



The countertop was poorly matched.



Loose door.



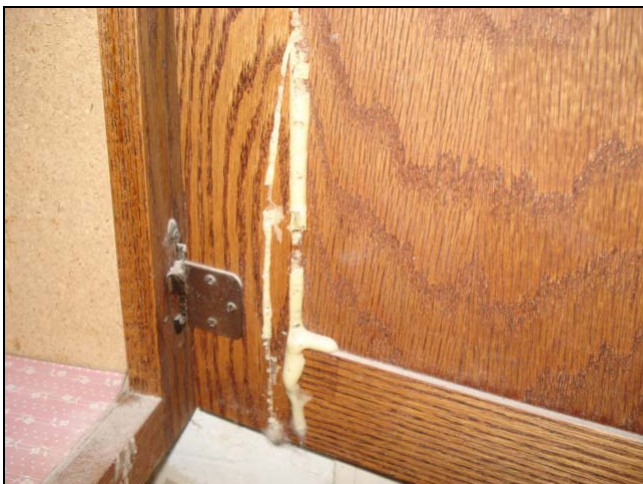
The doors did not properly close.



The doors were poorly fit.



Poor alignment.



Poor repair job to a cracked cabinet door.



This door was coming apart.



Weathered finish.



This drawer was off the track.



This track was off the guide.



The new range prevented this drawer from being opened unless the oven door was opened first.



Same problem. New appliances can impede the function of old cabinets.



These new knobs impeded each other.



The new knob is dragging on a facing drawer.



The light fixture prevented the full opening of this cabinet door.



Again.



Two doors are hitting this light fixture.

Chapter 10- Inspecting Kitchen Appliances

We will continue our inspection with kitchen appliances.

The kitchen is one of the most important rooms in a home. The importance of this room cannot be over stated from both a practical and social point of view. The kitchen is a place where we eat, socialize and traditionally connect with each other. Homebuilders recognized this important function and the workspaces in modern kitchens reflect our need for this interaction.

We begin with the cooktop and oven.

Before turning on the burners and oven we need to check for the presence of a little known device. It is an anti-tipping bracket designed to secure a slide-in stove/oven so it will not rock or tip forward if too much weight is placed on the open oven door, such as an inquisitive child or a very large Thanksgiving Turkey.

FYI: Slide-in stove/ovens are those that sit directly on the floor. Drop-ins are set in a cabinet and are usually flush with the countertop. Built-in ovens do not include a cooktop and are usually built into the wall or cabinet.

The anti-tipping bracket should be supplied as a part of the installation package from the appliance manufacturer. However, it is sometimes overlooked.

The bracket is hidden at the rear of the stove. Do not pull the stove out to see it since doing so could damage the flooring. There is test we can perform that not only verifies its presence, but also demonstrates its function.

Sometimes our visual inspection goes beyond what we can actually “see” to include what we are able to “observe” with testing, knowledge and experience.

If you do not feel totally confident with the following procedure, skip this test. Do not do anything if you feel unsure.



Typical slide-in unit.



Drop-in cooktop/oven



Built-in or wall unit



Anti-tip bracket



Common warning label

TAKE CARE WHEN TIPPING THE OVEN AND REMOVE EVERYTHING OFF THE COOKTOP BEFORE PROCEEDING.

With the help of an assistant, open the oven door and **CAREFULLY** press down on the door while pulling at the rear of the stove with a firm grip. The rear of the appliance should only raise an inch or so. Do not damage your oven door.

If the unit does not stop rocking forward within 2 inches, **STOP**. There is a chance the bracket is missing. If this is the case, a qualified appliance technician or handyman should install one.

Check the electric elements and gas burners for proper lighting and heating. If there is a clock, does it operate? Are the markings on the knobs legible? If present, do the digital display and controls operate properly?

Check the oven door gasket for cracks. Operate the broiler. Does the electric element or gas burner ignite and operate properly? Does the self-cleaning latch operate?

Place a thermometer in the middle of the center rack. Select “Bake” and set the temperature at 400 degrees. If you have purchased the **Premier Package** of our program, there is a thermostat in your tool kit.

The oven may not have reached full temperature when the pre-heat alarm sounds. This takes several minutes. You are looking for a reading on the thermometer that is within 10 degrees of the 400 degree dial or digital setting.

Inspect the range hood and exhaust fan. The fan and light over the stove may be part of an installed microwave oven. Whether you have a metal hood or microwave appliance, check the fan operation at all speeds for function and excessive noise. Check the light to make sure it is functioning. You already know my opinion about burned out lights.

If there is a build-up of oil and grease on the range hood, clean it. This is a potential fire hazard and it is sure to generate a note in the home inspection report.

In a previous chapter we discussed the problem with corrugated pipe



often found under sinks. A similar issue is flexible, corrugated metal duct tubing used over the range hood. The irregular shape of the tubing causes a rapid build-up of grease and oil inside the duct and increases the chances for a grease fire.

Vinyl duct tape is not recommended for use on a heated duct pipe. Metal tape is the proper material. Corrugated duct and vinyl tape will generate a note. The metal ducting may be difficult to replace, but installing metal duct tape is simple and inexpensive.

The same applies for retractable cooktop exhaust fans and downdraft cooktop exhaust fan ducting.

Next let's check the dishwasher. Open the dishwasher door. Look at the top of the unit near the door opening to see if the appliance has been secured to the cabinet. You should see two screws and brackets holding the dishwasher cabinet to the kitchen cabinet. If they are missing, make a note on your check sheet. This item always generates a note.

Inspect for any rust in the door and cabinet and check the door gasket for any deterioration or cracks.

Pull the trays out and spin the spray impellers to see if they are being obstructed by anything stuck in the dishwasher.

FYI: If there are dings or dents in the dishwasher cabinet door, you may be surprised to know that many manufactures provide additional door skins under the existing door facing. They are different colors, but you may be able to replace a damaged door skin at no cost.

Start the dishwasher and set it to "NORMAL." If you have some dirty dishes, you might as well wash them while it runs through its cycle.

While the dishwasher is running, you are checking for unusual motor noises and leaks. Obviously you know what your dishwasher sounds like, but you might be surprised what you hear when you are purposefully listening rather than intentionally "tuning" out the noise.

We mentioned the dishwasher air gap device in the plumbing chapter.

Again, water should not run out of this device when the dishwasher drains.

Does your microwave oven work? To test, fill a microwavable cup with cold water and heat it in the microwave for one minute at full power. **WARNING**, whenever you heat just water in a microwave, it is always a good habit to place a toothpick on top of the water so that it won't explode when you disturb it on removal. The toothpick helps absorb the energy the microwave creates.

Do the microwave controls work properly? The door of the microwave should also be checked for any cracks and to see if it latches properly and securely.

If possible, you may want to collect all of the operator's manuals and information you have been saving on the various appliances in your home. Your buyers will thank you for making these available.

Next inspect the garbage disposal. Inspect the "weir" gasket. That is the expandable rubber gasket where you dump food into the disposal. The gasket should be soft, flexible and closed enough so it is difficult to see down into the disposal.

Always use cold water when operating the disposal. Without turning on the disposal, turn on the water and check again under the sink for any possible leaks in the disposal and associated plumbing. As I mentioned before, I would run my hand along the pipes feeling for moisture. I also tugged on them gently, particularly at junction connections to see if they were loose.

Make sure the disposal is properly secured to the bottom of the sink.

Inspect the disposal casing at the front and rear. If you notice rust or deterioration around the casing, the disposal needs to be replaced.

HAZARD: If rust or water is noticed on the outside of the casing do not touch the disposal while it is operating.

Here is where you get to see how the stuff under your kitchen sink can

hinder the inspection process. This is a tight area and it is not easy to see the back of the disposal unless the area is relatively clear. Make sense? Having this area cleaned before the home inspector arrives is a wonderful idea.

We spoke briefly about the wiring connection on the disposal in the chapter on electrical. The cord for the disposal should not be made of “Romex” type wiring unless it is properly clamped and installed in conduit. If the cord is a common appliance cord the end should be clamped at the bottom of the disposal.

If you have an air switch that activates the disposal, the same rules apply to the installation and wiring of that device as well.

If everything looks ok, turn on the disposal and watch for any leaks. There can be a leak high up on the unit that is not detectable unless it is operating.

Another common appliance is a trash compactor. I always opened the compactor before operating. Some people use them as storage compartments rather than trash receptacles. Make notes if you have a compactor that does not function properly or needs attention. A way to test the compactor ram is to stick a piece of scotch tape or masking tape across the wastebasket and then run the unit. The tape will be broken if the ram actually moved.

Another popular appliance is an under counter wine cooler. They function differently than a refrigerator because they have to maintain proper temperature humidity levels to prevent damaging the delicate beverage. If your wines are turning to vinegar or the wine appears to be evaporating mysteriously through the cork, it is time for an appliance technician have a look.

The next appliance to inspect is the refrigerator. Check the door seals, the light and the general appearance of this appliance. If it has an icemaker and water dispenser be sure they are functioning properly.

Check for gas appliance valves that are not being used. Such valves should have a cap installed.

Now would be a good time to check your oven temperature.

A variation of more than 10 degrees either way should be adjusted by an appliance technician.

The dishwasher has been running for a while. Check for any leaks around the door and in front of the unit.

Over time we have a tendency to mentally adjust to the idiosyncrasies of our appliances. So if there are any little adjustments you personally make when operating your appliances, make a note to have them repaired. I guarantee if you don't and the home inspector finds it, it will be on the report and you may end up replacing an appliance that could have been repaired by an appliance technician for a lot less money.

I want to point out that this is your home, your belongings and your property until the close of escrow. An "as is" sale could suggest to your buyer that you know there are things wrong with your home that you are not willing to fix.

After the home inspection report is received the buyer may not ask you to repair or replace anything but may low ball your asking price to take care of all the noted items on the home inspection report.

Your goal is to minimize those items, save money and put more cash in your pocket at the close of escrow.

KITCHEN APPLIANCES: REMEDIES AND SOLUTIONS

Except for cleaning, replacing light bulbs and perhaps replacing an old garbage disposal, major appliances should be serviced or repaired by a qualified appliance technician.

In some cases, the cost of repairing an appliance could be close to the cost of replacement. However, it pays to have your appliances checked before deciding. If a technician suggests the appliance be replaced, ask him if he knows where you can purchase one at a discount. It never hurts to ask. It is surprising what you can learn and achieve by asking honest questions.



May I suggest another direction you can try?

There is a fantastic program that gets very little attention but provides an excellent security net for both the seller and the buyer. For very little money, you can leverage a nationwide company to help protect your equity profit, add power to your negotiating position, increase the buyer's sense of security and dramatically reduce the chance for future problems. Your Realtor may even financially participate in this program with you.

It is called a **home warranty**. This is a strategy I highly recommend for strengthening your position as a home seller. Here is some good information for you to consider on this matter.

THE VALUE OF A HOME WARRANTY

A home warranty adds to the attractiveness of a home sale, but did you know:

- 8 out of 10 buyers prefer to buy a home with a warranty.¹
- Homes with warranties return a sales price that averages 3% higher.²
- Homes on the market with a warranty included sell on average 50% faster than homes without.³

¹ Gallup Poll

² Business Week Magazine

³ National Home Warranty Association

A seller's home warranty can protect you throughout the listing period and beyond while making your property more attractive than homes listed without home warranties. Once sold – all parties in the transaction will be relieved; you will be relaxed, knowing that any appliance breakdown will no longer be a concern of yours.

The buyer will be more confident knowing he won't be shelling out for unexpected household system and appliance repair.

You won't be bothered by the threat of post-sale litigation with a home warranty protecting your household systems and appliances.

You won't get stuck having to deal with appliance repair issues and arrangements after you've sold the house. A good warranty company takes care of all that.

Providing a home seller warranty gives buyers a perception of increased security and value. In this case, perception IS reality.

Promote buyer confidence with a home seller warranty included in your sale. Your prospective buyers will breathe a sigh of relief when they see this added caveat that sweetens the home purchasing process and can be just the item to close the deal.

A recommended home warranty company is listed in the "Conclusion & Resources" chapter at the end of this book.

PHOTO GALLERY



This propane burner was jetted for natural gas.



Corrugated vent pipe.



Corrugated vent pipe.



Vinyl duct tape.



Vinyl duct tape.



Vinyl duct tape.



Vinyl duct tape.



Rust in the dishwasher door.



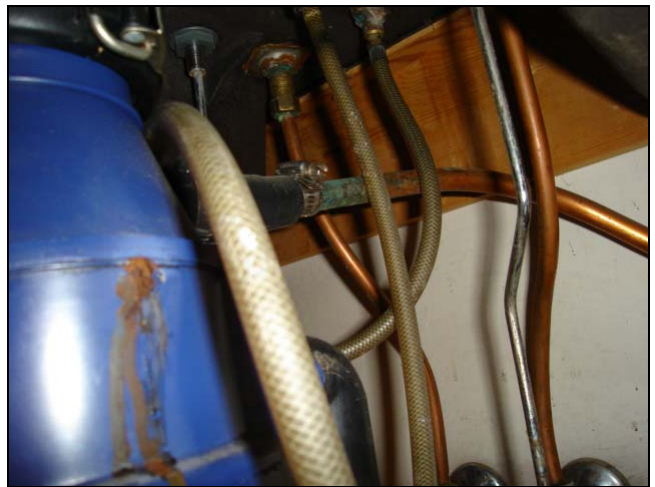
This dishwasher did not fit properly under the cabinet.



Damaged weir gasket.



Wiped out weir gasket.



Leaking garbage disposal casing.



Leaking garbage disposal casing.



Leaking disposal plumbing fitting.



Missing electrical coverplate.



Corrosion on an instant hot water dispenser.



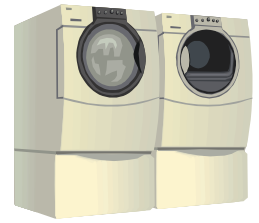
Missing gas vavle cap.



Missing gas valve cap.

Chapter 11- Inspecting Laundry Areas

We will continue our inspection with the laundry area. We have already checked most of this area: the windows and doors, the floor, ceiling and walls, the electrical outlets, switches and lighting and the sink if present.



What's left? The appliances.

First, you have to decide if the washer and dryer are included in the sale. If they are new, you may want to take them with you. If they are badly worn, you may consider other options. (See REMEDIES & SOLUTIONS).

Check the following:

Do both the washer and dryer operate properly?

Is there any damage to the washer or dryer's exterior?

Do the doors open and close properly?

Are the dials and controls on the face of the washer and dryer readable and do they function properly?

Does the washer leak?

Is there adequate flow into the washer? The washer water supply hoses usually have a wire screen and gasket inside the hose end where they hook to the water valves. The fine screens can become clogged with debris and mineral buildup over time causing low water flow.



A home inspector probably will not check the screens because he will not want to turn off the water valves. The water valves are not regularly operated and could begin to leak if disturbed. However, you might want to take a few minutes to check yourself. If you find clogged screen, replace it.

Does the dryer sound like a "thrashing machine" when operating? It may only require a simple repair.

Look behind the appliances and make sure the dryer vent pipe is

properly attached and not kinked. A clogged dryer vent pipe causes poor airflow through the dryer and will require more time for the clothes to dry. Many dryers have been unnecessarily replaced because of this issue.

FYI: Plastic wrapped flexible wire is no longer acceptable for dryer vents. They have been known to melt under intense heat and could ignite due to lint buildup.

Lint buildup and improper installation of the vent pipe are the most common problems found in the laundry area. Another common problem is when the vent pipe does not terminate at the exterior of the building. We will discuss this further in the chapter on the crawl space.

If your home is on a concrete slab and you have no crawl space, the dryer must vent to the exterior of the building.

Make sure that the dryer vent piping is clear of lint and debris and the exterior vent diffuser is clean and in good condition. There should be a hinged cover on the exterior diffuser to prevent the entry of vermin.

Laundry areas can be notorious for organic growth and moisture from overflowing drainpipes and leaking washer hoses. Double check the walls and flooring for possible stains, particularly at the hookup for the washer hoses.

LAUNDRY AREAS: REMEDIES AND SOLUTIONS

If your washer or dryer are old, beat up or damaged but operate well, you might just clean them up and make them a gift to the new owners.

If the new owners have their own washer and dryer, they may want yours removed. Consult with your Realtor before you do anything.



If the washing machine leaks it may be a clogged or loose drainpipe behind the washer or a loose or worn drain line in the machine itself.

Clogged or restricted dryer vent pipes are a fire **HAZARD** and can damage a perfectly good dryer.

If you do not feel comfortable about cleaning or repairing the vent pipe or leaking hoses, call a couple of qualified appliance repairmen for an estimate.

Inspect the laundry area in the garage as you would any separate laundry room or closet.

If the washer leaks in the garage, it usually won't damage the floor. However, if you live in an area where freezing temperatures are possible, water on the floor could become a slipping **HAZARD**.

PHOTO GALLERY

You will probably recognize a trend in these photos when it comes to laundry area issues.



Excessive lint encased 220-volt outlet receptacle.



Damaged vent pipe and excessive lint build-up.



Damaged vent pipe.



Disconnected vent pipe and lint build-up.



Loose diffuser cover.



Diffuser plugged with lint.



Diffuser plugged with lint.



Loose diffuser cover. Who (or what) might climb into this warm and cozy little nest area?



Water damaged wall in a laundry area.



Organic growth behind a washer. The washer drain hose leaked and soaked the wall. Nobody ever looks back here.



Water and lint. That's the deal with the laundry area as long as the appliances themselves work ok.

Leaking water in a garage.

Chapter 12- Inspecting Garages

We will continue our inspection with the garage.

The garage is one of the most misused areas in the home and can potentially be the most dangerous. Many times the garage is used for purposes other than those for which it was designed and built.



We have inspected garages that have been modified to accommodate laundry areas, heating and air-conditioning systems, stair steps, additional living and sleeping rooms, offices, music studios and storage centers. The primary purpose of a garage is to store vehicles.

The minimum distance between the inside of the closed garage door to the first object that stops further entry of a vehicle should be at least 18 feet. This would apply to each vehicle that will be parked in this area. Anything that restricts this minimum distance needs to be removed if you plan to advertise a garage as part of the property.

Any addition that restricts the minimum required distance would compromise the garage. Your listing agent may call it a garage but, if it isn't large enough to fit a car, you only have a large storage area with a big door.

The garage area is not considered a living space. It does not have to comply with living space code requirements but it has its own set of rules related to its particular design and use.

You have previously spent some time in this area on the windows, doors, walls, ceilings and so forth. There are differences you need to be aware of regarding some of these items.

If you haven't done so, inspect the windows. Check for broken or missing panes and damaged or missing screens. Check the general operation and function of the windows and window locks.

The garage window glass may appear to be the same type as the rest of the house when viewed from the exterior. However, in most cases, it will be single pane instead of double pane because of the lower cost.

Dual pane windows are more expensive and the need for thermal

protection is usually unnecessary for a garage. I say “*usually*” because you never know what people will do with this space.

Inspect the doors. If the garage is attached to the house the door we are primarily concerned with is the one between the living space and the garage. We have discussed this door before but it is worth going over again because this is where we find a variation between doors at the interior of the house and the garage. This door should be a fire rated door with an automatic closer that will close and latch the door when released.

This “fire” door cannot have a pet door installed. If it does, the pet door was installed after the final construction inspection and has compromised the protective fire envelope between the garage and the living space.

Any other doors in the garage should be checked just like the doors in the house, primarily for appearance and operation. Check any windows in the doors.

Fire Wall or Fire Envelope

Due to the common practice of storing flammable materials in the garage area and the great percentage of house fires that start in the garage, firewalls were designed in the construction of housing decades ago.

Firewalls in attached garages were designed to go from the bottom wall plate to the ceiling ridge of the common wall that adjoined the garage and the living area.

The most common construction material of the firewall is 5/8” type “X” drywall. The installation requires that all penetrations and holes be sealed with approved foam insulation, taping or the equivalent.

As homes grew larger and living spaces were designed over lower level garages, the ceilings were also required to have an equivalent fire protection system. Hence, they have developed the term “fire envelope”.

In the event of an emergency, the purpose of this firewall or fire

envelope is to slow down the advance of a fire and give the people inside additional time to escape. Components of the firewall are the fire door (the door to the living space), access openings and doors or drop ladders into the attic over the garage and the walls themselves.

Any penetrations or holes in the firewall can allow heat and flames to be drawn into adjacent living areas and spread fire faster.

We have found improperly installed vent pipes for water heaters and HVAC units in the garage. To comply with modern building standards for fire safety a minimum clearance must be maintained between flammable materials and the metal pipes. Heated pipes set too close to the wood framing of the building will continually dry the wood and lower its flash point. Flash point refers to the temperature at which a material will ignite. Also, there can be no openings around the pipes that might allow fire to find its way to the living space. A flashing collar is one way to seal the hole and still maintain the proper distance between a metal vent pipe and flammable building materials.



Vent pipe collar

Improperly installed ducting for a central heat/AC system is a direct violation of firewall requirements. We found HVAC systems in garages that were apparently installed after the original building permits were issued with soft heater ducting. Soft ducting cannot prevent the spread of fire into the living space. The ducting should be constructed of insulated double wall sheet metal or the soft ducting should have been installed inside protective soffets. **(A soffet for ducting is basically a box made of wood framing and drywall that encases the soft ducting tube or pipe. The idea is to seal the ducting inside an area that is protected from light, water and potential fire.)**

A firewall is compromised when any component that penetrates the firewall is not fire rated or properly sealed.

Any holes or damage in the firewall or envelope should be properly repaired and sealed.

The big doors or roll-up doors should operate smoothly. The door or doors may be made of large plywood panels or sectional wood or metal panels. Some panels may be insulated. The doors may be made of other materials but wood and metal are the most common.

Check the door for damage, dents, corrosion, deterioration or any other surface problems including weathering or stains. Record your findings.

Inspect the hardware for any obvious signs of wear, bent brackets, loose rollers, broken cables or damaged locking mechanisms. If the door does not open or close smoothly, there is probably a problem with the hardware.

The garage door opener automatic “Stop and Reverse” feature should operate when the electric eye beam is blocked or the door encounters an obstacle. The beam generators should not be higher than 6” above the floor.

The common test for checking the auto reverse feature of the opener is to place a 2x2 or 2x4 wood block on the floor in the path of the door. The opener should reverse direction and open the door when it hits the block.

Some older opener units did not have this feature so be careful. I had to buy a couple of new roll-up doors when I screwed up this test. It is certainly not our intention to generate new problems for you.

Garage doors are expensive to replace and dangerous to repair. The large springs and tension loaded cable systems for these doors are designed to counterweight the heavy door. Any damage to the counterweight system can be hazardous if a door begins to fall back on a person.

If you have a one-piece tilt-up door with the heavy side mounted springs at either end, the inspector will make a note if there isn't a safety device (cables or rods) installed inside the spring that will prevent it from flying apart if it should break.

When these springs break under tension, they can shoot up and out through the roof or through the body of a car. Let's not even think about what they could do to a person. When they let go they sound like a bomb going off.

If one spring has broken, the other spring's failure is not far behind. Add that little bit of common sense to the fact that the ***strength of a spring decreases with time and use***. Thus, using a new spring with an



Garage door spring

old spring can cause an imbalance in the door that cannot be corrected with an adjustment. I recommend replacing both springs at the same time. If you have only replaced one spring, you should disclose this to the buyer.

Check the rubber or seal at the bottom of the roll-up door for damage. This seal helps prevent water from leaking under the door.

Check to see if there are any severe cracks in the floor of the garage. Minor cracks in concrete garage floors are very common. Cracks that shear (move apart) or rise up are a concern and could indicate the presence of expansive soils or sink holes beneath the floor. If severe these cracks may radiate up the walls.

Expansive soils are those that primarily consist of clay. They expand when wet and turn hard, shrink and crack when dry. It has been reported that the second leading cause of property damage in the United States is expansive soils. The number one cause is dry rot from water intrusion. Other causes of damage include floods, tornados, fires, earthquakes, new puppy dogs, adventurous kittens and the occasional loose hamster.



Expansive soil

We also see cracks that appear at a central point and radiate like spokes in an outward direction. A stone or rock that was present in the soil when the floor was poured usually causes such cracks.

As the concrete cured, it settled over the stone. The floor moved but the stone did not. If you have such a crack but it hasn't changed over a period of time, it is probably done growing. The home inspector will make a note of its presence.

When cracks appear to be extreme or continue to move or open, the home inspector will probably defer to a Geotechnical Engineer for further evaluation.

"Geotechnical engineering" is the branch of civil engineering concerned with the engineering behavior of earth materials. Geotechnical engineering includes investigating existing subsurface conditions and materials; assessing risks posed by site conditions; designing earthworks and structure foundations; and monitoring site conditions, earthwork and foundation construction."

Source: WIKIPEDIA.com

The garage floor should slope to the front or main garage door so any water in the garage area will drain to the exterior. This also allows for ease in washing down the garage.

The electrical in the garage should be checked like the house. The chart provided in a previous chapter (page 73) will indicate if G.F.C.I. outlets are required. At a cost of about \$18 it is probably a good idea to have them installed. It's up to you.

Garages seem to be the place where the DIY (do-it-yourselfer) people set up shop. Common electrical modifications added by the DIY technician include extra electrical cords, outlets and light fixtures.

The DIY technician is very meticulous about his zip cord installations and “Romex” runs. If this is you, it may be time to take the shop down. You should have enough understanding by now to recognize where the home inspector is going to strike.

Storage in the ceiling trusses of the garage is another common practice.

Why is it that we have so much stuff and want to stash it away?

Unless you know for a fact that your garage trusses were designed to carry the weight of stored items, there should not be plywood sheets and planks present in the rafters where you can stash more stuff. If you are using your rafters for storage, now would be a good time to take everything down and put it somewhere out of the way.

Organic growth (mold and mildew) from water intrusion is often found in the garage area. Look carefully around walls and at the ceiling for possible discoloration and potential water intrusion issues.

A final issue that is common to garages is deterioration of the trim around the big door and man doors, particularly at the base of the casing where the trim boards are close to or come into contact with the ground. As I have mentioned before, the probe tool provided in the 27 Dollar Home Inspection **Premier Package** is useful in identifying potential problems with trim. The trim boards are very easy to replace and there is no good reason a home inspector should ever find them damaged.



Scratch awl

This is another one of those “over and over again” notes we want you to eliminate before the inspector arrives.

GARAGES: REMEDIES AND SOLUTIONS

If you have made any electrical modifications, I recommend you remove them, keeping **SAFETY** in mind, of course!

Remove as many personal belongings from the garage as possible or, at least, move items away from the walls so the inspectors can see them and locate the G.F.C.I. outlets. There is nothing more frustrating than tripping a G.F.C.I. and then discovering it is located behind a storage cabinet or a pile of your belongings.



If the closer spring on the door to the living space does not close and latch the door the spring-loaded hinge can be tightened. This works as long as the door itself closes normally without excessive resistance such as dragging on the threshold or binding at the striker plate.

Seal all penetrations and damaged sheetrock in the firewall. Fire retardant caulking is available at most hardware stores. Again, hiring a handyman to assist with these small tasks will save you time and money.

Minor concrete cracks can be left alone. If you have larger cracks, they can be patched and the floor can be restored. There are several Websites with products and materials that teach how to do this.

Will the cracks continue to grow is the question in your buyers' mind. Only a licensed Geotechnical Engineer can say for sure.

Regarding handymen and contractors...

Ask them questions about how they work, what their qualifications and experience are and if they know why firewall penetrations should be sealed. If they actually know why, then chances are they know how to do it and what materials are needed

When arranging for repairs, it might be necessary for you to contact a few people. You want to be sure your handyman is as smart as you are. Remember, you are thinking like a home inspector now and that is a rare skill set.

PHOTO GALLERY

I hope the photos provided in these galleries have been helpful. The companion video series available through our **Deluxe and Premier Package** are another useful source of information and visual aid.



Access to the attic space should be closed.



An opening in the fire envelope of the garage.



Access to the attic space. Such openings compromise the fire wall. Advancing fire will be drawn into this space directly over the living area.



A penetration through the firewall around a water heater vent pipe. The collar pictured in the margin above would have been appropriate here.



Gaps around these A/C lines should be sealed.



This heater ducting was not properly sealed.



The small gaps around these pipes should be sealed.



This plumbing pipe penetration compromised the fire envelope.



This cable TV installation compromised the firewall.



These vent pipes were not properly sealed where they passed through the firewall.



A bent garage door panel.



Dented roll up door panels.



These wood panels were cracked.



This roller refused to stay in the track. There may be a problem with the counterweight system.



Water intrusion where the door seal had failed.



The failed door astragal seal.



Possible organic growth around this roof leak.



Some serious growth and deterioration where this garage roof had failed.



Loose big door trim.

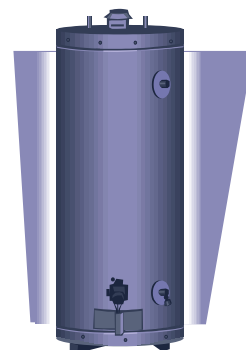


This type of deterioration is common at the base of the big door's side trim.

Chapter 13- Inspecting Water Heaters

We will continue our inspection with the water heater.

This chapter exceeds the primary purpose of this eBook. Even though there will be little you can do to rectify problems with the water heater, it is the intent of this project to inform you on what the home inspection report will reveal.



Inside the hallowed corridors of the home inspection industry, the water heater is commonly referred to as a “*Target Rich Environment.*” This means there are several things that can go wrong with a water heater installation.

An improperly installed water heater can spill toxic fumes, start a fire, damage your home by leaking water or even destroy a building.

Here is a little known fact. A 30 gallon water heater with 50 pounds of water pressure where water boils at 297.7 degrees Fahrenheit will liberate 2,021,900 foot pounds of energy when the water is exposed to atmospheric pressure. If it has been a long time since your high school science class let me put it this way. A pound of nitroglycerine will liberate 2,000,000 foot-pounds of energy. Hey, that’s a lot of boom. That’s a thousand tons. One kiloton.

We downloaded an excellent video from www.waterheaterblast.com that shows how a 12-gallon electric water heater acts under a little pressure.

You can watch the video on our site at:

www.27dollarhomeinspections.com/index.php?page=whbomb

Let’s have a long talk about water heaters...

The water heater location could be in the garage on a platform or in a hall closet. In mountain cabins or homes constructed on hillsides, the water heater might be under the building in the crawl space. We have

found them in attics, bedrooms, and laundry closets, exterior closets and even under kitchen sinks (these are usually rectangular in shape, to fit in the base cabinetry).

We have inspected homes with multiple water heaters.

Residential water heater capacity may vary from 30 gallons to 75 gallons.

We are seeing more on-demand type systems which are relatively small in comparison to the usual water heater tank. Such systems may look like an over grown metal backpack with copper plumbing attached. They do not have a water tank but heat the water as it passes through the unit. This eliminates the extra expense of maintaining a tank full of hot water when it is not needed.



A gas fired water heater located in a garage or in a room that shares the garage floor should be elevated on a sturdy platform so the burner flame is at least 18 inches above the floor.

Gasoline fumes emitted from our vehicles are heavier than air and will collect near the floor. The reason for this requirement is to prevent any flammable fumes in the garage from being ignited by the water heater.

Electric water heaters or gas fired water heaters with a sealed combustion chamber generally do not have to be elevated.

A gas fired water heater should never be installed in a bedroom, bathroom, clothes closet or a closet that opens into a bedroom or bathroom. Some jurisdictions allow electric or sealed combustion chamber type water heaters in these locations. Did you watch that video yet? Think about it...

The water heater should be rigidly secured in place with special heavy-duty 16 to 24 gauge metal straps or braces to keep it from moving in an earthquake. You can check with a local plumber to determine if strapping is required in your area. Your Realtor will also know.

A flexible gas supply line should be installed between the rigid gas pipe and water heater regulator. There should be a gas shut off valve present. The flex pipe provides for movement in the event of an

earthquake.

Flexible water supply lines are recommended as they are less likely to break in an earthquake. Some plumber's feel rigid water pipe plumbing provides greater security. I'm not a licensed plumbing contractor so I can't provide you with a specific answer on this issue.

There should be a dielectric connection between dissimilar piping metals to prevent corrosion of the plumbing fittings. Copper and galvanized pipe are not good friends. Brass fittings are the most common union between the piping and tank.

There should be a shut off valve installed in the cold-water inlet pipe.

All water heaters should be equipped with temperature and pressure relief valves (TPR) to prevent a malfunctioning water heater from overheating and exploding. The TPR valve is designed to release steam pressure in the event the temperature regulator fails. Watch the video recommended above and see what happens when a valve gets plugged on a water heater that has lost temperature control.



TPR valve

The TPR valve should be located at the top or at the side of the water heater within the top six inches of the tank. This valve should have a drainpipe that extends to the exterior of the building although some jurisdictions allow this pipe to drain on the garage floor. The drainpipe should be within 6 to 24 inches from the floor or ground.

The drainpipe is necessary to control where potentially scalding hot water goes in the event there is a discharge.

A leaking TPR valve is not common but the discharge pipe should terminate where you will easily notice drips or water. Leaking TPR valves should be replaced with a properly rated replacement.

The pipe that extends from the TPR valve should be made of hard drawn copper, CPVC, polybutylene or steel. Regular PVC pipe is not adequate. CPVC is rated for higher temperatures.

(CPVC - chlorinated polyvinyl chloride)

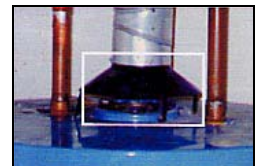
(PVC - polyvinyl chloride)

(Polybutylene - A type of plastic pipe, often gray in color, used in domestic water supply systems. Some polybutylene plumbing

systems have been recalled due to a history of leaks and failure.)

The pipe for the TPR valve should have the same diameter as the valve. The typical valve is 3/4" so the pipe should be 3/4" as well. There should not be more than four elbows in the pipe. There should not be any threads at the terminating point of the pipe. People just love to hook things up to other things that are threaded, **LIKE A CAP!** I recently saw a TPR valve discharge pipe attached to 100' water hose. You really need to watch that video!

Fumes from gas fired water heaters must be carried outdoors by a vent piping system. The bottom portion of this vent, called the draft diverter, is typically located at the top of the water heater. The diverter and vent piping can get very hot. Do not store any items on or near the water heater.



Draft diverter

Some venting systems use double wall "Type B" vents that extend through the roof. Type B vents require one inch clearance to combustible materials, single wall vent pipes need at least six inches clearance. Penetration in the firewall issues often occur around the vent pipes for the water heater where they pass through the ceiling.

Exhaust gasses from a gas fired appliance that leak into a habitable space is hazardous. Flue gas spillage can occur if the vent is obstructed, damaged or improperly installed. Installing carbon monoxide detectors near all gas fired appliances is a good safety measure.

Gas fired water heaters require a source of fresh air to provide oxygen to the flame. A water heater in a closet, or a confined space such as a laundry room, requires ducts or openings to the outside to assure an adequate air supply. Exhaust fans in laundry rooms can also cause flue gas spillage and an insufficient supply of oxygen can cause the water heater to produce carbon monoxide.

A venting system called "direct vent" serves two functions in a short, single structure. The air for combustion is drawn in from the outdoors and exhaust gases are released through a specially constructed vent pipe unit. The vent is a large flue pipe coming off the water heater that penetrates through an exterior wall and has a large defusing bonnet at the exterior of the building.



Direct vent type water heater

Moisture is a by-product of natural gas combustion. It will cause rusting at the piping near the draft diverter on top of the water heater or at the firebox opening at the bottom.

Almost all water heaters eventually fail and leak. Water flowing from a leaky water heater can cause substantial damage especially if it happens while you are away for a few days. New water heaters are usually required to have a catch pan and drain when installed in areas where leakage could cause damage.

Be sure the water in your heater is not hot enough that it could scald you, a child, or anyone unable to move quickly out of the way. The preferred temperature is 120 degrees Fahrenheit.

The location of the water heater will have to comply with different code requirements. Different types of water heaters have to comply with different installation specification. A local plumbing contractor will know these codes and specifications.

The most important thing to remember about a water heater is that the manufacturer's specifications for installation supersede building codes.

Water heater tanks are required to have seismic strapping. National building codes require two straps but some jurisdictions may not be as stringent. Water heater straps should be properly secured to the wall or some rigid structure.

Check the water heater for leaks or signs of prior leaks at all of the plumbing joints or valves.

Rust or corrosion around the top or bottom joints of the tank might indicate the tank is leaking.

If the water heater tank is under the building in the crawl space it should be installed on a concrete pad. It should NOT BE BELOW GRADE LEVEL. Gas molecules should not be trapped in a pit under the appliance. If a pit was necessary for an installation the pit must be properly vented.

Electrical water heaters should be properly wired and the wiring should

be in conduit for protection.

Slow recovery time of hot water in an electric water heater could indicate that one of the two heating elements has failed. Slow recovery in any water heater could indicate a damaged dip tube. A dip tube is installed at the cold-water inlet of the water heater. The tube extends to the bottom of the tank and prevents cold water entering the tank from mixing with the heated water that is exiting at the top of the tank.

Propane or natural gas water heaters located under the building that are not Direct-Vent should have vent piping sloping upward at one-quarter inch per foot to the outside of the building. Make sure there are no leaks in the vent pipe from corrosion. Holes caused by corrosion are a source of gas spillage and carbon monoxide poisoning.

Exterior venting should not terminate under a deck, eave of the roof or within 4' of a window or exterior doorway.

Soot at the access covers of the combustion chamber is a result of a flame rollout. Flame rollout occurs when there is a condition of negative pressure in the area of the burner and venting arrangements. This is also known as backdrafting. Flame rollout can create serious fire hazards if flammable materials are stored too close to the water heater.

Negative pressure can be created by forced air heating system pressure differentials, clothes dryers, ventilation fans, range hoods, and house stack effect. The "stack effect" occurs when the flow of naturally rising warm air creates a positive pressure area at the top of a building and a negative pressure area at the bottom of a building. The negative, or low pressure will be "back filled" with air drawn from cracks and holes in the floors, walls and any openings to the exterior, including the combustion chamber of a water heater.

Backdraft interactions are more common than we would like to think. Preventing them may be quite difficult and requires trained personnel to diagnose and resolve. When in doubt as to the safety of a particular installation, an induced draft or sealed combustion gas water heater replacement may be the wise choice. The energy savings from a higher quality, safer appliance offsets the initial expense.

Another issue is a rotten egg smell from the hot water tap. This smell is derived from hydrogen sulfide gas dissolved in the water. Concentrations as little as 1 ppm (parts per million) can produce this odor. The smell is the result of four factors all of which must be present for the odor to develop:

1. There must be a high concentration of sulfate in the raw water;
2. There must be little or no dissolved oxygen in the water;
3. There must be sulfate-reducing bacteria in the water heater (this bacteria is nontoxic to humans and originates in the water source);
4. There must be an excess of active hydrogen in the tank. This hydrogen can be created as a result of the cathodic action of some anode rods in glass-lined water heaters.

With these factors present the hydrogen and sulfur combine to form the hydrogen sulfide gas that gives off the rotten egg odor. Active use of the water heater will reduce the problem. An idle water heater (while you are on vacation) allows the accumulation of this hydrogen sulfide gas.

Smelly water can easily be eliminated or reduced by chlorination of the hot water system (both the water heater and all hot water lines) and by replacing a glass-lined water heater anode rod with one of a less active material.

Only glass-lined water heaters are equipped with anodes, therefore, chlorination of the system may be the only treatment necessary for some water heaters.

If you hear a bubbling sound when the water heater fires up it is most likely the result of mineral buildup in the bottom of the tank. This is common in older water heaters.

A.O. Smith Water Products Co., a nationally known manufacturer of water heaters, publishes a series of technical bulletins. These bulletins may be found at www.hotwater.com/bulletin/main1.htm.

A.O. Smith's Technical Bulletin 13, titled "Mineral Build-Up," offers a detailed discussion about the symptoms, cause and cure of a "rumbling" water heater.

All furnace and water heater manufactures as well as the National Fuel Gas Code (see section 8.5.7 of NFPA 54/ANS Z223.1) require that sediment traps be installed on the gas fuel supply line as close to the supply inlet as possible. The sediment trap is also known as a “drip leg.” A drip leg is installed to prevent foreign material in the gas pipe from getting into the appliance and causing problems such as gas leaks and regulator failure. The installation instructions also require that the gas change direction of flow by 90 degrees.

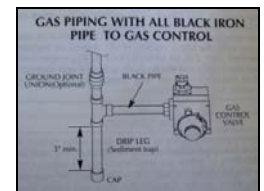
In my region of the country there is no code requiring that a drip leg be installed and guess what, there doesn't need to be because the manufacturer's installation instructions supersede code. Many times the drip leg is missing or improperly installed.

I got into a rather tense “discussion” with a homeowner one time about this issue. While going through the inspection report with the buyer, I commented that the water heater drip leg was improperly installed. The owner became a bit irate and wanted me to show him what was wrong. We went into his garage and I explained the problem. A drip leg was present but the pipes were not installed in a way that allowed the flow of gas to make the 90 degree change in direction.

He said, “You're not a building contractor, not a plumbing contractor, not an HVAC contractor and not a “real” building inspector. My son works for the company that built this house and they are a reputable nationwide corporation. What gives you the authority to say this is wrong? The county didn't even call it out.”

I was prepared to show him why. I said, “Sir, you are absolutely correct. I am not a building contractor, not a plumbing contractor, not an HVAC contractor and I am not a county building inspector either. I am sure your son is a fine person and the company he works for is well known for its excellent reputation. However, this device is still improperly installed.”

“County inspectors look for code violations. This drip leg does not fall under a code so is not checked by a county official. What we are dealing with is a manufacturer's requirement. You can see in this installation manual taped to the side of your water heater exactly what is required. Even though I am not one of the professionals you mentioned, I can read and this manual says it needs to be installed this way.”



He was very apologetic and said he was going to call his son and let him know about this mistake. He left me alone the rest of the time I was there. By the way, he was a building appraiser and a very nice man after all.

There are other devices that can heat water including hydronic boilers, coal and fuel oil boilers, wood fired boilers and probably others. I have only encountered tank and tankless water heaters and a few hydronic boilers. The hydronic hot water heater equipment I have encountered was usually integrated with radiant heating for baseboard or in-floor systems. We will touch on these in the HVAC chapter.

Except for the water tank itself, the “backpack” tankless water heaters have many of the same considerations regarding venting, air supply and plumbing as a tank type water heater.

If you have a device that is not the typical tank type water heater the information covered will provide a basis from which to observe your system. I recommend that you have a qualified tradesman inspect it if you observe anything out of the ordinary.

If you have any further questions about your water heater contact a licensed plumbing contractor or my office if you have purchased the **Premium Package** through the Website. **Premium Package** owners receive 1 hour of direct consultation time. Free. A description of our various packages is presented at the end of this book.

WATER HEATERS: REMEDIES AND SOLUTIONS

The information provided above represents a small portion of the material related to water heater installation. Provisions for exhaust venting and combustion air supply sources are extensive and beyond the scope of this report.

Water heater installations and replacements require a permit and should only be done by a competent plumbing contractor.

Things you can probably do yourself are wire brush the corrosion off the plumbing nipples, clean around the appliance and maybe even install a proper TPR pipe. Much more than that is not recommended. Have your water heater inspected if you see any conditions similar to those in the Photo Gallery.

PHOTO GALLERY



Corrosion



Rust



Corrosion and rust.



Corrosion, rust and dirt



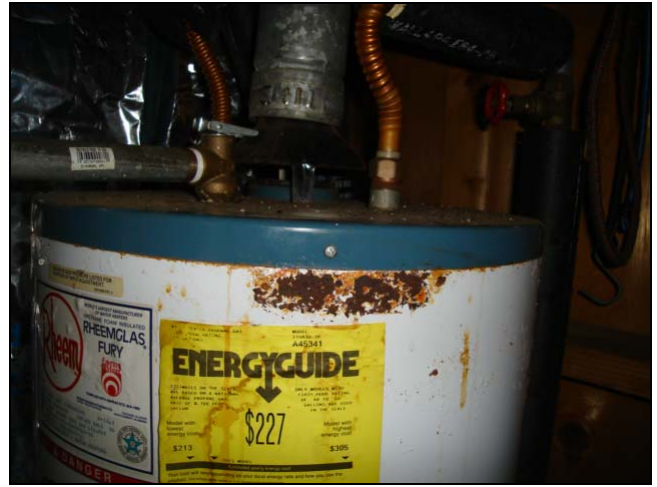
Corrosion



Corrosion



Corrosion



Rust on the tank.



Rusted tank



Rusted tank from leaking fittings.



Water leak at the fittings.



Severe water leak.



Drain valve leaking.



Drain valve leaking.



Nipple fitting leak.



TPR valve with no discharge pipe.



TPR valve with no pipe.



TPR with undersized drainpipe that should slope downwards. The discharge pipe should match the size of the TPR valve.



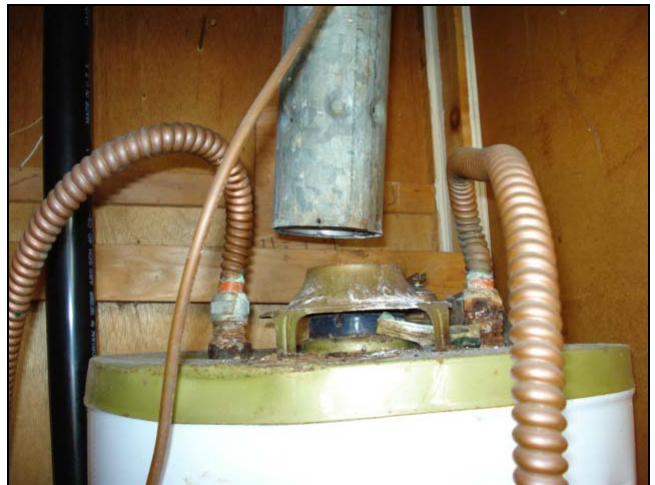
TPR with undersized drainpipe.



Leaking TPR valve with no pipe.



I guess the installer thought the arrow meant "up".



HAZARD: Disconnected draft diverter allows for flue gas spillage. Plenty of corrosion too.



Bent diverter.



Crushed diverter.



Damaged shielding revealed vent pipe in direct contact with flammable materials.



HAZARD: This water heater vent pipe has scorched the sub floor.



Flame roll out scorching.



Flame roll out scorching.



Flame roll out. It's a good thing those blankets are not flammable!



Tank buried in the dirt.



Dirt should be cleared away from the appliance.



A wiring mess.



Missing cover plates exposes 220 volts for the children to discover.



Missing cover plates.



Missing cover plates.

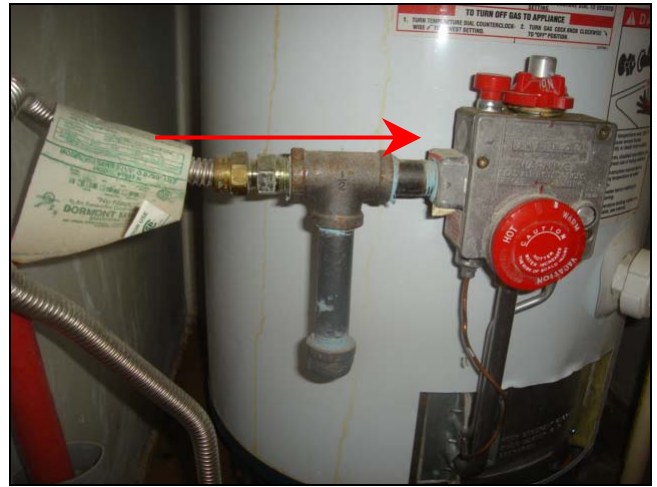


Missing cover plates.

The following photos show how the drip leg can be installed in a variety of ways. Only the fourth photo shows the drip leg installed where the gas flow changes direction.



Improper drip leg installation.



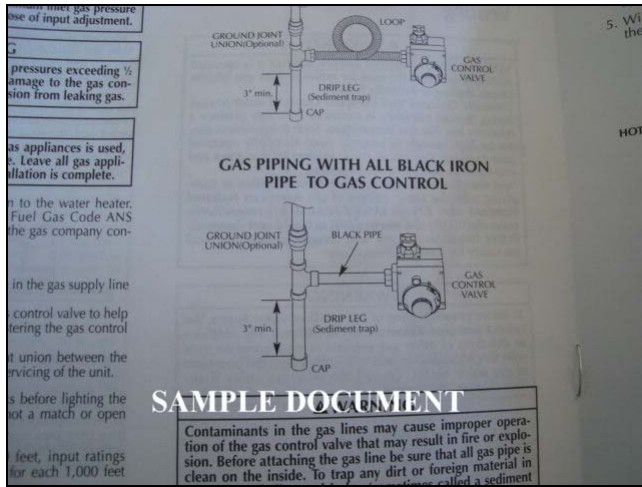
Improper drip leg installation. Gas flows straight.



Improper drip leg installation.



A proper installation. The gas changes direction.



BONUS PHOTO.

Tough place to hang a water heater.

I always included this image from a page of an installation manual when I referred to a missing or improperly installed drip leg. This picture came from the manual that belonged to that building appraiser fellow I told you about.

Here is one of my “over and over again” notes. Your goal is to eliminate this kind of note...

Note: No gas line drip leg could be identified (see photos). Further information could be obtained from the appliance manufacturer's installation manual.

In most cases, there was no drip leg installed.

Chapter 14- Inspecting HVAC Systems

We will continue our inspection with the HVAC system.

As you recall HVAC is an acronym for Heating, Ventilation and Air Conditioning. The heating and/or air conditioning system of the home is a vital component. One of the qualifications for listing a room as a bedroom is the presence of a permanent heat source.

As with the water heater, there are very few things a homeowner can personally do to service or repair a heating system. These systems are often more complicated than water heaters and there are many factors to consider.

Remember these comments from the Website?

"The furnace did not appear to provide adequate air flow to the upper floor."

and

"The furnace did not appear to provide adequate air flow to the upper floor and may be undersized for the square footage of this building."

The factors to determine what size HVAC system is adequate for a given home are calculated from a series of formulas that can contain as many as 9 pages of instructions. It is not our intention to provide that training nor is it necessary.

In the spirit of this project we will provide general information on what is checked by the home inspector. The advantage to you is that you will have time to shop for the most reasonable repairs if needed. Thus you avoid getting slammed by expensive repairs or replacements because you are faced with a rapidly approaching close. You get to choose your destiny.

Heating systems come in different types, designs, shapes and sizes. Like the water heater, the system may be located in a multitude of places including closets, attics, garages, crawl spaces, any room or hallway, on the roof or sitting next to the building on a platform. There are many different heating systems. Some homes may have multiple types of systems or multiple units.



Early Heating system

Let's talk about types and designs I am familiar with. There are wood stoves, propane stoves, natural gas stoves, kerosene stoves, electric stoves, oil stoves, radiant heating systems, radiators and heat pumps. There are freestanding, built-in, wall mounted, floor mounted, ceiling mounted, central forced air systems and package units. There are manually operated, clock operated or thermostatically operated systems. There are single systems, single systems with zone controls and multiple systems. There are geothermal systems that use the natural temperature of the earth or a pond for improving efficiency. There are solar assist units.

There are probably other types and designs I have never seen.

The conditioned air is delivered from the heating and cooling system to the living space through the ducting material. We will be discussing ducting material in the chapters covering the attic and the crawl space. We briefly touched on ducting materials in the chapter on garages during the discussion about firewall penetrations.

Isn't that great? You know what a firewall is!

By the way, we call a home inspection a "visual" inspection. Perhaps a more accurate term is an "observable inspection" where observations include utilizing all the human senses.

Let's talk about a very common system first - the gas fired forced air heater and A/C.

Central or forced air systems have several items to look for and several components to inspect. Many of these components cross over to other systems. Homeowners are expected to monitor the cold air return filter. Check your filter and clean or replace it if needed. A dirty air filter will restrict the performance of your heater and A/C and generate an automatic note on the inspection report. I see this over and over again.

Most heating systems have some type of thermostat. Check your heating system to see if all the controls work properly?

Many home inspectors use an infrared thermostat gun to check for sufficient operation of the furnace and A/C. The temperature readings

taken with this tool at the air intake is compared to the temperature at the output registers. Our video of this chapter in the **Deluxe Package** shows one of these tools in action.



**Digital Infrared
Thermostat tool**

Do you have any rooms that always seem to be too cold or too hot? With just the blower fan running, are there any registers that do not produce an adequate airflow? There may be a loose, disconnected or restricted duct pipe.

Let's look at your system provided it is not a roof mounted package unit.

SPECIAL HAZARD: Don't go on the roof. It is just too dangerous. Like I mentioned before, there are things you won't be able to do. Getting on the roof is one of them.

Components of the furnace include a housing, gas supply lines, vent piping, mounting hardware, duct piping and perhaps a drip pan.

You had a lesson on drip legs in the water heater chapter. Drip legs are usually only installed on appliances that are considered "unattended" such as the water heater and furnace. The manufacturer's installation instructions determine if a drip leg is required. All gas fired furnaces should have a "properly installed" drip leg on the gas supply line. A qualified tradesman should immediately investigate any smell of gas. The local gas provider can inspect for leaks.

Is there carbon soot anywhere around the exhaust pipe or on the furnace housing?

Is there evidence of corrosion from condensation or leaks around any of the pipes or flue?

Is there dirt or debris touching the appliance? If so clear it away. Gas fired units in the garage should be on an elevated pad. If the unit is in the crawl space, make sure it is out of the soil.

With the blower fan running, do you hear any air noises or whistling around the furnace housing or ducting? Sometimes you can see spider webs or fiberglass batting blowing in the breeze from a leaking furnace housing or loose duct pipe.

Are there any water stains around the unit indicating a possible leaking condensate line?

Is there any scorching on the wood components surrounding the unit or the flue pipe? Installation instructions always provide minimum clearances around the furnace units and the vent pipes even when they are lying horizontally.

Did the installer use vinyl duct tape that is now coming loose? Metal foil tape is the preferred adhesive product.

Does the vent pipe slope upwards at least $\frac{1}{4}$ inch per foot to the exterior of the building? It should not come into close contact with any wood components and NOT terminate under a roof eave.

On newer construction in areas where the gas supply is propane, the appliances may be delivered and pre-set to run on natural gas. The molecules of these two gasses are different and require different size orifice jets. When a propane appliance is equipped with a natural gas jet you will see a wandering orange flame instead of a crisp blue flame. The installer forgot to change the jets. You might remember the photo of the orange flame at a cooktop burner in the photo gallery for the kitchen appliances.

For some furnaces an orange flame is normal. I know. It's complicated. Don't worry about it. Just do the best you can.

A home inspector will observe the operation of the burners during the inspection by removing the service panel when possible. There are other items we look for inside the cabinet like loose wires, loose condensate lines, rust or corrosion and so forth. I advise you not to remove the service panel, particularly while the unit is running.

You may be able to see the burners in operation through the louvered vents in the cabinet but any further investigation should be done by a qualified tradesperson.

I recommend having the furnace inspected by a qualified tradesperson if your heating system is over 12 years old, even if it is operating normally.

Repeated cycling through the hot and cold transitions puts a strain on the internal heat exchanger and can cause cracking at seams, spot welds and joints. Only rely on a qualified tradesperson with the proper tools and training to inspect older units. Your life could depend on it.

Except for the fact that they do not have ducting, floor and wall gas heaters are inspected in the same way as a gas fired forced air furnace.

Older wall and floor furnaces often have a single wall vent pipe. This single wall system is not very efficient and has a tendency to collect hazardous flue gasses until heated up. Carefully inspect the flue pipe for any holes or loose seams.

Hydronic radiant heating systems consist of pipes imbedded in the floor, in the ceiling or at baseboard heaters in each room. Hot water flows through the pipes and the heat “radiates” into the room. Electric radiant heating uses wires or electric pads in the floor or ceiling to produce the same effect. Radiant systems are considered more efficient at distributing an even room temperature without the noise and dust of a forced air system. However, the time it takes to bring a cold room to a desired temperature is considerably longer.

The boilers used for hydronic heating are essentially water heaters without a tank. In fact, the radiant heat boiler usually works to heat the water supply for the home. This is a rare installation in the West where I am from, as are coal and heating oil furnaces. Inspect the hydronic boiler with the same method you inspected your water heater.

If your potential buyer is unfamiliar with the benefits of a radiant heating system, you get to be a hero and teach them all the wonderful reasons why you loved the radiant heat concept.

I have also come across kerosene and diesel heaters. They are very efficient and work well. Ventilation is the main concern for these devices. The ones I observed were the direct vent type.

The air conditioning unit you see outside the building is one half of the A/C system. That exterior unit is called the condenser. The evaporator or “A” coil is concealed at the furnace housing.

When in operation the exterior condenser should be level and not make

any unusual noises.

Leaves and debris inside and around the unit will reduce its efficiency and should be removed.

The electrical connection should be secure and in good condition. The electrical disconnect for the A/C condenser should be within sight of the unit. This is so a repair technician can warn away anyone who might turn it on while he is servicing the unit.

The home inspector will take temperature readings at the cold air intake and at each of the room registers. He is looking for a difference of 17 degrees or more between the air intake and the output registers during the A/C cycle.

Electric forced air furnaces are relatively straightforward. Either they do or do not produce adequate heat. The condition of the ducting is important and secured electrical wiring is essential.

An electric heat pump works differently than an electric furnace or gas fired furnace. It is basically two air conditioning units that switch directions depending on what air temperature is desired.

If you have ever stood near an A/C condenser when it was running you probably noticed that the air blown out by the fan is very hot. That is basically lost energy. A heat pump utilizes that heated air to warm the interior of the building by reversing the operation of the units. There is a great explanation of this appliance at:

<http://home.howstuffworks.com/question49.htm>

Geothermal heating and cooling technology uses the concept of a heat pump but, instead of a condenser unit at the exterior of the building with a fan, this system uses the consistent temperatures of the earth to extract the captured heat for cooling and the warmer than air earth temperatures for heating. The consistent temperatures of the earth provide a more even thermal variation, which requires less energy to achieve the desired temperature.

Freestanding wood burning stoves, freestanding gas stoves and gas log fireplaces.

One of the primary issues with freestanding wood burning stoves is the clearance to flammable materials. Wood stoves and fireplaces can be very dangerous and if not installed properly, can cause fire and possible death from carbon monoxide poisoning. When installed properly, they can provide an efficient and relatively inexpensive source for heat.

Each stove manufacturer has specific installation requirements and specifications that establish the proper clearances for stoves. Installation requirements are different for stoves that have been “listed” versus “unlisted.” A listed stove is one that has been examined by a recognized independent laboratory. If your stove is older than 20 years, it is a safe bet that it is either not listed or the listing has expired.

The installation requirements can vary from one manufacturer to the next. The basic consensus is that there are sufficient barriers or distances between building materials and the stove. The heat generated by the stove will dry out such materials and lower the temperature at which they could ignite. As you may recall, this is known as the flash point. The barriers might be part of the stove design or construction requirements for the area around the unit.

One measurement to check is the distance from the door opening of the stove to flammable materials (measured horizontally). This distance should be at least 18”. The reason for this distance is so embers that fall off the door land on a non-flammable material. A fire retardant pad or floor covering material should be installed to cover any location that could ignite and start a fire. Hot embers that land on nylon carpeting will melt the carpet and release toxic vapors.

Single wall flue pipes should also be at least 18” away from combustible material. This distance changes when a double or triple wall flue pipe is present. Again, it depends on the manufacturers specifications.

All stoves should have floor protection directly underneath. This is called the “hearth.” The distance the stove sits above the floor and the types of materials allowed for the flooring are varied depending on the manufacturer. Some stoves are only allowed to be installed over concrete.

If you notice a dark residue or soot on the ceiling above the stove, there

is likely a leak in the stove or flue pipe. This is a **HAZARD**.

The flue pipe should be secure and properly installed. Flue pipes are assembled from sections of metal tubing that slip into the end of the preceding pipe in continuous sections until the ceiling is reached.

Many times I notice that the single wall flue pipes are installed upside down. This happens when the lower section of pipe is slipped inside of the pipe above. Some people think this is correct so that the smoke doesn't leak out into the room. Actually, the lower pipe should be sleeved **OVER** the pipe above to contain any condensation or moisture generated inside the pipe. The graphics to the right illustrate the point. A natural condition called "drafting" will keep smoke out of the room if the wood stove is properly installed. Let me explain.

A fireplace chimney or fluepipe works when hot air rises creating a negative pressure in the flue. Moving air has a lower pressure than air that is not moving. The heated air moving quickly inside the flue pipe has lower pressure than the standing air in the room. That is why air flows from the room into the fireplace and out the chimney.

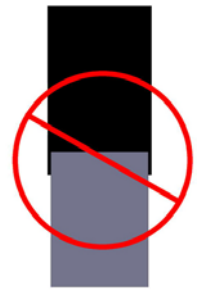
Propane gas stoves and gas log fireplaces are available in many sizes and configurations. There are way to many to cover here. Suffice it to say you will be time and energy ahead if you simply hire a qualified tradesman to inspect and clean this equipment.

HVAC SYSTEMS: REMEDIES AND SOLUTIONS

As with the water heater, the action you can personally take regarding your HVAC system will probably be based around general maintenance.

Energy conservation has become a big deal for our society. The new California Title 24 Energy Efficiency Standards and Regulations for new construction indicate how serious the government is regarding energy efficiency and conservation. That is tough on the builders but good for you. It is driving technology and service providers to also get serious.

You might look into the possibility that your local gas and electric utility company provides a free or low cost energy audit. They will come out and look at your heating and air conditioning system, weather-stripping, doors, windows and insulation and



The lower section of pipe is incorrectly installed inside the pipe above.



The lower section of pipe is sleeved OVER the piece above.



make recommendations on how to improve the energy efficiency of your home. Ask them to also do a carbon monoxide test.

If your utility company will not do it for free, ask them how much it will cost to inspect your furnace. The cost of having a qualified HVAC technician look at your furnace is inexpensive. Call around and get some bids. One of them should do the job for \$85 - \$100.

There are different levels of chimney and fireplace inspections from a simple peak up the flue to a full-blown inspection with a robotic spider equipped with a digital camera. I ALWAYS recommended a chimney inspector when I come across a wood stove, fireplace or a gas log furnace.

PHOTO GALLERY



A water leak from a condensate pipe.



A condensate leak at a flue pipe.



Water dripping out of an evaporator housing. This moisture should be routed to the exterior of the building.



A condensate leak creates rust. That vinyl duct tape just couldn't hold it back.



Corrosion and rust in the drip pan.



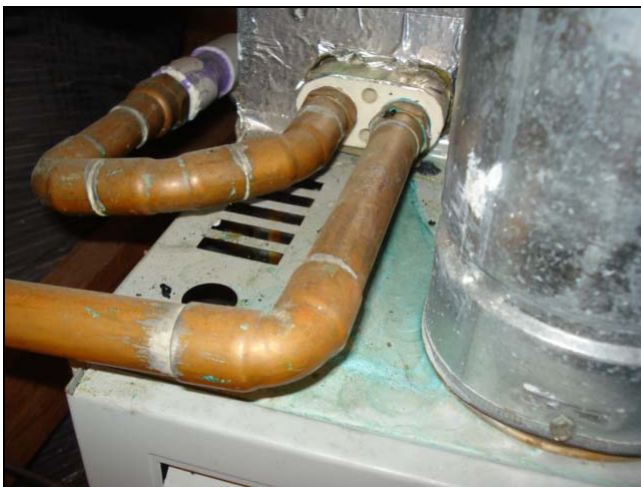
Rust on the top of a furnace housing.



Rust from a leaking housing.



Rust from a leaking housing.



Corrosion from a leaking housing.



Water stain from... I, eh, forget.



Air leaks around the A/C line grommets were common.



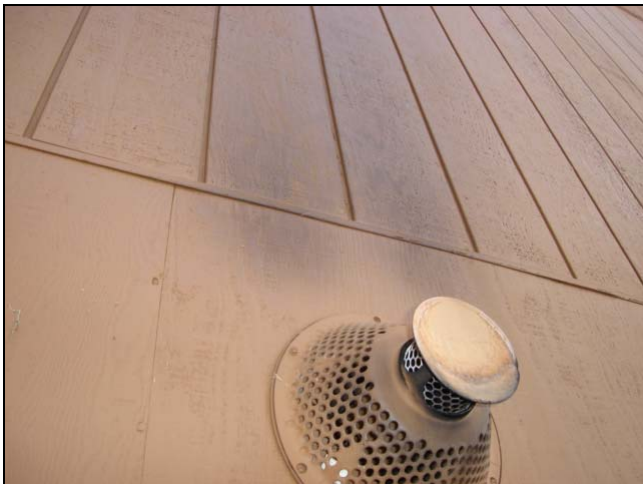
Air leaks around A/C lines again.



Loose tape created a massive air leak in this unit.



Soot at the exterior of the package unit furnace housing.



Soot at the exterior of a direct vent bonnet.



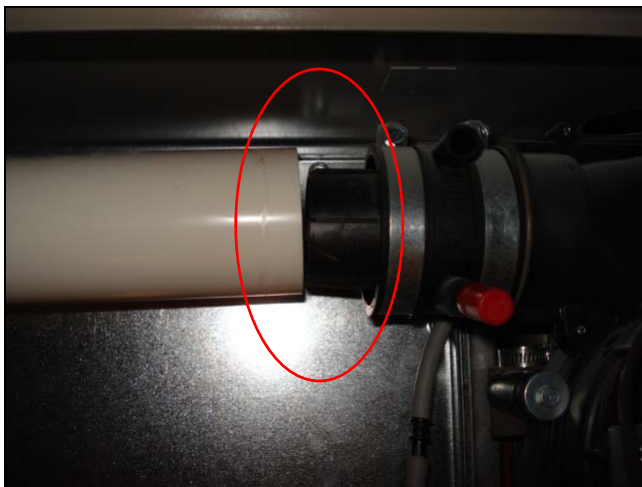
This is not a good sign on high efficiency furnace exhaust pipe. Wrong gas jet orifices perhaps?



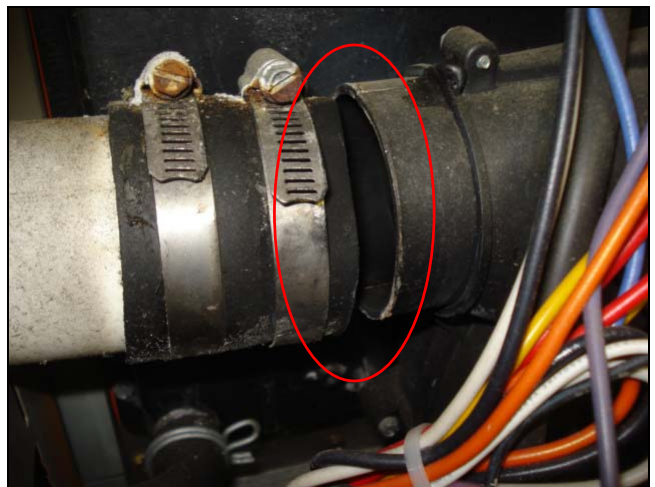
Soot at the exterior of the furnace housing.



Soot at the exterior of the furnace housing.



A loose pipe on a high efficiency furnace.



Same as at left.



A/C liquid and high pressure lines should be lifted out of the soil and properly insulated.



Loose vinyl duct tape is common. Conditioned air was leaking into the crawl space. Also, the soil should be cleared away from the housing.



Furnace sitting directly on a plywood paltform.



A rare look at an orange burner flame. This needs an air venturi adjustment or something.



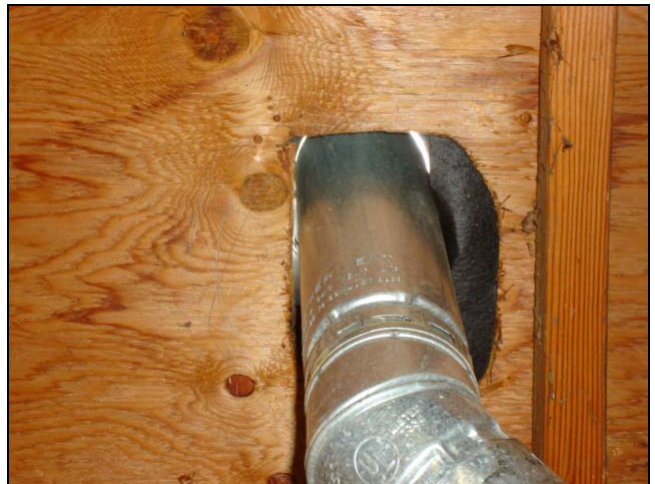
Holes in the flue pipe under a building is not good. This is a source of "Flue Gas Spillage."



Insufficient clearance to flammable materials.



Insufficient clearance to flammable materials.



Insufficient clearance to flammable materials.



Insufficient clearance to flammable materials.



Insufficient clearance to flammable materials.



It won't be long before the hot flue pipe melts the ducting.



Dirt around an A/C condenser.



Debris inside an A/C condenser.



Dirt around the furnace housing.



Leaves and debris collecting around an A/C condenser.



This high efficiency system looked good but for the lack of a gas drip leg.



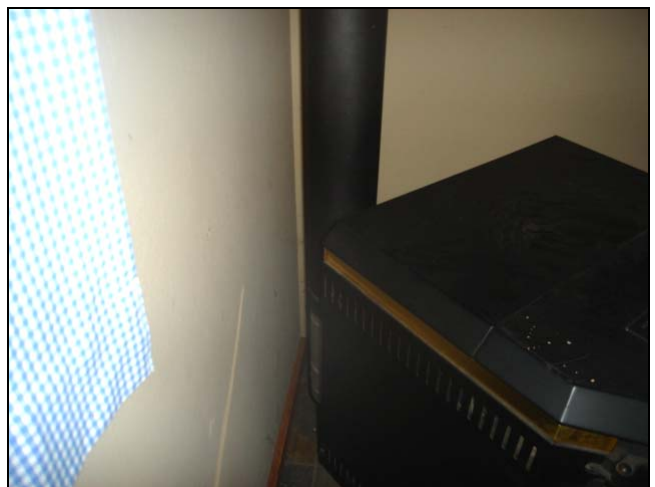
What's wrong with this picture?



Does this look familiar?



Now that looks good. Kudos to this installer.



This single wall pipe was too close to the wall.



This single wall pipe was too close to the wall.



Soot on the ceiling indicates a severe combustion leak into the living space. This is a **HAZARD**.



This damaged pipe will leak combustion gas into the living space. This is a **HAZARD**.



This soot was on a propane gas log and indicates a possible burner or log position needs adjustment.



Rather severe corrosion.



Here is what happens when the pipe is installed upside down. You can see how the upper pipe is slipped over the lower.

Chapter 15- Inspecting Service Utility Equipment & Exterior Electrical

We will continue our inspection with the service utility equipment and exterior electrical.



Have I mentioned that the most screwed up things I encountered during my inspection career were electrical issues created by residents? I truly am surprised that we do not hear more news stories about electrocuted homeowners. I think we should count our blessings.

When I introduced you to this program I said I would not direct you to do anything that might cause harm or injury. Much of what is provided in this chapter is information only. The highly dangerous nature of electricity and gas distribution dictates the need for professional inspectors.

I will not even describe some of the items and issues the home inspector will be checking. It would be innate human nature for you to try and find those items on your own. My intent is to protect you.

The electric utility company will bring power into your main service panel from an underground line or overhead pole. The overhead power lines are strung from a pole and connected to a set of cables that run out of your main service panel.

Overhead power lines have maximum height and minimum clearance requirements when crossing over streets, driveways, walkways, roofs and within the physical reaching distance of windows, decks, stairs, porches, balconies and elevated walking surfaces. The following (unofficial) chart shows the minimum clearances accepted in most jurisdictions.

Roadways	18 feet
Driveways	12 feet
Walking surfaces	10 feet (and 3 feet past the edge)
Over a Roof	8 feet (and 3 feet past the edge)
Roof with a 4:12 or greater slope	3 feet
Windows adjacent to service entrance	3 feet

Wires over swimming pools are generally not allowed. Exceptions indicate lines should be at least 18 feet over the general area.

The power company service lines should not be in contact with trees and should be securely anchored to the building or the mast pipe. These cables should not rely on the connector splices to hold them in place.

The cables from the main service panel travel up through a pipe called a mast and out of a cap called a weatherhead. The weatherhead is designed to face downward so water does not enter the pipe and flow into the service panel.



Mast, weatherhead, drip loops and anchor point.

The mast pipe should not be bent and should be securely attached to the building. The cables themselves should have what is called a drip loop. The drip loop allows water to drip off the wire rather than run down into the mast and service panel.

The service panel exterior cover should be properly secured. Breakers should be labeled and any open spaces created by missing breakers should be sealed. Such open blanks are always listed as a **HAZARD**. This was another one of those over and over again findings.

The home inspector will be removing the main service panel's interior cover, called the "Dead Cover", and inspecting the inside of the box. It is called a "Dead Cover" for a reason.

HAZARD: DO NOT REMOVE THIS COVER UNLESS YOU ARE A LICENSED ELECTRICAL CONTRACTOR.

This is one of the areas you should not venture into. The risk of injury is very high for an inexperienced person. This also applies to any sub panels and old style fuse boxes located on the property.

Obstructions in front of the main service panel should be removed. Code requires clearance of at least 3 feet around the panel to allow access for a service technician or any person who needs to turn off the power in an emergency.

Conduit connections should be secure and watertight.

Exposed electrical wiring should be installed in conduit to protect it from the weather, animal and human contact.

Electrical wiring splices should be placed in a junction box. Splicing with electrical tape is not acceptable. Frayed wires and use of extension cords as permanent wiring should be removed if you want to avoid a note on a home inspection report.

Exterior outlets should be tested using the tester we include in the **Premier Package**. The chart on page 73 indicates that exterior outlets should be G.F.C.I. protected from 1973 on.



Tester

Exterior outlets exposed to weather and moisture need to be protected with weather covers. Have a licensed electrical contractor replace these covers to avoid electrocution.



Exterior cover plate

All exterior electrical fixtures (lighting, outlets, junction boxes, etc) must be properly secured and in good condition.

REPLACE ANY BURNED OUT LIGHT BULBS.

There, I said it again!

Hire a licensed electrical contractor for any electrical modifications or repairs. This includes any and all work done to the main service panel or any sub panels.

Your gas supply will either be natural gas provided by the utility company through a meter or propane delivered by truck to an onsite or community tank.

The natural gas meter and community propane gas meter should have a valve that can be turned off with a crescent wrench or pliers in the event of an emergency.

The shut off valve for a propane system will be at the tank and there may also be additional valves at the exterior of the building.

Be sure there is no odor of gas around any observable fitting, pipe or connection.

Be sure fuel oil tanks are properly vented and the filter is replaced per the supplier's recommendations.

Backup generator systems that may be present for alternative electrical power in the event of blackouts must be installed with equipment that isolates the generator from the electrical grid when in use.

If you are running a generator and are still hooked into the grid, you are electrifying the power lines and could potentially injury a lineman who is working to restore the power to your neighborhood.



UTILITY EQUIPMENT & EXTERIOR ELECTRICAL: REMEDIES AND SOLUTIONS

Replace any broken or missing outlet, switch or junction box cover plates. They are inexpensive and easy to install. Please remember that the wires attached to the switches and receptacles inside junction boxes are potentially hot and dangerous.



The non-contact tester provided in the **Premier Package** can be used to determine if there is power at a wire.



REPLACE ANY BURNED OUT BULBS. There, I said it again.

If you smell gas contact the gas provider immediately. They will not charge you to identify the source of a leak and may even repair the problem at no charge.

Working with electricity can be hazardous and sometimes fatal. Do not attempt to work on electrical items or fixtures yourself. If you identify any electrical problems call a licensed electrical contractor.

Record your findings on the provided worksheets. Having identified and located these items before the electrical contractor arrives will expedite the time needed to correct them. In this game, time is money. You already know the advantage of having these issues resolved before the home inspector arrives.

PHOTO GALLERY



Service drop traverses a roof.



The tree branch is pulling the power line upwards.



Service drop traverses a roof.



Service drop is physically touching this roof.



The service drop is grinding into this tree.



Service drop traverses a roof.



This wire was indirect contact with the coarse shingles of this garage roof. Lookslike the roof needs attention as well.



Frayed service drop wires.



Broken weatherhead.



Loose mast pipe clamp.



Encroaching foilage



The tree prevents proper access.



The hedge prevents proper access.



No access.



The storage shed blocked the access to this box.



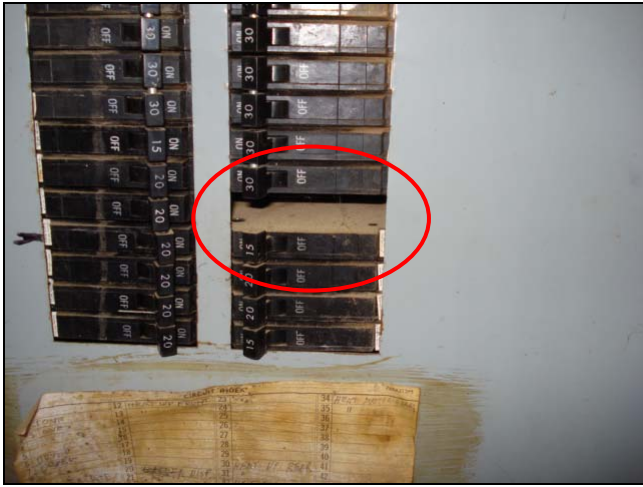
A deck board has to be lifted to open this cover. Snowfall common in this area will make this task almost impossible.



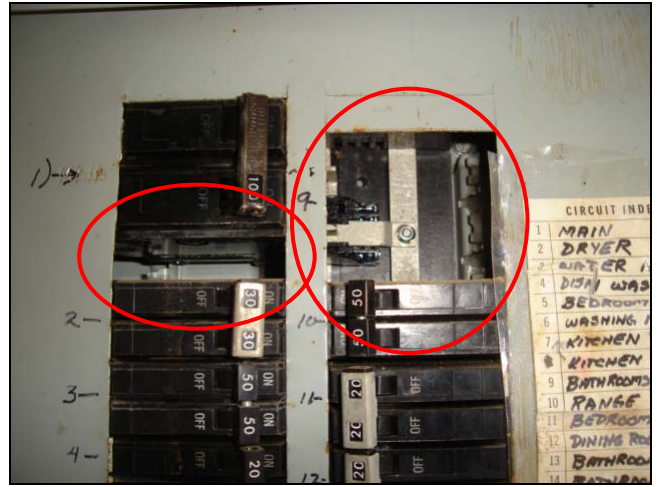
This sub panel was clearly too high. I am not sure how this got past the building inspector.



All open blanks should be plugged.



An open blank.



Lots of open blanks.



An open blank.



Lots of open blanks.



A loose utility box.



A very loose utility box.



A very loose light fixture.



Loose light fixture.



Cracked light fixture lens.



Loose can light fixture.



Loose conduit.



Loose conduit.



Loose conduit.



Loose conduit.



Loose conduit.



Loose conduit.



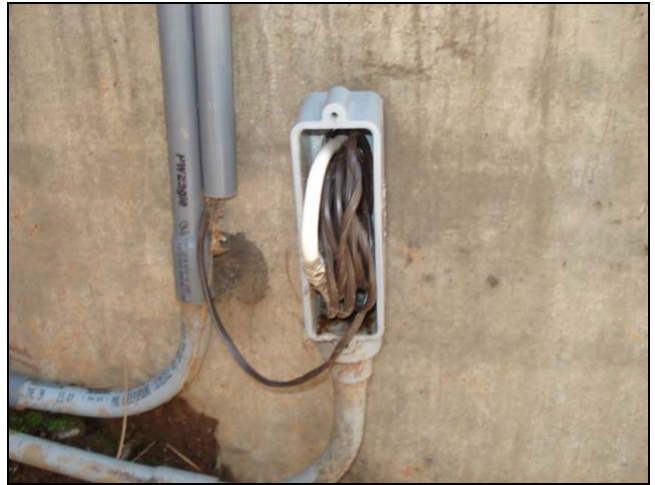
Blocked and open junction box. Not sure how to cover this one. Cut the plate in half?



Open junction box.



Open junction box.



Open junction box.



Defective weather cover.



Missing weather cover for a G.F.C.I. outlet.



Missing cover and cracked receptacle.



Cracked receptacle.



Missing weather cover plate.



Remember what this means?



Open air splice.



Open splice.



Open splice.



Permanent use of an extension cord.



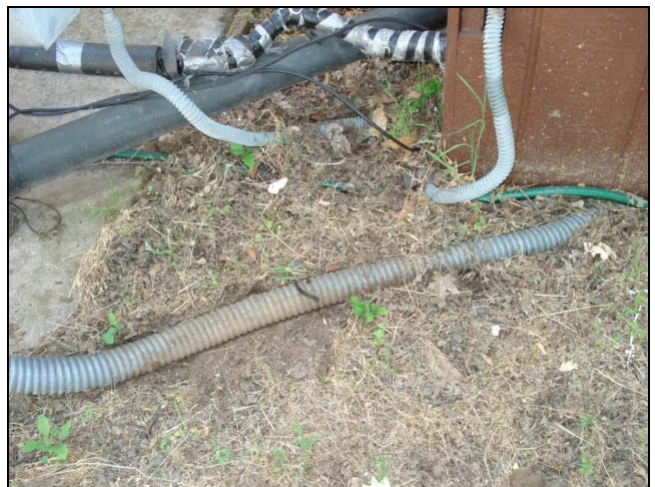
Extension cords being used for permanent wiring.



I forget what this was set up for, but it's not right.



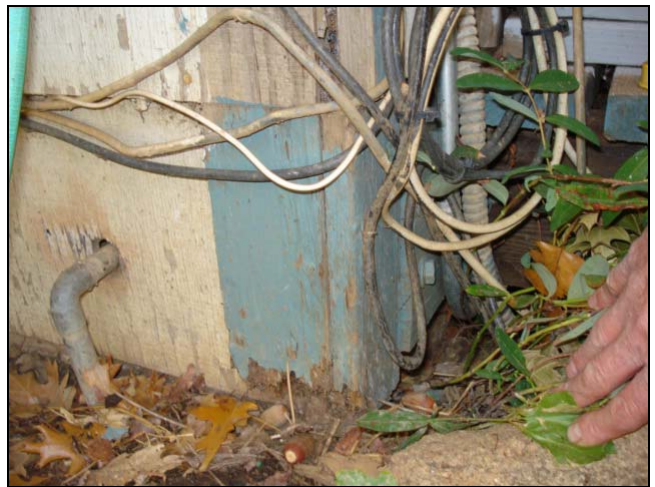
Metal conduit common around manufactured housing should be elevated above the soil.



Metal conduit in the soil will eventually deteriorate through to the wires.



A wire for something.



A bunch of wires for something.



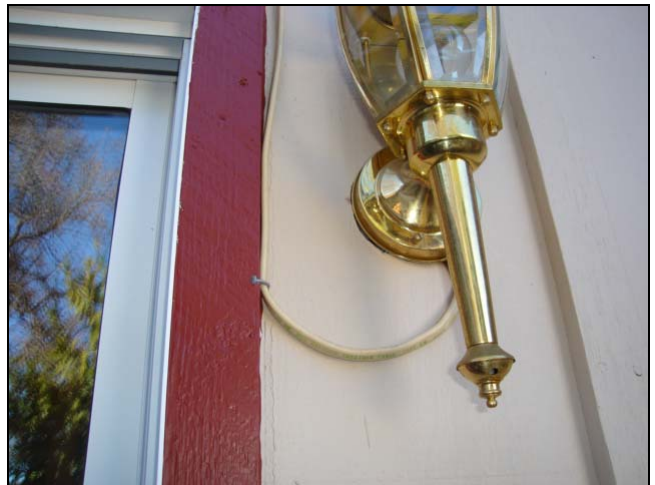
These puppies were HOT. Very dangerous!



Exposed wiring should be in conduit.



Exposed wiring.



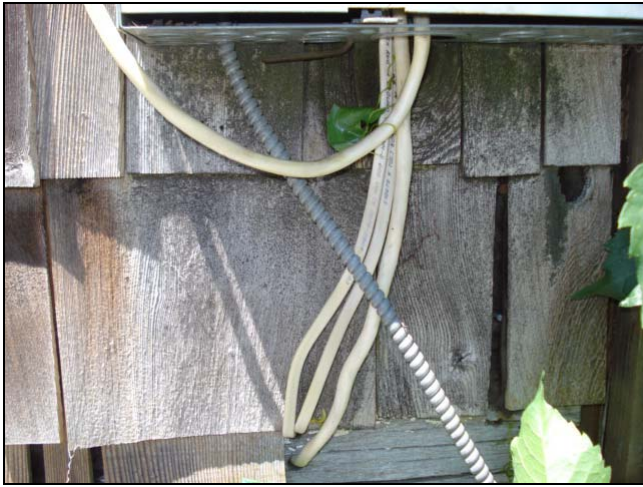
Exposed wiring.



Exposed wiring rubbing against this fascia board.



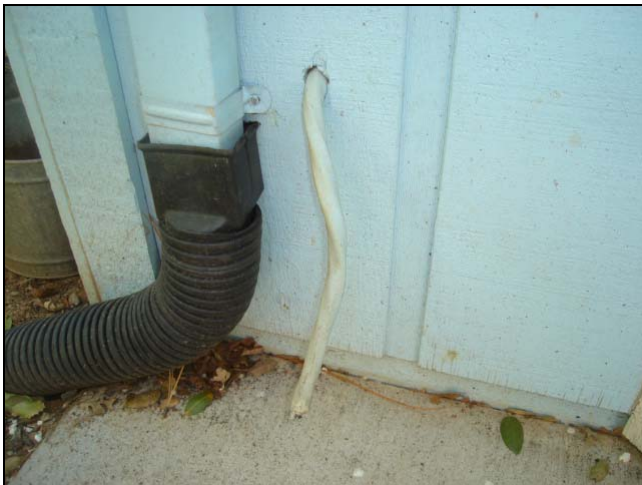
Exposed wiring.



Lots of exposed wiring.



More exposed wiring.



Let's see, is that exposed wiring.



A toasted varmint. This is another reason for you not to inspect these boxes. You never know what is inside them.



A few accessories.

I have several hundred "Exposed Wiring" photos. These should be adequate for now. We still have the attic and crawl space coming up. Whoopee!

Chapter 16- Inspecting Exterior Siding Materials & Exterior Walls

We will continue our inspection with siding materials and exterior walls.

There are several materials used to construct and finish the exterior of your home. We will cover the more common materials such as T1-11 wood siding, lap siding, shingles, logs, fiber-cement materials, vinyl, aluminum and masonry walls such as stucco, concrete block and brick and mortar.



Log construction is not common but important to consider. There are several log home manufacturers and the style of construction can be as unique as the trees themselves.

Inspect the logs for deterioration at areas where the end grain is exposed to the weather. Record the presence of any stains or areas where water intrusion may have occurred. Repairs to log structures are a specialized trade and are referred to professionals skilled in such work.

Concrete and brick walls are more than a siding as they provide a complete structured wall. The materials have little flexibility so movement will leave cracks.

Look for cracks or deterioration of the concrete, bricks or mortar. Deterioration in the masonry could be caused by exposure to detrimental elements.

Peeling paint and a white powdery substance called efflorescence on the surface of the wall could be an indication of moisture penetrating the walls.

Stucco is cement or a synthetic material made of an aggregate, a binder and water which is applied wet and hardens when it dries. Movement in any structure with a stucco finish may cause cracks. Other causes of cracks in stucco include poor application or faulty materials.

Standard stucco applications are multiple layers of material called the scratch coat, the brown coat and the color coat applied over a moisture

barrier and screen mesh attached to the exterior walls.

Years ago stucco was applied all the way to the ground. The aggregate nature of stucco allowed it to wick or draw moisture out of the soil. Deterioration in the wood framing at the lower sections of the walls resulted. Evidence of water damage can sometimes be observed in the crawl space around the perimeter of the building.

Installation standards now require that stucco terminate 4-6" above the ground and 2" over wood, masonry, concrete or composite decking.

On modern stucco applications a weep screed is installed at the base of each wall which allows moisture to drain out of the wall. The weep screed should not be obstructed by landscaping materials, vegetation or planter boxes. The weep screed should not be covered or imbedded in any walkway or structure that will prevent the free flow of moisture.



Weep screed holes at the base of the wall allows moisture to evacuate.

Single course (one layer) stucco applications are being used which, if applied per the manufacturer's specifications, function as well as the multiple layered products. One such stucco product is called EIFS (**Exterior Insulation and Finish Systems**).

Problems including water intrusion around exterior doors and windows can occur in any type of stucco application. However, the EIFS installations appear to be particularly problematic. Water intrusion causes damage to the interior framework of the building and can result in water leaks, stains and organic growth.

Your previous inspection of the interior may have revealed problems related to water intrusion such as stains, loose texture or organic growth. If you found such issues present there could be a problem with the exterior stucco application.

Inspect for cracks. Cracks in stucco are common. If the product was properly installed the moisture that naturally penetrates the surface will evacuate through the weep screed.

Record the presence of any stains at the exterior of the building. Although their source may be difficult to ascertain stains should always be carefully investigated.

There is a Weblink in Chapter 26, Conclusion and Resources, that will take you to an online album containing a series of photos and commentary from a Pennsylvania homeowner who experienced a nightmare related to poor craftsmanship on her stucco home.

If you have stucco siding go to this site before you inspect your siding. In fact, EVERYONE reading this eBook should have a look at the photos. This additional education is excellent.

Buyers present during an inspection often asked questions about things they observed while looking around the building. I explained that I needed to complete the inspection before I could know if any single issue could be a symptom of a larger problem.

I informed them that the building was telling me a story and until I had the whole story I would not be able to determine the consequences of any one particular item. The story is not fully told until we have looked at everything.

T1-11 panel siding (**originally know as Texture 111**) is very common and is essentially an exterior grade textured plywood or OSB (**oriented stand board**) product installed over a felt or approved vapor/moisture barrier. When properly cared for it will last many years.

T1-11 is a wood product and is susceptible to water, weather and pest damage. Inspect for stains and record your findings.

Rust stains from the nails holding any type of siding material in place indicate two potential problems: the wrong nails were used and/or there may be moisture in the wall.

Inspect the siding for signs of delaminating and deterioration.

“Wood to soil contact” is a very common problem and is a note in every home inspector’s digital library. T1-11 siding material should be 4-6 inches above the soil and at least 2 inches over wood, masonry, concrete or composite decking.

Use the scratch awl provided in the **Premier Package** to probe around questionable areas where the siding has been in contact with the soil or where water run off from the roof or any intercepting surface may have compromised the material. Home inspectors and termite contractors both look very carefully at T1-11 siding for signs of warping and deterioration.

Damaged T1-11 may be found around wood or composite deck boards where the boards have been installed directly against the siding material. Debris caught in the tight space between the deck boards and siding traps water and over time ruins the materials. Metal flashing between the siding and decking prevents this problem from occurring.

The photo gallery shows examples of damaged siding caused by this issue.

FYI: The term termite inspectors' use for moisture damage in wood is "dry rot." In California, home inspectors are not allowed to use the term "dry rot" in their inspection reports. The term "dry rot" is apparently an industry specific term for termite inspection reports. Home inspectors call it deterioration.

Moisture in any wood material is extremely susceptible to insect infestation and deterioration.

Vertical lap siding, shiplap siding and shingles are inspected for warping, looseness, holes, stains and water damage.

Siding materials on buildings constructed until the mid 1980's may contain asbestos. The best thing we can do to preserve these materials is to keep them cleaned and painted. If removal is required it must be done by a licensed hazardous material abatement contractor.

Hardboard materials used in the 1970's and 1980's have been known to be problematic due to water intrusion breakdown. Class action suites have been filed over the years against the manufacturers of these materials and the products have been removed from production. Such materials can be in vertical lap siding or 4x8 sheet configurations.

Symptoms of failure include bowing, swelling, material that is soft or spongy to the touch and edges that are coming apart.

This hardboard material was common on manufactured homes.

Fiber cement siding (FCS) is a composite material made of sand, cement and cellulose fibers. It was developed to replace widely used asbestos cement sheeting products manufactured until the 1980's.

In appearance FCS usually consists of overlapping horizontal boards imitating wooden cladding, clapboard and imitation shingles. FCS is also manufactured in a sheet form and is used not only as cladding but also as a soffit or eave lining and as a tile underlay on decks and in bathrooms.

FCS is resistant to water and insects and is non-combustible. The material is subject to cracking. Cracks can be filled, lightly sanded to protect the texture and repainted.

Vinyl and aluminum siding materials have been in use for many years. Penetrations or holes in the material are subject to water intrusion. Older vinyl products are subject to cracking and deterioration. Aluminum siding is subject to dents from impact.

Exterior trim boards are very susceptible to deterioration. Trim installed over the top of any door or window should be flashed and bevel cut to slope down and away from the wall. The flat edges of trim create a shelf where rain and snow can collect and seep back into the wall. The outer corners of trim boards installed under windows seem to be susceptible to deterioration. Check these areas for deterioration with the probe tool provided in the [Premier Package](#).

Paint is a wonderful product for maintaining wood and reducing the chance of water intrusion.

Caulking the trim is a cheap and temporary construction practice. Any surface that does not slope down and away from the building can become a location for water intrusion and needs to be inspected carefully.

Seal all openings in exterior walls to prevent the entry of vermin and insects.

Move firewood or any wood materials away from the walls.

EXTERIOR SIDING MATERIALS & EXTERIOR WALLS FINDINGS: REMEDIES AND SOLUTIONS

Siding materials are the outer skin of your building. Your inspection may reveal minor issues you or a handyman can resolve. This will cost a lot less money than your buyer's contractor will charge.



Damage or holes from poor craftsmanship, animals, weathering and general wear and tear will require qualified persons to evaluate and restore.

Any cracks in a concrete block wall will require further investigation for a possible broken footing or foundation. If further investigation reveals such damage, it is recommended that a licensed structural engineer be consulted.

Most stucco cracks can be repaired or patched by a qualified painter. Larger cracks or missing pieces indicate more a serious condition. Consult a licensed stucco contractor.

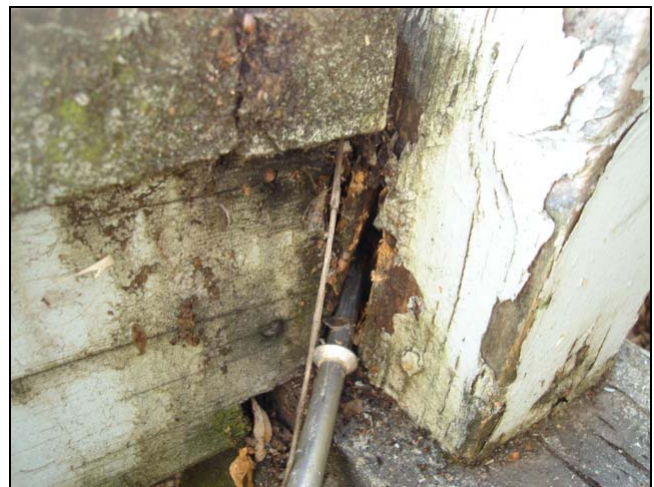
Damaged or deteriorated siding materials of all types should be repaired or replaced by a qualified tradesman.

A qualified tradesman can replace wood trim boards. Woodpeckers also damage wood siding and exterior trim. Before holes and damage are repaired consult with a licensed pest control company for the eradication of vermin.

PHOTO GALLERY



Brick wall wicking up moisture.



Severe deterioration in the trim and lap siding.



Severe deterioration.



Loose metal skirting.



Missing corner metal trim.



Vinyl stained from a leaking roof flashing.



Vinyl stained from a leaking roof flashing.



Peeling paint on this metal siding.



Slipped siding.



The weep screed is sealed in concrete at the bottom of this wall.



Stucco stain from an unknown source.



Peeling and flaking stucco and paint. That vent screen should be repaired also.



Classic old time application. Stucco travels down the wall and foundation below the grade.



Cracked stucco corner will allow water intrusion.



Stucco patching.



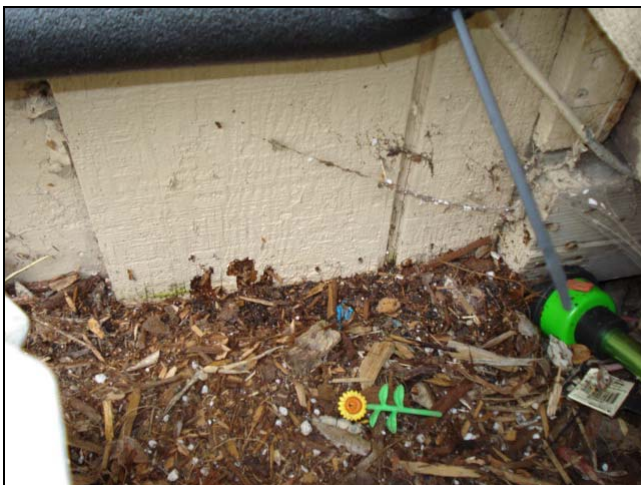
This hole should be plugged to prevent the entry of water, bugs and other unsavory things.



A typical weep screen. This is an expanded view of the photo provided in the margin above.



A slipped wood shingle.



Note: Wood-to-earth contact and deterioration was noted at...



Note: Wood-to-earth contact and deterioration was noted at...



Note: Wood-to-earth contact and deterioration was noted at...



Damaged board and batten panel and trim.



Possible fungus in this storage room under a deck.



Note: Wood-to-earth contact and deterioration was noted at...



Stains and beginning signs of deterioration.



Advance stages of deterioration.



Detereriation.



This hardboard material was soft and spongy. The hole was made with my thumb.



Hardboard deterioration. Notice the flat topped trim board.



Warped and cracked lap siding.



Severe deterioration in this hardbord material. Notice the flat topped trim board.



Severe deterioration in this hardbaord material. Notice the flat topped trim board.



Warped siding.



Warped siding.



Warped siding.



Warped siding.



Possible fungus between the decking material and the siding.



Possible fungus between the decking material and the siding.



Deterioration between the decking and siding.



Deterioration between the decking and siding.



Deterioration between the decking and siding.
This problem regularly occurs under patio doors.



Deterioration between the decking and siding.



Possible fungus between the decking material and the siding.



Deterioration in the T1-11.



Deterioration in the T1-11.



Deterioration in the T1-11. The siding should be at least 2" above the concrete.



Deterioration in the T1-11.



Damaged T1-11.



Deterioration in the T1-11. There was no place for the rain water to go but to sit on the step and penetrate into the siding.



Wood pecker damage.



Something was digging its way into these vents until the homeowner installed the screen mesh.



Wood pecker damage.



Wood pecker damage.



These rust stains are a tell tale sign of moisture behind the wall. I understand the termite contractor bid \$40,000 to repair the damage in the siding of this building.



Trim damage.



Trim damage.



Trim damage.



Trim damage.



Trim damage.



Trim damage.



Trim damage. The ever common flat topped trim board.



Trim damaged with a flat topped trim board underneath.



This isn't very common.



Trim damaged with a flat topped trim board.



The caulking has pulled loose over this window on a brand new cabin home.



Another view. It is unknown if there was proper moisture wrap around these windows. After a few storms and we will know.



This type of damage at a garage big door trim is common.



Get the bug-laden firewood away from the wall. The water stains in the sheetrock are not a good sign either. Bugs like the moisture.



Firewood and stained lap siding. Not a good storage idea.



Painted log slag siding and firewood equals a bug super highway.



This unusual dirt pile is the result of insects. A termite contractor could probably look at this picture say "Oh yeah, that's from the ..." I don't know much about bugs.

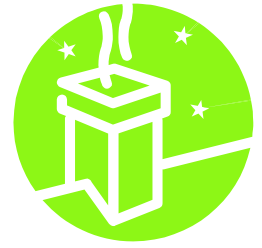


This pile of soil just appeared on top of a concrete pad next to this building. Its bugs. I don't know what kind, but trust me, its bugs.

Chapter 17- Inspecting Chimneys & Flue Pipes

We will continue our inspection with chimneys and flue pipes.

Wood and gas burning stoves for indoor heating and decorative uses have been in existence for hundreds of years. The idea of building a fire inside a living space is such an accepted practice that we have lost touch with the hazards of doing so. Fortunately the manufacturers and building codes have remained focused for our protection.



There are hundreds of fireplace and stove products on the market therefore you will conduct only a very basic inspection. We ALWAYS recommend that a qualified chimney inspector evaluate any fireplace, chimney and wood or gas burning stove. To not do so would be negligent.

Fireplace chimneys can be made of masonry (brick or concrete block) and might have a tile or metal liner, siding that matches the exterior of the building (zero clearance construction) or metal flue piping (single, double or triple wall pipes) depending on the location and manufacturers specifications.

Masonry fireplace chimneys should be checked for any cracks at the exterior and in the liner. Gaps between the chimney and the building are not a good sign.

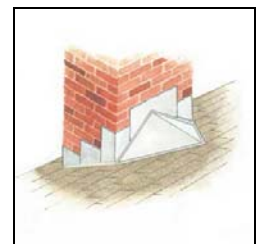
Zero-clearance fireplaces are essentially a wooden box with a metal fluepipe inside. Inspect a zero clearance chimney as you would exterior siding.

There should be a spark arrestor or bonnet at the top of wood burning fireplaces and stove flue pipes and the flue should be cleaned and checked for cracks by a qualified tradesperson.

Exterior flue pipes should never terminate under the eaves of the roof. Flue pipes rising over 6' above the roof need to be braced.

Remove tree branches and foliage growing over the chimney.

If the roof is particularly steep or if the chimney is more than 2' wide, a "cricket" should be installed to prevent water, snow and debris from

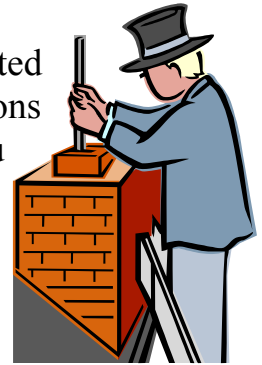


Cricket flashing

collecting behind the chimney. (A chimney cricket is a wedge shaped flashing installed behind the chimney. The flashing diverts drifting snow and water around the chimney and prevents a build-up of debris.)

CHIMNEYS & FLUE PIPE FINDINGS: REMEDIES & SOLUTIONS

Fireplace and stove chimneys and flues can only be properly inspected and certified by a licensed Chimney Sweep. Chimney Sweep inspections and cleaning are inexpensive and should be done annually even if you don't plan to sell your home.



DO NOT CLIMB ON YOUR ROOF. Usually everything you need to see can be observed from the ground. If not, play it safe and let a professional do the work for you.

PHOTO GALLERY



Cracked tiles and no spark arrestor.



Cracked tile.



No spark arrestor.



No spark arrestor.



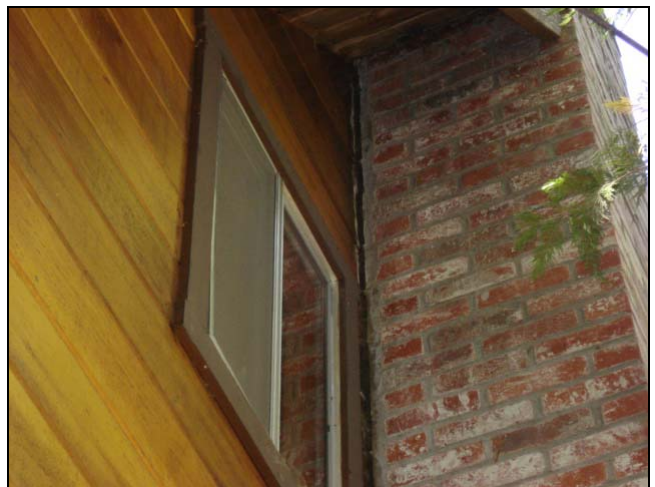
No spark arrestor.



Foliage over a chimney should be cleared away.



Excessive creosote build up is a major cause of chimney fires.



This chimney is pulling loose from the wall.



This chimney is pulling loose from the wall.



This chimney is pulling loose from the wall.



This chimney was over four feet wide. A cricket should be installed to divert water from behind it.



Same chimney, different angle.



This pipe should have additional bracing installed.



The tall pipe should have been braced.



The damaged pipe could restrict the proper drafting. Recommend having a licensed Chimney Sweep inspect for further information.



The excessive soot around this direct vent bonnet was possibly caused by natural gas orifice jets installed on a propane gas stove.



The flue pipe should not terminate under the eave.



The flue pipe should not terminate under the eave.



This kind of excessive rust on a flue pipe was a rare observation.

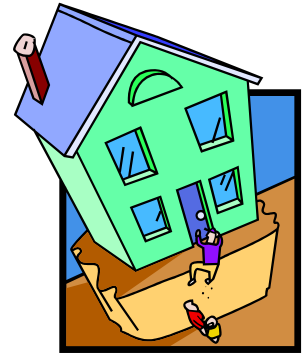


Deterioration in the flue pipe.

Chapter 18- Inspecting Perimeter Grade

We will continue our inspection with the perimeter grade.

The perimeter grade is probably one of the most overlooked conditions of a property. Most building contractors are only concerned with the initial grade. The initial grade must take into account the position of the building on the property as related to streets, property line set backs and natural drainage. After the building is signed off for occupancy the condition of the grade becomes a maintenance issue.



The exterior grade should slope down and away from the building so that all surface water drains away from the foundation. Proper grade will alleviate water problems around the building. Water causes more property damage to homes than any other factor including natural disasters and fire.

Water that is allowed to pond around the building or reach the siding will cause deterioration. Water can leach into the interior of the building or crawl space causing potential deterioration to the building framing. Erosion around the foundation footings and deck piers can occur. When the base of wood posts and piers are allowed to come into contact with water or soil they become subject to deterioration and attract insects.

Water that collects at the foundation and flows over concrete surfaces seeps into the cracks. If the water freezes it will expand in the crack. The continual freeze/thaw cycle will erode the concrete and cause it to flake and deteriorate.

Foliage and debris must not be allowed to collect around the building. Areas subject to wild fires are required to maintain defensible space around homes and structures as a measure against fire damage.

Runoff from the roof is also a part of this system. Water draining off of the roof has to be diverted away from the building by the slope of the grade. This may require additional measures such as gutters and downspouts.

Direct the water exiting the downspouts away from the foundation.

The home inspector will make notes when drainage problems are found. The Photo Gallery will provide additional information.

You know your property best. Record any areas where water ponds or flows towards the building.

PERIMETER GRADE FINDINGS: REMEDIES AND SOLUTIONS

Grade problems are primarily a maintenance issue. Rake the ground around your home so that the soil slopes down and away from the foundation.



If you have a driveway, sidewalk or patio decking made of concrete, brick or asphalt that butts up to the foundation the surface should be constructed to slope away from the building.

If you have planter boxes that trap water between a walkway and the building, a drain system may be necessary.

Install water diverters or drain pipes to downspouts and at areas subject to runoff from the roof.

Restore any soil erosion that may have occurred around the foundation footings and deck piers.

Issues that require more attention should be referred to a professional landscaper rather than a building contractor.

In some cases a french drain systems may need to be installed to capture water as it flows towards the building. A french drain is constructed by trenching a ditch perpendicular to the direction of the water flow. The trench has a perforated pipe at the bottom, a fabric mesh to prevent slit from clogging the pipe and is filled with drain rock. Any water that is running over or through the soil will take the path of least resistance and run into the drain rock, leach down to the pipe and then flow to the exit point.

French drains are often necessary to capture water that migrates through the soil around areas of below grade construction. Moisture issues in basements and subterranean rooms can be resolved with non-permeable material affixed to the underground portion of the wall and a french drain installed just below the foundation footing.

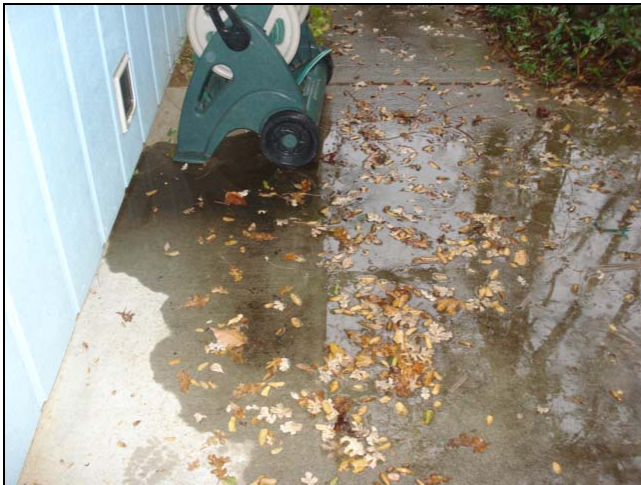
PHOTO GALLERY



Standing water at a downspout.



Water intrusion under a garage door.



Water flowing towards the building on a rainy day.



This drainpipe did quite reach far enough to make it to lower ground.



This downspout drains into a low area. No route was provided for water to evacuate.



There was nowhere for water escape from around this patio.



This pit under a deck will be a become a pool in wet weather. Water could rise as high as the OSB siding materials and cause serious damage.



Erosion under a walkway.



Erosion under a walkway.



Erosion around the foundation footing.



Erosion around a deck pier.



Efflorescence is always a sign of moisture intrusion but may not necessarily be a severe issue.



Water stains and green slime are a good indicator of water intrusion.

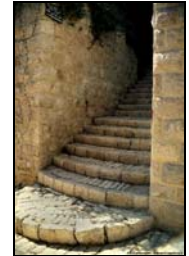


More efflorescence.

Chapter 19- Inspecting Stairs, Steps, Walks & Decks

We will continue our inspection with the stairs, steps, walks and decks.

The proper installation of a set of steps and handrails is very important when it comes to personal safety. Stairs are the location of frequent injury in the home.



When we walk up or down a set of steps we quickly adapt to the distance between one step and the next. Variations in the step height is a **HAZARD** because a person could trip, especially at night or if carrying something.

Interior stairways require switched lighting at the top and bottom of the stairs. Exterior stairs require a switched light at the top landing that is controlled from inside the building.

Modern building standards require a maximum variation of $3/8$ " between the tallest and shortest step riser height and $3/8$ " between the deepest and shallowest tread depth.

Maximum stair riser height is $7\frac{3}{4}$ " to 8", depending on which standard you read, and a minimum height of 4". Minimum tread depth is 9" to 10".

Changes to the floor coverings can affect the step height at the top and bottom of a stairway. This does not change the step height requirements.

The minimum stairway width is 36" above the handrail. The minimum ceiling height over a stairway is 6' 8".

Any stairway with 4 or more steps requires a handrail. The handrail must be between 34" and 38" high. Modern requirements state that the rail must be a graspable railing of $1\frac{1}{4}$ " to 2". This size allows a person to grab hold of the rail if they start to fall.

Guardrails around lofts, decks, balconies or areas over 30" above the ground are required to be at least 36" high. The space between the vertical posts must be less than 4 inches.

Modern building standards require the spaces between the balusters or pickets to be four inches or less to prevent children from slipping through and falling or getting stuck.

“Ladder” style rails are no longer allowed. The Photo Gallery will provide visual examples of ladder style rails.

Wood decking and walkways are two of the biggest issues homeowners deal with when selling their home. Deck care and maintenance is often overlooked.



The components of the decking are the piers and posts, the joists and beams, the deck boards, the rails and the balusters.

The most common issues associated with wood decking are water damage, insect damage, wood to earth contact, loose steps, loose deck boards and loose or missing railings.

Inspect around areas where the decking construction comes into contact with the ground. Record any points where the soil or water may have caused deterioration. Use the probe tool provided in the **Premier Package** to check for deterioration. Home inspectors report any wood to earth contact. The termite inspector will also scrutinize such areas.

The deck boards and joists may be damaged by a white fungus like material. If this fungus is extensive the wood materials will have to be replaced. Areas with minor fungus damage can be scraped and the wood treated with an anti-fungal sealant.

Record any loose steps, deck boards and railings.

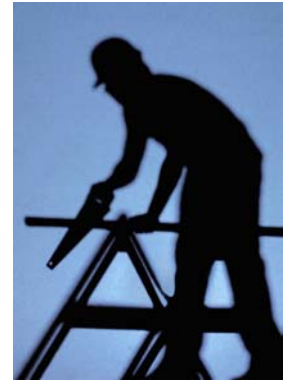
A common area for damage is where the decking meets the side of the house. This was mentioned in the chapter on siding. Moisture gets trapped between the decking and the home and eventually decays the siding.

IMPORTANT: If the termite contractor can identify decay in 45% or more of any deck area, he will quite likely condemn the entire area. This happens for mathematical reasons. There is less labor expense in replacing the entire deck than partially repairing it. This piece of information could save you thousands of

dollars in unexpected repairs.

STAIRS, STEPS, WALKS & DECK FINDINGS: REMEDIES AND SOLUTIONS

Minor repairs to wood decking can be conducted with basic carpentry skills, common tools and common sense. The greatest cost to the homeowner will be the labor to have a licensed contractor do the repairs. Most people know someone who has the basic knowledge to repair wood decking.



Secure any loose boards, rails and steps. Replace any frame components that have been damaged by deterioration.

Repair of posts, joists and beams is intensive but not that difficult unless you are dealing with very high decking.

You would be absolutely amazed at how well a freshly stained deck can enhance the appeal of a home to a buyer and cause a home inspector to smile. The termite contractor can still cause you some grief so do not try and hide any deterioration you discover - just get it fixed.

PHOTO GALLERY



Uneven step height at several steps.



Uneven step height.



Uneven step height.



Uneven step height.



Uneven step height.



Uneven step height.



Uneven step height.



Uneven step height.



No guard rail for this interior staircase.



No guardrail. It could be argued that there is a railing on the right and the ground is not 30 inches down. At least a graspable rail ought to be installed. It's a gray area. Some inspectors will call it, others won't.



No railing for these 4 steps.



No guardrail for this 6' driveway edge.



No guard rail, no steps.



No guardrail for this ledge over 30 inches high.



No railing for these 4 steps.



No railing for these 4 steps.



"Ladder" style rails.



"Ladder" style rails.



Unusual stair step construction practices.



Unsafe construction practices.



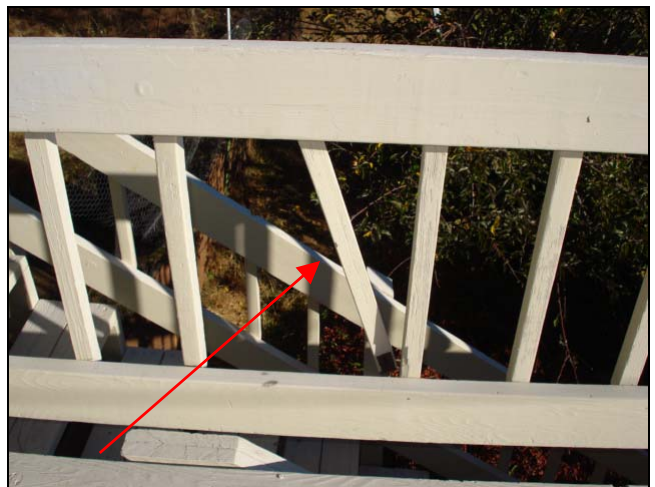
A broken step.



A loose guard railing.



Loose balusters.



A broken baluster.



Wood to earth contact at a post.



Wood to earth contact for these joists.



Wood to earth contact for these joists.



A deteriorated post.



A deteriorated post.



A deteriorated post. A ski pole makes a great probe tool.



Deterioration in this deck beam.



Possible fungus (organic growth) in this joist and the deck boards.



Organic growth often means decay. The white substance is “possible fungus.” Yes, I have to refer it to possible fungus because I am not a fungologist. ☺ I just made that word up.



Organic growth and deterioration for the boards and joist.



Decay in a beam.



Decay in a beam.



Decay in a beam.



Organic growth.



Deck board decay.



Lots of organic growth.



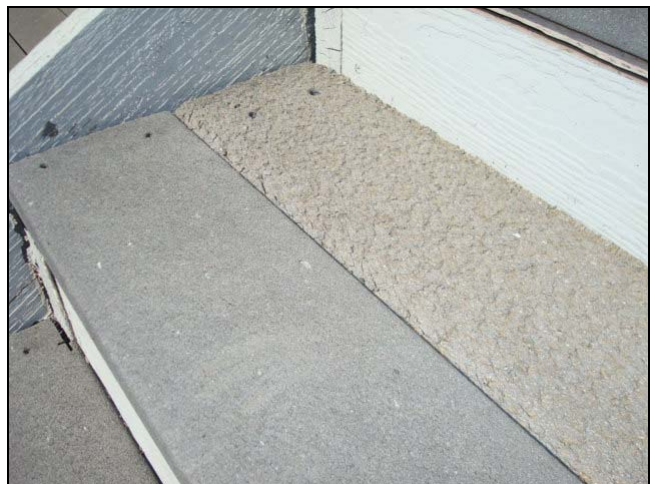
Deteriorated deck board.



Deteriorated railing.



Deteriorated "Florida Room" porch on a manufactured home.



Man-made decking material that has failed.

Chapter 20- Inspecting the Roof

We will continue our inspection with the roof.

When you inspect the ceilings and walls at the interior of your home you may notice water stains. The stains could be due to a leaking roof. The roof is the first line of defense from inclement weather. If your roof leaks, the building below is in jeopardy.



HAZARD:

**DO NOT GET ON YOUR ROOF.
ROOFERS FALL OFF ROOFS.
DO NOT GET ON YOUR ROOF!**

What we found during our inspections were: damaged and leaking gutters; plugged, loose or missing downspouts; poorly installed, loose or missing flashings; warped and deteriorated fascia boards and rafter tails; cracked roofing tiles; worn and damaged shingles; cracked and loose vent boot collars; bent metal roofing; weathered paint; sagging roof fields; patched shingles; cracked caulking; tree branches rubbing on the roof surface and golf balls, shoes and other assorted items in the rain gutters.



A damaged plumbing vent boot.

A qualified and licensed roofing contractor should be contacted for a roof inspection. That inspection should include evaluation of the gutters and downspouts, over hanging trees or shrubs, the roof coverings, flashings and all roof membrane penetrations like plumbing and chimney vents. Do not get on your roof unless you are a qualified roofing contractor.

ROOF FINDINGS: REMEDIES AND SOLUTIONS

No matter what the age of the building or how new the roof looks the home inspector will inspect by either walking on it or looking at it with binoculars.



Having a new roof does not insure it is problem free. Roofs of any age can have issues. If the roof is over 10 years old you can expect the buyer's Realtor to request a roof inspection.

Your goal is to eliminate potential notes before the home inspector arrives. Since I have insisted you not get on your roof and did not provide a photo gallery, I have a recommendation. If your roof is over 10 years old I suggest you look in any phone book under "Roofing." Nearly every display ad will say "Free Estimates." Call a couple of these companies and ask if they provide a written roof inspection and a bid for repairs. If you have to pay this is one time where a few dollars invested will allow you to make a wise decision on your own. Having the time to shop for the best deal on a new roof eliminates the hassle of having to make a quick, uninformed decision.

A reputable and qualified licensed roofing contractor will be able to tell you if the roof needs repair or replacement. He will also be able to provide you with a written estimate of costs. Getting more than one estimate is always advisable.

As stated, even new roofs have problems. If your roof is relatively new, you will have to decide if the expense of a roof inspection is justified. I recommend it, but I have a tendency to ere on the side of caution.

HOW TO FIND A REPUTABLE ROOFER

This is a very scientific approach on how to avoid getting scammed by a shiftless roofing contractor. This tip alone is worth the cost of this book. You can use this process to find the best experts for any aspect of your home repair needs.

Call at least three real estate offices in your area. Call one that is a nationally recognized chain, another that is locally owned and operated with at least 5 agents and one that has some old guy or gal who sold property to Moses' older brother.

At the first two offices, ask the receptionist which agent in the office has been working in the local market the longest. Ask to speak with that person. Simply say, "Hello, my name is ... and I am looking for a reputable roofing contractor. If your home needed a roof inspected and repairs, who would you use?"

Call the old guy or gal and ask the same question. If the answer is the same two out of three times, you have found your roofer. If you get three different answers, select three more real estate offices and do it again. After six inquires, a good roofer will rise to the top.

Chapter 21- Inspecting the Attic

We will continue our inspection with the attic.



The attic is an area most people would rather avoid and for good reason. Attics can be very hot, difficult to get into, difficult to move around in and are usually very confining.

Depending on the time and location, attic temperatures can reach well over 140 degrees. If you don't step in the right place you could step right through the ceiling. It is difficult to maneuver around wires, roof trusses bracing and insulation.

Most termite and pest control companies won't allow their inspectors to enter attics because of the hazards listed above. This should give you pause about inspecting an attic on your own. You might want to have a qualified tradesman perform this inspection.

Access to attics may vary. Access may be through a hatch in a hallway ceiling, a garage firewall, a bedroom closet or an exterior door at a gable end of the building (**a gable is the triangle formed by a sloping roof**).



Home inspectors inspect attic because they are required to list specific structural components as well as identify potential problems.

Problems could include roof leaks, skylight leaks, broken framing members, exposed electrical wiring, missing insulation and blocked or inadequate attic ventilation. The standards of practice most home inspectors follow require reporting the material type and "R" factor of the ceiling insulation.

In addition to being a place to store Christmas decorations and luggage, the attic could contain your furnace or your water heater. If a thermostatically controlled attic fan is present, it needs to be tested.

Sufficient attic ventilation is very important. The cross flow of air reduces moisture buildup and possible mold growth. Proper ventilation lowers attic space temperatures and helps increase the lifespan of composite roof materials. High temperatures generated in a poorly ventilated attic overheat the composite shingles and cause early failure.

Bathroom fans, kitchen stove hoods and clothes dryers should vent to the exterior of the building. Appliances often transfer large amounts of moisture and, as stated previously, moisture around wood attracts insects and organic growth.

Insure HVAC ducting is intact, attached to the registers and properly supported. Eliminate kinks in the ducting that restrict airflow.

Check recessed lighting fixtures (can lights) that protrude into the attic for proper installation. There are two types of can lights: those that are allowed to be in contact with the ceiling insulation and those that need clearance for cooling. Labels on the fixtures indicate the proper installation. Improperly installed can light fixtures increase the risk of fire due to excessive heat build up. One symptom of a can light covered with insulation is intermittent on and off blinking of the bulb.

Can lights are energy hogs because most of them use inefficient, incandescent bulbs. They indirectly lead to additional energy use by heating up the room, which causes the air conditioner to run. Since many can light fixtures are not airtight, they allow heated or cooled air to escape into attic space.

Previously discussed electrical issues such as open junction boxes and open splices are also found in the attic.

One electrical feature we haven't discussed is knob and tube wiring.

“Knob and tube wiring (sometimes abbreviated K&T) was an early standardized method of electrical wiring in buildings, in common use in North America from about 1880 to the 1930s. It consisted of single insulated copper conductors run within wall or ceiling cavities, passing through joist and stud drill-holes via protective porcelain insulating tubes, and supported along their length on nailed-down porcelain knob insulators. Where conductors entered a wiring device such as a lamp or switch, they were protected by flexible cloth insulating sleeving. The first insulation was asphalt-saturated cotton cloth, then rubber became common. Wire splices in such installations were twisted for good mechanical strength, then soldered and wrapped with friction tape (asphalt saturated cloth), or made inside metal junction boxes.”

“Knob and tube wiring was displaced from interior wiring systems because of the high cost of installation compared with use of power cables, which combined both power conductors of a circuit in one run (and which later included grounding conductors).”

“Exposed wiring supported by porcelain knobs is still permitted by wiring codes, although it is unusual in new installations.”

Source: WIKIPEDIA.com

Ceiling insulation should not cover knob and tube wiring. Dissipating their heat to the surrounding air cools knob and tube wires. They do not have a ground wire and the wire gauge itself may not be adequate for the electrical loads placed on circuits from our many modern electric appliances.

Any modifications to engineered roof trusses will raise a big red flag.

Pests and insects seem to enjoy the attic space. Any evidence of infestation will be included in the home inspection report.

The home inspector also looks for evidence of roof leaks during the attic inspection. Water stains in the roof sheathing and the presence of the proverbial plastic bucket are signs that the roof may need to be inspected by a licensed roofing contractor.

Rather than go through the usual list of things to look for, many of which are familiar to you, review the Photo Gallery images and see if the attic is something you choose to tackle.

ATTIC FINDINGS: REMEDIES AND SOLUTIONS

If you choose to inspect your own attic, **BE VERY CAREFUL!!!!**

Do not enter the attic on a hot day. Early morning is the best time to inspect an attic. You must wear goggles, gloves, long sleeves, long pants, kneepads and a dust mask or respirator. Fiberglass and attic dust can be harmful.

Be careful where you put your hands. Open electrical junction



boxes and open splices are common in attics. The raw lumber could cut, scratch or splinter in your hands. Also be aware of things that bite.

Be careful where you put your feet. Falling through your ceiling will create additional home repairs and potential medical expenses.

I recommend that you do not enter the attic space. The Photo Gallery may help to support my suggestion.

PHOTO GALLERY

I hope you enjoy this gallery. Getting into attics always provided an interesting experience. The attic and the crawl space were areas that seemed to generate the most notes. I suppose no one really wants to spend much time in these places so they are often neglected. Attic and crawl space inspections are most challenging. This is an area you may wisely choose to bypass.



Missing insulation.

FYI: Fiberglass insulation with a vapor barrier should be installed with the vapor barrier facing towards the living space. This is true for most regions of the country except in those areas where high humidity is prevalent.



Missing blown in cellulose insulation.

A home inspection report should identify the type of insulation material but may not provide an “R” value. “R” value is a term predominantly used in the building industry to describe the insulation properties of certain building materials.



Loose batting on a channeled skylight housing.



A combination of insulation material types was common. Here we see fiberglass batting and blown in cellulose. Missing insulation is noted.



Missing insulation. This condition happens a lot. Particularly when lighting upgrades have been done.



Loose insulation in an "A" frame cabin. It looks ripped up because something is using the fiberglass for its own nest.



The black sploching is the wood mold that probably was dormant in the plywood sheathing materials. Poor attic ventilation will allow a build up of moisture in the attic space. Moisture that is not vented will activate the wood mold spors.



Wood mold. Some people with allergies and respiratory problems do not tolerate the presence of mold and fungus.



More wood mold.



A great way to alleviate moisture and heat build-up in an attic space is to install a fan. This interior fan may not be a recommended model however.



Modern building standards would have this bathroom vent terminate to the exterior. The screen on the gable vent will collect lint and eventually restrict the air flow of this ventpipe. A diffuser like those used for dryer vents are used to direct the moist air outside.



The bathroom fan vent pipe was loose. Moist air will be pumped into the attic.



These vent pipes were a little short.



This one too.



No vent pipe was installed.



The vent pipe should terminate at the exterior.



This bathroom fan pumps directly into the attic.



Here is another way contractors route the vent pipe.



This vent blew right into the roof skip boards and felt paper.



This loose stove pipe could allow toxic flue gasses to vent in the attic.



This loose stove pipe has come loose from an asbestos covered pipe. The grey colored upper pipe could be asbestos coated.



Loose HVAC ducting is a waste of energy.



Open junction box. You know all about these.



Open junction boxes are an automatic note. The box is designed to contain potential sparks and help arrest the spread of fire.



Open junction box.



Open junction boxes.



Open junction box.



This is not an open junction box. This is a completely covered in insulation junction box.



Open splice that should be in a junction box.



If knob and wires are in use, they must not be covered with insulation.



Open splice.



Non-terminated wire. Was it hot? Who cares! It should be properly terminated or removed.



Open junction box and open splices.



Is there an exception for using non-metallic sheathed wire as an extension cord in an attic?
NO.



This wire was hot!



Open splice.



Open splices were allowed on knob and tube, but not here.



Leaking copper water pipe. Water pipes in attics are common in homes with a slab foundation.



A leaking copper water pipe. These attic pipes can be subject to freezing. When these split open, it's a big mess.



Water intrusion at the roof and missing insulation. Notice the OSB sheathing? Looks like a new roof was installed. This is probably an old stain and the reason for the new roof.



Water intrusion.



This is a plumbing vent pipe that had a leaking vent boot.



This is a plumbing vent boot. This one leaked.



When the new roof was installed, this plumbing vent pipe was forgotten. Septic gasses were allowed to vent into the side attic access space of this "A" frame cabin.



An obvious roof leak.



These are custom engineered water collection devices.



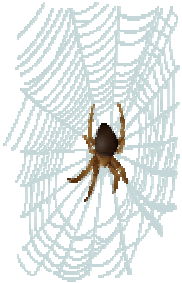
I had to climb a long way before I discovered these babies tucked way back in a corner.



If you have buckets in the attic but no water leak, I recommend you get rid of the buckets. Buckets in the attic are a wonderful technique for freaking out a buyer.

WARNING

The following six images are not for the timid. Sub areas and under-building crawl spaces are happily occupied by the creepy crawly multi-legged creatures we share the planet with.



Attics on the other hand attract a variety of species, warm and cold blooded alike. I guess the warm space and cozy insulating materials are most inviting to critters looking for a home.



If the following pictures do not give you pause on inspecting your own attic, then you probably will be ok doing so.

You have been warned.



What is making this pile?



Bugs are. These are probably carpenter ants.



What made this 12 inch glob? I have no idea. Something from a science fiction movie?



Those little black dots are not raisins. They are rodent feces.



Although a bit difficult to see, everything in this photo that isn't manmade, wasn't. Its animal feces.



Everything that looks like feces in this photo, is. A happy little squirrel family was still enjoying the side attic space of this "A" frame cabin while I was inspecting. I kept hearing this noise...

Chapter 22- Inspecting Sub-Areas and Crawl Spaces

We will continue our inspection with the sub-area and crawl space.

Unless your home was built on a concrete slab it will have a sub-area or crawl space.

I found issues in the crawl space even in the best kept homes. This is probably because most people prefer not to enter this area, even if there is enough room to stand.

Sub-areas can be tight confined spaces with only a few inches of clearance between the soil and floor joists or they can be open expansive spaces several feet high. Whether you choose to inspect this area is your decision.

There are various aspects to be investigated in the crawl space including: the foundation system, proper installation of the insulation, crawl space ventilation, dryer vent ducting, HVAC ducting, water heater bracing, water supply and waste plumbing pipes, electrical items, soil condition and excavation issues.

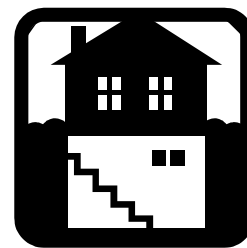
Access to the crawl space can vary from a trap door hidden under carpet in a bedroom to a full size door at the exterior of the building. Ideally, this access opening will be at least 30" square.

If you see standing water in the opening of the crawl space, STOP!!

DO NOT ENTER THIS AREA UNTIL YOU KNOW THERE ARE NO ELECTRICAL WIRES LYING IN THE WATER. CONTACT A LICENSED ELECTRICAL CONTRACTOR FOR FURTHER INVESTIGATION.

IF WATER IS THE RESULT OF A SEWER LINE LEAK, YOU MUST NOT ENTER THE AREA. SEWER LINE LEAKS CONTAMINATE THE BREATHING AIR.

If you are able to safely enter the crawl space your inspection will include examining the perimeter of the foundation for cracks or damage. Put on gloves, a mask or respirator, kneepads, elbow pads and goggles or protective eyewear before you enter the crawl space.



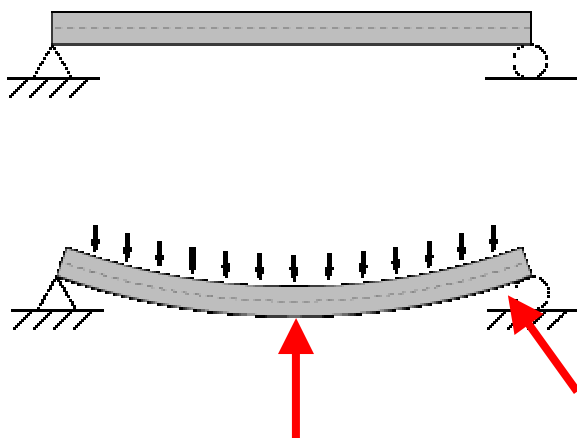
Inspect the piers and posts to insure they are making good contact with the beams they are supporting.

The home inspector will be looking for excessive cuts and holes in wood construction components. There could be several reasons why the joists and beams under the building have been cut. One example is when a plumber bores a hole to fit pipes and waste lines. Sometimes an HVAC installer will cut a floor joist rather than reposition a heater floor register.

If you recall the discussion on “span” in an earlier chapter, you received a brief education on wood span issues. The underside of your home is constructed of several components that make up the support system and floor of the building.

Beams and joists are the primary components that cross back and forth under the building to create the floor and tie the exterior walls together. Builders and architects follow specific tables to know what material types and sizes can be used to “span” certain distances and still support the structure above.

Let’s have a look at our span image again. The lower drawing shows excessive stress being placed on the beam. What do you think would happen if I cut holes in the board at those areas indicated by the arrows? The larger the holes, the quicker the board will fail.



Holes and notches are allowed within very specific tolerances and in a few locations along the beam or joist. Here is the rule of thumb:

Holes: Do not bore holes closer than 2" from joist edges, nor make them larger than 1/3 the depth of the joist.

Notches: Do not make notches in the middle third of the span where the bending forces are greatest. Notches should be no deeper than 1/6 the depth of the joist. Notches at the end of the joist should be no deeper than 1/4 the depth. Limit the length of notches to 1/3 of the joist's depth.

Boards with holes or notches exceeding these limits must have additional construction members installed to redistribute the load the board is supposed to support.

No wood component of the foundation, flooring or support system should be in contact with the soil. No wood materials stored in the crawl space should be in contact with the soil.

The insulation material should be properly installed and securely fitted. Proper installation of the insulation in the crawl space has been a controversial issue from time to time. The most common insulation material used in the crawl space is rolled fiberglass batting with a facing. The facing or material coating is foil, plastic or kraft paper. The facing is also referred to as the vapor barrier. Batting in attics is often unfaced.

On many occasions I observed insulation material in the crawl space where the vapor barrier faced downward toward the soil. I reported the insulation was installed upside down.

That report note often generated phone calls from owners and Realtors informing me their licensed contractor said it was installed properly. I had a conversation with a contractor who told me I was wrong and that I should find another line of work. He told me the vapor barrier was to block the vapor that was being released from the soil. After three or four of these episodes, I decided to get the final word on the issue.

I spent several hours researching this subject. Here is a very condensed version of my findings:

In climates of low humidity, the vapor barrier is always placed toward the heated living space. In walls, the vapor

barrier faces inward toward the room; in attics, downward to the rooms below and in a crawl space, upward toward the rooms above. The warm moisture generated inside a building will naturally migrate to the colder surfaces and exterior walls and floor. The moisture can and does penetrate through floors and walls. The vapor retarder (barrier) essentially prevents the moisture generated inside the building from getting trapped in the insulation material where mold and fungus can grow.

In warm climates with high humidity, the denser moisture laden air will migrate towards the conditioned dryer air inside the building so the vapor barrier is installed away from the conditioned living space. The reason is to prevent moisture from getting trapped in the insulation batting, which will reduce its effectiveness. This also prevents the growth of fungus and mold.

In my region of the country, the vapor barrier installed in crawl spaces faces toward the living space above.

Termite contractors will recommend and install a plastic moisture barrier over the entire floor of a crawl space. This barrier traps moisture coming from the soil. This practice is useful in chronic damp conditions and lowers the potential for mold and mildew.

Open crawl space foundation vents provide a cross flow of air and are essential for maintaining low levels of moisture. The vents should be screened to prevent the entry of vermin and should not be blocked. The foundation vents can also be inspected from the exterior of building.

Another source for moisture is the clothes dryer duct pipe. The dryer ducting should be properly secured to the floor joists, not have any sags, not be damaged or disconnected in any way and terminate at the exterior of the building. Dryer ducts over 20' require a booster fan to exhaust the moist air.

DISCONNECTED DRYER VENT DUCTING DISCHARGED INTO THE CRAWL SPACE MAY ATTRACT TERMITES.

SAGGING AND DAMAGED DRYER VENT DUCTING MAY CAUSE OVER HEATING AND BECOME A FIRE HAZARD.

Check the HVAC ducting of the central heating and cooling systems. Make sure that all ducting is suspended above the ground, is secured to the floor joists and that all wyes, boots and sheet metal joints are attached and insulated.

Clear soil and flammable materials away from the water heater and furnace. Insure the water heater and furnace are properly braced.

Inspect the plumbing water supply and waste lines for damage, leaks and proper installation. To help identify water leaks, run all the water faucets, toilets and showers in the home before inspecting the plumbing and waste lines. The trick is to look at the ground beneath the pipes for wet spots or mud. This will give you a clue as to the condition of the plumbing joints.

There are charts that instruct building contractors on how often certain pipes should be supported to prevent sagging. For your inspection, if a pipe or waste line looks like it is sagging it needs more support.

Inspect the electrical components. The crawl space often has open splices, missing junction box covers and wires that seem to go nowhere. Use the non-contact circuit tester tool included in your **Premier Package** kit to determine if loose, unterminated wires are hot and dangerous.

Remove all debris from the crawl space area. Debris is anything made of cellulose material that attracts termites and other pests. Cardboard boxes and wood sitting on the dirt are huge red flags for termite contractors and home inspectors. A way to impress the termite contractor and the home inspector is to rake the soil in the crawl space. Leave the lines made by the rake. This is very cool.

The exterior grade slope and landscape irrigation practices can have a huge impact on the dryness of the crawl space. Record any signs of moisture or any place where water appears to have been flowing.

The home inspector will look for areas of over-excavation of the soil. The foundation, piers and posts and retaining walls require support from the earth in order to support the structure above.

In the mountains where we work and live, many homes were built on a



Non-contact circuit tester.

hillside. These buildings often had expansive areas underneath. We found homeowners who had altered this sub area for storage. In order to have a nice flat floor they would remove or “excavate” excessive soil around the foundation, stem walls and support posts.

Another common practice was partially enclosing the sub area for additional living space. This presents problems such as: floor joists and wall components in contact with the soil; inaccessible crawl space under the new room; compromised ventilation of the sub area and excessive excavation of the soil.

It was unknown if these rooms were constructed under permit but the biggest issue was the installation of access stairs from the floor above. I am not sure how a person can think it is ok to cut out several floor joists for a stairway and not properly support the floor.

Such practices compromise the foundation of the building and will always generate a note in a home inspection report. The note will recommend that a licensed Structural Engineer be called to evaluate the changes. Nothing will raise the hair on the back of a Realtor’s neck faster than calling for an engineer’s evaluation. The need for such an evaluation usually indicates a serious problem, and such problems may jeopardize a smooth close.

SUB AREAS AND CRAWL SPACE FINDINGS: REMEDIES AND SOLUTIONS

Broken, damaged or deteriorated framing members should be inspected and repaired by a licensed contractor.

Hairline cracks in the stem walls of the foundation are not uncommon. Unless they are shearing (twisting in different directions) or are large enough to fit a nickel in the crack, concern should be minimal. A licensed Structural Engineer would need to provide additional information.

Insulation that has been damaged or is hanging down should be secured or replaced. Open up blocked foundation vents and repair or replace damaged foundation vent screens.

Secure or repair damaged or detached heating and dryer vent ducting.

Brace the water heater. Clear away soil from the water heater and furnace housing. In California, it is state law that the homeowner must brace the water heater before the close of escrow. Check with a local plumbing company or your municipal building department to learn the necessary requirements for your region.

Hire a qualified tradesman to repair water leaks and electrical issues. Splices should be in junction boxes and open junction boxes should be covered.

Dampness in the crawl space soil may be a seasonal condition. In some areas, naturally occurring moisture in the ground is normal. Plastic sheeting set on the crawl space floor is a common way to trap and retard condensation issues and reduces the potential for organic growth.

The source of muddy, standing or running water should be thoroughly investigated. Excessive water intrusion can be detrimental to the integrity of the foundation. It can also cause deterioration in the wood underpinning. If it is determined that the water is coming from an underground source and is more than seasonal, a sump pump or “French” drain may be a necessary. Contact a Geotechnical engineer to determine how best to address this issue.

Excessive excavation issues can usually be resolved by supporting the soil with retaining walls. Questionable construction practices can be looked at and repaired without necessarily calling in a Structural Engineer. A good contractor can determine a reasonable course of action for repairs. Let the contractor call an engineer if needed.

PHOTO GALLERY



Foundation crack. Appears to be stable.



Foundation crack. Appears to be stable.



A make shift brace and severe erosion around this pier.



Missing anchor nut and washer.



Excessive notching.



Monkey wrenches are not a proper shim.



Short post.



Excessive soil excavation. Wood to earth contact at the platform joist.



Temporarily supported floor system.



Another short post.



Oops. Not quite right.



Severe deterioration in the beam.



Severe deterioration in these joists.



A very precise boring job by this plumber. This beam has lost over half its support capacity. This beam was under a bathtub. Bathtubs hold between 65 and 80 gallons of water. Water weighs 8.6 lbs per gallon. Do the math.



Compromised joist. Looks like this one had a sistered joist behind it however.



Same joist, different angle.



Over notched stud.



Water intrusion.



Wood to earth contact at a post. Where is the concrete pier? Buried in the dirt.



Wood to earth contact at this room addition.



Severe water leak from above.



Water leak from above.



Evidence of flowing water under this building.



Standing water is not good.



Severe deterioration and fungus in this sub floor.



Water intrusion in this manufactured home.



Water intrusion.



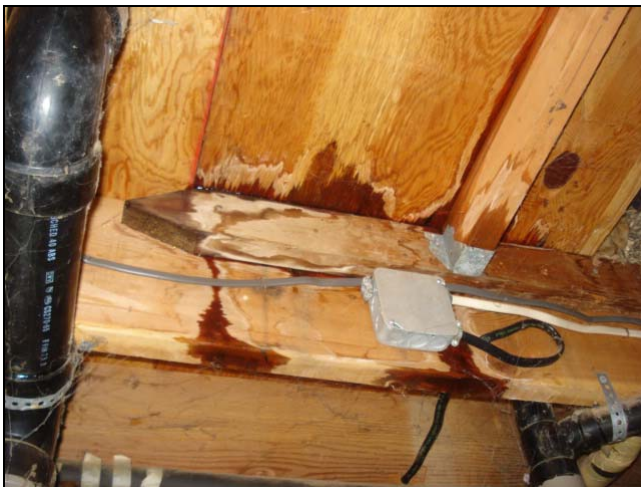
Standing water.



Water intrusion at a pier.



Water intrusion in a corner of the crawlspace.
The ABS waste line needs more support as well.



Water intrusion.



Standing water in a corner of the crawlspace.
Maybe they should shorten that drainpipe in the corner.



Evidence of flowing water.



These boxes are termite food.



Termite damage. Remove all cardboard and wood debris from the crawl space.



“Possible” fungus growing in the sub flooring.



The insulation was installed upside down and in direct contact with the heater flue pipe.



The insulation was installed upside down and in direct contact with the heater flue pipe.



Loose insulation fiberglass batting. The insulation was installed upside down. The vapor barrier (kraft paper coating) should face towards the living space above.



Loose fiberglass batting.



Loose batting.



Loose batting.



Evidence of organic growth in this insulation that was installed upside down.



Damaged ventilation screen could allow for the entry of vermin into the crawl space.



Damaged vent screen.



Damaged dryer vent pipe. Plastic pipe is not recommended.



Damaged dryer vent pipe.



Dryer vent pipe terminates in the crawl space.



This vent pipe should run in a straight line. The saddle will collect lint. Ideally the pipe would have a smooth, continuous inner surface.



The dryer vent pipe terminates under the building.



The dryer vent pipe has fallen loose from the diverter.



Damaged plastic dryer vent tube.



Shredded HVAC duct covering.



Shredded duct cover.



A loose duct.



The HVAC ducting should be suspended above or isolated from the soil.



A broken waste pipe hanger.



A loose waste pipe hanger.



Sagging waste pipe will collect material in the low spots and could become clogged.



Sagging waste pipe with no support hangers.



Sagging waste pipe.



This low spot or "saddle" could become clogged with waste material. Plus water does not flow uphill.



“P” traps under the building are for the tubs and showers. This one had a leak at one time. A little paint and this note goes away. Hint hint.



This tub drainpipe was leaking.



Water damage at the sub flooring under this drain pipe.



Some black spray paint on a repaired plumbing pipe might help lower the impact of the report. Just a thought.



An active water leak under a shower.



An active water leak.



An active water leak. The green fluid is antifreeze used to winterize this empty cabin.



Water soaked sub flooring under a toilet.



Evidence of a water leak under the toilet.



Evidence of a water leak under the toilet.



Evidence of a water leak under the toilet.



Evidence of a water leak under the toilet.



An open sewer pipe.



A water leak at a waste pipe cleanout cap.



A loose drain pipe.



A cracked drainpipe.



A loose waste pipe downstream from a toilet. This is a HAZARD for inspectors and occupants.



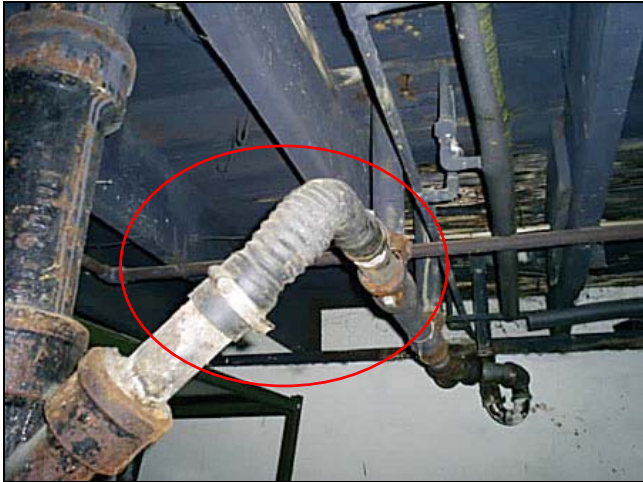
A cracked waste pipe was spewing an unknown material. Well, the material was known.



An open sewer pipe.



Someone cut a hole in this cast iron sewer drain to add this waste line.



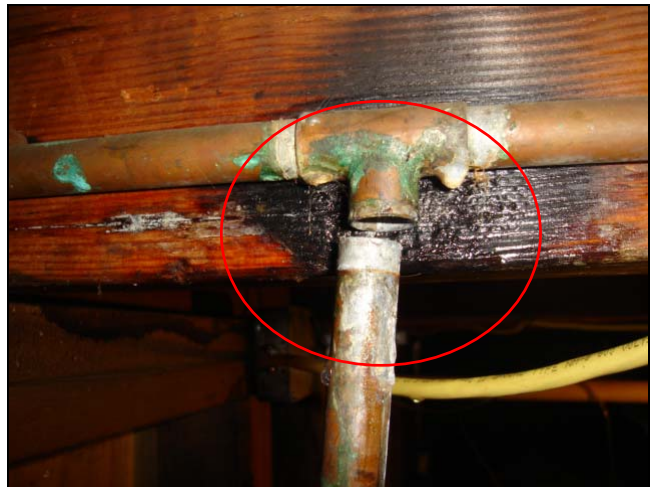
Radiator hoses are not a recommended plumbing material.



Radiators are not a recommended material either.



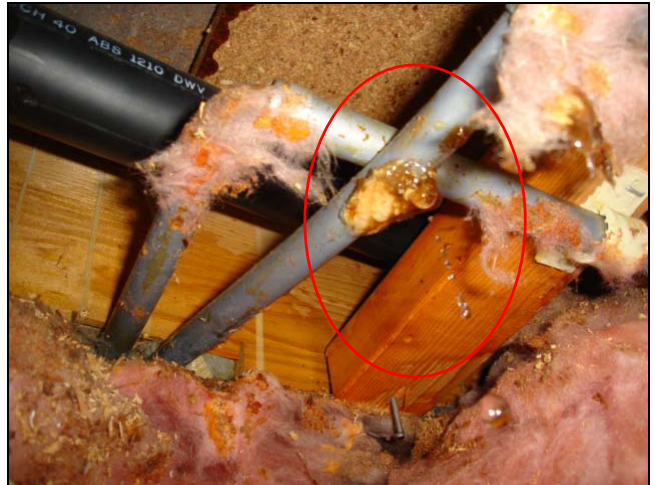
The copper water supply line split open inside this beam after a freeze.



This copper joint blew open when the water was turned on.



A leaking water supply line.



Leaking plastic water pipe under a manufactured home.



Wet spots in the soil beneath water and waste pipes is a good way to spot leaks.



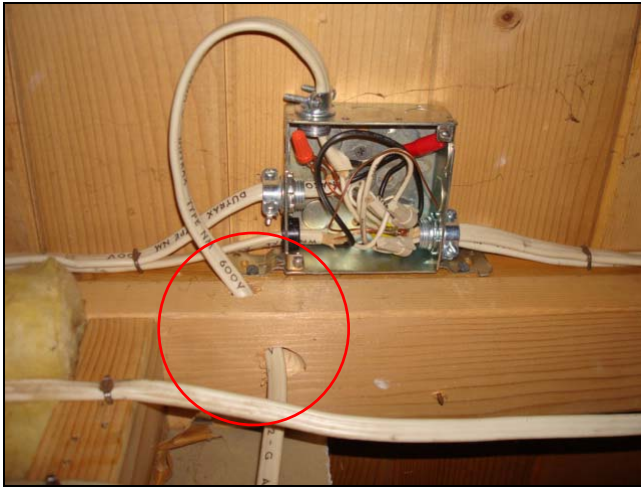
All those water leaks help the little plants to grow.



This was a beautiful fungus.



I think this became a computer screen saver.



The proverbial open junction box. I wonder why the installer chose to run the cable through a hole in the board?



Open junction box. A cheap cover on these will eliminate a note every time. Another “over and over again” issue we see constantly.



This metal conduit should be suspended above the soil.



This metal conduit has completely deteriorated. The wiring inside is exposed to the elements.



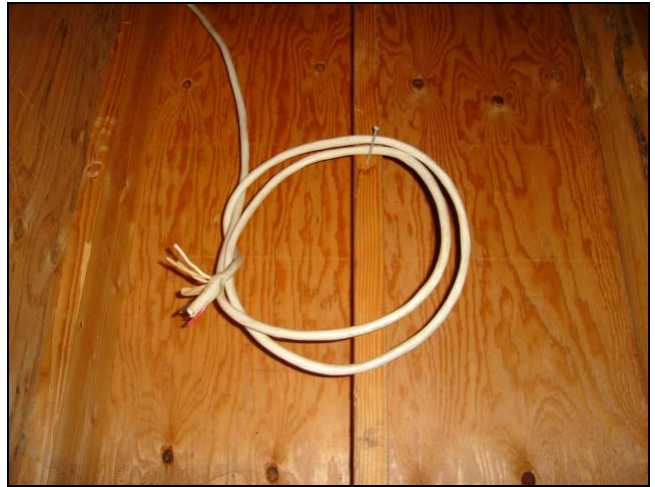
Get it off the ground or remove it.



A wiring snake pit. These wires were abandoned when a room addition was built.



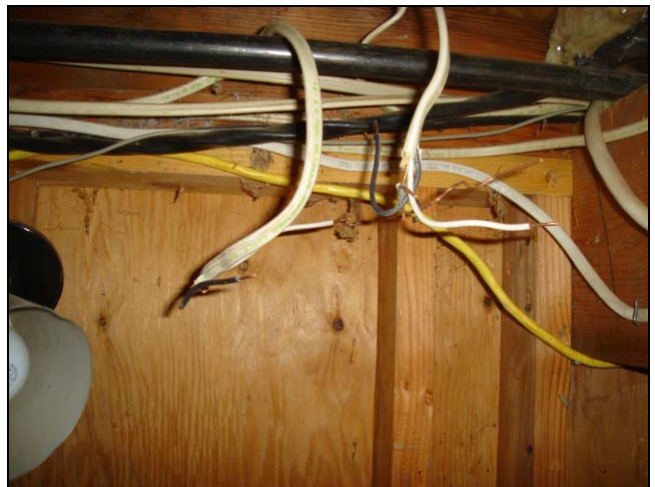
Is this open cable hot?



Is this open cable hot?



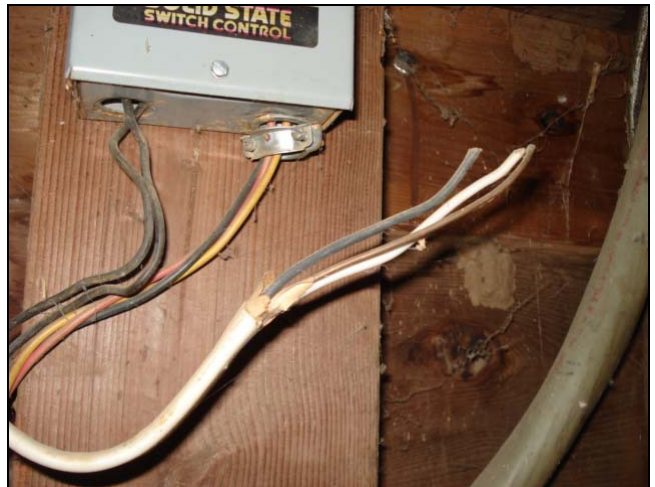
Is this open cable hot? Why is it just hanging there? What does it go to? If I have questions, so will the buyer.



Get these loose wires cleaned up and eliminate notes on the home inspection report.



Another loose cable. At the very least, put a tag on it that says "For future wiring" or something.



Old, abandoned electrical boxes and wiring should be removed.



And now, the ever popular “open splices.”



Open splice.



Extension cords being used as permanent wiring.



Open splice.



Ugly splices in an open junction box.



Open splice.



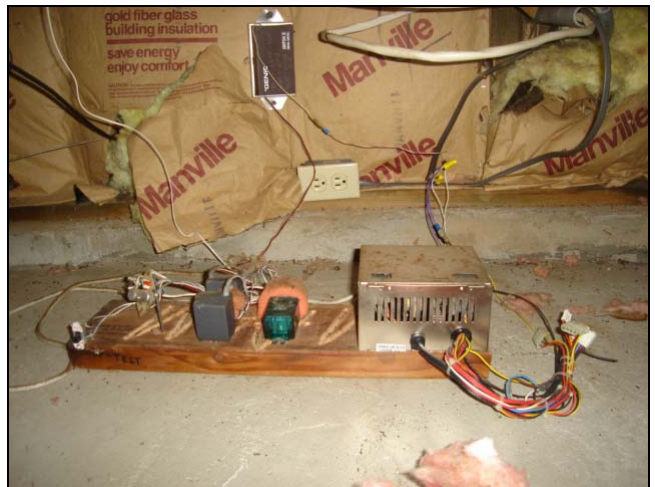
Open splice.



Open splice. There are usually more open splices in the crawl space than in the attic.



A loose wire.



I have no idea what this contraption was for. I did recognize the computer power supply.



This is a non-contact tool. It is indicating this open wire is hot. The photo to the right shows the tool's lamp illuminated.



The light flashes and there is an audible beep when the tool finds electricity in a wire. This tool is provided in the **Premier Package**.

Chapter 23- Inspecting Pools, Spas, Alarm Systems, Telephone Service, etc.

Our company did not inspect pools, spas, alarm systems or the telephone service. All I have to offer are a couple of ideas and some very disturbing statistics.

Inspect the fences, gates and door alarms from the home to the pool area for proper operation. Have your spa, pool and pool electrical equipment inspected by a qualified professional.

Statistics on Pool Drowning of Children and Adults in the United States.

Six people drown in U.S. pools every day. Many of these pools are public facilities staffed with certified professional lifeguards.

Centers for Disease Control

19% of drowning deaths involving children occur in public pools with certified lifeguards present.

Drowning Prevention Foundation

Drowning is the 4th leading cause of accidental death in the United States, claiming 4,000 lives annually. Approximately one-third are children under the age of 14.

American Institute for Preventive Medicine

Drowning is the second leading cause of unintentional injury related death among children under the age of 15.

National Center for Health Statistics

A child can drown in the time it takes to answer a phone.

U.S. Consumer Product Safety Commission

A swimming pool is 14 times more likely than a motor vehicle to be involved in the death of a child age 4 and under.

Orange County California Fire Authority

Children under five and adolescents between the ages of 15-24 have the highest drowning rates. For every child who drowns, four are hospitalized for near drowning.

American Academy of Pediatrics

An estimated 5,000 children ages 14 and under are hospitalized due to near-drownings each year; 15 percent die in the hospital and as many as 20 percent suffer severe, permanent neurological disability.

Foundation for Aquatic Injury Prevention

Of all preschoolers who drown, 70 percent are in the care of one or both parents at the time of the drowning and 75 percent are missing from sight for five minutes or less. In 10 states - Alaska, Arizona, California, Florida, Hawaii, Montana, Nevada, Oregon, Utah and Washington - drowning surpasses all other causes of death to children age 14 and under.

Orange County, CA, Fire Authority

Please, secure the pool area with gates, fences and alarms.

Even though I chose not to inspect pools, I do have access to a very powerful, very little known guide written by an expert. He teaches pool owners how to maintain a pool spending less than \$11.00 per month on chemicals and 5 minutes per week on maintenance. He also provides a number of valuable tips and tricks on diagnosing and solving pool problems related to both equipment and water chemistry.

As of this writing I am negotiating a deal to get you direct access to this excellent resource. As a member of the 27 Dollar Home Inspection community I will keep you informed on the progress of this offer.

Membership to the 27 Dollar Home Inspection "Preferred Members Area" is free and available to anyone. Inform your family, friends and associates they can sign-up at: www.27DollarHomeInspections.com

Chapter 24- What about Permits before you do repairs?

During the course of my inspection career the question of permits often came up, particularly when it appeared there had been changes to the original floor plan or the intended use of an area.



The pulling of permits is not verified by home inspectors. Suspected code violations will be in the home inspection report.

I am not a lawyer and am not able to provide legal advice. However, it is my understanding that the permit process provides an additional level of protection to the homeowner by having a disinterested code inspector involved in the construction process. This lowers the risks involved in ownership if a property ends up in litigation. Any person who has ever had ownership of the property could possibly be named in a law suite.

Most municipalities are eager to sell you a permit to do work on your property. Pulling a permit is also a good idea because it helps verify your licensed contractor's performance. The red flags fly if a building contractor suggests not pulling a permit.

It is recommended that you get more than one estimate for construction or repairs conducted by licensed contractors.

Chapter 25- Additional Comments & Some “Over and Over Again Notes”

Let us now turn our attention to odors.

The smell of gas could be an indication of a leaking appliance.

Odd, musty, gassy smells in a home could be an indication of toxic mold.

Contact an industrial hygienist to take samples so smells or odors can be identified. If the mold inspector’s report is returned with hazardous or toxic molds identified, the hygienist will provide guidance on how to remediate this hazard.

On the “Recommended Links” page of our Website is a company that offers free mold test kits. This site is an excellent resource for additional information about mold and allergens. In the spirit of full disclosure the kit is free, but the lab work is not.

Pet stains and odors can be detrimental to a successful home sale. Just as we become oblivious to settlement cracks and the other little idiosyncrasies in our homes, pet odors can also become subjectified.

There are enzyme-based products on the market that claim to eliminate pet urine odors. I have no experience with this and am not able to recommend any particular product. In extreme cases replacement of floor coverings, baseboards, wallboard and subflooring may be the only solution. Professional painters may have advice for this issue.

If you have found an effective method or product for solving pet odor problems, please share your ideas in the 27 Dollar Home Inspection forum. Your fellow readers could benefit from your specialized knowledge.

<http://www.27dollarhomeinspections.com/forum/>

“OVER AND OVER AGAIN NOTES”

Here are a few of the “Over and over again notes” common to home inspection reports. The notes came directly out of our computer digital library.

Note: The xxx switch of the x-gang set was unidentifiable.

Note: The xxx light fixture did not illuminate. The bulb may be burned out.

Note: The outlet at **xxx** indicated “Hot/Neutral reversed.”

Note: The outlet indicated “Open Ground.”

Note: The outlet indicated “Dead.”

Note: The test/reset function of the G.F.C.I. outlet was not operable at the time of this inspection.

Note: The outlet over the sink was not G.F.C.I. protected.

Note: Exposed wiring below 7’ was noted.

Note: No air gap was installed for the dishwasher. The air gap device prevents the potential for the backflow of wastewater into the appliance.

FYI: Maximum pressure is recommended at or below 80 lbs. to help prevent leaks and ruptures of plumbing lines and fixtures.

Note: The closer should be adjusted to close and latch the fire door between the garage and living space.

Note: All penetrations through this firewall to the living space should be sealed.

Note: The water heater pressure relief valve terminates at **xxx** and should be redirected to the exterior of the building.

Note: No seismic strapping was installed on the water heater.

Note: The smoke detector was not operable at the time of this inspection. The battery may be dead.

Note: No doorstopper was installed. The knob hits the wall.

Note: The carpet needs to be stretched.

Note: An irregularity was noted in the level of this floor.

Note: The cold air return filter should be cleaned or replaced.

Note: The distance between the fireplace door opening and flammable material should be at least 18”.

FYI: A locked double deadbolt lock could be a hazard in the event of an emergency if the key is not available.

Note: Wood-to-earth contact was noted at [xxx](#).

Note: Efflorescence was noted in the concrete perimeter foundation.

Note: The insulation material appears to have been installed upside down. The manufacturer's installation instructions generally indicate the vapor barrier should face towards the living space.

Note: Due to personal items and furniture, a thorough inspection could not be made of all areas.

BONUS PHOTOS from the wide, wonderful world of home inspections.



A goofy gutter.



Ouch



A bottle of leak stopper or a leak stopper bottle?



Tree house.

Chapter 26- Conclusion & Resources

The goal of this eBook is to provide a tool that you can use to put more cash in your pocket at the close of escrow. It is our desire that you recognize the impact you can have on a home inspector, which will influence the final report.

We trust that this eBook and our other products will serve you well.

It has taken several months to compile the information you have in your hands. It is a work in progress even in its current form. We recognize there are many different types and styles of residences and acknowledge this eBook is not the final word on home inspections. As changes are made we will communicate them to you through the www.27DollarHomeInspections.com Website.

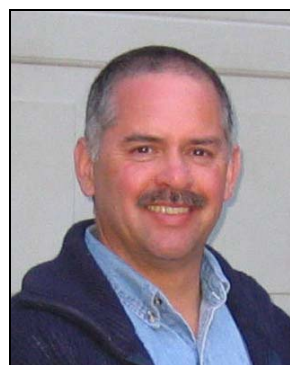
As a valued member of our program, you are invited participate in the www.27DollarHomeInspections.com/forum/. Join our growing community of homeowners, real estate professionals and real estate investors and share your findings, your remedies and your experiences using this material.

Here's to your success and may you pocket of the money at the close of escrow.

Dave Frederick



Rick Daniel



In 1998, Dave Frederick opened “The Home Inspector” in Calaveras County, CA. He operated as a sole proprietor until Rick joined him in 2004. It was Dave’s goal to pass his knowledge on to the right person so that the company could thrive after he retired. Rick was that person. Together they became “The Home Inspector, Inc.” Combined they have conducted over 3300 home and commercial inspections. They have been personal friends for over 20 years.

For years Dave had a burning desire to create a home inspection process that helps sellers realize more profit at the close of escrow. After he retired he motivated Rick to help him make that dream come true. This resulted in the creation of the 27 Dollar Home Inspections eBook, the Companion Video Series and the Website.

Rick continues to conduct home inspections on a daily basis.

Resources

The Internet is a remarkable resource for information on any of the subjects discussed in this eBook. We used www.Dogpile.com to help find consensus on several topics discussed in this work. Dogpile is a metasearch engine that gathers results from Google, Yahoo!, Windows Live Search, Ask.com, About.com, MIVA, LookSmart and several other popular search engines, including results from audio and video content providers. Dogpile is a registered trademark of InfoSpace, Inc.

Search these terms in www.Dogpile.com for additional information on the subjects:
Thermography video inspections
Repairing holes in sheetrock

If you need the services of a professional home inspector there are several associations across the country with Website search resources and contact links to their inspector members.

The following is a partial list of inspection associations. There may be other state and local associations in your area.

CREIA - California Real Estate Inspection Association.

www.CREIA.org

Founded in 1976. Choose an “MCI” inspector for the highest level of certification in this organization.

ASHI – American Society of Home Inspectors

www.ASHI.org

Established in 1976.

NAHI – National Association of Home Inspectors, Inc.

www.NAHI.org

Established in 1987.

AII – American Institute of Inspectors

www.Inspection.org

Formed in 1989.

InterNACHI – National Association of Certified Home Inspectors

www.NACHI.org

An internet based marketing organization with a rapidly growing list of members nationwide.

Another resource we often use is www.wikipedia.org. This glossary site provides quick descriptions and additional references on selected topics.

About expansive soils:

<http://geology.com/articles/expansive-soil.shtml>

The stucco house from hell. A Pennsylvania homeowner's photo diary of stucco gone bad.

<http://ImageEvent.com/platow/defectivehouse>

About cement siding material:

http://en.wikipedia.org/wiki/Fiber_cement_siding

Home warranty information:

<http://www.libertyhomeprotection.com/>

Reference ID #12673

This product could save you thousands on grout repair:

<http://www.colorfastind.com/products/tilegroutcaulk.htm>



Tile & Grout Caulk

- 100% acrylic formula
- Siliconized 4 Unlimited colors
- Available in sanded and non-sanded formulas
- For indoor or outdoor uses
- Moisture and mildew resistant
- Available in 10.3 oz. and 5.5 oz. tubes

Color Fast Tile & Grout Caulk is easy to use, it comes color matched and texture matched for that perfect look around tubs, showers, counter top backsplashes, thresholds and many other uses.

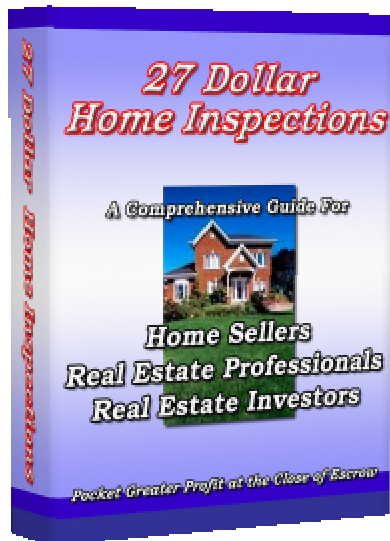
Easy cold water cleanup with just a damp sponge. Color Fast's formula is non-slump, so it's simple to use on vertical installations.

When fully cured, Color Fast Tile & Grout Caulk offers superior water and UV resistance.

The following pages were copied from the Website. May 9, 2008

27 Dollar Home Inspections

Product Options



BASIC PACKAGE

27 Dollar Home Inspections **downloadable eBook**

Get instant access to this step by step, fully illustrated foundational eBook to help insure you get a bigger check at the close of escrow.

26 chapters filled with instructions, 100's of actual photos, an inspection worksheet and the expertise you want and need.

Get your property ready before strangers enter your home and begin ripping into your equity profits.

\$27.00 and instant access

DELUXE PACKAGE

27 Dollar Home Inspections **downloadable eBook**

and Companion Video Series

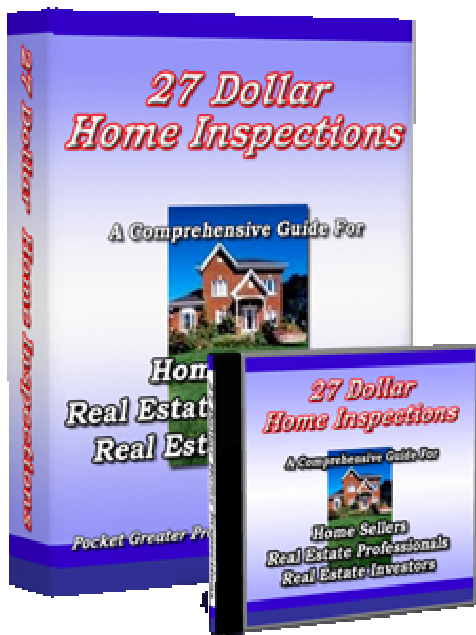
Get instant access to both the foundational eBook and fast loading flash videos where Master Home Inspectors Dave Frederick and Rick Daniel show you how to inspect everything taught in the **27 Dollar Home Inspections** eBook.

You use your eyes and their knowledge to fully inspect your own property before strangers come in and start chewing up your equity profits.

These videos are a must for people with little or no experience with an inspection process.

\$74.00 and instant access





PREMIER PACKAGE

27 Dollar Home Inspections
downloadable eBook

Companion Video Series

Video Series DVD

Inspector's Starter Tool Kit

1 Hour of Consultation with Master Home Inspector Dave Frederick or Rick Daniel

Get the foundational eBook and instant access to fast loading flash videos where Master Home Inspectors Dave Frederick and Rick Daniel show you how to inspect everything taught in the **27 Dollar Home Inspections** eBook.

Valued at \$74.00

AND

You will also receive the Companion Video Series on DVD so you can watch the inspection process offline.

Valued at \$87.00



AND

You will also receive a mini tool bag and a set of starter tools that professional Home Inspectors use everyday.

The kit includes:

- a probe tool for checking deterioration,
- a thermostat for testing ovens
- a tester for checking outlet receptacles,
- and a non-contact tool for testing potentially HAZARDOUS exposed wiring.

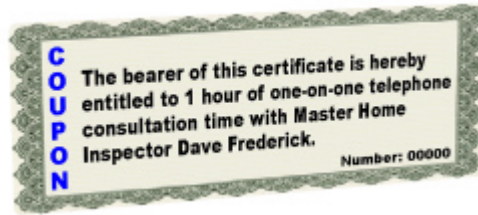
All these tools are used and demonstrated in the **27 Dollar Home Inspections** program.

Valued at \$64.00



AND

You will also receive a coupon for up to one hour of phone time with Master Home Inspector Dave Frederick or Rick Daniel. Talk one on one with the masters for those questions that relate to your specific situation.



Valued at \$175.00

(Additional time can be purchased at a Member discounted rate of \$125.00 per hour as needed.)

Total value of the package contents:

\$400.00

***Order the Premier Package
today for only***

\$237.00

+ \$12.95 S&H

+ CA residents applicable sales tax

27 DOLLAR HOME INSPECTION WORKSHEET

Component:	Order of Priority:
Location:	
Findings:	
Remedies:	

Component:	Order of Priority:
Location:	
Findings:	
Remedies:	

Component:	Order of Priority:
Location:	
Findings:	
Remedies:	