



Physical Inspection of 123 Sample Street

c: 1904

Reported Square Footage: 1,900

Monday, September 13, 2010

2:00 pm – 7:00 pm



Prepared For: John & Marsha Sample

Report Number: 100913P

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INTRODUCTION

This is my report of a visual inspection of the readily accessible areas of this building conducted on September 13, 2010. I prepared it for the exclusive use of John & Marsha Sample; it represents their interests only. It does not represent the interests of any other party. A separate inspection contract contains terms and conditions that are crucial to the understanding of this report. Don't use this report without considering the terms and conditions of that contract.

The purpose of this report is to alert you to major defects in the condition of the property. Please do not mistake this report for a warranty or any kind of insurance. I assume no liability or responsibility for the cost of repairing or replacing any unreported defects or deficiencies either current or arising in the future, or for any property damage, consequential damage, or bodily injury of any nature.

In the body of this report, I may occasionally cite the sources of my opinions by referring to the building code. Understand that I provide this information as a courtesy. This inspection will not identify every item in the house that doesn't comply with the provisions of the building code. I am not a building code inspector and this is not a building code inspection. The citations are merely for reference, not enforcement.

Please review all parts of this report carefully and call me for an explanation of any part that you do not fully understand. You can call me anytime at 503 985-7543 or e-mail me at jim@amipdx.com

Conditions during the inspection:

- At the beginning of the inspection, the weather was clear with a temperature of 72 degrees and relative humidity at 64%.
- For the purpose of this inspection, consider that the house faces east.
- The soil was dry.
- John, Jane, & their agent, Stan, were present during the inspection.

This report was prepared by James S. Katen, partner in Associated Master Inspectors:

- Oregon Certified Home Inspector #15.
- Washington Licensed Home Inspector #425
- American Society of Home Inspectors #109204.
- Oregon Construction Contractors Board #146715.
- A member in good standing of the Oregon Association of Home Inspectors-ASHI.

The Oregon Construction Contractors Board requires me to include the following paragraph in this report. They tell me that it has to be in 12-point type and in all caps. Here it is:

THIS REPORT IS INTENDED ONLY FOR THE USE OF THE PERSON PURCHASING THE HOME INSPECTION SERVICES. NO OTHER PERSON, INCLUDING A PURCHASER OF THE INSPECTED PROPERTY WHO DID NOT PURCHASE THE HOME INSPECTION SERVICES, MAY RELY UPON ANY REPRESENTATION IN THE REPORT.

HOW TO READ THIS REPORT

Description

Each of the building's systems has a heading, like the one at the top of the page, followed by two sections. The first section is called "Description." This is where I'll describe the

basics of that particular system in general terms. It's a short inventory of what things the building is made of and the methods I used to inspect it.

Observations & Recommendations

In this section I'll go into more detail about topics that I think are particularly important for you to understand about the given system. Most of these details will be formatted as follows:

Topic

Many of the topics will have their own headings followed by a short description of the problem or concern. If I have a recommendation for a specific action, I'll write it in bold below this paragraph, with a number before it, like this:

- 1. This is where I'll put specific recommendations. They might suggest repairs, maintenance, or the need for further evaluation by a specialist. Wherever I recommend repairs, you should have the work done by qualified, licensed contractors.**

STRUCTURE

Description

Building Type: 1-1/2 story wood frame house.

Foundation Type: Concrete block foundation walls under most of the house, with cast concrete stemwalls under the north addition.

Columns: Wood.

Floor Construction: 2x8 joist system.

Subfloor: Shiplap sheathing, tongue & groove fir, & plywood.

Exterior Wall Construction: 2x4 stud frame.

Interior Wall Construction: Wood stud.

Roof Framing: 2x4 rafters.

Roof Sheathing: Skip sheathing with plywood on top.

Ceiling Support: Joists.

The floors are flat and level, the walls are plumb, and the roof planes are flat with no significant sagging. The cracks that I can see in the foundation walls are less than 1/4" wide.

This house's structure is typical of 1904 residential construction in Oregon City.

Observations and Recommendations

FYI – Newer Foundation

The perimeter concrete block foundation is not original. When it was built, this house probably had a post & pier foundation. The crawlspace was partially excavated and the block foundation added at a later time, possibly in the mid 1980s.

FYI – Older Houses

Houses of this era were constructed without the benefit of modern building codes. Contrary to what some people think, they are usually not as strong (structurally) as modern buildings. Footings were much smaller than we would use today, and framing is lighter. Concrete foundation walls were usually not reinforced and no consideration was given to wind or seismic forces. As a result, sagging and settling are often evident. These result in cracked walls and ceilings, sloping floors, doors that bind, and windows that stick. Older houses often have concealed insect and rot damage beyond what is readily visible. In spite of all this, they have served their owners well for decades and, barring extreme conditions, should continue to serve for many more years to come given proper care and maintenance. Maintenance and repair costs are typically higher than for modern buildings.

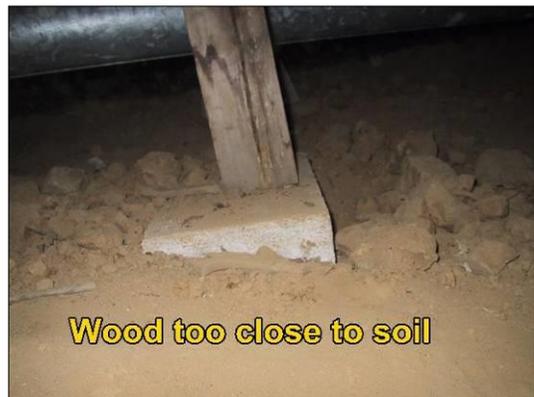
Poorly Supported Posts & Piers

In the crawlspace, some of the support posts & piers are well installed and some are poorly installed.

- Most of the posts lack lateral support to prevent them from moving about during an earthquake. Some of the posts are merely toe nailed in place, while others are held in place only by gravity & friction. Lateral support, in the form of plywood gussets or Simpson connectors, is an easy thing to add and it can help to hold the floor structure together during a moderate quake.
- Some of the poorly installed piers look like Jenga towers placed on anthills.
- In other places, piers rest on soil mounds that have been cut well below their acceptable angle of repose. These piers will tend to settle as the soil erodes beneath them.
- I see posts that support horizontal boards, or shims, that, in turn, support joists or girders. If a post is intended to support a joist or girder, it should do so directly, without intermediary shims or blocking. Likewise, posts shouldn't have shims or blocks under them. These tend to crush, deform, or shift out of place over time.
- In a few places, I see untreated wood posts that bear on the surface of concrete piers that are less than 8" above the surrounding grade. All untreated wood should be at least 8" above the surrounding soil to reduce the risk of rot & insect attack.

1. **Hire a contractor to improve the posts & piers in the crawlspace. All posts should bear on robust, stable, concrete piers that, in turn, rest on undisturbed soil. This soil shouldn't**

descend away from the piers at an angle steeper than 45 degrees. The posts should be correctly sized, without the need for shims. There should be a moisture break, such as an asphalt shingle, between the concrete and the post base. Any post that isn't 8" above grade should be made from pressure-treated wood. Each post should be firmly secured to its beam or girder with Simpson hardware or plywood gussets.



Abandoned Chimney

An abandoned brick chimney remains in place. It begins mid-story at the first floor, and ends at the floor of the attic. This chimney can never be used to vent anything; it's a useless remnant. The space where the chimney exists, however, might be useful to increase floor space in the first & second floor, or it might be used as a chase to bring a heating duct up to the 2nd floor rooms. Also consider that the chimney might collapse during an earthquake and injure someone.

- 2. Consider dismantling the abandoned chimney and using its chase for other purposes.**



FYI – Seismic Concerns

As was typical of the era, this house was built with no consideration for seismic movement. Understand that, during a moderate earthquake, this house is likely to suffer more damage than a modern house would. Seismic retrofitting, to raise the threshold of damage, is often possible. If you're interested in this type of improvement, consult with an engineer to design and oversee a seismic retrofit program for the house.

CRAWL SPACE

Description

Access: Through a hatch outdoors, at the west side of the house.

Clearance below Joists: Inadequate in some places.

Method of Inspection: I crawled through some of it. Some portions are not accessible because of low clearance.

Ventilation: Perimeter foundation vents.

Vapor Barrier: None in most places.

Underfloor Insulation: None.

Fungal Rot: None visible.

Signs of Water: I saw no signs of present or past standing water. I can't predict future water entry.

Sump Pump: None.

Gravity Drain: I failed to find one.

Wood Destroying Insects: None visible.

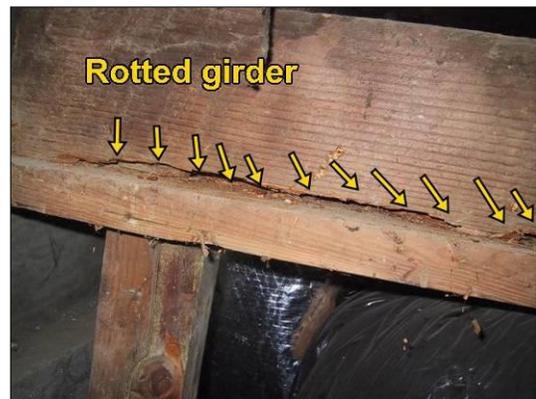
I looked for evidence of carpenter ants, termites, and wood-boring beetles. I saw no signs of them. This does not mean that the house is free of these insects. It only means that, if they are there, I couldn't find them today.

Observations and Recommendations

Old Decay at Girder

At the northwest side of the crawlspace, just east of the crawlspace entrance, the girder end is partially rotted. Someone has placed a board under the rotting section and installed a post under the board. This is an ineffective way of dealing with a rotting girder. It's a poor idea to allow rotting wood to remain in the crawlspace. Even if the girder's strength is still adequate to do its job, the rotting wood can attract secondary infestations of undesirable bugs.

3. **Replace the rotting section of girder at the northwest side of the crawlspace, several feet in front of the crawlspace entrance. Provide proper support for the repaired girder when the repairs are done.**



Missing Underfloor Insulation

There's no underfloor insulation at all. A persistent myth is that underfloor insulation isn't important because "heat rises." This is not true. Heat does not rise, it radiates equally in all directions. (Hot air rises.) Lots of heat will be lost to the crawlspace through this floor. If you install insulation under the floor, the house will use less energy and will be more comfortable. The modern standard for underfloor insulation is R-25.

4. **Consider hiring an insulation contractor to insulate the underside of the floor to at least R-25. Be sure to improve the insulation at the heating ducts and the plumbing pipes as well.**

***Missing Vapor Barrier***

In a crawlspace, the purpose of a vapor barrier is to provide a vapor-impermeable covering on the soil. Moisture in the soil will condense on the underside of the vapor barrier and drip back into the soil instead of evaporating into the crawlspace air. Vapor barriers reduce indoor humidity, increase occupant comfort, and lessen the likelihood of insect infestation and decay in the structure. In this crawlspace, there's no vapor barrier covering most of the soil. I can see a small section of vapor barrier covering only the southeast corner.

5. **In the crawlspace, remove all debris, rake the soil clean, and install a 6-mil black polyethylene vapor barrier to completely cover the soil. Broadly overlap the seams and place bricks along the edges to hold the plastic in place.**



Limited Clearance in Places

Some portions of this crawlspace have very little clearance between the bottom of the joists and the surface of the soil below them. In some spots, as little as 6"-8" of clearance is present. This not only makes it difficult to inspect the crawlspace effectively, it makes it difficult to do pretty much anything down there, including running wiring, installing insulation, and performing maintenance. The small space also means that there's less air down there to act as a buffer to absorb and remove moisture.

- 6. Excavate the crawlspace to provide not less than 18" clearance between the bottom of the joists and the surface of the soil. In order to prevent undermining, don't excavate below a 45-degree line extending downward from the bottom edge of every footing.**



ELECTRICAL SYSTEM

Description

Overall Service Capacity: 200-amp, 120/240-volt, single phase.

Service Type: Overhead service drop.

Meter: Class 200 meter.

SEC Type: 4/0 aluminum.

Service Location: Dining room.

Service Panel: Bryant 200-amp MCB load center.

Sub Panel: None.

Permit: Final signature dated 8/24/84.

Service Grounding & Bonding: The service is grounded via the water service pipe. The gas pipes are bonded at the furnace.

Grounding Electrode Conductor: Stranded copper.

Branch Wiring: Copper NM cables & one stranded aluminum SE cable to the range. There might still be some knob & tube wiring in the walls.

Solid Aluminum Wiring: None.

Smoke Alarms: One obsolete alarm upstairs. None downstairs.

I opened the service panel to observe service and branch circuit conductors, their overcurrent devices, and the compatibility of their ampacities and voltages as well as grounding and bonding equipment. I also tested a random selection of receptacle outlets for proper polarity and grounding.

I couldn't test the smoke alarm because it has no test button.

I didn't inspect the low voltage accessory systems for things like telephone, cable TV, intercoms, alarms, or timers.

I tested the GFCIs today. They're working properly for now.

Observations and Recommendations

Obsolete Smoke Alarm

The smoke alarm in the upstairs hallway is obsolete. After 10 years of service, its sensors are no longer dependable. In Oregon, no person may sell a dwelling unless there is installed in the dwelling the proper type, number, and placement of alarms as required by the building codes at the time the dwelling was constructed but not less than one alarm adjacent to each sleeping area and at least one alarm on each level of the dwelling.¹ These alarms must have a 10-year battery and a "hush" mechanism which allows a person to temporarily disengage the alarm.

- 7. Install new smoke alarms in the house. Place one on each level, near the bedrooms. If you'd like greater protection, install one smoke alarm in each bedroom as well. The alarms should include 10-year batteries and hush buttons.**

¹ The source of my opinion is Oregon Revised Statute 479.260

No Power to Receptacle?

The dining room's north receptacle has no power. If this is the result of a loose or broken connection, it could cause arcing that could start a fire.

8. Ask the sellers to tell you whether or not there's a switch somewhere that controls power to the dining room's north receptacle. If not, then ask your electrician to figure out why there's no power there and have him fix it.

Poor Attic Wiring

In the upper attic, there's a jumble of poorly installed NM cable. I see poorly protected cables and cables not properly secured. At one box at the north side, I see open knockouts & electrical tape used in lieu of clamps.

9. Hire an electrician to clean up the poor wiring in the attic.

***Missing Ceiling Boxes Upstairs***

At least two of the upstairs light fixtures are mounted directly on the ceiling, without being attached to wiring boxes. Their fixture wires run through the ceiling and into the round boxes mounted in the attic.

10. Ask your electrician to ensure that all wall- and ceiling-mounted light fixtures have proper wiring boxes behind their canopies.



Incandescent Light in Closet

In the south bedroom closet, the incandescent light above the storage shelf can ignite combustible materials.

- 11. Remove the incandescent light fixture from the south bedroom closet. Replace it with a fluorescent fixture.**

***Improper Multi-Wire Circuit***

A multi-wire circuit uses three wires to do the job normally done by four wires. It does this by using one of the wires as a shared neutral. If the circuit is installed properly, there's never too much electricity on this wire. If installed improperly, this shared neutral can become overloaded. There's an improperly installed multi-wire circuit in this service panel. It's at the middle left side of the panel. I marked it with a round red sticker with the letters MW written on it.

- 12. Have your electrician correct the improperly installed multi-wire circuit in the service panel. Ensure that each side of each multi-wire circuit originates on different legs of the system.**

***GFCI Protection***

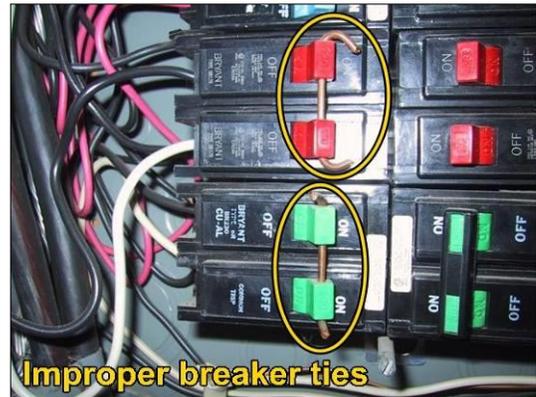
Ground fault circuit interrupters (GFCIs) are special electrical devices that protect people from being shocked by “ground faults” (electricity that moves through our bodies to grounded surfaces). The most common type of GFCI is an electrical receptacle that has two buttons, one for testing the device, and one for resetting it. They first began to be required in the 1970s. It's best to have GFCIs at any location where people may be exposed to electricity and grounded surfaces at the same time, for instance, outdoors, at kitchen counters, near wet bar sinks & laundry sinks, and in bathrooms, garages, unfinished basements, & crawlspaces. You're supposed to test GFCIs each month by pushing their test buttons. In this house, I found GFCI protection at the receptacles next to the bathroom sinks. It's missing at remaining bathroom receptacles, the garage receptacles, the exterior receptacles, the concrete-floored north storeroom/office receptacles, and the kitchen counter receptacles.

- 13. Ensure that you have GFCI protection at *all* exterior, bathroom, kitchen counter, garage, and storeroom/office receptacles.**

Improvised Breaker Ties

In the service panel, two 240-volt circuits (one for the water heater and one for an electric heating circuit) are each protected by a pair of single-pole circuit breakers that are joined with improvised breaker ties made from short lengths of #12 copper wires. While this was commonly done, it has always been wrong. These ties might allow only one breaker to be switched off while the other remains energized. Sometimes, when this happens, the breaker handle snaps from the stress. This could be dangerous.

14. Ask your electrician to ensure that all of the 240-volt circuits have proper breaker ties that are listed for use with those breakers.

***Running Splice in Crawlspace***

I found one running splice in the crawlspace. There might be others.

15. Ask your electrician to repair any electrical defects that he discovers in the crawlspace, including the running splice near the center.

Unprotected Cable at Water Heater

The water heater's power cable is not supported or protected and it isn't secured within 12" of the water heater as it should be. The simplest solution to this issue is usually to run it through flexible conduit.

16. Ask your electrician to provide physical protection to the water heater's NM cable.

***NM Through Wall***

In the upstairs south bedroom closet, a length of NM cable comes out of the wall and disappears into an adjacent wall. NM cable shouldn't be exposed in places where it can be damaged.

17. At the upstairs south bedroom's closet, install physical protection over the NM cable. A simply wooden box will suffice.

FYI – Stuff I Missed?

I found an unusually large number of wiring problems in this house. That means that there are probably others that I missed. Ask your electrician to survey the house to locate other defects in the electrical system and repair them as necessary.

HEATING AND AIR CONDITIONING SYSTEM

Description

Fuel: Natural gas.	Distribution: Ducts.
Type: Category IV warm air furnace.	Filter: 16x25x4. Clean today.
Manufacturer: Bryant.	Asbestos: None visible.
Age: 2005.	Auxiliary Heat: Electric baseboard heaters in the upstairs rooms.
Electrical Disconnect: Service switch next to the furnace.	Onsite Fuel Storage: No visible signs.
Heating Capacity: 60,000 btu/hr.	Cooling: None.
Clearances: Adequate.	Differentials: N/A.

I wasn't able to run the furnace today because the thermostat batteries were dead.

Gas furnaces of this design tend to last 20-25 years.

Have the furnace serviced every year to keep it in good condition and to spot problems early.

Clean air filters help your furnace to run cooler and last longer. Change your filter as soon as it gets dirty. Large media filters such as this one only need to be changed once or twice per year.

Observations and Recommendations

Unable to Test the Furnace

I couldn't test the furnace today because the thermostat batteries were dead.

- 18. Replace the batteries in the thermostat and ask your HVAC technician to evaluate the operation of the furnace.**

Carbon Monoxide Alarm

Carbon monoxide is an odorless poison gas that's produced by incomplete combustion. Things in this house that can produce carbon monoxide include the furnace, the gas water heater, and the woodstove. Even electric ovens can produce carbon monoxide during their cleaning mode. Carbon monoxide alarms are inexpensive and easy to install. You can find very high quality carbon monoxide alarms at www.aeromedix.com

- 19. Install a carbon monoxide alarm in the house.**

Missing Sleeve at Gas Main

The main gas pipe is directly through the pavement at the east exterior and then directly through the grouted concrete block foundation wall. This pipe should have been run through a sleeve to lessen the risk of damage if the soil, pavement, or foundation were to settle. Also, the sleeve is supposed to be vented to the exterior so that, if the pipe breaks or develops a leak, the gas will be directed outdoors, where it can dissipate, rather than indoors, where it can concentrate.

- 20. Hire a gas pipefitter to provide proper sleeving of the gas pipe where it passes through the paved surface and through the foundation wall.**

***Disconnected Duct***

At the west end of the crawlspace, there's a duct that's disconnected at its elbow. This duct currently pours conditioned air into the crawlspace. This is very inefficient and a big waste of energy & money.

- 21. Replace the broken elbow at the crawlspace's west heating duct.**

***Uninsulated Ducts***

The heating ducts aren't insulated and their joints aren't sealed. This makes the heating system extremely inefficient; lots of heat is lost to the crawlspace.

- 22. Seal & insulate the heating ducts to save money and make the heating system much more efficient.**



Ducts on Soil

In the crawlspace both flex ducts and metal ducts rest on the soil in places. All ducts should be at least 4" above the soil to prevent decay and damage from critters.²

- 23. In the crawlspace, adjust the heating ducts to create a minimum of 4" clearance between the ducts and the soil.**

Large Furnace

This furnace only serves the first floor. It's too big for that. I suspect, once the broken duct is repaired and the floor insulated, that the furnace will run in short, inefficient cycles. I also suspect that the furnace would run more efficiently if it were heating the upstairs rooms as well as those downstairs.

- 24. Consider having an HVAC contractor run heating ducts to the second floor so that the furnace can heat that space as well. Note that, if the abandoned mid-story chimney were to be removed a handy chase would be created for running a supply duct to the second floor.**

Leaking Condensate

Condensate water is leaking out of the furnace's PVC exhaust vent. This water is slightly acidic and is causing corrosion at the furnace cabinet, the floor of the blower compartment. Left unchecked, this leak will damage the furnace.

- 25. Have an HVAC contractor properly repair the furnace's leaking PVC exhaust vent.**

***Underground Oil Tank?***

It's possible that this house once had oil heat. If so, the oil tank might have been placed underground. If such an underground tank still exists, it could be expensive to clean up.

- 26. Have an environmental services contractor scan the yard for an underground oil tank. If he finds one, have the soil around it tested and the tank decommissioned. If he doesn't find one, ask him to provide you with documentation that you can pass on to the next homeowner when you sell the house.**

² The source of my opinion is the Oregon Residential Specialty Code, Section 1601.3.7

PLUMBING SYSTEM

Description

Water Shut-Off Location: At the meter in the southwest yard.

Service Pipe: The visible portion is copper.

Supply Pressure: 140 psi.

Visible Distribution Piping: Copper.

Visible DWV Piping: ABS plastic.

Functional Flow: Adequate.

Functional Drainage: Adequate.

Hose Bibs: Frost proof.

Water Heater Location: Closet under the stairway.

Brand: Craft Master.

Fuel: Electricity.

Size: 50 gallons.

Age: 2003

Elevation: On the floor.

Safety Valve: Present & properly plumbed.

Seismic Support: None.

I operated the plumbing fixtures to check for proper orientation of hot & cold, adequate flow and adequate drainage.

I can only see some of the water distribution pipes & waste pipes; I can't see any of the underground portions or the portions that are concealed in walls, floors, or ceilings.

Observations and Recommendations

FYI – Sewer Scope

I can't tell you anything about the condition of the underground portion of the drain pipe or sewer pipe. During the inspection, Camco Environmental performed a sewer scope inspection. Please refer to their video report for information about the condition of the drain pipe & sewer pipe.

High Pressure

The water pressure at the hose bib is 140 psi. This is very high. Water in the distribution pipes isn't supposed to exceed 80 psi. High water pressure can damage automatic valves and stress plumbing connections. Note that the water heater's temperature & pressure relief valve seems to have been replaced once already. This valve is set to open at 150 psi. The old one might have leaked.

27. **Install a pressure reducing valve to provide water pressure at or below 80 psi. If the pressure reducing valve doesn't have a bypass valve, then be sure to install an expansion tank at the water heater.**



Hot/Cold Reversed at Shower

At the downstairs bathroom, hot & cold are reversed at the shower's control valve. The accepted convention is that the rotary valve should move from off, through cold to get to hot. This valve moves through hot first. This is dangerous. If someone in the shower were to be scalded by water that's too hot, he or she would have to move the valve past an even hotter setting to turn the water off.

- 28. At the downstairs shower, have a plumber correct the orientation of hot & cold at the control valve.**

Slow Drain

At both bathrooms, the lavatory drains are slow. They can't keep up with the flow from the faucets.

- 29. Clear the slow drains at the bathroom sinks.**

***Missing Catch Pan at Water Heater***

When the water heater leaks, it will damage the nearby wooden floor.

- 30. Install a catch pan under the water heater and plumb its drain to a conspicuous location outdoors.**

***Missing Seismic Support at Water Heater***

The water heater isn't strapped in place. During an earthquake, it might move about and damage its water connections or its gas connections.

- 31. Install proper seismic support at the water heater.**



Improper Trap in Kitchen

At the kitchen sink's drainpipe, the trap is located below the floor, in the crawlspace. This trap should be located in the cabinet below the sink.

- 32. Have a plumber replumb the kitchen sink's drain line so that the trap is in the cabinet below the sink.**

***Uninsulated Plumbing Pipes***

In the crawlspace, the distribution pipes aren't insulated. The hot water pipes will lose heat to the crawlspace quickly and, in very cold weather, the water in the pipes could freeze.

- 33. Thoroughly insulate the water distribution pipes in the crawlspace.**

Improper Drain Fittings

In the crawlspace under the kitchen & bathroom, the shower drainpipe joins the main drainpipe via a sanitary tee that's placed on its back. This is a classic amateur plumbing error. Sanitary tees are vent fittings; they don't have enough of a sweep to direct the wastewater in the proper path without slowing its velocity. The installer should have used a wye or a combo fitting in this location.³ The use of a sanitary tee might cause the waste pipe to drain poorly.

- 34. Have your plumber review the waste plumbing under the kitchen & bathroom and install proper fittings where necessary. In particular, remove the sanitary tee that's on its back and replace it with a proper wye or combo fitting.**

***ABS in Foundation Wall***

At the east crawlspace, the ABS plastic waste pipe passes through the concrete block foundation wall and is firmly grouted in place. There's no gap or soft joint material around the pipe to allow for expansion, contraction, settling, or other movement.⁴ The pipe might break without warning.

- 35. Ask your plumber to reinstall the ABS drain pipe in such a way that it passes through the foundation wall without being subject to strains or stresses from expansion, contraction, and structural settlement.**



³ The source of my opinion is the Oregon Plumbing Specialty Code, Section 706

⁴ The source of my opinion is the Oregon Plumbing Specialty Code, Section 313.2

INTERIOR

Description

Walls: Plaster, wood paneling, & drywall.

Ceilings: Plaster, wood paneling, & drywall.

Floors: Softwood, hardwood laminate, & vinyl.

Doors: Solid wood.

Cabinets: Wood.

Countertops: Ceramic tile & stone tile & butcher block.

Windows: Wood sash & aluminum sash.

Wall Insulation: Unknown.

Ceiling Insulation: Cellulose & fiberglass.
0" - 8" thick.

Floor Insulation: None.

Stairways and Handrails: One stairway to the 2nd floor.

Fireplace: None.

Wood Stove: Steel. Unlisted.

Floor Moisture Content near Toilets:

Hall Bath: 14%. Normal for wood.

Half Bath: 30%+. High for vinyl.

Exhaust Fans: None.

I opened and closed all doors and all cabinets. I attempted to open all windows.

Observations and Recommendations

Dangerous Stairway

The stairway has a dangerous section of winders & narrow steps near the top. If someone wished to design the most dangerous stairway possible, he would do well to study the upper portion of this stairway. Someone could easily slip or trip on these stairs and be severely injured.

- 36. Rebuild the stairway to a safe, modern standard.**



Damaged Counterbalances

At the east bedroom window, the counterbalance springs are missing. The window won't operate properly unless these springs are installed correctly. Never prop open a window that has non-working counterbalance springs. It can fall unexpectedly and severely injure someone's hands.

- 37. Replace the counterbalance assemblies at the east bedroom's window. NEVER PROP OPEN THIS WINDOW.**

Broken Sash Cords

At both downstairs west rooms, the wooden window sash cords are broken. These are dangerous because, if they fall unexpectedly, they can severely injure someone's hands. Never prop open a window that has broken sash cords.

- 38. Repair the broken sash cords at the downstairs west rooms. NEVER PROP OPEN A WINDOW THAT HAS A BROKEN SASH CORD.**

***Ordinary Glass at Doors***

Three of the first floor doors are glazed with panels of ordinary glass. Doors are considered hazardous locations for glass. If the glass were to break, it would break into large, sharp shards that could severely injure someone.

- 39. Reglaze the first floor glass doors with safety glass to reduce the risk of injuries.**

***FYI – Lead Paint***

Understand that the older layers of paint in the house probably contain lead. Adjust entry doors, cabinet doors, and drawers so that the painted surfaces don't rub on their frames. Address peeling paint promptly and ensure that you're not creating a hazard by sanding or scraping it. Learn more about lead paint in homes by visiting the EPA web site. <http://www.epa.gov/lead/>

Obsolete Woodstove

The woodstove is obsolete. It lacks EPA and DEQ listings and is very inefficient compared to modern woodstoves. As of August 1, 2010, the wood stove has to be removed and destroyed. See <http://www.deq.state.or.us/aq/burning/woodstoves/> for more information.

- 40. Remove the existing wood stove.**



Unknown Woodstove Vent

The wood stove vent looks like a modern class A vent, but I can't find any markings on it to corroborate my guess. The labels that originally identified this vent have been removed. If you install a new woodstove, it will have to be vented through a proper A-vent.

- 41. Ask a woodstove installer or chimney sweep to confirm that the existing wood stove vent is a class A vent. He might have to remove a section of vent to confirm this.**

Missing Screen at Woodstove Vent

At the top of the woodstove vent, the spark screen is missing.

- 42. Ask your sweep to install a spark screen at the top of the woodstove vent.**

Inadequate Clearance at Wood Stove Vent

If the existing wood stove vent is an A-vent, then it lacks proper clearance to combustible surfaces at the side of the house and at the point where it passes through the roof. A-vents require 2" clearance to any combustible surface. This vent is slightly less than 2" from the building's siding. It's only $\frac{3}{4}$ " away from the frieze trim, and $\frac{5}{8}$ " away from the barge rafter & roof sheathing. During normal operation, the clearance around this vent is not important, but if there were to be a chimney fire, the clearance would become critical and might make the difference between containing the fire and allowing it to spread to the rest of the house.



- 43. Create proper clearance around the woodstove vent.**

Failed Window Seals (Fogging Glass)

Insulated glass window panels are manufactured with a rubber-like seal between two panes of glass. When this seal fails, moisture enters between the panes and can be seen as fogging. This has little effect on the insulating ability of the insulated glass panel and it has no effect on the weather-keeping-out ability of the window. It merely affects the clarity of the window. Since one of the primary functions of a window is to be clear, I consider fogged windows to be defective. I found fogged glass panels at the following locations, there may be others that have failed seals but that aren't apparent today:

- 3 upper panels in the living room windows.
- 2 left & right lower panels in the living room windows.
- 4 panels in the kitchen

I marked the failed panels with red paper dots.

- 44. Have a glass contractor replace the 3 failed insulated glass panels noted above as well as any others that he discovers in addition to these. Note that the panel in the front door is tempered glass and will be more expensive to replace than ordinary glass panels.**

FYI – Inadequate Egress at Bedroom Window

At the east bedroom, the window is too small to meet the standards for an emergency escape & rescue opening. During an emergency, this makes it more difficult for you to get out and for firemen to get in. Modern bedroom windows should be no more than 44” off the floor, no less than 20” wide, and have an openable area of not less than 5.7 square feet. If you ever decide to replace the window in this bedroom, consider installing larger egress windows at that time. In the meantime, understand the egress limitations in the house.

***High Moisture Content near Toilet***

In the downstairs bath, the moisture content of the floor pegs my meter at over 30%. The floor to the left of the toilet is deformed. This suggests that the toilet's wax ring might be leaking. I can't tell for sure.

- 45. Remove the downstairs toilet to determine whether or not the wax ring is leaking. If the floor is damaged, repair it before installing a new wax ring and replacing the toilet.**

Missing Drywall below Stairway

There's an accessible storage space under the stairway. From inside that space, I can see the stairway's wood framing. This framing is supposed to be covered with drywall to protect it from fire and to ensure that, if there's a fire in the house, the stairway remains intact for a longer time so that you can get safely out of the house and firefighters can get in.⁵

- 46. In the closet under the stairway, cover all exposed wood framing with ½” drywall.**

***Broken Skylight Crank***

At the east bedroom, the east skylight's opening crank is missing its handle linkage.

- 47. Replace the opening crank assembly at the east bedroom's east skylight.**



⁵ The source of my opinion is the International Residential Code, Section 311.2.2

Cracked Window

One of the first floor north windows has a cracked pane.

- 48. Replace the cracked pane in the first floor north window.**

No Fans in Bathrooms

The bathrooms lack exhaust fans, though each has an operable window.

- 49. Consider installing exhaust fans in the bathrooms, particularly the downstairs bathroom where the shower is, to direct humid air to the outdoors.**

Faulty Bifold Doors

Throughout the house, the closet bifold doors are poorly installed. Some are off their tracks and some fit in their openings poorly.

- 50. Throughout the house, adjust the closet bifold doors to work properly.**

Sticky Windows

Some of the older wood windows are painted shut.

- 51. Refurbish the older wood windows to restore them to proper operation.**

C.L.U.E. Report

C.L.U.E. stands for Comprehensive Loss Underwriting Exchange and provides information on insurance claims filed on the house in the previous 5-7 years. These reports can be found at www.choicepoint.com but are only available through the owner of the home.

- 52. Ask the seller to provide a C.L.U.E Report on the home.**

FYI – Note Small Door

The east bedroom door is only 21” wide by 61” tall. This will limit the size of objects that you can move in & out of the room and it will make it more difficult for people to move in & out of the room.

APPLIANCES

Description

Dishwasher: Kenmore with plastic tub.

Disposer: None.

Range: Whirlpool 4-burner electric range.

Range Hood: None.

Refrigerator: Kitchenaid side-by-side with ice & water in the door.

Washer: None.

Dryer: None.

I inspected the appliances by turning them on briefly using the normal operating controls. I didn't make extensive tests of timers, thermostats, and other controls.

I ran the kitchen appliances. The dishwasher ran through its cycle, made typical noises, and didn't leak; the range's cooktop, bake, & broil elements all got hot except for one (see below); the range hood fan spun around and its light lit; the fridge was cold inside, made ice, and dispensed ice & water. I can't tell how well any of these appliances run, only that they run.

Discovery of recalled appliances and other products is outside the scope of this inspection. For the latest information on recalls, visit www.recalls.gov

Observations and Recommendations

Non-Working Range Burner

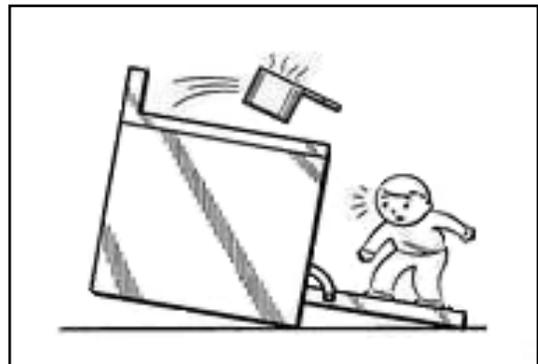
The range's right rear burner doesn't work.

53. Replace the range's right rear burner.

Missing Anti-Tip Bracket

At the kitchen range, the anti-tip bracket is not installed. If you open the oven door and apply pressure to it, the range could tip forward and fall or spill the contents of hot pans on you.

54. Install the kitchen range's anti-tip bracket as required by the manufacturer.



ROOF & ATTIC

Description

Roof Type: Intersecting gables & sheds.

Roof Covering: Three-tab composition shingles.

Flashing Materials: Galvanized steel & PVC plastic.

Estimated Age: Upper roof ~1994 (WAG).
The lower roof looks older.

Layers: One.

Drainage: Continuous metal gutter & downspout system.

Skylights: Curbed plastic bubble.

Recent Weather: We've had a long period of dry weather with recent light rains.

Method of Inspection: I walked across the entire roof.

Ventilation: Roof jacks & soffit vents.

Attic Access: Hatch above the upstairs hallway.

Method of Attic Inspection: I crawled through the attic.

Composition shingles of this quality tend to last about 15-20 years in our climate.

Be sure to ask the seller about the presence of any roof leaks, including those that have occurred in the past and been repaired.

Observations and Recommendations

Brittle Lower Roof

At the lower north roof sections, the shingles are exceptionally brittle and have suffered extreme granule loss, possibly as a result of aggressive power washing. These shingles are no longer serviceable.

55. Replace the shingles on the lower roof.

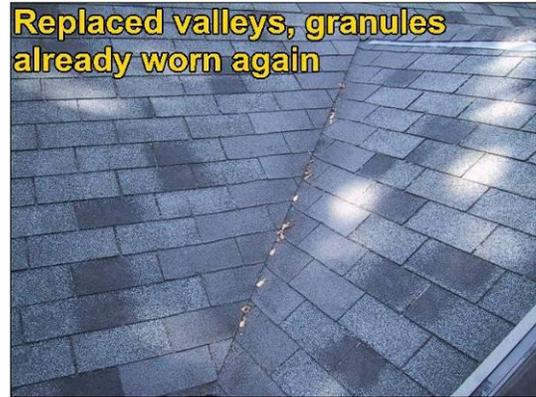


Poorly Installed Upper Roof

The upper roof shingles are not as brittle as the lower roof shingles but they still suffer from granule loss in some areas and they were poorly installed.

- Their rake flashings were improperly placed on top of the shingles. This makes decay more likely at the rake edges.
- Many of their seal tabs never sealed. This will make them vulnerable to wind damage.
- In all 4 valleys, the closed cut valley shingles have been replaced and, even so, they suffer severe granule loss – again, probably due to aggressive pressure washing.
- Some other areas also have replaced sections of shingles, probably as a result of wind damage.
- At the ridges, I see lots of worn & split ridge caps. At the base of the northeast valley, the valley liner never extended far enough beyond the roof framing and the framing has begun to rot.

This roof is unreliable.

56. Replace the upper roof.**Inadequate Clearance at Sidewall Joints**

Where the roof surfaces meet the house sidewalls, there's inadequate clearance between the siding and the roof shingles. There should be 1" – 2" of clearance in these locations. Instead there's no clearance in places. This allows the siding to wick moisture up from the roof. In some places, the siding has begun to rot.

57. Create 1"-2" clearance between the siding and the roof at the sidewall joints.

Poor Flashing at the Electrical Mast

At the electric service mast, the flashing relies on mastic. Mastic will dry out and leak over time. Several manufacturers make retrofit flashing kits that don't rely on mastic and that will fit around an existing electrical mast without having to disconnect the wires from it.

- 58. Remove and discard the existing flashing at the electric service mast. Replace it with a retrofit flashing assembly that will give long-lasting, maintenance-free service such as those at www.spinflashing.com or <http://www.sansoar.com/resiretro.htm>**

***Missing Gutter***

There's no gutter above the front porch roof. Water will flow off this roof directly over the entryway to the house.

- 59. Consider installing a gutter & downspout at the front porch roof.**



EXTERIOR & GROUNDS

Description

Doors: Metal clad & glass. Wood & glass.

Windows: Single-pane wood sash & double pane aluminum single hung.

Siding: Horizontal wood lap.

Soffits: Open, plywood, & wood.

Trim: Wood.

Chimney: Metal woodstove vent. Metal cap.

Grading: Level & negative grades.

Walkways: Asphalt & gravel.

Driveway: Asphalt.

Vegetation: Under control for now.

Fences: None.

Stairs: Wood.

Deck: None.

Patio: Concrete.

Retaining Wall: RR ties.

I inspected the exterior by walking around the grounds.

In the context of this report, *flashing* is sheet metal that's been bent into a specific shape and interwoven between building materials to keep water from flowing behind them.

Observations and Recommendations

FYI – Lead Paint

Understand that the older layers of paint on the exterior of the house probably contain lead. Address peeling paint promptly and ensure that you're not creating a hazard by sanding or scraping it. Don't plant vegetables or edible plants in the soil immediately next to the house. Learn more about lead paint in homes by visiting the EPA web site <http://www.epa.gov/lead/>

Double Cylinder Deadbolt

The north door is fitted with a double cylinder dead bolt. You'll need a key to get out of the house through this door. This is dangerous. If there's an emergency, you could be trapped in the house. All exterior exit doors are supposed to be able to be opened without the need for a key or any special tool.⁶

60. Install a thumb latch on the interior side of the north door's deadbolt.



⁶ The source of my opinion is the Oregon Residential Specialty Code, Section R311.4.4

Missing Flashing at Wood Trim

All projecting wood trim should be flashed.⁷ There's no flashing above the projecting wood trim at most of the window & door trim. These areas are caulked instead. Caulk fails over time.

- 61. Properly flash all projecting wood trim. If you choose to ignore this recommendation, establish a maintenance schedule to inspect the caulk above this trim every fall and replace the caulk as necessary.**

***Big Trees***

Large trees are growing near the house. If they or their larger branches were to fall, they could cause severe damage to your house.

- 62. Consult with an arborist about the big trees. Ask him to advise you about ways to reduce the risk that they pose to the house.**

Stumps

At the southwest yard are two tree stumps. These will become an attractive habitat for wood destroying insects. It's best to keep this kind of insect attraction away from the house.

- 63. Remove the tree stumps at the southwest yard.**

***Poor Grading***

There are some level and negative grades around the house, particularly at the north side. This can encourage rainwater to flow into the crawlspace.

- 64. Grade the yard to ensure that the soil slopes steeply away from the house in all directions.**

⁷ The source of my opinion is the Oregon Residential Specialty Code, Section 703.8(4)

GARAGE

Description

Garage Type: Detached 2-car garage.

Overhead Doors: One uninsulated steel door. 7x16.

Door Balance: The door is balanced.

Automatic Opener: The door is operated manually.

Safety Eyes: Not applicable.

Pressure Sensitive Reverse: Not applicable.

Floor: Cast concrete slab.

Fire Separation: Not Applicable.

Vehicle Barrier: None necessary. There is no mechanical equipment in the garage.

This is an detached garage with one overhead door. A man door leads to the side yard.

Observations and Recommendations

Poor Lateral Support at Trusses

The roof trusses have only one lateral brace running down the center of the lower chords. There's a risk that, if the trusses are loaded close to their capacity, that the lower chords could deform and cause the trusses to collapse.

65. Have a contractor install additional lateral bracing at the garage roof trusses' bottom chords.



FYI – Past Leaks

Note staining from past roof leaks at the garage roof sheathing. I can't determine with certainty that the roof no longer leaks, but it looks as if these stains are the result of leaks from a previous layer of roof shingles. Watch the garage roof during a strong rain & wind storm to confirm that it doesn't leak.



SUMMARY

This house is in good condition with some exceptions. Comparing it to other houses of the same age and type that I've recently inspected, the overall condition is about average and the number of repairs is typical. Bear in mind that all homes need repairs of one type or another, even if only minor. Some of the repairs are of the type that you might be inclined to live with under ordinary circumstances. Buyers and sellers of homes often have different perspectives on this issue.

What follows is a summary of recommendations contained in previous pages. I provide it as a convenient reference. Don't rely exclusively on this summary. The full explanations of these issues are on the pages listed to the right of each recommendation.

STRUCTURE	5
1. Hire a contractor to improve the posts & piers in the crawlspace. All posts should bear on robust, stable, concrete piers that, in turn, rest on undisturbed soil. This soil shouldn't descend away from the piers at an angle steeper than 45 degrees. The posts should be correctly sized, without the need for shims. There should be a moisture break, such as an asphalt shingle, between the concrete and the post base. Any post that isn't 8" above grade should be made from pressure-treated wood. Each post should be firmly secured to its beam or girder with Simpson hardware or plywood gussets.	6
2. Consider dismantling the abandoned chimney and using its chase for other purposes.	7
CRAWL SPACE	8
3. Replace the rotting section of girder at the northwest side of the crawlspace, several feet in front of the crawlspace entrance. Provide proper support for the repaired girder when the repairs are done.	8
4. Consider hiring an insulation contractor to insulate the underside of the floor to at least R-25. Be sure to improve the insulation at the heating ducts and the plumbing pipes as well.	9
5. In the crawlspace, remove all debris, rake the soil clean, and install a 6-mil black polyethylene vapor barrier to completely cover the soil. Broadly overlap the seams and place bricks along the edges to hold the plastic in place.	9
6. Excavate the crawlspace to provide not less than 18" clearance between the bottom of the joists and the surface of the soil. In order to prevent undermining, don't excavate below a 45-degree line extending downward from the bottom edge of every footing.	10
ELECTRICAL SYSTEM	11

7. **Install new smoke alarms in the house. Place one on each level, near the bedrooms. If you'd like greater protection, install one smoke alarm in each bedroom as well. The alarms should include 10-year batteries and hush buttons.** _____ 11
 8. **Ask the sellers to tell you whether or not there's a switch somewhere that controls power to the dining room's north receptacle. If not, then ask your electrician to figure out why there's no power there and have him fix it.** _____ 12
 9. **Hire an electrician to clean up the poor wiring in the attic.** _____ 12
 10. **Ask your electrician to ensure that all wall- and ceiling-mounted light fixtures have proper wiring boxes behind their canopies.** _____ 12
 11. **Remove the incandescent light fixture from the south bedroom closet. Replace it with a fluorescent fixture.** _____ 13
 12. **Have your electrician correct the improperly installed multi-wire circuit in the service panel. Ensure that each side of each multi-wire circuit originates on different legs of the system.** _____ 13
 13. **Ensure that you have GFCI protection at *all* exterior, bathroom, kitchen counter, garage, and storeroom/office receptacles.** _____ 13
 14. **Ask your electrician to ensure that all of the 240-volt circuits have proper breaker ties that are listed for use with those breakers.** _____ 14
 15. **Ask your electrician to repair any electrical defects that he discovers in the crawlspace, including the running splice near the center.** _____ 14
 16. **Ask your electrician to provide physical protection to the water heater's NM cable.**
14
 17. **At the upstairs south bedroom's closet, install physical protection over the NM cable. A simply wooden box will suffice.** _____ 14
- HEATING AND AIR CONDITIONING SYSTEM** _____ 15
18. **Replace the batteries in the thermostat and ask your HVAC technician to evaluate the operation of the furnace.** _____ 15
 19. **Install a carbon monoxide alarm in the house.** _____ 15
 20. **Hire a gas pipefitter to provide proper sleeving of the gas pipe where it passes through the paved surface and through the foundation wall.** _____ 16
 21. **Replace the broken elbow at the crawlspace's west heating duct.** _____ 16
 22. **Seal & insulate the heating ducts to save money and make the heating system much more efficient.** _____ 16
 23. **In the crawlspace, adjust the heating ducts to create a minimum of 4" clearance between the ducts and the soil.** _____ 17

24. Consider having an HVAC contractor run heating ducts to the second floor so that the furnace can heat that space as well. Note that, if the abandoned mid-story chimney were to be removed a handy chase would be created for running a supply duct to the second floor.	17
25. Have an HVAC contractor properly repair the furnace's leaking PVC exhaust vent.	17
26. Have an environmental services contractor scan the yard for an underground oil tank. If he finds one, have the soil around it tested and the tank decommissioned. If he doesn't find one, ask him to provide you with documentation that you can pass on to the next homeowner when you sell the house.	17
PLUMBING SYSTEM	18
27. Install a pressure reducing valve to provide water pressure at or below 80 psi. If the pressure reducing valve doesn't have a bypass valve, then be sure to install an expansion tank at the water heater.	18
28. At the downstairs shower, have a plumber correct the orientation of hot & cold at the control valve.	19
29. Clear the slow drains at the bathroom sinks.	19
30. Install a catch pan under the water heater and plumb its drain to a conspicuous location outdoors.	19
31. Install proper seismic support at the water heater.	19
32. Have a plumber replumb the kitchen sink's drain line so that the trap is in the cabinet below the sink.	20
33. Thoroughly insulate the water distribution pipes in the crawlspace.	20
34. Have your plumber review the waste plumbing under the kitchen & bathroom and install proper fittings where necessary. In particular, remove the sanitary tee that's on its back and replace it with a proper wye or combo fitting.	20
35. Ask your plumber to reinstall the ABS drain pipe in such a way that it passes through the foundation wall without being subject to strains or stresses from expansion, contraction, and structural settlement.	20
INTERIOR	21
36. Rebuild the stairway to a safe, modern standard.	21
37. Replace the counterbalance assemblies at the east bedroom's window. NEVER PROP OPEN THIS WINDOW.	21
38. Repair the broken sash cords at the downstairs west rooms. NEVER PROP OPEN A WINDOW THAT HAS A BROKEN SASH CORD.	22
39. Reglaze the first floor glass doors with safety glass to reduce the risk of injuries.	22

40. Remove the existing wood stove.	22
41. Ask a woodstove installer or chimney sweep to confirm that the existing wood stove vent is a class A vent. He might have to remove a section of vent to confirm this.	23
42. Ask your sweep to install a spark screen at the top of the woodstove vent.	23
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44. Have a glass contractor replace the 3 failed insulated glass panels noted above as well as any others that he discovers in addition to these. Note that the panel in the front door is tempered glass and will be more expensive to replace than ordinary glass panels.	23
45. Remove the downstairs toilet to determine whether or not the wax ring is leaking. If the floor is damaged, repair it before installing a new wax ring and replacing the toilet.	24
46. In the closet under the stairway, cover all exposed wood framing with ½” drywall.	24
47. Replace the opening crank assembly at the east bedroom’s east skylight.	24
48. Replace the cracked pane in the first floor north window.	25
49. Consider installing exhaust fans in the bathrooms, particularly the downstairs bathroom where the shower is, to direct humid air to the outdoors.	25
50. Throughout the house, adjust the closet bifold doors to work properly.	25
51. Refurbish the older wood windows to restore them to proper operation.	25
52. Ask the seller to provide a C.L.U.E Report on the home.	25
APPLIANCES	26
53. Replace the range’s right rear burner.	26
54. Install the kitchen range’s anti-tip bracket as required by the manufacturer.	26
ROOF & ATTIC	27
55. Replace the shingles on the lower roof.	27
56. Replace the upper roof.	28
57. Create 1”-2” clearance between the siding and the roof at the sidewall joints.	28
58. Remove and discard the existing flashing at the electric service mast. Replace it with a retrofit flashing assembly that will give long-lasting, maintenance-free service such as those at www.spinflashing.com or http://www.sansoar.com/resiretro.htm	29
59. Consider installing a gutter & downspout at the front porch roof.	29
EXTERIOR & GROUNDS	30
60. Install a thumb latch on the interior side of the north door’s deadbolt.	30

61. Properly flash all projecting wood trim. If you choose to ignore this recommendation, establish a maintenance schedule to inspect the caulk above this trim every fall and replace the caulk as necessary.	31
62. Consult with an arborist about the big trees. Ask him to advise you about ways to reduce the risk that they pose to the house.	31
63. Remove the tree stumps at the southwest yard.	31
64. Grade the yard to ensure that the soil slopes steeply away from the house in all directions.	31
GARAGE	32
65. Have a contractor install additional lateral bracing at the garage roof trusses' bottom chords.	32