

# Home Inspection Report

Inspection Date:  
**July 3, 2018**

Prepared for:  
**Connie Szeto**

Prepared by:  
**Pace Inspection  
Services  
PO Box 1837  
Brentwood, CA 94513**

**Office: 925-513-0006  
Fax: 925-513-0009**

**Master CREIA Inspector**

Report Number:  
**2018070302**

Inspector:  
**David Pace**  
Master CREIA Inspector  
California Real Estate Inspection  
Association

Listing Agent Information:  
**Henry Chung**  
Infinity Realty  
318 Westlake Center,  
Suite 222  
Daly City, CA 94015

Inspection Address:  
**2082 Henry Hart Drive  
Brentwood, CA**



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# Client Advisory

**Please note: This Advisory is not a “summary” of the inspection report.** That is why we urge you to read the entire inspection report before you review this section. As an additional service to our Clients and their Real Estate Professionals, we have provided this listing of the items which, in the professional opinion of your Inspector are the more significant items which merit further attention, investigation, or improvement at this time. Some of these conditions may be of such a nature as to require repair or modification by a skilled craftsman, technician or other specialist. A homeowner such as you can easily handle others. In listing these items, your Inspector is not offering any opinion as to who, among the parties to your transaction, should take responsibility for addressing any of these concerns. As with most other facets of your transaction, we recommend consultation with your Real Estate Professional, Attorney or Home Builder for further advice with regards to the items listed below.

Finally, we remind you that following the Inspector’s advice will often result in enhanced safety for the occupants of the home or improved performance and/or extended life for the component in question.

## ROOF SURFACE

1. **A roof tile at the left side of the dormer has slid out of place. We recommend the tiles be repositioned and resecured by a qualified roofing contractor.**

## ELECTRICAL SYSTEM

2. **The multiple switch combination in the family room and at the entry to the master bedroom was not functioning as intended. This was primarily a matter of convenience and was not necessarily a safety concern. However a licensed electrician should be retained to restore the circuit to its intended configuration.**

## HEATING SYSTEM

3. **The filter had accumulated debris that decreased its effectiveness and blocked airflow. This condition can dramatically decrease the efficiency of the system, decrease the service life of the furnace and increase maintenance costs. A properly sized new replacement air filter should be installed and secured in the correct orientation in this unit.**

## INTERIOR COMPONENTS

4. **Several of the smoke detectors were “chirping” at the time of the inspection. This is an indication of low battery levels. We recommend the batteries in every smoke detector be replaced and the proper operation of each smoke detector be verified.**
5. **Hot water did not flow from the right hallway bathroom when tested. We recommend repairs be made by a qualified and licensed plumber.**
6. **Hot water did not flow from the right wash basin in the master bathroom when tested. We recommend repairs be made by a qualified and licensed plumber.**

# Inspection Overview

## Please Read This Important Information

### Essential Wisdom and Pertinent Precautions for the Home Buyer

While most of the primary concerns arising out of your inspection today have been addressed in the Client Advisory Section of this Report, nevertheless . . .

**WE STRONGLY URGE  
YOU TO READ ALL  
OF THE INSPECTION  
REPORT THAT  
FOLLOWS . . .  
BEFORE CLOSING  
ON YOUR PURCHASE!**

Although, we strive in every way to give each client a competent and thorough inspection, there may be specific features, systems or components which we are not able to inspect or perhaps even confirm their existence. Even in the case of those items which receive the most thorough examination, there may be further tasks which you as the home buyer and the new homeowner, will need to address during your period of ownership.

We urge you to make arrangements, as a part of the Pre-Closing Walk-Through (see the section behind the tab toward the back of this report) to cover all of the points concerning the maintenance and operation of this home with the previous owner or occupants! To aid you in this orientation we have suggested items or tasks throughout this report which we believe you should cover with the outgoing occupants before they leave and you take over.

This inspection is only a beginning on the journey of home ownership. We know that through it you will have the advantage of being better educated than homeowners who did not have the wisdom to obtain a home inspection. However home inspectors (even the most competent ones) are not normally ordained members of the clergy! A home inspection is not a religious blessing on your new home! Just because you have had an inspection, you should not assume that you have nothing more to do but sit back and enjoy your home without conscientiously caring for and maintaining it!

Your Inspection and this Report are not substitutes for common sense!...  
. . . . They are only educational supplements!

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## QUESTIONS AND ANSWERS ABOUT BUILDING PERMITS AND “THE CODE”

### **Q. *Have you ever heard someone ask the question, "Is this house 'up to Code'?"***

**A.** Home inspectors are often asked if something in a home we are inspecting is "up to code." Unfortunately, we usually can't answer that question for a number of reasons. A given code will be in effect for a specific home at a specific point in time. Codes vary for a multitude of reasons including one or more of the following:

1. Each jurisdiction (a town, city or county) may choose to adopt, as its standard, any one of several model codes.
2. Even though different jurisdictions may each adhere to the same model code, such as the International Residential Code, they may each use a different *version* of the same code, i.e. the "2010 Version" or the "2013 Version"; etc.
3. Even though the local jurisdiction has adopted a given version of whatever Code, that jurisdiction can still *exclude* certain provisions which were in the model document or *add* its own custom provisions to tailor the model code to be more suitable to local conditions.
4. Finally, even though a jurisdiction may have a clearly defined "Code," it is still up to the local Building Official, while on site during an inspection, to further interpret the local code for conditions specific to that house.

Thus, it should be easy to understand why a responsible Home Inspector would exclude Code compliance from the scope of their Home Inspection. Only the local Building Official can offer an opinion as to whether a given condition in a home “meets Code”. In that rare instance where our client may require an opinion as to whether a certain feature meets Code, we will refer them directly to the office of the local Building Official who will be the only person who can legally render such an opinion.

### **Q. *What is a Building Permit, and how important is it?***

**A.** Today, virtually every locality requires that an owner or their contractor obtain a Building Permit before attempting original construction, renovation which changes the original configuration of a building or structure, or replacement of certain systems or components. Examples of activities which usually require a permit are the following:

1. Original construction of a home or erection of outbuildings such as garages or barns.
2. Finishing an unfinished basement.
3. Replacement of roof coverings, electrical services, furnaces, water heaters, etc.
4. Installation of stoves or fireplaces.

A Building Permit is quite important as it signifies that the project complies with local regulations and usually has been inspected by the local Building Official. The existence of Building Permits for all activities on a given property for which a permit would be required is an important attribute. If you have questions as to whether aspects of your new home are covered by permits, seek out the local Building Department and inquire as to the status of permits. Most Building Departments can furnish a complete history, and will do so at no, or a minimal charge.

### **Q. *What can happen if a home owner finished, say their basement, without a Building Permit?***

**A.** The *current owner* of a property is responsible for Code compliance. If a homeowner finishes a basement without a Building Permit and its accompanying inspections, and there exists the possibility of undesirable outcomes:

1. Should an otherwise insurable loss occur, such as a fire, and the homeowner's insurance company determines that the loss originated from work done without a Building Permit, some insurance carriers have been known to deny coverage for the loss.
2. The current owner of an improved property is responsible for the status of permits and Code compliance. Thus, when you become "the *current owner*" of the property you will take on this responsibility should the local building official determine that remedial measures are necessary to bring your home into compliance. A likely scenario that may trigger such a determination would be when you attempt to remodel or add to your home and seek a Building Permit for this new work.

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This inspection was done on July 3, 2018, by Inspector David Pace of Pace Inspection Services, 925-513-0006.  
Acceptance and/or use of this Inspection Report shall constitute acceptance of, and agreement to, all of the provisions of the *Property Inspection Contract* and its *Standard Terms and Conditions* which are incorporated by reference and form a part of this Inspection Report.  
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# Inspection Overview

## DESCRIPTIVE INFORMATION

<b>Weather Conditions:</b>	• Clear Sky
<b>Temperature Range:</b>	• 80 - 90 Degrees F
<b>Orientation of the Dwelling:</b>	• The front entrance faced the street
<b>Age of the Dwelling:</b>	• 3 years, as reported by the Owner
<b>Main Water Shutoff Location:</b>	• On the exterior in the front
<b>Sewer Cleanout Location:</b>	• On the exterior at the front of the house
<b>Electrical Panel Location:</b>	• On the exterior on the right side
<b>Main Gas Shut-Off Location:</b>	• On the exterior on the right side
<b>Persons in Attendance:</b>	• The owner

## ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE INSPECTION

### IMPORTANT NOTICE

We performed this Home Inspection for the *exclusive* use of the Client(s) named in this Report. If anyone other than our Client for this inspection reads this Report, we wish to emphasize that by contract, **our sole responsibility is to our Client(s) and no third party may rely** on this report for any purpose. If anyone else wishes to obtain current information on the condition of this home, we can arrange to perform, for a fee, a follow-up inspection on their behalf.

### Location/Direction Conventions Used In This Report

Over the years, our clients have told us time and again how much they appreciate the information which we include in every report on the location of thermostats, furnace/air conditioner filters, electrical panels, ground fault circuit interrupt devices, and the main water, electricity and gas shutoffs - particularly when they are normally hidden or hard to get to.

Specifying these critical locations becomes even more valuable for those of our clients who are not able to accompany the inspector on the inspection. Not only does this information aid you in operating and maintaining your home, but the abundance of information contained in our Report is further reassurance that your inspector did, in fact, crawl into all those nasty places and examine all those “nitty-gritty” details.

Here is how you will find we have called out locations and directions in your report:

On the exterior, when we talk about the “right side” or “left side” of the house, we are assigning direction as we would if we were standing at the street and were looking towards the front door.

For features inside the home, they will be located by imagining that you are standing in the doorway of the main entrance (front door) looking towards the center of the house. Then locations will be described as “left” or “right”, and “front” or “rear”. (For example, “the left rear corner of the right front bedroom”).

### A Definition of the Terms “Acceptable” and “Satisfactory” as Used in this Report

When any item in this Report is noted as being in “acceptable” or “satisfactory” condition, the meaning is that it was providing generally adequate service within the limits of its age - and any defects, deficiencies or potential problems noted during the inspection.

The Manufacturer’s specifications or installation instructions should be consulted for guidance for any corrections or modifications.

## Important Information on the Scope of this Inspection

### Important Information Concerning Mold and Mildew

We hope that the following facts and considerations regarding mold and mildew, the scope of this home inspection and your family's health, will aid in your understanding of this important and timely topic:

- ♦ Mold spores are present in the outside air everywhere, even in the driest of the so-called desert climates. Thus, every home contains mold both inside and on all surfaces. But the mold will remain dormant until the right conditions of moisture and food become present. Accurately identifying those conditions often takes specialized skill and experience.
- ♦ Mold generates a number of mold byproducts. Particles include the mold organism, spores and fragments. Chemical byproducts include enzymes, mycotoxins and gasses. Many of these byproducts can affect susceptible people in a variety of ways, and from a health point of view it often makes no difference if the mold is dead or alive.
- ♦ Mold spores are present on the surfaces and in the cracks and pores of building materials as they are incorporated into new construction, no matter where in the world a new home is being built. While it is true that molds usually do not propagate if removed from a source of moisture, nevertheless they can remain in a dormant state for years waiting for the right conditions to spring into life and fill the atmosphere both inside and outside of a building with their progeny.
- ♦ Some molds give off toxic gases as an offensive "weapon". These toxic gases aid them in killing competing molds and expanding their "territory". These same gases can be dangerous to humans as well.
- ♦ Human reaction to, and the possible effects of, exposure to specific molds and other fungi can vary widely, *even between members of the same family exposed to the same conditions.*
- ♦ Many experts consider all molds to be potential allergens and irritants, including some toxins. Health concerns from exposure to mold in humans varies with each individual and can range from simple allergy symptoms to asthma, watery eyes, sneezing, wheezing, difficulty breathing, sinus congestion, blurry vision, sore throat, dry cough, aches and pains, fever, skin irritation, bleeding of the lungs, headaches, and memory loss.
- ♦ Searching for environmental hazards of *any* kind, including molds and/or mildew is not a part of this home inspection, or *any* standard home inspection and report. (See your Property Inspection Contract)
- ♦ Many times, mold infestations occur inside wall cavities or in an underbuilding space or attic where they cannot be seen without the destructive disassembly of the building, an activity specifically prohibited by all nationally recognized Standards of Practice governing the Home Inspection profession. Remember, also, that *you* as the Client would be financially responsible for the repair of any damage resulting from any invasive methods used to find hidden mold growth in a building that you do not yet own!
- ♦ Unfortunately, there have been many documented cases of significant and harmful mold growths that were totally concealed and which left absolutely *no* outwardly visible symptoms of their presence.
- ♦ During your inspection, if we did come across conditions that, in our opinion, could cause or suggest the presence of these organisms, we have made every effort to note them in the report.
- ♦ **No matter whether or not we have mentioned any visible evidence or even suspicious symptoms in your report, and whether or not you or any member of your family have been known to have ever had an adverse reaction to possible mold exposure, or if you are concerned at all about these organisms being present in this home, we strongly recommend that you engage the services of a qualified expert that specializes in the identification of these organisms and follow their recommendations.**

### The Yard Sprinkler System Was Not Inspected

The landscape irrigation (sprinkler) system was not inspected and is not included in this report. Thus, we cannot make any representations as to its present condition or future performance. We recommend evaluation by a sprinkler system technician, if further information on the system's function and condition is desired.

### **We Evaluate for Function, Operability and Condition**

The purpose of a home inspection is to evaluate the home for function, operability and condition of systems and components. Its purpose is not to list or attempt to address cosmetic flaws. It is assumed that the client will be the final judge of aesthetic issues and not the home inspector, as the inspector's tastes and values will always be different from those of the client.

### **Environmental Issues Are Excluded**

Comments on environmental hazards or conditions, including, but not limited to, toxic, reactive, combustible or corrosive contaminants, wildfire, geologic or flood hazards are specifically excluded from this inspection and report.

### **Not Inspecting for Building Code Violations**

The presence or extent of building code violations was not the subject of this inspection, nor was it included in the report. No warranty is offered on the legal use, or uses of the building or property. Information with regard to these issues may be available from the appropriate building and/or zoning agency.

### **Important Information May be Found in the Public Records**

Important information about this property may be a matter of public record. However, search of public records is not within the scope of a home inspection. We recommend review of all appropriate public records by the buyer, or a representative of the buyer, should this information be desired.

### **A Home Inspection, Not a Pest Inspection**

Any observations, which the inspector might make in this report regarding evidence of pests or wood destroying organisms, are not a substitute for inspection by a licensed pest control operator or exterminator. Your inspector may only report on a *portion* of the currently visible conditions and cannot render an opinion regarding their cause or remediation.

### **We Suggest Review of a Recent Pest Control Inspection Report**

We recommend review of a current Pest Control Report for further information concerning pest activity or wood destroying organisms on this property. If such a report is not available, we recommend arranging for a pest control inspection, before close of escrow, to confirm the presence and extent of pest or wood destroying organism activity.

## **Valuable Advice for Our Clients**

### **An Explanation of Expansive Soils**

Soils in this area may be "expansive", in that they may tend to expand and contract with variations in moisture content. Because this expansion and contraction may result in movement in certain important elements of the structure, we strongly recommend regular attention to drainage and grading around the entire foundation.

### **Maintain Drainage to Minimize Soil Movement**

Movement caused by expansion and contraction of the soils under and around the dwelling could cause exterior and interior cracking, sticking doors, and other undesirable, yet avoidable, conditions. Maintaining proper grading and adequate drainage around and from the foundation is the best and most cost-effective way to minimize this movement. If desired, more information about expansive soils could be obtained from the municipal engineering department, or a private soils engineer.

### **Your Inspector is Not a Representative of Any Insurance Company**

Some companies which underwrite homeowner's insurance policies, in an effort to reduce their exposure, have begun to "tighten up" their underwriting standards and are refusing to write policies on homes with older technology electrical systems or components, weathered or worn roof coverings, a record of moisture intrusion and related water damage or perceived vulnerability to earthquake damage. For example, in more than one recorded case, insurance companies have cancelled homeowner's insurance policies part way through their first year of coverage because the company's representatives judged the condition of the roof coverings to be unacceptable, when in fact, they were quite functional and no moisture had penetrated the homes.

Your home inspector is not a representative of any homeowner's insurance company and cannot possibly forecast the future actions of your proposed insurance carrier. If you have any uncertainty about what your insurer may be willing to insure (and for how long), we strongly recommend consulting with your insurance agent *before* you close on your new home.

### **Consult Insurance Company Regarding Earthquake Insurance**

Certain building designs and/or lot topography may not qualify for earthquake insurance. Each insurance company has its own underwriting policies. If such coverage is of concern, then we recommend checking with your Insurance Agent as to the availability of earthquake insurance for this specific property.

### **Environmental Topics Can be Found in California Guide**

For additional information concerning environmental topics, we suggest obtaining a copy of the State of California publication, "Environmental Hazards: Guide for Homeowners and Buyers", available from your real estate professional.

### **Items Not Covered in a Standard Home Inspection**

Examination or evaluation of locked or inaccessible areas, HVAC, Elevator; Landscape Irrigation, Smoke Detection, Fire Suppression, Security, Communication, Computer, Satellite Receiving, and Emergency Lighting systems, Appliances, Tenant Improvements, Energy Efficiency, and any related Equipment, or the anticipated use of the property are not included in the scope of this Building Inspection and Report.

# Structure

## THE STRUCTURE A Definition

The purpose of the structure of any building is to carry all loads safely to the ground. The structure is the system of load bearing components, including the foundation, that support the roof, floors and exterior walls.

## A HISTORY OF THE DEVELOPMENT OF RESIDENTIAL STRUCTURES

Man's earliest dwellings were provided by nature - in the form of caves, trees and rock ledges. The advent of crude tools and better hunting techniques resulted in shelters made from animal skins supported with poles. These portable shelters were ideal for the nomadic lifestyle of the hunters and gatherers.

Early settlers in America built homes and shelters of native materials - logs from wooded areas, stone from the mountains, sod from the plains and adobe in the southwest. Shelters were limited in their placement by the available supply of building materials.

During this era, the primary structural configuration was "post and beam" or "column and lintel" where walls or posts supported vertical loads while beams or lintels carried horizontal loads. Stone masonry and adobe were the beginnings of home construction utilizing modular components.

With the advent of more sophisticated machinery, particularly saw mills, structural components became even more portable and modular components more prevalent. Early building foundations were made of stone – often, "dry-laid" without mortar. Later, lime/sand mortar was used to bond the stone and then brick into a more cohesive foundation for even larger homes.

The advent of truck transportation and Portland Cement concrete brought the concrete foundation onto the home building scene. Today, in urban areas, poured concrete or concrete block foundations are typical, while in remote locations, treated timber foundations are often encountered.

## THE STRUCTURE - OUR INSPECTION PROCEDURE

Our inspection of the structural aspects of your dwelling will include the following:

- A. The types of materials used to form the structure, and its configuration.
- B. An examination of the visible and accessible roof components, usually from the attic access. These will include roof sheathing or decking, trusses or rafters and may include ceiling joists, crossties and purlins.
- C. A visual check of the load bearing walls, looking for excessive and/or unusual cracking and noticeable movement of door openings causing them to become out-of-square.
- D. An evaluation of the floors, looking for humps or sags which might be symptomatic of support system movement.
- E. An examination of the visible and readily accessible aspects of the foundation and underbuilding support elements.

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# GLOSSARY OF STRUCTURAL TERMS

While our report is designed to be clear and easy to understand, it may contain terms or phrases with which you may not be familiar. We are pleased to furnish this reference to define and clarify terms and phrases that may appear in your report.

**ANCHOR BOLT** - A bolt used to secure a wooden sill plate to a concrete or masonry floor or wall. The purpose of the bolt is to limit the ability of the framing to move independently of the foundation in the event of seismic activity.

**BALLOON FRAMING** - A framing system configuration where the exterior wall studs extend from the foundation to the roof – as opposed to Platform Framing.

**BRIDGING** - Short, structural members “crisscrossed” between floor or ceiling joists to provide reinforcement and load distribution.

**CRACKS IN INTERIOR WALLS/CEILINGS** - Hairline cracking in the interior walls and ceilings, as well as minor sloping and sagging of floors and door jambs, should be expected as a result of ordinary settlement and expansion of the foundation system, structural framing, and soil. These conditions do not, in our opinion, represent a failure of the framing system. We are not registered engineers. Additional information concerning settlement of the structure and building site would have to be obtained by retaining a qualified registered engineer.

**EFFLORESCENCE** - A deposit of soluble salts, usually white, on the surface of concrete and masonry walls due to evaporation of water.

**FOUNDATION** - Construction below or partly below grade, which provides support for exterior walls or other structural parts of the building.

**GUSSET** - A strap made of metal or wood attached at the connection of roof trusses or rafters or foundation area beams and posts. Gussets will help limit the framing's ability to laterally “rack” (move out of square) in the event of high winds or earthquake.

**INADEQUATE FOUNDATION CLEARANCE** - Subarea clearance between the soil and the wood framing which is less than eighteen inches. Insufficient clearance does not allow access for inspection or maintenance and creates a condition conducive to moisture damage and decay of wood members. We recommend a minimum of 24 inches of clearance be provided between the soil and the framing. Any damaged material found in the course of this work should be replaced.

**PARGING** - A coat of cement over block foundation walls, or a coat of plaster over stone or brick walls.

**PLATFORM FRAMING** - A framing configuration where each story is built on a platform and the studs run the height of that story only – as opposed to Balloon Framing (see above).

**TO “POINT-UP” MORTAR JOINTS** - To fill and finish the joints between bricks with cement or mortar. Often called “Tuck Pointing”. We recommend that this work be done by experienced professionals.

**RAFTERS** - A series of inclined structural members which support the roof, running from the exterior wall to the ridge board.

**RIDGE BOARD** - The horizontal structural member at the very top of a roof where the rafters meet.

**FOUNDATION ROTATION** - Many older foundations were constructed on shallow footings without steel reinforcement. The weight of the structure was placed on the outer edge of the foundation wall. This design commonly results in some leaning of the foundation. Poor drainage is often times the catalyst for rotation. Rotation does not necessarily mean that the foundation has failed. It does weaken the foundation and it is more vulnerable to excessive moisture conditions and seismic activity. However, if left unattended, this condition may worsen and eventually result in failure of the foundation.

**SETTLEMENT** - Settlement is that instance in which some portion of the foundation drops below the original “as built” grade. This occurs as a result of a loss of bearing due to compaction of fill, erosion of supporting soil, and/or dehydration (shrinkage of supporting soil).

**SHEATHING** - A term commonly used to describe material used to cover the walls, floors, or roof of a wood frame house.

**SILL PLATE** - Framing lumber placed on and around the foundation to support exterior wall studs and outer floor joists.

**SILT MARKS** - When a subarea gets wet enough for water to pond, it can leave a sediment deposit on the foundation walls and foundation area support piers.

**SPALLING** - Breaking off of the surface of brick or concrete.

**STUD** - A vertical framing member in a wall or partition, usually spaced 16 or 24 inches apart.

**VAPOR BARRIER** - A material used to prevent the passage of moisture. Plastic vapor barriers are sometimes applied over the subarea soil. This helps create a dry air space between damp soil and wood framing and limits the amount of moisture able to rise into the framing, thereby reducing moisture damage. A plastic vapor barrier tends to keep moist soil from drying out completely and reduces the subsequent shrinkage and cracking that often occurs. This reduces the settlement often associated with expansive soil subject to fluctuating moisture content.

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# Structure

## DESCRIPTIVE INFORMATION

<b>Foundation Type:</b>	• Slab on grade
<b>Foundation Material:</b>	• Poured in place concrete
<b>Exterior Wall System:</b>	• Conventionally framed wood stud
<b>Interior Bearing Walls:</b>	• Conventionally framed wood partitions
<b>Floor System:</b>	• Concrete slab on grade
<b>Roof Structure:</b>	• Factory built trusses
<b>Roof Sheathing:</b>	• Foil faced plywood nailed across the top chords of the roof trusses

## OBSERVATIONS & RECOMMENDATIONS

### Building Foundation

The visible areas of the foundation and other exposed elements of the underbuilding support structure were in satisfactory condition for the age of the dwelling. No abnormal sags, cracks, or deterioration were observed.

### Foundation Slab

Finishes concealed virtually all floor surfaces. Thus, the floor slab was considered mostly inaccessible and could not be thoroughly inspected. However, no signs of significant settlement or related interior cracking were observed to suggest any need for immediate attention.

### Moisture Considerations

Although access to the slab was limited because of the presence of finished flooring, we found no visible evidence of seepage or other moisture related conditions.

### Wall Framing

The wall framing was nowhere visible, however no symptoms of non-performance were evident.

### Roof Sheathing

The roof sheathing, where visible, was in acceptable condition.

### Roof Trusses



The visible trusses were generally in acceptable condition and had performed adequately since their installation.

## Summary Comments On The Structure

After careful examination of the visible and readily accessible portions of the structure, we were able to conclude that it was in acceptable condition for its age.

## **ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE STRUCTURE INSPECTION**

### **Usually, Our Evaluation Must Be Based On Symptoms**

Most of the time, many, if not all, structural components are inaccessible. Thus, our evaluation is based only on our observations of symptoms of movement, damage, and deterioration. If there are no visible symptoms, conditions requiring repair may go undetected. We make no comment on the internal conditions of soils, foundations and framing, except as reflected in their performance.

### **Most of the Structure Was Not Visible**

Most of the structure of this dwelling was not accessible for a visual inspection. The opinions expressed in this Report on the construction methods and conditions of structural components were, of necessity, based upon limited visual inspection.

### **The Mudsill Was Covered By Finished Surfaces**

The mudsill was not visible, as it was covered by finished surfaces.

### **Foundation Slab Was Not Visible**

Surface finishes completely covered the floor slab, rendering a meaningful visual evaluation impossible. Further evaluation might be possible when the carpeting is removed, but such an activity would be considered too invasive for a home inspection.

### **Anchorage of the Sill Plate Could Not Be Determined**

The sill plate is the first (lowest) wood member of the framing that rests directly on the foundation. The sill plate was inaccessible, thus, it was unknown as to how or even if, it was bolted, nailed or strapped.

# Building Exterior & Site

## THE EXTERIOR SHELL A Definition

The Exterior Shell is that combination of materials and components installed on the perimeter designed to shed water and protect the structure and interior finishes from damage caused by moisture delivered by rain or snow.

The exterior shell, in combination with the roof covering, is intended to keep wind and moisture from entering the dwelling.



## A HISTORY OF THE DEVELOPMENT OF EXTERIOR CLADDING SYSTEMS

Up until the middle of the nineteenth century, most of the exterior cladding systems on homes consisted of the exposed surfaces of the structure. Stone or brick masonry and even logs and adobe were the structural elements used during this time, so the outside face of the exterior walls was the "weather shell" of these buildings.

With the increased availability of lumber, the structure and the weather shell became two separate, but connected elements of the building. Wood siding was applied in overlapping horizontal strips similar to the way wood had been applied to the outside of ship's hulls. Thus, the origin of the term "shiplap" siding.

While wood siding is known for its aesthetic appeal, it is also considered to be a high maintenance material when used outdoors. Anyone who has owned a home with wood on the exterior knows how often painting or staining is required. Thus, in many areas of the country stucco became popular because of its increased durability and lower maintenance demands. Today, stucco substitute materials are often applied over foam insulation board, which has been nailed to the outside face of the wood framing members. This system is known generically as "E.I.F.S.", or Exterior Insulation Finish System.

In the past 30 years, manufacturers have offered wood siding materials which are composites made up of wood fibers and chips bonded with resins. These sidings have become popular because of their lower cost and the lack of knots, splits or checks that are common in natural wood siding. With these sidings, the importance of keeping all surfaces and edges well sealed against moisture penetration is imperative. If water is allowed to saturate these components, they tend to revert to the wood chips from whence they came.

More recently, cement-based composite siding has become the material of choice because of its great durability and non-flammability.

## THE EXTERIOR - OUR INSPECTION PROCEDURE

We will walk around the accessible areas of the building site examining the exterior finishes and details on the dwelling for condition, function and general state of repair. Our examination includes the primary cladding materials, trim, fascia, eaves and soffits, doors and windows, flashings, exterior plumbing and electrical details as well as decks, porches, patios, railings and other attached structures. We are watchful for the condition of gutters, downspouts, site grading adjacent to the structure and other features which might influence potential moisture caused damage to the dwelling.

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## GLOSSARY OF SITE & EXTERIOR TERMS

While our report is designed to be clear and easy to understand, it may contain terms or phrases with which you may not be familiar. We are pleased to furnish this reference to define and clarify terms and phrases that may appear in your report.

**CAULK/SEAL GAPS** - Gaps in the exterior can occur around doors, windows and plumbing and electrical entry points. All gaps should be caulked and sealed to prevent heat loss, air infiltration and moisture entry.

**DECK RAILING UPGRADE** - We recommend all decks and landings 30 inches or more above the ground have a railing. The railing should be at least 36 inches high and the spacing between the railing balusters should be no more than 4 inches.

**DOWNPOUT OR GUTTER LEAKS** - A leaking gutter or downspout can allow water to penetrate a sidewall and enter the interior through a foundation wall or slab. Deteriorated gutters and downspouts should be repaired or replaced as necessary.

**E.I.F.S.** (Exterior Insulation Finish System) - Consists of a layer of foam insulation board applied over the exterior framing of the dwelling. The foam board is then covered with several layers of acrylic stucco applied over mesh reinforcement. Because the exterior coating is applied over foam insulation, EIFS adds significantly to the overall thermal efficiency of the dwelling. However, it also can be soft, making it vulnerable to damage from impact and pecking birds.

**FASCIA** - A flat, vertical board enclosing the overhang under the eave that runs along the roof edge.

**FIRE-RESISTIVE BARRIER** - A fire-resistive separation barrier. Fire-resistive walls may not have been required at the time of construction. Present building standards require a one-hour fire-resistive barrier between the garage and the occupied interior. The purpose of this barrier is to prevent the spread of fire from the garage into the living areas. Flammable liquids are often stored in the garage, so the risk of a fire starting in the garage is significant enough to warrant installing a one-hour fire-resistive barrier.

**FLASHING** - Material used at connections and penetrations in a roof or wall to prevent leakage.

**FLATWORK** - A concrete or asphalt surface such as a sidewalk, driveway or patio. Significant cracks should be patched and any holes or gaps filled. The flatwork should be examined periodically for signs of failure or further deterioration and repairs made if necessary.

**GRADE** - The ground level around a structure. When the ground is less than six inches below the top of the foundation it is considered marginal. A marginal grade can lead to moisture damage and/or pest control problems. If no damage is present, we recommend that these areas be periodically reviewed by a competent individual for signs of damage. Then, repairs should be made as necessary.

**INADEQUATE FOUNDATION DRAINAGE** - Moisture accumulation around the foundation often causes damage and deterioration to the foundation and framing. We recommend that the drainage be improved to collect all moisture and route it away from the house.

**LEDGER FLASHING MISSING** - The ledger is a piece of horizontal lumber, usually a 2x10 or 2x 12 bolted or nailed to the exterior of a building. Joists are attached to the ledger and the finished decking is secured to the joists. Water seeping behind the ledger can cause damage to the siding and framing as well as rotting the ledger itself. Ideally, the ledger should be flashed at the top edge to prevent moisture penetration behind it and around the ledger fasteners. A less desirable, temporary method of dealing with this condition is to keep the top edge of the ledger caulked and sealed as well as applying caulking at the ledger fasteners.

**NEGATIVE GRADING** - Grading which is sloped *toward* the structure. Low spots and negative grading will increase the chances of water penetration through the foundation and subsequent pooling in the basement, garage or subarea. We recommend that the site be re-graded as necessary to make sure that surface water runs *away* from the structure.

**POINT-UP MORTAR JOINTS** - To fill and finish the joints between bricks with cement or mortar. Often called "Tuck Pointing".

**RETAINING WALLS** - True retaining walls are engineered structures designed to retain earth that, if they were to fail, would adversely affect the integrity of buildings, driveways, pools and other site improvements. Home inspectors are not normally equipped to analyze such structures, but may comment on what they observe about them.

**ROUTE DOWNSPOUTS** - Any downspouts that do not terminate within drain lines should be routed sufficiently away from the foundation to prevent pooling and seepage through the foundation and into the basement, garage or subarea.

**SOFFIT** - The underside of an overhang of structural members, such as staircases, beams and eaves.

**STUCCO** - Comprised of a mixture of sand, water and Portland Cement, which is usually trowel-applied over wire reinforcing mesh-called "wire lath"-which has been attached with special "spacer nails" to the exterior substrate of the dwelling.

**UNDERLAYMENT** - A building material used as a protection against the passage of air and moisture.

**VEGETATION ENCROACHMENT** - Trees, vines or shrubbery that contacts the exterior. This vegetation can cause damage. We recommend that all vines, shrubbery, tree limbs or branches that have overgrown the exterior should be cut back to eliminate building contact.

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# Building Exterior & Site

## DESCRIPTIVE INFORMATION

<b>Lot Topography:</b>	• Uneven
<b>Driveway Surface:</b>	• Concrete
<b>Walkway Surface:</b>	• Concrete
<b>Patio Surface:</b>	• Concrete
<b>Primary Exterior Cladding:</b>	• E.I.F.S. – Exterior Insulated Finish System
<b>Secondary Exterior Cladding:</b>	• Stone veneer
<b>Exterior Window Material:</b>	• Extruded vinyl frame
<b>Number/Type of Garage Door:</b>	• One roll-up “Overhead” type door

## OBSERVATIONS & RECOMMENDATIONS

### Grading and Drainage

Surface grading was generally effective, but some adjustment of the grading at the foundation, would be beneficial.

There appears to be the potential for standing water at the rear and right sides of the house. We recommend the area be monitored during periods of rain and drainage improvements be made as required.

We suggest regrading of areas near the building as needed, to assure unobstructed flow of surface water away from the foundations in order to ensure that surface water does not accumulate near the building.

A surface drainage system should be designed to collect and divert roof runoff and other surface water. It is typically installed in solid pipe and flows continuously downhill to a point of discharge.

The surface water drainage system was below grade and could not be viewed. Designs and materials for these systems vary widely, making it impossible to evaluate the integrity of the system with any certainty.

The drainage system was not water tested during the inspection. Thus, we cannot make any representations as to its effectiveness. We recommend that its operation be observed during adverse weather.

The drainage system should be checked for debris and cleaned regularly to ensure proper operation during heavy rains.



A drain pipe extends well above grade and will not be effective for drainage. We recommend the pipe be lowered to grade and a drain grate be installed.

### **Downspouts**

The downspouts were properly installed and in acceptable condition.

### **Driveway**

The small cracks in the driveway pavement were not significant in terms of the performance of the driveway. The driveway was otherwise in acceptable condition.

### **Walkways**

The walkways were in acceptable condition.

### **Fences and Gates**

The fences and gate were generally in acceptable condition.

### **EIFS - Exterior Insulation and Finish System**

“EIFS” is an acronym that stands for Exterior Insulation and Finish System. It is commonly referred to as “synthetic stucco” because of its stucco-like appearance. The EIFS product consists of several components which are combined to produce a cladding system. The first half of the acronym, “Exterior Insulation” is derived from the fact that the first component installed is a polymer-based foam board. This foam board is mechanically and/or adhesively attached to the exterior sheathing of the home. In this respect the foam board serves as an exterior insulating layer. A synthetic material in which is embedded a fiberglass reinforcing mesh is applied over the foam board insulation. It is typically referred to as the “base-coat”. One or more “finish coats” are then applied over the top of the base coat. This is the exterior layer that gives the product its stucco-like appearance. Hence the second part of the acronym “Finish System.”

Examination of the exterior surface of the EIFS (Exterior Insulation and Finish System) clad portions of the dwelling revealed the conditions listed below which we recommend receive attention, as noted.

Some minor damage was noted to the falsework at several locations. We recommend repairs be made in the course of routine maintenance.

### **Vegetation Considerations**

The vegetation near the building should be conscientiously and periodically maintained to prevent overgrowth and encroachment onto the structure.

### **Exterior Trim**

All of the exterior trim was in acceptable condition.

### **Eaves and Soffits**

The eaves or overhangs are comprised of those portions of the roof that extend beyond the exterior walls. The eaves protect the siding, windows and doors from the deteriorating effects of direct rain or snowfall.

The eaves and overhangs were in acceptable condition.

### **Paint and Stain**

Exterior finishes were in acceptable condition.

### **Exterior Doors**

The exterior doors were in acceptable condition.

### **Exterior Windows**

The exterior aspects of the windows were in acceptable condition.

### **Glass & Glazing**

Because it is harder to break and less likely to cause injury if broken, safety glass is now required in certain specified locations. These include, but are not limited to, all door glass, and fixed and operable glass adjacent to doors and stair landings; enclosures for showers, hot tubs, saunas, steam rooms, and bathtubs; most large windows, and windows near doors and floors.

Safety glass was observed in all locations where recommended by industry standards at the time this home was built.

### **Patio**

The patio was in acceptable condition.

### **Exterior Plumbing**

The back flow preventer on the hose bibb at the rear of the house leaked under pressure. We recommend this hose bibb be replaced.

### **General Comments about the Exterior**

Exterior features were generally in acceptable condition. The few exceptions have been commented upon in this section and elsewhere in this report. Regular maintenance will extend the service life of this important “weather shell”.

### **Garage Structure**

The garage framing was not visible. The area around the garage door opening is generally the most vulnerable to movement, but no adverse conditions were noted.

Some parts of the garage were inaccessible because of the presence of stored materials, and could not be inspected. When access becomes available, the inaccessible areas should be carefully inspected.

### **Garage Vehicle Doors**

The garage door was operated and was in generally acceptable condition.

### **Garage Door Opener**

The garage door’s opener operated properly to raise and lower the door, including the auto-reverse mechanism, which stopped and reversed the direction of the door when striking an object in its path.

### **Personnel Doors serving the Garage**

The door between the garage and the living space appeared to be of fire resistive construction. It did include a functional automatic closer. This was a positive feature that provided a greater margin of safety.

### **Garage Ventilation**

The ventilation in the garage was adequate.

### **Fire Separation between the House and the Garage**

The wall between the garage and the living space was of fire resistive construction as required by today’s building standards.

## **ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE EXTERIOR INSPECTION**

### **Sprinkler System Was Not Inspected**

Operation and evaluation of irrigation (sprinkler) systems are outside of the scope of a home inspection. In cold climates, the winterization of sprinkler systems also precludes their inspection. For these reasons, this system was not inspected. We recommend consultation with the present owners, occupants or caretaker regarding the layout, maintenance and operation of the sprinkler system.

### **Water Penetration Into E.I.F.S Cladding**

No evidence of moisture penetration was noted at the time of the inspection. In most (if not all) cases, evidence of water infiltration into EIFS is virtually impossible to see without performing invasive and destructive testing. If further information is desired, we recommend engaging the services of a qualified (certified) E.I.F.S. Inspector to carry out a more invasive inspection.

### **Masonry Walls Were A Veneer**

The masonry walls were a veneer over conventional wood frame construction. The masonry was not a structural element of the building. Masonry veneer is often used for its architectural and aesthetic appeal as well as its durability and low maintenance requirements.

### **Rekeying Exterior Doors**

Most exterior door locks can and should be rekeyed after transfer of ownership to ensure personal safety and security.

# Roof Surface

## THE ROOF SURFACE A Definition

The Roof Surface is that combination of materials and components installed on the uppermost elements of the building designed to shed water and protect the structural frame and the interior finishes from damage caused by moisture delivered by rain or snow.

The roof surface, in combination with the exterior cladding, is intended to keep weather caused moisture from entering the dwelling.



## A HISTORY OF THE DEVELOPMENT OF MODERN ROOF COVERINGS

When early man left his cave as a nomadic hunter, he was forced to devise a portable form of shelter. One of the byproducts of a successful hunt was the skin of the hunted animal. Hence, the earliest man-made shelters were made of animal skins. As man stayed in one place for longer periods of time, he made better use of readily available natural materials such as mud and thatch. These materials still left a lot to be desired, because during periods of prolonged rain or snow, the cover tended to become saturated and would lose its water shedding properties.

A great advance in roofing technology came with the use of slates to cover the dwelling. Slate roofs were more impermeable and durable. Their main drawback was their great weight coupled with the difficulty of moving slates over long distances. In addition, the heavy weight per square foot required heavier structural framing in order to support all that "rock" on the roof.

Shortly after the development of the slate roof, several attractive alternatives appeared. Sheet copper was used on the homes of the more affluent and on public buildings. Other sheet materials soon appeared on the scene, including galvanized sheet metal and even gold foil. In each case, the goal was to provide a reliable water-tight covering to keep the occupants and contents dry during wet weather.

Architects and homeowners then discovered the natural beauty of wood shingles, and later, wood shakes. The difference between a wood shingle and a wood shake is that a wood shingle is sawn on both sides to produce a very uniform profile, while a wood shake is sawn on only one side. The other side of a wood shake is "hand-split." By the 1900's, wood shingles were the most common roof covering material.

With refinement of coal-tar pitch and asphalt compounds, lower sloped roofs became feasible. These materials, when used in conjunction with asphalt impregnated roofing paper provided a watertight surface for flat and near-flat roofs.

Today, the homeowner has a vast choice of material from which to choose for covering roofs of every conceivable pitch from "dead flat" to very steep.

## THE ROOF SURFACE - OUR INSPECTION PROCEDURE

We believe the best way to evaluate the condition of any roof surface is to walk upon it and examine it from a "birds eye" point of view. We will attempt to walk on every roof considering the slope, the weather during the inspection and the durability of the material to withstand walking. In short, we will usually walk every roof which is safe for the Inspector *and* the roof surface.

We will look at the overall condition of the roof covering and details such as flashings, vents, chimneys and skylights. Where there is an accessible attic, we will also examine the underside of the roof for signs of past moisture penetration and proper ventilation.

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## GLOSSARY OF ROOFING TERMS

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**AIR POCKET/BLISTER** - A bubble in the roof surface formed by water vapor expanding between the layers of a built-up roof membrane. This can reduce the useful life of the roofing and is conducive to moisture penetration.

**BRITTLE SURFACE** - A roof surface which is brittle will be prone to breakage. This is an indication of aging and suggests that the roof surface is nearing the end of its useful life.

**CRACKED MASTIC** - Cracks in the roof cement coating used to seal roof connections and penetrations can cause moisture penetration and subsequent leakage. We recommend that cracked areas be sealed to prevent leakage.

**DEBRIS ON ROOF OR IN GUTTERS** - Gutters filled with debris should be cleaned to ensure proper drainage. Roof surfaces covered with debris should be cleaned to ensure proper drainage and to prevent premature deterioration of the roof surface.

**EAVE** - The part of the roof which extends beyond the wall.

**EXPOSED ROOF FASTENERS** - An indication of roofing wear or poor installation creating a condition conducive to moisture penetration and leakage into the building. All exposed fasteners should be covered.

**GABLE ROOF** - A roof configured with two pitches, designed to provide more space on the upper floors.

**HIP ROOF** - A roof with no gables usually having inclined planes on all four sides of the building.

**INADEQUATE ROOF DRAINAGE** - Roof "ponding" can indicate inadequate drainage. Standing water can result in leakage. We recommend that the drainage be upgraded as necessary to properly divert water off of the roof.

**INSUFFICIENT ROOF SLOPE** - A shingle type roof surface applied over framing whose pitch is less than three inches in twelve inches. This means that for every twelve horizontal inches, the roof fails to rise at least three inches. This roof surface can leak because of poor drainage. We recommend that these roofs be periodically checked for signs of moisture penetration, patched and sealed as necessary to prevent leakage. When the roof surface is replaced, we recommend installation of a conventional built-up or single-ply roof membrane.

**MASTIC** - Asphalt material used to seal around roof connections and penetrations.

**MOSS BUILDUP** - Moss retains moisture and can damage the roof surface. We recommend that any moss be removed.

**MULTIPLE LAYERS** - Multiple roof surfaces add extra weight to the roof structure. Too much weight can crack framing members. Some local building departments limit the number of roof surfaces to two while others only allow one. At such time as replacement of the roof surface is made, we recommend that all of the existing roof surfaces be removed, any areas re-sheathed as necessary and all roof connections and penetrations re-flashed before the new surface is installed. This will reduce the weight on the framing and prolong the useful life of the new roof.

**NO UNDERLAYMENT** - Roofing installed directly over the sheathing without an underlayment. An underlayment provides a moisture barrier between the roof surface and the attic. The manufacturer's specifications may permit this method of installation; however, it is our opinion that without an underlayment, any roof is subject to premature leakage. We recommend that surfaces without an underlayment be periodically examined by a qualified and licensed roofing contractor for signs of leakage and repairs made if necessary.

**PARAPET WALL** - The part of the sidewall of a structure which extends above the roof line.

**PENETRATIONS** - Any projection through a roof surface such as plumbing vents, flues, chimneys and skylights.

**ROOF PITCH** - The degree of slope of a roof.

**SHAKES** - Hand split wood shingles.

**SURFACE GRANULATION FAILURE** - An indication of roof surface wear due to exposure. This wear will continue and leaks may eventually develop. Until the roof is replaced, it should be examined periodically by a qualified roofing contractor for indications of wear significant enough to result in moisture penetration and repairs should be made as necessary.

**TILE ROOF** - Fired clay, stone or concrete roofing material. Tile roofs are highly resistant to wear and have a life expectancy of fifty-plus years. However, problems can develop and may need attention to prevent leakage. Walking on a tile roof may result in tile breakage. If walking on a tile roof might result in breakage, we will examine it from the ground and other vantage points. We look for cracked and missing tiles and deteriorated mortar joints. We examine the visible flashings for damage and defects. Problems in these areas must be corrected to prevent moisture penetration. The water tightness of a tile roof depends to a large degree on the condition of the felt underlayment.

**VALLEY** - A depressed angle formed when two roof planes meet.

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# Roof Surface

## DESCRIPTIVE INFORMATION

<b>Roof Coverage Area:</b>	<ul style="list-style-type: none"><li>• The entire dwelling, including the attached garage</li></ul>
<b>Slope, or Pitch, of the Roof:</b>	<ul style="list-style-type: none"><li>• Medium</li></ul>
<b>Roof Covering Material:</b>	<ul style="list-style-type: none"><li>• Concrete tiles</li></ul>
<b>Estimated Age of Covering:</b>	<ul style="list-style-type: none"><li>• Original installation</li></ul>
<b>Valleys Were Flashd With:</b>	<ul style="list-style-type: none"><li>• Sheet metal</li></ul>
<b>Penetrations Sealed With:</b>	<ul style="list-style-type: none"><li>• Sheet metal flanges with Neoprene “boots” or collars</li></ul>
<b>Roof Drainage System:</b>	<ul style="list-style-type: none"><li>• Gutters and downspouts</li></ul>
<b>Method of Inspection:</b>	<ul style="list-style-type: none"><li>• Inspected from the ground</li></ul>

## OBSERVATIONS & RECOMMENDATIONS

### Tile Roof Coverings

The tile roof was in acceptable condition with minor exceptions. Attention to the items listed, together with routine maintenance, should keep it functional and maximize its expected useful life.



**A roof tile at the left side of the dormer has slid out of place. We recommend the tiles be repositioned and resecured by a qualified roofing contractor.**

### Flashings

The accessible flashings were in acceptable condition. However, all flashings should be periodically examined for signs of leakage, and repairs should be performed if necessary.

### Valley Flashings

The valley flashings on the roof were closed valleys. The condition of the valleys under the tiles and the presence of any debris in the valleys could not be determined. Further investigation is recommended. The valleys should be monitored for the presence of debris. Any debris should be promptly removed to ensure proper drainage, and then these critical areas should be kept clear to reduce the potential for backups and subsequent water penetration into the dwelling.

## **Gutters**

Roof runoff water was collected and channeled to the downspouts by a metal gutter system that was attached to the fascia boards, or directly on the ends of the rafters, along the edge of the roof.

The gutters were in acceptable condition, but should be checked for debris and cleaned on a regular basis to prolong their useful life.

## **General Commentary on the Roof**

The roof covering was in satisfactory condition, with exceptions noted above. Attention to these items, together with routine maintenance should maximize its useful life.

## **Attic Access Entry Information**

The attic was accessible through a hatch in the ceiling of the laundry room.

## **Attic Ventilation**

The space between the ceilings and the roof was adequately vented.

## **ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE ROOF SURFACE INSPECTION**

### **Roof Was Inspected From the Ground**

Due to the potential for damaging the roof our inspection was made from the ground. It was therefore a limited visual inspection. There may be areas or conditions not fully visible from the ground. We recommend the advice and services of a qualified roofing contractor to make a full inspection from the roof surface.

### **We Cannot Guaranty a Leak-free Roof**

Our comments do not constitute a warranty that the roof is free of leaks, or will remain free of leaks.

### **We Recommend Not Walking On the Roof**

Because of the nature of the roofing material, and its susceptibility to damage, common sense dictates that the roof should not be walked on, except by an experienced professional.

### **The Gutters Were Examined From Below**

Physical constraints posed by the building or site limited our examination of the gutter system to observations from below the level of the roof surface. We examined the gutters for signs of leakage, but were unable to determine other conditions that might exist.

### **The Attic Was Inspected From The Furnace Platform**

Because of the potential for damage to insulation and ceiling finishes below caused by walking in the attic, our inspection of the attic space was performed from the furnace platform only.

# Plumbing System

## THE PLUMBING SYSTEM A Definition

Technically speaking, the plumbing system is the combination of pipes, fixtures and controls necessary to supply water and fuel gas, and to remove liquid waste from the building.



## A BRIEF HISTORY OF RESIDENTIAL PLUMBING, OR "HOW THE PLUMBING CAME INDOORS"

The dictionary tells us that the word "Plumbing" "was derived from the Latin word "plumbum" meaning lead. From the earliest times, lead was used to fashion piping, fixtures and utensils used in the supply of fresh water and to convey waste out of buildings. Lead piping has been superseded by cast iron, copper and more recently plastic, but one can still see lead drainage fittings in homes built as recently as the 1930s.

Archaeologists have found evidence of waste disposal systems in dwellings 10,000 years old. Waste disposal and running water were provided in the palaces of royalty and priests as early as 2500 to 1700 BC. These systems were well developed during the Roman Empire.

Here in America, the supply of water for residential use started with nearby streams or springs and progressed to wells. Thus, the supply of water for domestic consumption started on the exterior of the home. Likewise with waste disposal. Most of us are familiar with the image of the outhouse in the backyard. It was often said that they were "100 yards too close (to the house) in the summer, and 100 yards too far (away) in the winter."

Fortunately, plumbing had moved indoors for all but the poorest or most remote of the population by the late 1800s. During this transition period, homes built prior to the "move indoors" could be recognized by the fact that the kitchen and bathroom were housed in an addition on the back of the house. It wasn't until later that bathrooms and kitchens were located centrally and conveniently within the home. It was the advent of central water supply and sewage collection systems which made indoor plumbing practical. In rural areas, a drilled well and a septic system are still the most prevalent and practical methods for supplying water and disposing of waste.

The next time that a family member complains about having to go down the hall to the bathroom, we could remind them of their grandparents who had to make do with the water pitcher and "thunder mug" on their nightstand!

## THE PLUMBING SYSTEM - OUR INSPECTION PROCEDURE

Our examination of the Plumbing System will include the visible portions of the water, gas and drain piping. We will operate every functional shower and tub, flush every operable toilet and run every working wash basin and sink. Hydrotherapy ("jetted") tubs are filled and activated. Accessible underbuilding areas are checked for visible plumbing leaks.

The water heater is examined for function and operation including fuel or electric supply, water connections, relief valves and their discharge piping. We also check for proper venting and clearances for gas fired water heaters.

The components which make up the plumbing system in your specific dwelling are described in the pages which follow. In these pages we will also report on the condition and operability of controls and fixtures.

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## GLOSSARY OF PLUMBING TERMS

While our report is designed to be clear and easy to understand, it may contain terms or phrases with which you may not be familiar. We are pleased to furnish this reference to define and clarify terms and phrases that may appear in your report.

**“ABS”** - Black plastic pipe and fittings. Generally used in waste water drainage and vent systems. Introduced in the 1960s; popular for new residential construction and remodeling.

**ANGLE STOP** - A valve used to shut off the flow of water to a fixture.

**ANTI-SIPHON VALVE** - A device installed on irrigation piping designed to prevent the drawing of contaminated ground water into the domestic water supply system.

**FROZEN FIXTURE SHUT-OFF VALVES** – Plumbing shut-off valves that no longer operate. This occurs when the valves are seldom operated. An inoperable valve prevents the water from being turned off if it is necessary to repair the fixture. We recommend that they be repaired and be made operable again or be replaced with a new valve.

**FUNCTIONAL DRAINAGE** - A plumbing drain is functional when the fixture empties in a reasonable amount of time, and does not overflow when another fixture is drained simultaneously.

**FUNCTIONAL FLOW** - A reasonable flow at the highest fixture in a dwelling when another fixture is operated simultaneously.

**GALVANIZED PIPE** - Steel pipe with a protective zinc coating. Used for supply of domestic water and waste and vent piping.

**GATE VALVE** - A shut-off valve using a round rising disc (gate) to control liquid flow.

**INADEQUATE CLEARANCE TO COMBUSTIBLES** - Gas-fired appliance vents must be far enough away from combustible surfaces to prevent the heat that these vents carry from causing a fire. Single wall vents should be at least six inches away from combustible surfaces and double wall vents should be at least one inch away.

**“PVC”** - Rigid white plastic pipe and fittings used for supply of domestic water and yard sprinkler systems and in some interior drain, waste and vent systems. Introduced in the 1960s.

**“S” TRAP** - A sink drain line configuration in which the piping beyond the trap runs vertically instead of horizontally. This can cause the water in the trap to be siphoned out, allowing sewer gas to enter the occupied interior. We recommend that the pipe after the trap be repaired so that it runs horizontally with a slight downward slope until it joins the main drain and vent piping, or that an approved mechanical vent be installed.

**TEMPERATURE/PRESSURE RELIEF VALVE** - A safety valve designed to release excess temperature and pressure. Commonly used on water heaters and steam boilers.

**TOILET LOOSE (on the floor)** - When a toilet is not securely fastened to the floor, the wax ring seal can distort or deteriorate, causing the connection to the sewer to leak. A leaking toilet connection can damage the floor and the floor framing. A toilet can leak for some time before the damage becomes visible. If a toilet is loose, we recommend that the wax ring seal be replaced and the toilet be securely fastened to prevent costly repairs.

**TRAP** - A fitting to provide a liquid seal that prevents the back passage of gases, without materially affecting the flow of sewage or water through it.

**VENT (PLUMBING)** - A pipe installed to provide a flow of air to or from a drainage system and to minimize the possibility of trap siphonage and back pressure.

**WASTE (Dishwasher) AIR GAP** - A sink device installed between the dishwasher and the drain line. Its purpose is to prevent the drawing of waste water into the dishwasher.

**WATER HAMMER** - A sudden pounding noise in a piping system caused by rapid pressure changes due to very quick closing of valves or other restrictions. It is possible to correct this condition by installing an air chamber.

**WATER PRESSURE** - 55-85 pounds per square inch is considered in the mid-range of normal water pressure. Less than 30 psi is considered in the low-range of normal water pressure. This usually occurs as a result of mineral deposits building up inside the domestic water supply piping which restrict the flow of water. The corroded lines eventually will need to be replaced. Excessive water pressure (above 100 psi) puts unnecessary strain on the water heater, water lines and fixtures which can result in leaks. We recommend that a pressure reducing valve be installed in such instances.

# Plumbing System

## DESCRIPTIVE INFORMATION

<b>Domestic Water Source:</b>	• Municipal/Community supply
<b>Landscape Water Source:</b>	• Public, same as domestic water source
<b>Main Supply Line Material:</b>	• Copper, where visible
<b>Supply Piping Material:</b>	• Cross-linked Polyethylene, where visible
<b>Water Pressure:</b>	• At the mid-range of normal
<b>Waste Disposal:</b>	• Municipal/Community collection system
<b>D.W.V. Pipe Material:</b>	• ABS Plastic

## OBSERVATIONS & RECOMMENDATIONS

### Water Shut Off Valve Condition

The main water supply shut-off valve was located, but testing the operation of this valve is not within the scope of a home inspection. Operation of the valve from time to time will keep it functional and maximize its useful life.

### Main Water Supply Piping

No surface corrosion or leakage was visible at the exposed and accessible portions of the main water supply piping.

### Interior Water Supply Piping

The visible portions of the exposed and accessible supply piping generally were in acceptable condition, with minor exceptions noted.



Portions of the polyethylene supply piping were exposed to sunlight in the attic. Over time the cross-linked polyethylene piping could become damaged by the sunlight coming through the attic vents. We recommend the piping be covered by insulation as preventive maintenance.

### Water Conservation Compliance

California now requires the seller to certify the plumbing fixtures in the dwelling meet certain water conservation standards. Verification of such compliance is outside the scope of a home inspection and is excluded from this report.

### **Water Pressure**

Functional flow of water at the fixtures was judged to be adequate. Several fixtures were operated simultaneously. Minor changes in flow, when other fixtures are turned on or turned off, are considered normal.

### **Sewer Cleanout Locations**

A sewer cleanout was located on the exterior at the front of the house.

### **Drain & Waste Lines**

The visible drain & waste piping was in acceptable condition.

### **Vent Lines**

The visible portions of the vent piping for the dwelling were in acceptable condition.

### **Gas Meter Installation**

The condition and placement of the gas meter were acceptable at the time of this inspection.

A meter wrench could not be located in the vicinity of the gas meter as recommended in areas subject to seismic activity. A proper wrench should be chained to the meter to provide a convenient means for shutoff in an emergency. The valve can be turned 90 degrees in either direction to shut the gas supply off.

### **Gas Piping**

The gas piping was in acceptable condition. No evidence of leakage was detected at any of the exposed gas piping. Pressure testing may reveal leaks, but this procedure would be considered beyond the scope of a home inspection.

### **Fixtures: Overall**

The plumbing fixtures were operating, but were in need of some repair. Attention to the items listed, together with routine maintenance, should keep them functional and maximize their useful life.

### **General Comments About The Plumbing System**

The plumbing system was in satisfactory condition and was functioning as designed and intended.

## **ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE PLUMBING SYSTEM INSPECTION**

### **For Water Quality Questions, Ask The Supplier**

For information concerning water quality, we suggest contacting the municipality or utility company that provides water to this property.

### **The Sewer Lateral Was Not Inspected**

A sewer lateral test is not within the scope of a Home Inspection. Inspection and testing of sewer laterals requires the services of competent, licensed specialists. We recommend the advice and services of a qualified drain piping inspection professional to confirm the sewer lateral is properly installed and functioning properly.

# Water Heater



## THE "LIFE AND TIMES" OF RESIDENTIAL WATER HEATERS

Often our client's first question is, "How old is the water heater?" You will notice in your Inspection Report that we try to state the age of the water heater whenever we can determine it from the its data plate. If our answer is more than about five years, the next question is, "How long should I expect this water heater to last?" The answer to this question is the *average* life is eight to 12 years.

Recently the Institute for Business and Home Safety conducted a series of studies that found that the chance that a water heater will leak or burst (the most common mode of failure) increases dramatically when its age passes five years old. According to the I.B.H.S., three-quarters of all water heaters fail before they reach twelve years of age. The author had the personal experience of replacing a residential water heater at the age of only eight years. On the other hand, inspectors have observed water heaters over 20 years old which were still making hot water and were not leaking.

There are several conditions which can dramatically reduce the service life of your water heater. Among them are:

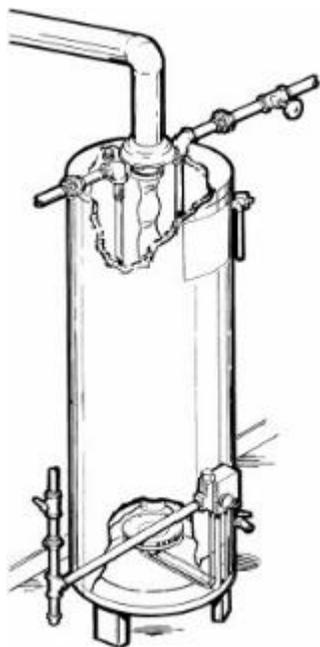
- Excessive water pressure (excessive is anything over 75 psi),
- Too much sediment accumulation in the bottom of the heater, or
- Operating the heater at unnecessarily high temperatures (above 120 degrees).

Excessive pressure is cured by the installation of a Pressure Reducing Valve (PRV) in the supply to the house. Lower pressures inside the home will also extend the service life of toilet ball cocks (fill valves) and reduce the incidence of water hammer in the water supply system.

Hardly anyone regularly flushes the sediment from the bottom of their water heater tank as all manufacturers recommend, even though this is a preventative maintenance step which costs the homeowner nothing and may contribute to a significant extension of the life of the water heater.

In addition to tank failure, there are other less catastrophic maladies which do not require replacement of the heater itself. These include failure of the temperature and pressure relief valve or, if your water heater is electric, the heating elements may burn out before the tank reaches the end of its life. Fortunately, heating elements are relatively easily replaced. Another minor concern can be a leak from the drain valve - usually because of debris trapped in the valve seat.

The last question is the cost of their replacement. There is quite a variation depending upon many factors such as capacity (size), length of warranty, fuel efficiency and heater type ("Storage" vs. "Demand"). Replacement costs start around \$1,200 for a 40-gallon storage type heater and can be as much as \$3,000 or more for a demand type heater. Other factors affecting replacement cost are the quality of the new heater and how diligently you "shop" for the plumber(s) to do the job. Another factor is the urgency of the situation. One can expect to pay more for installation of a new water heater on Thanksgiving, Christmas Eve and other popular holidays, which; according to "Murphy's Laws" will be the likely time of failure.



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# Water Heater

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## DESCRIPTIVE INFORMATION

<b>Water Heater Location:</b>	<ul style="list-style-type: none"><li>• In the garage</li></ul>
<b>Energy Source:</b>	<ul style="list-style-type: none"><li>• Natural Gas</li></ul>
<b>Storage Capacity:</b>	<ul style="list-style-type: none"><li>• 50 Gallons</li></ul>
<b>Water Heater Age:</b>	<ul style="list-style-type: none"><li>• 3 years, from Serial Number</li></ul>
<b>Water Heater Configuration:</b>	<ul style="list-style-type: none"><li>• Free standing tank</li></ul>
<b>Vessel Insulation:</b>	<ul style="list-style-type: none"><li>• Manufactured with insulation</li></ul>

## OBSERVATIONS & RECOMMENDATIONS

### Water Connections

The cold water inlet and hot water outlet connections were properly installed and in acceptable condition.

The water heater was equipped with a cold water supply shut-off valve. The valve was not operated during this inspection; however, it should be “exercised” periodically so that it will remain functional when the need arises.

### Temperature and Pressure Relief Valve

The water heater installation included a temperature and pressure relief valve. This device is an important safety feature and should not be altered or tampered with. No adverse conditions were observed.

### Water Heater Gas Supply

The gas supply piping included a 90-degree shutoff valve in the vicinity of the heater for service personnel and emergency use. The valve was not operated, but this age and style of valve is normally found to be operable by hand and generally trouble free.

The gas connector was an approved flexible type in acceptable condition.

### Water Heater Combustion Air Supply

The combustion air supply for the water heater was adequate.

### The Water Heater Venting System

The water heater vent was properly installed and was in acceptable condition.

### Seismic Restraint For The Water Heater

The water heater tank had been properly secured. This will help prevent water heater movement and possible gas leakage, limit damage and provide a source of usable domestic water in the event of a major earthquake.

### General Comments About The Water Heater

This was a newer water heater, which was operating satisfactorily. With routine maintenance, it should be reliable for a number of years.

## **ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE WATER HEATER INSPECTION**

### **Why is a Discharge Pipe Required on Every T & P Relief Valve?**

The function of the T & P Relief valve, which is required on every water heater, is to allow excessive pressure to safely escape the tank without causing damage to the vessel or the surroundings. Excessive pressure can be caused by a variety of conditions, including too high an internal temperature, which could even cause the water to flash to steam. In any case, when the valve discharges (as is its intended function), it will spray very hot water or even steam from its exit opening. If no discharge pipe has been installed to safely conduct this scalding water (or steam) to the floor, or to the exterior of the building, nearby persons could be seriously burned.

# Electrical System

## RESIDENTIAL ELECTRICAL SYSTEMS A Definition

Residential electrical systems consist of supply and distribution wiring, controls, and devices necessary to provide for safe and convenient use of electrical power. Common components, in addition to wire and conductor cables, are switches, light fixtures and receptacles ("plugs"). There are also outlet and fixture boxes, and distribution panels with protective devices called fuses or circuit breakers.

## ILLUMINATING INFORMATION ON THE HISTORY OF ELECTRICITY IN THE HOME

The earliest history of electricity in the residential setting evolved around its use in providing light. Man's early attempts to light his dwelling were cumbersome, inconvenient and even dangerous. All were based upon fire and thus involved burning something which gave off more unwanted byproducts than light. With the development of candles and oil lamps, the production of light became cleaner and more convenient. Then came the introduction of the gas lamp. They were cleaner burning and gave off more light in the homes of the more affluent city dwellers as fuel gas was piped in to their houses.

With the invention of the light bulb in the 1870s, gas lamps were replaced with electric lights. Electric appliances had yet to be invented, so electrical installations did not provide for convenience outlets (receptacles). As new uses were developed, receptacles began to appear in homes for supplying cord-connected appliances such as clothes washing 'machines' and radios. This evolutionary process explains why, in older homes, there may be only one electrical receptacle in each room.

As more devices were created utilizing electricity to make our lives easier, "convenience outlets" have been added in homes until today the "rule of thumb" is that new houses have a receptacle within six feet of any point along most walls.

We have become so dependent upon the convenience of electricity that "batteries not included" could ruin your whole day.

## THE ELECTRICAL SYSTEM - OUR INSPECTION PROCEDURE

Your inspector will operate at least a representative sample of light switches and receptacles during the inspection. Ground fault protection devices will be tested utilizing an industry standard ground fault circuit tester. Arc-fault protection, where present, will be tested using the "Test" button on the Arc-fault circuit breakers in the main distribution panel. Subject to accessibility, we will remove the protective cover on the distribution panel(s) so we can evaluate the condition of the components and the workmanship employed in installing the system.

We inspect the visible portions of the service entrance (overhead service *drop* or underground service *lateral*) and the system grounding. During our inspection, we are alert for signs of homeowner wiring, particularly in areas such as basements, additions or outbuildings where non-electricians are likely to have applied their "talents".

## GLOSSARY OF ELECTRICAL TERMS

While our report is designed to be clear and easy to understand, it may contain terms or phrases with which you may not be familiar. We are pleased to furnish this reference to define and clarify terms and phrases that may appear in your report.

**AMP** - Short for Amperes. The rate of flow of electricity through wire - current. There are 1000 *Milliamps* in 1 *Amp*.

**CIRCUIT** - The path of electricity away from and back to its source.

**CIRCUIT BREAKER** - An overcurrent protection device which automatically opens an electrical circuit when excessive current flows through the conductor.

**CONDUCTOR** - An electrical wire capable of carrying current.

**CONDUIT** - A hollow pipe (metal or plastic) casing through which electric wires run.

**DEAD-FRONT** - Switches, boards, circuit breakers, switchboards, control panels and panel boards must be covered so that no current-carrying parts are exposed. This cover is called a Dead-Front.

**DRIPLOOP** - A downward loop in the overhead electrical service entrance conductors designed to prevent the entry of moisture into the weather head, service raceway or equipment.

**EXPOSED WIRING** - Wiring or connections not properly covered and protected.

**FUSE** - An overcurrent protection device with a circuit opening fusible member directly heated and destroyed by the passage of too much current through it.

**FUSED NEUTRAL** - Where an electrical neutral wire is fused. If the fuse on the neutral wire blows, the circuit will be "open", and the fixtures and/or appliances on this circuit will not function. However, power will still be present through the circuit, right up to the outlet. This creates a shock hazard.

**GFCI (Ground Fault Circuit Interrupter)** - A safety device which monitors the difference between current flowing through the hot and neutral wires of a receptacle. If there is an imbalance of current greater than five milliamps, the current will be cut off. GFCI protection is recommended in the garage, outdoor and bathroom receptacles, pool and spa equipment, and all kitchen receptacles within six feet of the sink. Their presence will reduce shock and short hazards.

**GROUND CONDUCTOR SPLICES AND LOOSE CONNECTIONS** - The electrical system ground will be ineffective because of splices and loose connections.

**GROUNDING** - A connection between an electrical circuit or equipment and the earth or to some conducting body that serves in the place of the earth.

**LAMPCORD™ WIRING** - Unapproved extension cord wiring. It is easily overloaded and may be damaged.

All lampcord wiring should be removed and replaced with proper wiring.

**MAIN DISCONNECT** - A device or devices by which the electrical system can be disconnected from its source.

**MULTI-WIRE BRANCH CIRCUIT** - An electrical circuit consisting of two or more ungrounded conductors having a potential difference between them and a grounded conductor having equal potential difference between it and each ungrounded conductor. This type of circuit is commonly used to energize the dishwasher and garbage disposer outlet located in the sink base cabinet. A common problem arises when both hot conductors of the circuit are connected to the same pole or leg of the distribution panel. If both the dishwasher and disposer are operated at the same time, the breaker protecting the circuits will not trip. This is a potential hazard and the circuit should be repaired.

**OUTLET (Electrical)** - A switch, light or receptacle.

**OVERFUSED** - A fuse or circuit breaker rated too high for the circuit. This allows too much current to flow through a wire before the overcurrent protection device trips. Increased demand on a circuit may result in a conductor overheating which can cause a fire. We recommend that all over fused branch circuits be repaired by equipping with appropriate overcurrent protection devices.

**POLARITY REVERSED** - An electrical receptacle which has been wired with the hot and neutral wires reversed. Reversed polarity can compromise the grounding of an appliance and cause some electrical equipment to operate improperly. We recommend that the polarity be corrected.

**PULL CHAIN LIGHT NEAR WATER** - Pull chain lights in rooms with running water can create a shock hazard. We recommend that these lights be equipped with approved switches properly located.

**RECEPTACLE** - An electrical device to receive the prongs of a plug and which is connected to an electric circuit.

**REPRESENTATIVE SAMPLE** - Defined by the **American Society of Home Inspectors®** as follows, "For multiple identical components such as windows and electrical outlets - one such component per room. For multiple identical exterior components - one such component on each side of the building."

**RUNNING SPLICE** - An electrical connection made without proper protection. We recommend that all connections be mechanically protected.

**WATT** - The amount of electricity flowing through a line, measured in terms of watts. Volts multiplied by amps equals watts.

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# Electrical System

## DESCRIPTIVE INFORMATION

<b>Service Entry Type:</b>	<ul style="list-style-type: none"><li>• Underground lateral</li></ul>
<b>Electric Meter Location:</b>	<ul style="list-style-type: none"><li>• On the right side of the dwelling, when facing it from the street</li></ul>
<b>Service Voltage Supplied:</b>	<ul style="list-style-type: none"><li>• 120-240</li></ul>
<b>System Amperage Capacity:</b>	<ul style="list-style-type: none"><li>• 200</li></ul>
<b>Based Upon:</b>	<ul style="list-style-type: none"><li>• The rated capacity of the main distribution panel</li></ul>
<b>System Grounding Source:</b>	<ul style="list-style-type: none"><li>• Foundation reinforcing steel</li></ul>
<b>Circuit Protection:</b>	<ul style="list-style-type: none"><li>• Circuit breakers</li></ul>
<b>Conductor Material:</b>	<ul style="list-style-type: none"><li>• A combination of copper and aluminum</li></ul>
<b>Wiring Type:</b>	<ul style="list-style-type: none"><li>• Non-metallic sheathed cable (“Romex”)</li></ul>

## OBSERVATIONS & RECOMMENDATIONS

### Electric Meter Condition

The electric meter installation was in satisfactory condition. No need for immediate attention was evident.

### Electrical Service Capacity – How Much Power Can We Draw?

The service capacity was normal for a dwelling of this size and age, and was adequate for the existing demand and small additional loads.

### The Main Disconnect

The electrical system had no main disconnect - “shutoff switch”, but with six or fewer disconnects in the service panel, a single main shutoff is not required, making this an acceptable configuration. If the system is expanded, a main disconnect may be needed.

### The Main Distribution Panel



The main distribution panel was in acceptable condition with circuitry generally installed and protected in an acceptable manner.

### Service Grounding

The system and equipment grounding were acceptable.

## Branch Circuitry

Accessible branch circuitry was examined and was in acceptable condition.

## Electrical Conductor Material – The “Wire”

The conductor material in the 120 volt circuits was copper. The 240 volt circuits rated above 30 Amps were installed utilizing aluminum conductors. The use of stranded aluminum conductors in sizes #8 and larger is still standard accepted trade practice in residential electrical systems.

## Subpanels

Inspected circuitry in this subpanel was in acceptable condition.



Circuits in each of the subpanels were labeled. The accuracy of the labeling was not verified. When the opportunity arises, we recommend verifying the accuracy of the labeling by actually operating the breakers.

## Receptacles; Overall

Based upon the inspection of a representative number, the receptacles were properly grounded, in acceptable condition and operating properly.

Receptacles at many locations were protected by Arc Fault Circuit Breakers located in the subpanels. Each AFCI breaker was tested by pressing the “Test” button on the face of the breaker. When tested, each AFCI breaker tripped. In addition, we confirmed that the receptacles protected by the labeled circuit breakers were protected by an AFCI breaker. We recommend following the circuit breaker manufacturer’s instructions and testing each breaker periodically (usually monthly) using the same built in test button on the face of the breaker.

## Switches; Overall

A representative number of switches were operated and were in acceptable condition with exceptions noted below.

We noted switches for which no purpose was immediately obvious. These included but were not limited to each of the bedrooms as well as the dining room and family room. Many of these appear to be intended for future lighting. We recommend further investigation as to their function.

**The multiple switch combination in the family room and at the entry to the master bedroom was not functioning as intended. This was primarily a matter of convenience and was not necessarily a safety concern. However a licensed electrician should be retained to restore the circuit to its intended configuration.**

## General Comments On The Electrical System

The electrical system was generally in acceptable condition, with only a few instances of needed repair or correction observed. See notes above for specific comments. A competent, licensed electrician should examine those portions of the system specified as deficient in this Report, and repair, augment or modify them to insure that the entire system is safe and dependable.

## **ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE ELECTRICAL SYSTEM INSPECTION**

### **A Word About Voltage Terms**

We use the terms, “120 volts” and “240 volts” throughout the inspection report, as this is the nominal value of the designated voltage class in all nationally recognized standards for both residential and commercial construction. The actual voltage at which circuits operate can vary from the nominal within a range that permits satisfactory operation of the equipment, again, as defined in nationally recognized standards. This range includes 110 volts and 220 volts, the term you may be most familiar with. In fact, we are both speaking of the same voltage levels and not of a different type of class.

### **Low Voltage Systems Were Not Included**

Review of any low voltage electrical devices and their associated wiring, including, telephone, TV antenna, stereo systems, fire and burglar alarm, intercom, yard lighting, landscape water (sprinkler) timers or other water features, is not within the scope of a home inspection. We recommend consultation with the appropriate service technician for full evaluation of the operating condition of these devices.

# Heating System

## RESIDENTIAL HEATING SYSTEMS A Definition

The heating system consists of those components installed in the home for the purpose of maintaining the temperature of the interior at a controlled level. This heat can be supplied to each room by individual units, or by registers or radiant units which are supplied with air, water or steam from a central source. All heating systems contain a heat source and a means of control. In addition, central systems have a means of distribution to circulate the heat throughout the conditioned spaces.

## THE EVOLUTION OF INDOOR CLIMATE CONTROL

Temperature and comfort control has come a long way from the open fire and the daily circuit of the sun across the sky. When the early settlers built their log cabins, the "central heating system" was the fireplace. It served as the cook stove, and a source of light after the sun went down.

As homes got larger, it became necessary to supply heat to more than one room. Since the heat source was still wood or coal, stoves were developed to radiate the heat into the surrounding rooms.

The next step in the development of heating systems was to centralize the heat source in a furnace or boiler and distribute it to each room by means of heated air or water. Most early furnaces and boilers were located in the basement and used coal which was delivered by wagon and put in the basement near the furnace.

Over the years, central heating systems have been improved by adding forced distribution, more sophisticated controls and increasing the efficiency of combustion, heat transfer and distribution. Our grandfathers would hardly recognize our modern gas-fired forced air furnaces, hot water heating systems or heat pumps.

## THE HEATING SYSTEM - OUR INSPECTION PROCEDURE

Our examination of the heating system will include a visual check of the condition and operation of the heat source as well as the means of distribution. We will activate the thermostats and observe the response of the system. If the system has a centrally controlled source, we will open panels which would normally be used by a homeowner and observe the condition and operation of the heating plant, its fuel supply and its exhaust venting system.

## GLOSSARY OF HEATING & COOLING TERMS

While our report is designed to be clear and easy to understand, it may contain terms or phrases with which you may not be familiar. We are pleased to furnish this reference to define and clarify terms and phrases that may appear in your report.

**AIR FILTER** - A filter installed in the cold air return which filters out dust and debris and prevents its re-entry into the conditioned spaces.

**AIR RETURN** - A duct for interior cool air to return to the furnace. This air is then circulated through the heat exchanger, warmed, and distributed to the rooms.

**AUTOMATIC SAFETY CONTROLS** – Devices designed and installed to protect systems and components from too high or low pressures or temperatures, fuel leaks, or other unsafe conditions.

**BLOWER** - A fan in a furnace or air conditioning unit which blows air through ducts.

**BOILER** - A heating device which heats hot water or creates steam for circulation in heating pipes, radiators, baseboards or convectors.

**BTU** (British Thermal Unit) - A unit of measure of heat. One BTU is the quantity of heat needed to raise the temperature of one pound of water one Fahrenheit degree.

**COMPRESSOR** - A pump which forces refrigerant through an air conditioning system.

**DUCTS** - A chamber used for distributing warm or cool air.

**FORCED-AIR SYSTEM** - A heating system where air is heated in a furnace and distributed through a structure by a blower.

**HEAT EXCHANGER** - A device by which heat is exchanged from one heat-carrying medium to another without direct contact between the two media.

**HVAC UNIT** - A single unit which supplies heating, ventilation and air conditioning.

**INADEQUATE CLEARANCE TO COMBUSTIBLES** - Gas-fired appliances and their vents must be far enough away from combustible surfaces to prevent the heat that these vents carry from causing a fire. Single wall vents should be at least six inches away from combustible surfaces and double wall vents should be at least one inch away.

**COMBUSTION AIR** - The air which fuel burners need to operate safely. It is normally supplied through ducts or openings in walls, doors, floors or ceilings.

**INSULATION INSTALLED BACKWARDS** - Insulation installed with the vapor barrier placed on the side opposite the living space. This can cause a buildup of moisture inside the insulation itself and cause damage. We recommend that all insulation be installed with the vapor barrier oriented toward the heated side of the building in line with the manufacturer's recommendations. Any damaged material found in the course of this work should be repaired or replaced.

**PLENUM** - A large duct or air chamber in which the conditioned (hot or cold) air from the furnace is distributed to the ducting and through the ducts to the registers.

**REGISTER** - A grill installed at the end of a duct which controls and directs the flow of air into a room.

**THERMOSTAT** - An automatic heating/cooling control device. Some units are controlled by clocks to set back the temperature during certain time periods as a fuel-saving measure.

**VENT** - A metal or plastic tube or pipe, usually extending upward through the roof, but sometimes horizontally through the wall, which carries exhaust gasses from fuel burning appliances such as furnaces, boilers and water heaters, safely to the outside of the building.

**TRANSITE VENT** - A pipe composed chiefly of asbestos and Portland Cement used to carry products of combustion from gas fired appliances safely to the exterior of a dwelling. Transite vents are not recognized by present industry standards. They are subject to failure because of their absorbency and the effect of the products of combustion on the product binders. The local building department may require replacement of these vents.

**TRANSITION BOOT** - A rectangular box attached to the end of a duct into which a register is placed.

# Heating System

## DESCRIPTIVE INFORMATION

<b>Heat Plant Location:</b>	• In the attic
<b>Heating Fuel:</b>	• Natural Gas
<b>BTU Input Rating:</b>	• 80,000
<b>Heating Plant Age:</b>	• Age from Data Plate 4 years
<b>The Air Filter Type:</b>	• Disposable media
<b>The Air Filter Size:</b>	• 20" x 30" x 1"
<b>Number of Zones:</b>	• Single Zone system
<b>Attic Insulation Type/R-Value:</b>	• 16" Fiberglass, R-35
<b>Wall Insulation Type/R-Value:</b>	• Inaccessible, not visible, could not be inspected

## OBSERVATIONS & RECOMMENDATIONS

### Forced Hot Air Heating System

Forced air furnaces operate by heating a stream of air moved by a blower through a system of ducts. Important elements of the system include the heat exchanger, exhaust venting, blower, controls, and ducting.

The heat exchanger in this furnace was inaccessible and could not be visually examined.

### HVAC Electrical

The visible and accessible wiring for the electrical supply for this unit was in acceptable condition.

### Fuel Supply

The gas supply piping installation included a 90-degree shutoff valve in the vicinity of the heating plant for service personnel and emergency use. The valve was not operated, but this age and style of valve is normally found to be operable by hand and generally trouble free.

The gas connector was an approved flexible type in acceptable condition.

### Combustion Air

Combustion air provides the oxygen needed for the safe and efficient operation of fuel burning appliances. An adequate supply of fresh air around all fuel burning appliances with open combustion compartments is vital for their safe operation. Years ago, the air could come from inside or outside the building, however, more recent standards prefer for combustion air to come from the outside, only.

The combustion air supply was adequate.

### Ignition and Controls

The burner was equipped with an electronic ignition system, which is an energy saving feature that allows operation without the need for a continuously burning pilot light. The ignition system was activated during the inspection and was in acceptable condition.

### Exhaust Venting System

A PVC plastic pipe extending to the exterior of the building provided the flue for the venting of exhaust gases from the heating plant. This type of venting is common on high-efficiency heating systems.

## Distribution System



**The filter had accumulated debris that decreased its effectiveness and blocked airflow. This condition can dramatically decrease the efficiency of the system, decrease the service life of the furnace and increase maintenance costs. A properly sized new replacement air filter should be installed and secured in the correct orientation in this unit.**

Visible sections of the ducts were insulated with fiberglass. The insulation was in acceptable condition.

The visible portions of the distribution ducts were properly installed and in acceptable condition.

## System Controls

Activation of the user controls on the thermostat caused the unit to respond.

Keep in mind that this was a programmable device with many options for setback settings, timed events, etc. No attempt was made to test all of the functions of this thermostat.

## General Comments About The Heating System

The heating system was generally in acceptable condition, with only one instance of needed repair or correction observed. See notes above for specific comments. A competent, licensed heating technician should examine those portions of the system specified as deficient in this Report, and repair, augment or modify them to insure that the entire system is safe and dependable.

## Energy Conservation Features

All of the glass in the doors in this dwelling was double-pane or insulated glass.

All of the windows in this dwelling were glazed with double-pane or insulated glass units.

The doors in this dwelling were equipped with functional weather-stripping.

A random sampling of the windows in this dwelling revealed that they were adequately weather-stripped.

The thermostat in this dwelling was a programmable set-back type device.

### Attic Insulation Conditions



The insulation had settled or had been compressed and no longer provided the same R-value as when it was installed. At the least, additional insulation should be installed to restore the original thermal efficiency of the attic. Even better would be to add insulation to bring the level up to current industry standards.

### Wall Insulation Conditions

The wall insulation was not visible, thus it could not be inspected.

### General Comments on Energy Conservation Features

If enhancing the energy efficiency of the dwelling is of interest, then retaining a qualified energy conservation professional to evaluate the structure and identify the most cost effective manner to increase energy efficiency will be well worth the effort.

## ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE HEATING SYSTEM INSPECTION

### Important Tips On Changing Filters

It is extremely important that the homeowner (or occupant) change (or have someone else change) the furnace filter(s) regularly – every 30 to 60 days during the heating (and cooling, if you have central air conditioning) season. This is important for the safe operation of your furnace. Furnace filters that are very dirty will significantly slow the flow of air through the furnace heat exchanger, causing the heat exchanger to get much too warm. This may, in turn, cause the high limit switch to signal the main gas valve to shut down the burner prematurely. The last stage of this process causes the furnace to cycle against the high limit control, often resulting in expensive repairs. If the furnace also has evaporator coils for a refrigerated central air conditioning system, then the evaporator coils (which consist of hundreds very thin closely spaced aluminum fins, like the radiator in your automobile) will, by default, become a secondary air “filter”. The evaporator coils will then become clogged with dirt, necessitating a very expensive service call to remove and clean them.

When installing the new filter, if it is one of the “disposable” types with a rectangular cardboard frame, be sure to place it in the proper position with the arrow on the frame marked “Air Flow” pointing in the direction that the air flows into the furnace blower compartment.

### Recommend Periodic Review

Until eventual replacement of the heating system, we suggest periodic review and servicing by a competent HVAC contractor for continued safe and efficient operation.

# Cooling System

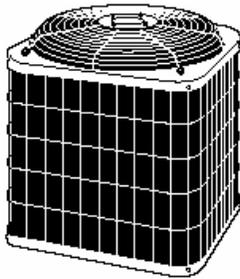
## AIR CONDITIONING

### THE BASICS

The basic principle involved in modern air conditioning is that a gas expanding under pressure absorbs heat while a gas condensing to a liquid releases heat.

An air conditioning unit (or system) operates by removing heat from the air inside the dwelling and releasing it outdoors. Heat pumps, which cool and heat, operate in much the same manner, but are reversible for winter heating use.

The major elements of an air conditioning system are an evaporator coil and fan (the furnace or air handler blower) with an expansion valve (the indoor unit), a condenser coil and fan with the compressor (the outdoor unit), and a sealed refrigerant circulating system connecting the two units.



### MAINTENANCE 101 FOR THE HOMEOWNER

Central air conditioning systems do not require a burdensome amount of maintenance, but some simple care must be exercised periodically if the unit is to achieve its maximum economic life span. A regular maintenance program can add many years of service. Aside from the sound recommendation of having an annual service check of the system (and the refrigerant level) by a local cooling professional, the following are the most important considerations for the homeowner:

- A) Clean and/or replace air filters monthly. Service the electronic air cleaner, if you have one.
- B) Maintain clearance around and over your outdoor unit. Keep vegetation, PETS and storage three feet from the unit, and do not locate the vent from the clothes dryer discharge within 15 feet of the outdoor unit.
- C) If there is a drain pan under the unit, as is the case in many attic installations, be sure the pan is clean and the condensate drain open. If your unit has a condensate pump, keep it clean and in working order.
- D) We advise that one never operate a residential air conditioning system when the outside temperature has been below 65°F for several hours. This can damage the compressor. We also do not recommend operating heat pumps in the heating mode when the outside temperature is above 75°F.

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# Cooling System

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## DESCRIPTIVE INFORMATION

<b>Type of Cooling System:</b>	• Central air conditioning system sharing distribution with a gas fired furnace
<b>Energy Source for Cooling:</b>	• Electricity
<b>Cooling Capacity:</b>	• Approximately 3-1/2 tons
<b>Cooling System Age:</b>	• 3 Years, from Serial Number

## OBSERVATIONS & RECOMMENDATIONS

### Type Of Cooling System

Cooling was accomplished by electrically powered refrigerant compression, with the cooling (evaporator) coil mounted adjacent to the gas fired furnace.

### Cooling Equipment Compressor/Condenser

The condensing unit was in acceptable condition.

The difference in temperature between the air entering the return to the system and the air being supplied from it was carefully measured with the system running during the inspection. This temperature differential, or temperature drop, was found to be within industry standards.

The condensing unit was not properly secured to the pad. We recommend the unit be secured to the pad in accordance with present standards.

### Notes On The Evaporator Coil

An evaporator coil is the component of an air conditioning or heat pump system that transfers or absorbs heat from the air passing through it to a liquid refrigerant. In doing so, the liquid refrigerant remains within the system as it is evaporated or boiled off to a gas while making its way through the evaporator.

The evaporator coil was concealed, was not accessible and could not be directly observed. However, the evaporator coil operated properly, overall.

### Refrigerant Lines

Refrigerant lines connect the evaporator coil and the condenser in an air conditioning or heat pump system. The “hot” side of the lines is the conduit through which collected heat from the living area is conveyed to be released through the condenser outdoors. Normally, the “cold”, or the suction, or return side of the refrigerant lines is the larger of the two and should be insulated.

Accessible refrigerant lines were in acceptable condition.

## Cooling System Electrical Wiring



The visible and accessible wiring for the electrical supply was in acceptable condition.

## General Comments About The Cooling System

The cooling equipment was relatively new, responded to user operating controls and was generally in acceptable condition.

## ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE COOLING SYSTEM INSPECTION

### Scope of the Air Conditioning System Inspection

Inspection and evaluation of the condition of the cooling system was limited to visible components and their basic functions. A full evaluation of the condition of the central air conditioning equipment requires extensive testing and is beyond the scope of a home inspection

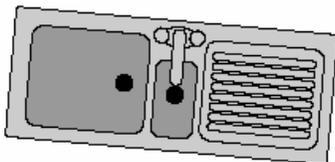
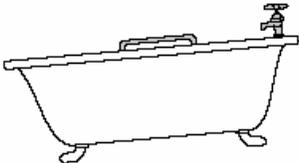
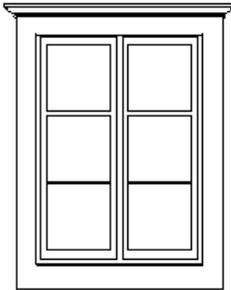
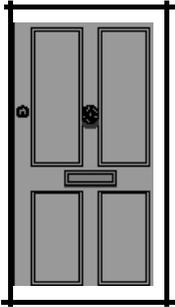
### Do Not Operate A/C System When It Is Below 65 Degrees Outside

Some authorities recommend running the compressor intermittently (perhaps once a month for a few minutes) during the season to keep the seals lubricated and pliable so that they will not begin to leak as soon. Extreme care must be taken to insure that the compressor is NOT operated when the outside temperature is below 65 degrees Fahrenheit, or serious damage may occur to the compressor itself!

The lubricant placed inside the factory sealed compressor unit of an air conditioning system during manufacturing will become very viscous (thick, like syrup) when subjected to cool temperatures. When it becomes thick, it will not circulate properly and doesn't adequately coat all of the internal moving parts.

For this reason, manufacturers of air conditioning compressors strongly recommend against running these units for any length of time when the outside temperature is below 65 degrees Fahrenheit. To do so invites the risk of mechanically seizing the compressor. Once a compressor has seized, the only course of action that can restore proper operation is to completely replace the compressor itself – often to the tune of \$1,000 to \$2,000, depending upon its size.

# Interior Components



From the very beginning, man has searched for ways to control his environment and create favorable conditions for his activities. His housing design has reflected the different solutions advanced in each period and place. It was the shelter's *exterior* that provided protection against unwanted environmental elements. It was the shelter's *interior* that gave man a comfort bubble in which to live.

The shelter was the main instrument man used to fulfill the requirement of comfort. It modifies the natural environment to approach optimum conditions of livability. It should filter, absorb or repel environmental elements according to their beneficial or adverse contributions to man's comfort.

In early times, it was the cave that provided this protection. Temperate China had its underground settlements. Equatorial man had his thatched roofs with no walls. In the transition from cold caves to cold castles much had changed, however man still huddled around his fire pit or fireplace for warmth.

With the technological advances made in the last 100 years, man has made great strides in modifying his structure to provide optimum living environments, within the interiors of his architecture. He can now control interior spaces to have exact temperatures, humidity, light, sound qualities, and aesthetic dimension.

If our forefathers could only see us now, they would not believe their senses. Our spaces can be physically and psychologically pleasing. They provide us with excellent spaces for both group and solitary activity. In short, we have created a place of comfort out of the wilderness. We hope you enjoy yours.

## THE INTERIOR - OUR INSPECTION PROCEDURE

Our examination of the interior and its components will include opening and closing every operable and unobstructed door and a representative sample of windows, where the window is not covered with curtains or a blind. In addition, we operate light switches and check readily accessible electrical receptacles. Where possible, we flush all toilets, run all wash basins, bathtubs and showers and check kitchen sinks. Finally, we check for the presence and operation of a permanently installed source of heat and/or cooling in each habitable room.

## A VIEW OF WINDOWS

Most home buyers take windows for granted until they discover that one or more of them don't operate satisfactorily or appear to be fogged. As we inspect a representative sample of the windows, we may not discover *all* possible or potential faults with *all* of the windows in any given home on any given day. Thus, we have prepared this supplementary information to increase the knowledge and refine the expectations of our Inspection clients.

### QUESTIONS AND ANSWERS

The following questions and answers will add to your understanding of windows.

**Q.** *Will all the windows in the home be inspected?*

**A.** Possibly not. In occupied homes (particularly with curtains, blinds or shades on the windows), we will inspect a representative number of windows, which typically means one window per room.

**Q.** *Do you operate all the windows that you inspect?*

**A.** Not necessarily, as our ability to do so is strongly influenced by their accessibility which can be impeded by furniture or personal property in the room or curtains or blinds over the windows.

**Q.** *Will the inspector find all of the breached seals in the windows he/she inspects?*

**A.** Physical damage to seals in double glazed windows cannot always be detected in a visual inspection. The fact that a seal has been breached can't be spotted visually, but one looks for symptoms such as fogging or staining between the layers of glass. Since staining looks a lot like a dirty window and since fogging only occurs under the right conditions of inside temperature vs. outside temperature, it is not unusual that symptoms of breached seals may not be apparent during the time available for your home inspection.

Thus, you may find that the symptoms of breached seals will only be apparent to you after you have occupied your home. If this occurs, please be assured that it is *not* the result of a substandard inspection.

**Q.** *What are the consequences of a breached seal in a double glazed window?*

**A.** A small breach in a double glazed window seal will not necessarily reduce the insulating value or solar conductivity of the unit. Usually, the most significant disadvantage to a window with a breached seal is purely aesthetic. The only permanent "cure" for a breached seal in a given window is removal and replacement of that window glazing unit (pane).

**Q.** *If breached seals (or even their symptoms) cannot always be detected during a home inspection, then how can the home buyer be confident that this condition does not exist in one or more windows or doors?*

**A.** Unfortunately, the home buyer can never be *absolutely* sure, no matter how many times they visit the house and examine the windows and doors prior to closing. Nevertheless, the home buyer can take a very effective precaution and ask the seller or occupant of the home whether they have ever observed any condensation, fogging or staining between the layers of glass in any of the windows or doors in the home. Since they have presumably lived in that house for an extended period of time, if there are breached seals, the sellers or occupants probably are aware of them. This question can properly be asked, and a written answer requested, as a part of the Seller's Disclosure obligations, now a common part of most real estate transactions.



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# Interior Components

## DESCRIPTIVE INFORMATION

<b>Number of Bathrooms:</b>	• Three
<b>Number of Bedrooms:</b>	• Four
<b>Window Material:</b>	• Extruded vinyl frame
<b>Window Glazing:</b>	• Double pane (“Insulated”)
<b>Wall Finish:</b>	• Gypsum wallboard, commonly called “Drywall”
<b>Ceiling Finish:</b>	• Gypsum wallboard, commonly called “Drywall”
<b>Floor Covering:</b>	• Various floor coverings

## OBSERVATIONS & RECOMMENDATIONS

### Interior Surfaces

The interior wall, floor, and ceiling surfaces gave the appearance of having been professionally installed and were generally in acceptable condition, taking into consideration the effects of normal wear and tear.

### Floors



There was a gap at the transition at the entry. We recommend repairs be made for improved appearance.



There was damage to a transition strip at the family room/kitchen. We recommend repairs be made for improved appearance.

#### **Interior Walls**

The interior walls were generally in acceptable condition, except for items noted.

There was a void in the wall above a receptacle in the dining room. We recommend repairs be made for improved appearance.

#### **Interior Doors**

The interior doors were properly installed and in acceptable condition.

#### **Windows**

All of the windows were functional and in acceptable condition.

#### **The Fireplace**

Components shared by most types of fireplaces include the interior, exterior and a fire burning area. Individual fireplaces may have a foundation, flue, firebox, mantel, hearth, and damper, smoke shelf, lintel, cap, wash, gas log and/or gas log lighter. Accessible fireplace components are visually inspected for signs of significant malfunction, excessive or unusual wear and general state of repair. However, portions of a standard fireplace configuration are always, by their nature and location, inaccessible for a home inspection.

The fireplace was intended to be gas fired only. It was fully functional at the time of the inspection, however no attempt should be made to burn wood in this fireplace, and it cannot be converted in the future to burn wood or *any* other solid fuel.

#### **Smoke Alarms (“Smoke Detectors”)**

The smoke alarms (“Smoke Detectors”) were appropriately located.

**Several of the smoke detectors were “chirping” at the time of the inspection. This is an indication of low battery levels. We recommend the batteries in every smoke detector be replaced and the proper operation of each smoke detector be verified.**

#### **Carbon Monoxide Detectors**

There were carbon monoxide detectors in appropriate locations at the time of the inspection.

## Right Hallway Bath

### Washbasin

Hot water did not flow from the right hallway bathroom when tested. We recommend repairs be made by a qualified and licensed plumber.

## Master Bedroom Bath

### Washbasin

Hot water did not flow from the right wash basin in the master bathroom when tested. We recommend repairs be made by a qualified and licensed plumber.

## Jack & Jill Bath

### Bathtub



The bathtub was rusted. We recommend repairs be made by a qualified professional.

## Laundry Area

### Clothes Washer and Dryer

The utility connections for both the clothes washer and clothes dryer were properly installed and in acceptable condition. There were no appliances in place at the time of this inspection.

## Kitchen

### Descriptive Information About the Kitchen

The heat source for cooking was natural gas for the range or cook top, and electricity for the oven.

### The Sink

The two-compartment sink was made of molded polymer.

When the sink was operated, it was fully functional and in acceptable condition.

### The Dishwasher Drain Separation

The dishwasher drain was equipped with an air-gap fitting (the cylinder protruding above the sink). This device assures separation of the supply water from the wastewater.

### Cabinets & Countertops

The cabinets and countertops were in acceptable condition.

## **Appliances in General**

All appliances were tested using normal operating controls and were found to be in satisfactory working condition.

## **In Summary**

Our inspection of the significant components in this kitchen led us to conclude that they were functioning as intended and in acceptable condition.

## **General Comments About the Interior**

In addition to any specific rooms noted, we inspected all rooms generally considered to be habitable space. These usually include the living room, dining room, family room, den, bedrooms, utility room, etc., in addition to the kitchen, bathroom, laundry area and garage, as applicable.

The interior surfaces, hardware, fixtures, doors and windows were properly installed and generally in acceptable condition with exceptions noted.

We do not attempt to list all cosmetic flaws and suggest that most of these items will be addressed by routine maintenance upgrading. The intended purpose of this inspection was not to create an architectural "punch list" of minor cosmetic flaws.

## **ADVICE, PRECAUTIONS & CONDITIONS AFFECTING THE SCOPE OF THE INTERIOR INSPECTION**

### **Smoke Detectors Checked For Location Only**

The smoke detectors were inspected for location only. For future reference, testing with only the built-in test button verifies proper battery and horn function, but does not test the smoke sensor. We advise testing with real or simulated smoke.

### **Carbon Monoxide Detectors Checked for Location Only**

The carbon detectors were inspected for location only. We advise testing in accordance with the manufacturers recommendations.

### **Fire Sprinkler System Was Not Inspected**

An automatic fire suppression (sprinkler) system was installed in this dwelling. Because of the specific and complex nature of such systems, their evaluation is never a part of a home inspection.

### **Familiarize Yourself With Fire Safety Equipment**

All occupants will want to become familiar with the locations of emergency controls, exits, fire extinguishers, alarm "pulls", etc. In addition, occupants are urged to have handy the phone number to call for an emergency shut-off, should a sprinkler head go off accidentally.

### **All Homes Require Regular Care and Maintenance**

A home inspection is designed to be a systematic review of the home, the surrounding site, and specific components and other features. While our findings will always be accurate as of the time of the inspection, because conditions can change literally hour by hour, let alone day to day and year to year, other items will undoubtedly need attention in the future. Regular and frequent maintenance will be needed to maintain the home in good working order.

# Environmental Topics

In our *Property Inspection Contracts* we specifically exclude inspection or testing for any toxic or dangerous substances other than fuel gas. Thus, your inspector does *not* inspect for the presence of Asbestos, Urea-formaldehyde foam, Lead in paint or water, and a long list of environmental contaminants.

We don't test or inspect for these substances because:

- 1) It requires an individual with highly specialized training and appropriate certification;
- 2) Testing requires a significant length of time, well beyond that required for a standard Home Inspection;
- 3) Testing may involve the use of expensive, specialized sampling and measuring equipment;
- 4) We don't get enough calls for such services to warrant our investing in all of this specialized training and equipment.

There are many companies who stand ready to carry out such surveys for our clients. Our office can refer you to several sources, or you can consult the Internet or Yellow Pages of the local telephone directory.

These companies can carry out as extensive a survey as you may desire. These services range in cost from around \$100 to over well over \$1000 for an exhaustive on-site survey with laboratory analysis all carried out by trained and certified personnel.

Laboratories, testers, and contractors will be listed with the U.S. Environmental Protection Agency, an appropriate State Agency or other recognized certifying authority, if they have qualified under that authority's guidelines to perform testing, laboratory analysis, or reduction and control of hazardous substances. You should request that your laboratory, tester, or reduction/control contractor provide you with their credentials.

## FORMALDEHYDE

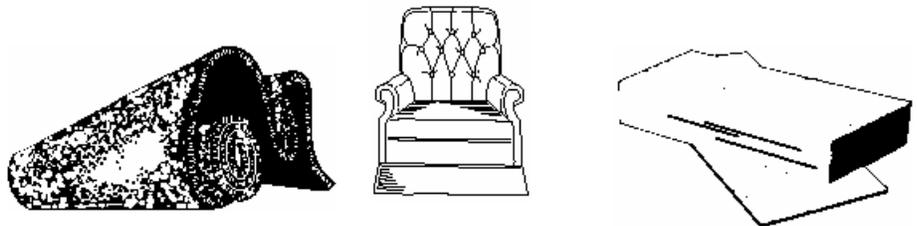
Formaldehyde, a colorless gas with a pungent odor, is so commonly used today that everyone is likely to be exposed to small amounts of it, and a number of people have developed symptoms due to exposure to large amounts of formaldehyde in their homes or workplaces. It was an integral component of the urea formaldehyde foam insulation (UFFI) that was installed in more than 500,000 homes in the 1970s. It is present in a large variety of products. It is a major part of the resins used as glue in particle board, plywood, and other pressed wood products used in the construction of homes and furniture. Some cosmetics, paper towels, upholstery, permanent press fabrics, carpets, toilet seats, pesticides, and explosives contain it, too.

The most common symptoms of excessive formaldehyde exposure are burning eyes, itching, shortness of breath, tightness in the chest, coughing, headaches, nausea, and asthma attacks.

## REDUCING THE RISK

People who live in homes that have been "tightened" for maximum energy conservation are most likely to suffer from the effects of formaldehyde gas. The gas seeps from the walls, furniture, carpet, etc. into the air, which can be irritating, particularly to sensitive people.

To minimize your exposure to formaldehyde, ventilate your home - in good weather, open the windows to provide a constant supply of fresh air. Some methods of heat recovery, such as heat recovery ventilators (also known as air-to-air heat exchangers), are available that can ventilate the home while also conserving energy.



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# Mold and Allergens

## IMPORTANT INFORMATION CONCERNING MOLD, MILDEW AND RELATED ALLERGENS

We hope that the following facts and considerations regarding mold, mildew and related allergens, the scope of this home inspection and your family's health, will aid in your understanding of this important and timely topic:

- ◆ Mold spores are present in the outside air everywhere, even in the driest of the so-called desert climates. Thus, every home contains mold both inside and on all surfaces. But the mold will remain dormant until the right conditions of moisture and food become present. Accurately identifying those conditions often takes specialized skill and experience.
- ◆ Mold generates a number of mold byproducts. Particles include the mold organism, spores and fragments. Chemical byproducts include enzymes, mycotoxins and gasses. Many of these byproducts can affect susceptible people in a variety of ways, and from a health point of view it often makes no difference if the mold is dead or alive.
- ◆ Mold spores are present on the surfaces and in the cracks and pores of building materials as they are incorporated into new construction, no matter where in the world a new home is being built. While it is true that molds usually do not propagate if removed from a source of moisture, nevertheless they can remain in a dormant state for years waiting for the right conditions to spring into life and fill the atmosphere both inside and outside of a building with their progeny.
- ◆ Some molds give off toxic gases as an offensive "weapon". These toxic gases aid them in killing competing molds and expanding their "territory". These same gases can be dangerous to humans as well.
- ◆ Human reaction to, and the possible effects of, exposure to specific molds and other fungi can vary widely, *even between members of the same family exposed to the same conditions.*
- ◆ Many experts consider all molds to be potential allergens and irritants, including some toxins. Health concerns from exposure to mold in humans varies with each individual and can range from simple allergy symptoms to asthma, watery eyes, sneezing, wheezing, difficulty breathing, sinus congestion, blurry vision, sore throat, dry cough, aches and pains, fever, skin irritation, bleeding of the lungs, headaches, and memory loss.
- ◆ Searching for environmental hazards of *any* kind, including molds and/or mildew is not a part of this home inspection, or *any* standard home inspection and report. (See your Property Inspection Contract)
- ◆ Many times, mold infestations occur inside wall cavities or in an underbuilding space or attic where they cannot be seen without the destructive disassembly of the building, an activity specifically prohibited by all nationally recognized Standards of Practice governing the Home Inspection profession. Remember, also, that *you* as the Client would be financially responsible for the repair of any damage resulting from any invasive methods used to find hidden mold growth in a building that you do not yet own!
- ◆ Unfortunately, there have been many documented cases of significant and harmful mold growths that were totally concealed and which left absolutely *no* outwardly visible symptoms of their presence.
- ◆ During your inspection, if we did come across conditions that, in our opinion, could cause or suggest the presence of these organisms, we have made every effort to note them in the report.
- ◆ **No matter whether we have mentioned any visible evidence or even suspicious symptoms in your report, and whether you or any member of your family have been known to have ever had an adverse reaction to possible mold exposure, or if you are concerned at all about these organisms being present in this home, we strongly recommend that you engage the services of a qualified expert that specializes in the identification of these organisms and follow their recommendations.**

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This inspection was done on July 3, 2018, by Inspector David Pace of Pace Inspection Services, 925-513-0006.  
Acceptance and/or use of this Inspection Report shall constitute acceptance of, and agreement to, all of the provisions of the *Property Inspection Contract* and its *Standard Terms and Conditions* which are incorporated by reference and form a part of this Inspection Report.  
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# After the Inspection

## STANDARDS TO GO BY

These requirements should be the minimum acceptable standards which *all* corrective measures should meet:

1. All repairs or modifications should be done by licensed and/or qualified tradespersons who are familiar with the system or component they will be servicing.
2. These persons should render a written report or itemized invoice which details all work done and certifies that new materials were used, that any necessary permits and inspections were obtained, and that the work was done in a workmanlike manner.
3. Finally, the trades-person completing the work should certify, in writing, that the system or component was left in a fully operational, safe and adequate condition.

Virtually every home inspection is bound to turn up a few conditions or concerns which will be listed in the *Client Advisory* sections of the *Inspection Report*. What you *do* with the information gained from your home inspection is strictly up to you, since your Professional Home Inspector is not a party to your transaction. However, because many of our clients are using our services for their very first home purchase, we have compiled the following guidelines and suggestions to help you interpret and respond to our findings.

Begin with the assumption that in the eyes of virtually every seller, they have "taken really good care of" the home that they are now selling to you. Furthermore, most sellers are not anticipating that a home inspector will find anything which might need immediate attention in their home! Additionally, that same seller usually has his/her attention focused on their *next* home and their impending move, and they are no longer fully "tuned in" to current conditions in their present home.

Because of this, if you request that the seller make any corrections, based on the Inspection Report findings, the seller's motivation might be to get the work done as quickly and inexpensively as possible. This may translate into the seller doing the work him or herself (or hiring inexpensive and unqualified help) and using the most inexpensive materials available. Usually, "corrections" made in this manner only provide a false sense of security. Additionally, it is not practical for your inspector to re-inspect such completed corrections. Without being constantly on site to observe each step, no one can ascertain, after the fact, that all work was done properly and up to industry standards.

In the majority of circumstances, we urge our clients (through your Real Estate Professional or Attorney, as applicable) to negotiate so that, no matter which party takes responsibility for agreed to corrections, the "Standards to Go By" (at the left) be followed rigorously.

(See the *Pre-closing Walk-Through Guidelines* on the next page.)

## Pre-Closing Walk-Through GUIDELINES

The primary purpose for a pre-closing walk-through is to confirm that there have not been any significant changes in the condition of the property or operation of its components after the pre-purchase inspection.

A one-time pre-purchase inspection will not assure you that a property will be okay at closing time. You should check it during poor weather conditions in the interim and check it 24-48 hours before closing. After several days of rain, a house may show some basement or roof leakage.

Visiting a house during very cold or windy weather may demonstrate frozen pipes or that the house won't heat adequately. Extremely hot or humid weather may demonstrate inadequate air-conditioning or basement condensation problems. Cold weather with snow on the roof may demonstrate ice damming on the roof or in the gutters.

For investment properties, this guide will establish a condition statement at a particular time. This allows fair deductions from damage deposits for those occurrences which are beyond normal wear and tear.

*Here are some of the events you might anticipate occurring between the time that you sign your Purchase contract and the time that you move in:*

1. A disgruntled tenant or owner may deliberately or accidentally damage the property or leave it dirty.
2. Weather damage may occur. Frozen soil, high winds, or heavy rains can deliver water into the basement where no evidence would suggest it had ever been.
3. High winds or lightning can damage roofing, gutters can clog with leaves, trees or limbs can fall on houses. Hail can dent siding, break windows and destroy roofing.
4. Sealed, insulated glass windows and doors can lose (breach) their seals.
5. Toilets can clog, drains can become plugged (especially if painting or plaster or drywall repairs have taken place, since these trades often flush waste materials down the drains, which frequently blocks them up). The hardware of plumbing fixtures may leak and require new seats, packing, or washers.
6. Pests (fleas, roaches, mice, termites, etc.) may infest the property.
7. Mechanical systems may fail, furnace heat exchangers may crack, electrical controls may fail and air-conditioning compressors may quit.
8. Freshly painted or decorated areas may peel, expose mildew, or open cracks.
9. Plaster ceilings may loosen, flooring may squeak and windows and doors may bind.
10. Items or appliances you thought would be conveyed with the house no longer exist or are exchanged for different ones.

*You should also take the opportunity to operate, check or test those things which were practical prohibitions during the professional home inspection.*

*Here is a sample listing:*

1. Operation of all localized fixture shut off valves and all outside hose bibs and shut-off valves.
2. Air conditioners or heat pump cycles not operational due to temperature. Flue drafts (bird nests, bricks, and disintegration can block them).
3. Those items found defective or questionable during the professional inspection. Mechanical items often demonstrate intermittent operation or may be out of the range of thermostat or humidistat controls.
4. Uninstalled window air conditioners, screens, etc.
5. Those areas inaccessible (obscured by furniture or stored items) during the professional inspection.
6. Floors under rugs, etc. Attics and crawl spaces without access openings, etc.
7. Roofing or yard areas (sidewalks, drives, etc.) previously covered with snow, ice or leaves.
8. Non-functional lighting fixtures and bulbs, receptacles or switches, etc.
9. Intercoms, security and telephone systems, etc., TV antennas and fireplace draws, cleanliness, etc. Accuracy of thermostats and timers, ice makers, door bells, etc.
10. Swimming pools and related equipment.
11. Those windows, doors and hardware not part of the original random sample.

**If you have any questions about the need for this Pre-Closing Walk-Through or how to perform it, ask your Professional Home Inspector.**

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This inspection was done on July 3, 2018, by Inspector David Pace of Pace Inspection Services, 925-513-0006.  
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# Pre-Closing Walk-Through CHECK LIST

Address: \_\_\_\_\_

Inspection Number: \_\_\_\_\_

Signature: \_\_\_\_\_

	OK	Needs Attention
<b>GENERAL</b>		
Have agreed-upon repairs been completed?	<input type="checkbox"/>	<input type="checkbox"/>
Are warranties and/or guarantees available for the repairs?	<input type="checkbox"/>	<input type="checkbox"/>
<b>BASEMENT/CRAWL SPACE</b>		
Is the area dry?	<input type="checkbox"/>	<input type="checkbox"/>
Are there any signs of water?	<input type="checkbox"/>	<input type="checkbox"/>
Is the sump pump functioning?	<input type="checkbox"/>	<input type="checkbox"/>
<b>SITE AND GROUNDS</b>		
Have any concrete driveways, walkways, sidewalks or patios cracked or settled?	<input type="checkbox"/>	<input type="checkbox"/>
Is there any <i>new</i> damage or deterioration to decks, steps, fencing or retaining walls?	<input type="checkbox"/>	<input type="checkbox"/>
<b>GARAGE</b>		
Do <i>all</i> the doors operate properly?	<input type="checkbox"/>	<input type="checkbox"/>
Does the automatic door opener operate, stop and reverse properly?	<input type="checkbox"/>	<input type="checkbox"/>
<b>PLUMBING</b>		
Do all the fixtures work?	<input type="checkbox"/>	<input type="checkbox"/>
Is there adequate flow from all the faucets in the highest bathroom?	<input type="checkbox"/>	<input type="checkbox"/>
Are there any drain or faucet leaks?	<input type="checkbox"/>	<input type="checkbox"/>
Do the tubs and basins drain?	<input type="checkbox"/>	<input type="checkbox"/>
Is the "Hot" water hot?	<input type="checkbox"/>	<input type="checkbox"/>
If included, do the washer and dryer work?	<input type="checkbox"/>	<input type="checkbox"/>
<b>ELECTRICAL</b>		
Do all the lights work?	<input type="checkbox"/>	<input type="checkbox"/>
Do all the switches work?	<input type="checkbox"/>	<input type="checkbox"/>
Do all the receptacles ("plugs") work?	<input type="checkbox"/>	<input type="checkbox"/>
Do the smoke & Carbon Monoxide alarms work?	<input type="checkbox"/>	<input type="checkbox"/>
Does the doorbell work?	<input type="checkbox"/>	<input type="checkbox"/>
<b>If any of these items or systems are present, we recommend that you also check their condition during your walk-through:</b>		
Hot Tub, Pool or Spa	<input type="checkbox"/>	<input type="checkbox"/>
Landscape Irrigation ("Sprinkler") System	<input type="checkbox"/>	<input type="checkbox"/>

	OK	Needs Attention
<b>KITCHEN</b>		
Do all the appliances work?	<input type="checkbox"/>	<input type="checkbox"/>
Does the exhaust fan work?	<input type="checkbox"/>	<input type="checkbox"/>
<b>HEATING AND COOLING</b>		
Does the Heating System work?	<input type="checkbox"/>	<input type="checkbox"/>
Does the Cooling System or Evaporative Cooler work?	<input type="checkbox"/>	<input type="checkbox"/>
Is there a working source of heating and/or cooling in each habitable room?	<input type="checkbox"/>	<input type="checkbox"/>
<b>ATTIC</b>		
Are there any signs of leaks?	<input type="checkbox"/>	<input type="checkbox"/>
Are there any signs of birds, rodents, or animals?	<input type="checkbox"/>	<input type="checkbox"/>
<b>WALLS, CEILINGS AND FLOORS</b>		
Are there any new water stains?	<input type="checkbox"/>	<input type="checkbox"/>
Have any previous stains become larger?	<input type="checkbox"/>	<input type="checkbox"/>
Are there any new interior cracks?	<input type="checkbox"/>	<input type="checkbox"/>
Have previously noted cracks become larger?	<input type="checkbox"/>	<input type="checkbox"/>
Are the carpets stained?	<input type="checkbox"/>	<input type="checkbox"/>
Is there any cracked bathroom tile?	<input type="checkbox"/>	<input type="checkbox"/>
Are there any cracked or broken windows?	<input type="checkbox"/>	<input type="checkbox"/>
Are any double-pane windows fogged or dirty <i>between</i> the panes?	<input type="checkbox"/>	<input type="checkbox"/>
Have any permanent fixtures been removed?	<input type="checkbox"/>	<input type="checkbox"/>
Is there noticeable pet odor?	<input type="checkbox"/>	<input type="checkbox"/>
<b>ROOF</b>		
Are there any signs of roof leaks?	<input type="checkbox"/>	<input type="checkbox"/>
Has the roof surface been damaged?	<input type="checkbox"/>	<input type="checkbox"/>
Are all downspouts attached?	<input type="checkbox"/>	<input type="checkbox"/>
Do any downspouts allow water to collect near the foundation?	<input type="checkbox"/>	<input type="checkbox"/>
Are the gutters clean and aligned?	<input type="checkbox"/>	<input type="checkbox"/>
Do you have a recent flow test from a competent well service company?	<input type="checkbox"/>	<input type="checkbox"/>
Did you have an inspection of the septic system by a competent, private septic system inspector?	<input type="checkbox"/>	<input type="checkbox"/>

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## Life Expectancy of Different Products / Items / Materials in the Home

### Appliances Average Life Expectancy in Years

Compactors	10
Dishwashers <i>Proper maintenance includes checking to see that the water temperature is at least 130°F and cleaning the filter screens and door seals.</i>	10
Disposal <i>Using it regularly is the best maintenance. Also grinding bones helps clear away build-up.</i>	10
Dryers, Compact <i>Proper maintenance includes regularly cleaning out the lint, tightening the connection between the wires and the heating element, lubricating the pulleys and rollers, and examining the exhaust outlet.</i>	14
Dryers, Electric <i>Same as compact dryers.</i>	14
Dryers, Gas <i>Same as compact dryers.</i>	13
Freezers, Compact <i>Proper maintenance includes cleaning the condenser coils every three months and sanitizing the door gaskets in order to maintain an effective seal.</i>	12
Freezers, Standard <i>Same as compact freezers.</i>	16
Microwave Ovens	11
Ranges, Free-standing Electric <i>Proper maintenance includes checking electrical connections, checking the oven vent for blockage and making sure the surface units are secure and level.</i>	17
Ranges, Built-in Electric <i>Same as free-standing electric ranges.</i>	17
Ranges, Free-standing Gas <i>Properly maintained by cleaning the igniters once a year.</i>	19
Ranges, Built-in Gas <i>Same as free-standing gas ranges.</i>	19
Ranges, High Oven, Gas <i>Same as free-standing gas ranges.</i>	14
Refrigerators, Compact <i>Proper maintenance includes cleaning the condenser coils every three months, sanitizing the door gaskets in order to maintain an effective seal, cleaning the mouth of the drain, and occasionally pouring a tablespoon of chlorine bleach followed by water in order to keep blockages from forming.</i>	14
Refrigerators, Standard <i>Same as compact refrigerators.</i>	17
Washers, Automatic and Compact <i>Proper maintenance includes checking the shaft seal, lubricating the pump, and tightening the belts.</i>	13
Exhaust Fan	20

### Bathrooms Average Life Expectancy in Years

Cast Iron Bathtub	50
Insulation Molded	20
Pumps Sump and Well	10
Burners	21

### Insulation Average Life Expectancy in Years

Foundation	Lifetime
Roof, Ceiling	Lifetime
Roof-Electrical Vent	Lifetime
Walls	Lifetime
Floor	Lifetime
Metal Weather Stripping	Lifetime

### Landscaping Average Life Expectancy in Years

Wooden Decks <i>Varies from the materials and products used in the construction.</i>	16
Steel Decks <i>With the proper maintenance.</i>	25–50
Brick Patios <i>Varies from the materials and products used in the construction.</i>	24
Concrete Patios <i>Varies from the materials and products used in the construction.</i>	24
Tennis Courts <i>Varies from the materials and products used in the construction.</i>	10
Concrete Walks <i>Varies from the materials and products used in the construction.</i>	24
Gravel Walks <i>Varies from the materials and products used in the construction.</i>	4
Asphalt Driveways <i>Varies from the materials and products used in the construction.</i>	10
Swimming Pool <i>Varies from the materials and products used in the construction.</i>	10
Sprinkler Systems <i>Provided that the system is properly maintained.</i>	15–20, 12
Fences <i>Varies from the materials and products used in the construction.</i>	12

### Masonry Average Life Expectancy in Years

Chimney	Lifetime+
Fireplace	Lifetime+
Brick Veneer	Lifetime+
Brick Walls <i>Provided that there are no structural problems.</i>	100+
Stone Walls <i>Provided that there are no structural problems.</i>	100+
Block Wall	Lifetime
Masonry Floor	Lifetime
Stucco <i>Provided that it is properly supported.</i>	Lifetime
Mantels <i>With the proper maintenance.</i>	Lifetime

### Mill Work Average Life Expectancy in Years

Stairs	60
Rails	30–40
Disappearing Stairs	30–40
Cornices	Lifetime
Baseboard and Shoe	Lifetime
Door and Window Trim	Lifetime
Built-in Bookshelves	Lifetime

### Paints and Stains Average Life Expectancy in Years

Wood	5–10, 7–10
Brick	5–10, 7–10
Aluminum <i>Doesn't face the moisture problems of wood.</i>	5–10, 7–10
Interior Wall Paint <i>Depends on the acrylic content.</i>	5–10
Trim and Doors	5–10
Wallpaper	7

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### Plumbing

Average Life Expectancy in Years

Pressure Pipes	Lifetime
Copper	Lifetime
Galvanized Iron	Lifetime
Plastic	Lifetime
Waste Pipe	Lifetime
Concrete	50-100
Vitreous China	Lifetime
Plastic	Lifetime
Cast Iron	75-100
Lead	Lifetime
Finish	Lifetime
Enamel Steel Sinks <i>They are not very durable.</i>	5-10
Enamel Cast Iron Sinks and China Sinks <i>Much more durable than enamel steel sinks.</i>	25-30
Faucets — Low Quality	2-5
High Quality	15-20
<i>Depends mostly on the finish. Chrome finish lasts much longer than brass or enamel finish.</i>	
Flush Valves	Lifetime
Well and Septic Systems	Lifetime

### Roofing

Average Life Expectancy in Years

Asphalt Shingles	15-30
Wood Shingles and Shakes <i>They last longer if pressure treated.</i>	15-30
Tile <i>Depends on the quality of tile and the climate.</i>	50
Slate <i>Depends on the grade.</i>	50-100
Sheet Metal <i>Depends on the gauge of metal, the quality coating and application.</i>	20-50+
Built-up Roofing Asphalt <i>Depends on materials and drainage. Coatings will add to life.</i>	12-25
Coal Tar <i>Depends on quality of materials, thoroughness of design and application.</i>	12-30
Felt Paper <i>Will last as long as roofing materials.</i>	Indefinitely
Asphalt Composition Shingle	15-30
Asphalt Overlap	25-35

#### Sources:

Association of Home Appliance Manufacturers  
 Air Conditioning and Refrigeration Institute  
*Air Conditioning and Refrigeration News*  
 Air Movement and Control Association  
 American Gas Association  
 American Society of Gas Engineers  
 American Society of Heating  
 Refrigeration and Air-Conditioning Engineers, Inc.  
*U.S. News and World Report*  
 Insulation Contractors Association of America  
 North American Insulation Manufacturers Association  
 Associated Landscape Contractors of America  
 Irrigation Association  
 Steel Deck Institute  
 Architectural Components  
 National Association of Brick Distributors  
 National Stone Association  
 Finnaren and Haley  
 Glidden Company

### Rough Structure

Average Life Expectancy in Years

Basement Floor System	Lifetime
Framing Exterior Walls	Lifetime
Framing Interior Walls	Lifetime

### Shutters

Average Life Expectancy in Years

Wood — Interior	Lifetime
Exterior <i>Depends on weather conditions.</i>	4-5
Metal — Plastic (Vinyl) Exterior <i>The color starts to fade.</i>	7-8
Aluminum — Interior	35-50
Exterior	3-5

### Siding

Average Life Expectancy in Years

Gutters and Downspouts	30
Siding — Wood	
Metal (Steel)	50-Life
Aluminum	50-Life
Vinyl	50-Life
Gable Vents — Wood	Lifetime
Aluminum	Lifetime
Gable Vent Screens	Lifetime
Cornice Rake Trim	Lifetime
Trellis	Lifetime

### Walls and Wall Treatment

Average Life Expectancy in Years

Drywall	30-70
Plaster	30-70
Wood Paneling	Lifetime
Ceramic Tile <i>Assuming its the highest grade of installation.</i>	Lifetime
Tub Alcove and Shower	Lifetime
Bath Wainscot	Lifetime

### Windows

Average Life Expectancy in Years

Window Glazing	20
Storm Windows and Gaskets	Lifetime
Steel Casement	10, 15-20
Wood Casement	Lifetime
Jalousie	8-9
Wooden Double-hung	Lifetime
Screen	25-50

#### The Wall Paper

American Concrete Pipe Association  
 Cast Iron Soil and Pipe Institute  
 Neil Kelly Designers  
 Thompson House of Kitchens and Baths  
 National Roofing Contractors Association  
 A.C. Shutters, Inc.  
 Alcoa Building Products  
 American Heritage Shutters  
 Alcoa Building Products  
 Alsida, Inc.  
 Vinyl Siding Institute  
 Association of Wall and Ceiling Ceramic Tile Institute  
 Best Built Products  
 Decorative Window Coverings Association  
 Optimum Window Manufacturing  
 Safety Glazing Certification Council  
 Screen Manufacturers Association