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Maintenance Advice

UPON TAKING OWNERSHIP

After taking possession of a new home, there are some maintenance and safety issues that should be addressed immediately. The following checklist should help you undertake these improvements:

- Change the locks on all exterior entrances, for improved security.
- Check that all windows and doors are secure. Improve window hardware as necessary. Security rods can be added to sliding doors and windows. Consideration could also be given to a security system.
- Install smoke detectors on each level of the home. Ensure that there is a smoke detector outside all sleeping areas. Replace batteries on any existing smoke detectors and test them. Make a note to replace batteries again in one year.
- Create a plan of action in the event of a fire in your home. Ensure that there is an operable window or door in every room of the house. Consult with your local fire department regarding fire safety issues and what to do in the event of a fire.
- Review your home inspection report for any items that require immediate improvement or further investigation. Address these areas as required.
- Install rain caps and vermin screens on all chimney flues, as necessary.
- Investigate the location of the main shut-offs for the plumbing, heating and electrical systems. If you attended the home inspection, these items were more than likely pointed out to you.

REGULAR MAINTENANCE

EVERY MONTH

- Check that fire extinguisher(s) are fully charged. Re-charge if necessary.
- Examine heating / cooling filters and replace or clean as necessary.
- Inspect and clean humidifiers and electronic air cleaners.
- Clean gutters and downspouts. Ensure that downspouts are secure and that the discharge of the downspouts is appropriate. Remove debris from window wells.
- Carefully inspect the condition of shower enclosures. Repair or replace deteriorated grout and caulk. Ensure that water is not escaping the enclosure during showering. Check below all plumbing fixtures for evidence of leakage.
- Repair of replace leaking faucets or showerheads.
- Secure loose toilets or repair flush mechanisms that become troublesome.

SPRING AND FALL

- Examine the roof for evidence of damage to roof coverings, flashings, and chimneys.
- Look in the attic to ensure that roof vents are not obstructed. Check for evidence of leakage, condensation or vermin activity. Level out insulation if needed.
- Trim back tree branches and shrubs to ensure that they are not in contact with the house.
- Inspect the exterior walls and foundation for evidence of damage, cracking or movement. Watch for bird nests or other vermin or insect activity.
- Survey the basement and/or crawl space for evidence of moisture seepage.
- Look at overhead wires coming to the home. They should be secure and clear of trees and other obstructions.
- Ensure that the grad of the land around the house encourages water to flow away from the foundation.
- Inspect all driveways, walkways, decks, porches, and landscape components for evidence of deterioration, movement or safety hazards.
- Clean windows and test their operation. Improve caulking and weather-stripping as necessary. Watch for evidence of rot in wood window frames. Paint and repair windowsills and frames as necessary.
- Test all ground fault circuit interrupter (GFCI) devices, as identified in the inspection report.
- Shut off isolating valves for exterior hose bibs in the fall, if below freezing temperatures are anticipated.
- Inspect for any evidence of wood boring activity. Eliminate any wood/soil contact around the perimeter of the home.
- Test the overhead garage door opener to ensure that the auto-reverse mechanism is responding properly.
- Replace and clean exhaust hood filters.

ANNUALLY

- Replace smoke detector batteries
- Have the heating, cooling and water heater systems cleaned and services.
- Have chimney inspected and cleaned. Ensure that rain caps and vermin screens are secure.
- Examine the electrical panels, wiring and electrical components for evidence of overheating. Ensure that all components are secure. Flip the breakers on and off to ensure that they are not sticky.

PREVENTION IS THE BEST APPROACH

Although we've heard it many times, nothing could be truer than the old cliché "an ounce of prevention is worth a pound of cure." Preventative maintenance is the best way to keep your house in great shape. It also reduces the risk of unexpected repairs and improves the odds of selling your house at fair market value when the time comes.

Please feel free to contact our office should you have any questions regarding the operation or maintenance of your home. Enjoy your home!

STRUCTURE - BASEMENT FOUNDATIONS

CRACKS MINOR, SHRINKAGE

Minor vertical cracks in the foundation. This type and pattern of cracking is usually the result of concrete shrinkage as it cures. Shrinkage cracks are very common and are not normally a concern.

CRACKS MODERATE, SETTLING

Larger than typical foundation settlement cracking. The amount of movement is not likely to have caused other damage to the structure but this area should be monitored. If additional movement occurs, more costly repairs might be necessary. The rate of movement cannot be predicted during a one-time inspection.



CRACKS MODERATE, HORIZONTAL

Larger than typical horizontal foundation cracking. The amount of movement is not likely to have caused other damage to the structure, but this area should be monitored. It is important to keep water away from the foundation: review the lot and roof drainage improvements in the Exterior and Roofing section of this document. If any additional movement occurs, more costly repairs may be necessary. The rate of movement cannot be predicted during a one-time inspection.



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CRACKS MODERATE, BOWING

Foundation bowing and cracking. This is usually the result of excessive soil or frost pressure on the foundation. Lot drainage and foundation improvements should be addressed to keep water away from the building and these cracks should be monitored. If additional movement occurs, repairs may be necessary. The rate of movement cannot be predicted during a one-time inspection.



CRACKS MAJOR SETTLEMENT

Substantial foundation settlement cracking. Structural movement of the building has occurred. Since repairs are needed to protect the building from more serious damage, a structural engineer who is familiar with foundation repair or a company specializing in foundation repairs should be consulted to evaluate the condition and to suggest corrective measures. The rate of movement cannot be predicted during a one-time inspection.



CRACKS MAJOR BOWING

Substantial foundation bowing and cracking. This is usually the result of excessive soil or frost pressure on the foundation. Since repairs are needed to protect the building from more serious damage, a structural engineer who is familiar with foundation repair or a company specializing in foundation repairs should be consulted to evaluate the condition and to suggest corrective measures. Lot drainage and foundation improvements should be addressed to keep water away from the building. The rate of movement cannot be predicted during a one-time inspection.



SURFACE DETERIORATION

Surface deterioration (spalling, crumbling material) on foundation walls. This condition is common in many older homes and does not usually represent a serious structural concern unless there is substantial loss of material. In newer homes the concrete mix being stiff and/or the forms not being vibrated adequately during the pouring stage sometimes causes this. In an effort to prevent long-term deterioration when there is substantial loss of material, it would be wise to consider parging (a concrete stucco-like coating) over the deteriorated areas. Lot drainage improvements and elimination of water or roof runoff splashing against foundation walls as outlined in the Exterior section of this document are also recommended.



OUTSIDE BASEMENT STAIRWELL ADDED

When a basement stairwell appears to have been added, it is possible that measures were not taken to protect the footing of the house from frost damage. Even if no evidence of frost movement has appeared to date, you should be alert for signs of damage in this area in the future.



TREE PROXIMITY

The proximity of a tree to the house could disrupt drainage pipes, cause physical damage to the exterior of the house, or influence the foundation over time. Consider removal of the tree.



BASEMENT / CRAWLSPACE - MOISTURE / SEEPAGE

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EVIDENCE OF WATER SEEPAGE IN CRAWLSPACE

Evidence of past water in the crawl space. Wet crawl spaces risk building damage from rot and insects and can cause interior mold or mildew. This condition may vary seasonally and/or with precipitation intensity. Roof and lot drainage repairs or improvements should be addressed as a first step to controlling water in the crawl space (see "Exterior"). This condition should then be monitored to determine if additional, potentially costly measures are necessary to protect the building interior from water and moisture damage.



EVIDENCE OF WATER SEEPAGE IN BASEMENT

Evidence of past water in basement. Seepage can cause deterioration of finish materials, contents, etc. as well as conditions that are conducive to the growth of mold. Moisture from seepage can also create and environment that will attract wood destroying insects. Roof and lot drainage repairs or improvements should be addressed as a first step to controlling water in the crawl space (see "Exterior"). This condition should then be monitored to determine if additional, potentially costly measures are necessary to protect the building interior from water and moisture damage.



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STRUCTURE – FLOORS

MINOR UNEVENNESS – Floor Structure

This condition is common. It may be the result of the materials, framing design, installation methods and aging of the building. There is no need for immediate costly repair.

SILLS NEAR OR BELOW GRADE LEVEL

The wood sills of the structure are at or near grade level. Foundation walls should extend at least eight (8) inches above grade level so that wood structural members are protected from moisture and insect damage. Where insufficient clearance exists, grade level should be lowered, treated wood used, or an effective moisture barrier should be provided. During these improvements, further investigation of the wood sills should be undertaken as there is risk of hidden and potentially costly damage.



JOIST CRACKING

Cracked joists are generally repaired by adding "sister" joists along side of the damaged joists for additional support. Where one or very few damaged joists are found this work is not high priority and can be combined with other structural or carpentry repairs at the property.



JOIST NOTCHES / CUT

This weakens the joist and risks structural damage. Repairs or additional support are needed.



JOIST END BEARING

When floor joists have insufficient end bearing, additional support is needed to reduce risk of structural movement and damage.



JOIST SPAN

The span of the floor joists appears to exceed common framing practice. While this does not pose a serious short-term problem, expect "bouncy floors" and possibly additional floor sagging over time. Additional support may be needed.



STAIRWELL FLOOR MOVEMENT

This is typically the result of poor framing connections, missing post(s), or missing/undersized framing members (header and trimmer joist) around the stair opening. This condition is common in old homes. Poor joist connections can be improved by the provision of joist hangers. Undersized header and trimmer joists can be enlarged, or re-supported by a post at the corner of the stairwell opening in the basement. In the absence of signs of ongoing movement these improvements are low priority and can be combined with other carpentry or structural repairs.



BEAM CRACKING

When a beam is cracked, further cracking or movement risks serious structural movement and damage. Re-supporting the beam is recommended.



BEAM NOTCHES:

This condition risks structural movement and damage. Re-supporting the beam is recommended.



BEAM END BEARING

When a beam has insufficient end bearing, additional support is needed to reduce risk of structural movement and damage.



BEAM SPAN

Sometimes the span of the beam appears to exceed common practice. While this does not pose a serious short-term problem, it may allow for excessive sagging of the beam over time. Additional support may be needed.



ROT DAMAGE

Rot weakens the structure and causes distress to the building. Damaged wood should be repaired or replaced and the conditions that have promoted the rot (such as wet conditions and/or poor ventilation) should be remedied.



FIRE DAMAGE TO STRUCTURE

It is important to determine if the visible char on the fire damaged members presents a serious problem. Other structural components concealed from view could be more (or less) seriously damaged depending on where the fire occurred. You should find out the history of this fire and the extent to which it involved the building since there could be additional hidden damage or improper repair work. The local fire department may have a record of what occurred.

CANTILEVER ROT / POTENTIAL ROT

The floor joists that are cantilevered (extended beyond the foundation on the exterior of the home) to form a balcony or deck are prone to rot if not installed and flashed properly. Unfortunately proper flashing will not be fully visible and therefore you should understand that this design brings with it the risk of rot extending to the portion of the joists serving the house interior floor as well. Should rot exist now or come in the future the cantilevered joists should be severed in order to protect the floor structure of the house, and the deck should be re-supported or rebuilt using conventional methods.



BASEMENT - CONCRETE FLOOR – HEAVED, DISPLACMENT AT CRACKS

Although the concrete floor is not a structural component of the house, repair is desirable to reduce trip hazards and potential water or other damage. Repair could involve significant expense.





MOLD VISIBLE

Mold is usually due to excessive moisture. In a crawl space a complete vapor barrier on the crawl space floor and proper exterior surface water controls to minimize seepage are the primary methods to reduce moisture. Consider conditioning the space as well, if not presently conditioned, to help keep it dry. In a basement the exterior surface water controls and adequate interior air movement are the primary methods to reduce moisture. You should also consider the installation of a dehumidifier to help keep basement humidity / moisture levels down. In an attic proper ventilation is essential (see page 23 for more information on attics and ventilation).

Note: Mold can be a serious health risk if not addressed and eliminated. It is important to not only eliminate existing mold, but to also eliminate the water problem that caused it or it will likely return.

DAMAGED / ROTTED SUBFLOORING

Damaged sub-flooring (supporting layer of flooring atop floor joists and below finish flooring or carpeting). This material should be re-supported or replaced to reduce risk of finish floor damage. Where only limited areas of damage exist, this repair can be deferred until combined with other carpentry work at the property. Beware of damaged sub-floor below carpet as it may be unsafe.



STRUCTURE - EXTERIOR WALLS



CRACKS, TYPICAL

Minor cracks in the exterior wall cladding of a house are not uncommon. This implies that structural movement has occurred. The location, size, and shape of minor cracks indicate that there is no evidence of significant movement that would necessitate immediate major repairs.



CRACKS, MODERATE

More extensive than common wall cracks would indicate more significant settlement of the structure. Consult with the seller for history on structural repairs. These areas should be monitored very closely if repairs are not to be performed at this time. Additional movement would be an indication for the need for repairs.



CRACKS, MAJOR

Pronounced exterior walls cracks imply that structural movement of the building has occurred. While the rate of movement cannot be predicted during a one-time inspection, it is likely that repairs are needed. A structural engineer or a repair specialist who is familiar with residential building failures should be consulted to further evaluate the condition and the remedies available.

WEEP HOLES BLOCKED / MISSING

Weep holes (openings in the mortar joints typically form at foundation level) in the brick veneer wall structure are either blocked or not there at all. All brick veneer walls should have weep holes for proper drainage of the wall assembly and to prevent pressure differential from drawing water into the wall system. It is also important that they be kept clear to reduce the risk of water and/or frost damage.

• Note: Until the last 5 years or so very few masons in our area installed weep holes in their brick veneer and quite often they did not install the base flashing noted in the following diagram either. Often these walls function without any noticeable problems, however, the installation is not in compliance with officially accepted standards and some do experience moisture problems.



BRICK OVERHANG EXCESS

The overhang of the brick at the foundation appears to be more than the accepted one third of unit width. This could lead to instability of the brickwork. If movement occurs, additional support will be needed.



LINTEL MOVEMENT/CRACKS

Exterior wall cracks above a lintel (a lintel is a beam supporting masonry above an opening in a wall) suggests that the lintel may be marginal in its size and capacity or that it has rusted to the point of expansion causing it to be weakened. This condition is not uncommon.



BRICK VENEER BOWING

Bowing of the exterior wall structure implies that structural movement of the building has occurred. Since the rate of movement cannot be predicted during a one-time inspection, a structural engineer or masonry repair expert should be consulted to further evaluate this condition and the remedies available.



CHIMNEY MOVEMENT

The chimney is pulling away from the wall structure of the house proper. Since chimney movement can damage the chimney's interior flue (an unsafe condition) you should have the chimney inspected by a competent, qualified chimney specialist. If chimney relining or chimney foundation repair is needed significant cost could be involved.



RE-POINTING NEEDED

Re-pointing of areas of deteriorated mortar between the bricks of the exterior walls is advisable to prevent further deterioration.



SPALLING BRICK

The faces of the brick are popping off (spalling) due to water getting into brick and undergoing freeze/thaw conditions. Consult a masonry specialist for recommended repairs. If the spalling is not too bad then generally a masonry sealer can be applied to keep moisture and water out of the bricks.



STRUCTURE – ROOF

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RIDGE SAG / ROOF SPREADING

The ridge of the roof appears to have minor sagging. This condition is common in many old homes. No corrective measures are necessary in most cases.



RAFTER SAG

The rafters of the roof structure show evidence of sagging. Strengthening the roof structure would resist further movement. This improvement is not a priority unless the roof is likely to be subjected to heavy loads such as from snow or additional layers of roofing material whose weight could cause further damage. Additional support can often be added easily.



COLLAR TIES INSUFFICIENT

To resist additional rafter sagging, collar ties (horizontal members running between each rafter, near their mid-span) should be provided for all rafters.



SHEATHING UNEVENNESS (TRUSS)

Sagging roof Sheathing. This is common, and met applicable building codes, where prefabricated roof trusses are spaced two feet apart allowing sagging between trusses. Additional support may be needed when re-roofing.



TRUSS UPLIFT

Cracks at the interior wall and ceiling intersection indicate cosmetic ceiling damage from "truss uplift". This condition is common in homes employing prefabricated trusses in cold climates. When cosmetic repairs are made you can reduce future cracking by eliminating nails in the drywall at the ceiling close to walls where cracks occurred or by installing ceiling molding that is only secured to the ceiling so it rides up and down on the wall seasonally.



CONDENSATION AND/OR MOLD ON UNDERSIDE OF ROOF DECK

Evidence of condensation was observed on the underside of the roof sheathing. This can weaken the sheathing and ultimately necessitate replacement. Improved roof and attic ventilation (see Insulation and Ventilation) can reduce condensation. Additionally, if the house sits on a crawl space foundation, controlling crawl space moisture via properly installed vapor barrier and surface water controls can also help to remedy this situation. During re-roofing, the sheathing should be investigated to determine if replacement is needed.



ROOF SHEATHING DELAMINATED

Delaminating is deterioration caused by moisture. In most cases, damaged roof sheathing must be replaced prior to re-roofing. Improved roof and attic ventilation (see Insulation and Ventilation) and if the home is on a crawl space verifying the presence of an adequate vapor barrier on the ground of the crawl space can significantly reduce moisture levels and cut future damage to the roof structure. Damaged sheathing should be replaced when re-roofing.

ROOFING SYSTEM

FLAT ROOFS – VULNERABLE

It should be noted that flat roofs have a higher potential for leaks. Leaks can be difficult to repair, as the source of the leakage can be far removed from the water stain that shows up on the interior. Some roofers will insist on re-roofing rather than patching flat roofs.

ROOF DESIGN – VULNERABLE

The design of the roofing system is such that several vulnerable areas exist. There is a higher potential for unanticipated repairs. Annual inspections and ongoing maintenance will be critical to performance of the roofing system.



TREE BRANCHES OVERHANGING ROOF

Trim tree branches away from roof so they do not overhang it or rub on it.



ICE DAMS

The potential for ice dams varies with the severity of the winter and depending on insulation and ventilation under the roof. Severe ice dams can result in leaks, typically near eaves. Solutions include better attic insulation and ventilation, eave protection below the roof coverings, or as a stop-gap measure, the installation of heating cables on the roof.





PREMATURE FAILURE OF ASPHALT SHINGLES

Roof covering shows evidence of flaws (either cracking in the shingles – see diagram, or bald spots where excessive granule loss has occurred) possibly manufacturing defects. The wear rate on roofing material in this condition often accelerates and can lead to premature roof leaks and the need for extensive replacement. A warranty claim may be possible if made by the present owner who had the roof installed. The roof should be examined by a roofing contractor and/or manufacturer's representative.



MOSS FROM SHADE

Shaded areas of the roof can produce moss and organic build-up. This condition may reduce the life expectancy of the roofing material. Trimming or removing trees and/or spraying this area with a 50/50 solution of bleach and water could improve this condition.

UNEVEN WEAR ON ROOF MATERIALS

The sides of the roof exposed to the most sunlight and prevailing weather wear more quickly than the more shaded or protected areas. Early repair or replacement may be needed in some areas prior to replacing the entire roof covering. The south and west sides of a roof typically wear faster than the balance of the roof, while the other exposures of the roof may last for a longer period of time. If the best roof sections have less than five years of remaining life when the worst sections already need replacement it is usually logical to replace off roof slopes during re-roofing.

INAPPROPRIATE MATERIAL FOR LOW SLOPE

Most general roofing material is not intended for low slope applications. While this condition does not pose a serious short term concern, you should expect a short roof life in this area. For longer life use a membrane-type roofing material such as EPDM or modified bitumen when re-roofing.

OLD ROOFS – MAINTENANCE NOTES

Older roofs are, by their nature, high maintenance roofs. Annual inspection and repair should be anticipated. In addition, the older flashings should be monitored. In some cases, a deteriorated flashing can result in expensive repairs, because sections of the roofing have to be removed. As a rule of thumb, replacement of the entire roof covering may be logical if more than ten percent of the roof requires repair.

PRIOR REPAIRS EVIDENT

Prior repairs to the roof are evident. This would suggest that problems/leaks have been experienced in the past. These areas and adjacent areas of the roof should be monitored for future leaks.



WOOD ROOF – MAINTENANCE NOTES

The life expectancy of wood roofs is generally twenty-five to forty years. This will depend on several factors such as the quality of shingle or shake, the slope of the roof (steeper is better), the amount of exposed shingle, and the amount of sun or shade. As with all roofs, annual maintenance is needed. Cracked, curled, or displaced shingles or shakes should be repaired. As a rule of thumb, replacement of the entire roof covering may be logical if more than ten percent of the roof requires repair.

REMOVE DEBRIS

Debris should be removed and kept clear from the roofing to reduce the risk of leaks and premature deterioration of the roof covering.

DOWNSPOUT DISCHARGE ONTO ROOF

Downspouts or gutters that discharge onto the roof should be extended to discharge directly into the gutters below. This condition, if left unattended, can result in premature deterioration of the roofing in the affected area.



EXTERIOR

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SIDING - WOOD / SOIL CONTACT

Wood / Soil contact at the base of the siding should be eliminated. Rotted, damaged siding that is uncovered should be replaced. These areas are at risk of additional hidden damage.



SIDING DELAMINATION

Siding material is delaminating (coming apart). Localized repairs, replacement and/or painting may extend the life of the siding. Wholesale replacement may eventually be necessary – significant expense, which can be deferred when only limited areas of damage are found. For Louisiana Pacific's (commonly called LP siding) it is important to remember that siding installed on or after January 1, 1996 is covered under the new manufacturer's warranty. This product is different from the product that was the subject of the class action lawsuit in the early 90's. This product does require more diligent maintenance to obtain full service life.



STACCATO BOARD PANEL REPLACEMENT

When Staccato Board siding (generally "pressboard" panels) is damaged the panels need to be replaced. Replacement will need to be performed on a whole panel basis including adjacent cedar trim boards. Often the original installer failed to install the required flashings to prevent water from getting behind this product. Verify that the replacement is being installed to prevent the same problem from reoccurring.



WINDOW SILL DAMAGE AT BRICK VENEER

Due to typical settlement of the framing after the house is built the window sills have been pushed up causing casements to open hard and possible damage to the window frame. Repairs may include removing the window trim and siding and raising the window assembly in the framed opening to relieve the pressure on the window sill.



MISSING KICK-OUT FLASHING

Kick-out flashings are necessary to keep roof run-off water from getting behind the siding or cladding that is on the side of the house. This is true when it is EIFS (commonly called "Dryvit") or any time there is a siding material other than vinyl or aluminum installed on the home.



PROPER WINDOW FLASHING DETAIL

All buildings are watersheds; no part of them is waterproof. They have to be built in layers to keep water out. If the layers are not lapped properly or are missing then water can find its way into the wall structure and cause damage to the wall.



LOT DRAINAGE

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LOW LOT RELATIVE TO NEIGHBOR

Grading improvements should be undertaken where possible when the lot is lower than adjacent lots. The general topography of the area may be such that it is difficult to control storm water entirely. During heavy rains or snowmelts, the accumulation of storm water on the lot may be unavoidable. This could cause water entry in the basement or crawl space.

GRADING IMPROVEMENT NEEDED

Grading can often be improved to promote the flow of storm water away from the house. This can be accomplished by regarding the existing lot soil then adding topsoil to replant grass. The ground should slope away from the house at a rate of one inch per foot for at least six (6) feet. At a bare minimum, at least four (4) inches of clearance should be maintained between soil level and the bottom of exterior wall siding (eight (8) inches of clearance is desirable). With respect to hard surfaces such as driveways, sidewalks, and patios the surface should have a slope of at least ¹/₄" per foot drop down and away from the foundation for a length of at least six (6) feet. (*See diagrams on next page*)



SWALE IMPROVEMENT BETWEEN HOUSES

A drainage swale (in effect, a wide and shallow ditch) could be created. Drainage swales are intended to divert storm water away from the house and ultimately off the lot.

RAVINE EROSION PROBLEM

A steep bank or ravine is a risk for erosion, soil movement, an/or foundation damage. If erosion problems are suspected, a soils engineer should be consulted.



ATTACHED DECK ISSUES

Proper flashing, support or attachment, and railings are the primary concerns with all decks.



ELECTRICAL SYSTEM

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BASICS OF ELECTRICITY






SERVICE / ENTRANCE DRIP LOOP INSUFFICIENT

The service wires should form a "drip loop" where they meet the service mast on the exterior of the home. This ensures that water will drip off the wires, rather than run into the service mast and down into the box.



CLEARANCE INADEQUATE

The service wires must have adequate clearance from the ground. The top of the service mast and the service wires should be at least ten (10) feet above the ground.



SERVICE ATTACHMENT

The service mast / conduit must be safely secured to the exterior of the house.



MAIN PANEL

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OVERSIZED FUSES OR BREAKERS

Oversized breakers or fuses within the main panel should be replaced. All breakers or fuses should be sized appropriately for the wires they are intended to protect. A licenses electrician should make corrections immediately. *Over fusing can be a fire hazard*.



OPENINGS IN PANEL

All exposed openings in the panel box(es) should be covered.



DOUBLE TAPS

Circuits within the main distribution panel that are doubled up (referred to as "double taps") should be separated. Each circuit should be served by a separate fuse or breaker.



JUMPER WIRE / WATER METER BYPASS

A jumper wire should be installed across the water meter to ensure sufficient grounding of the electrical service. When the ground wire is attached on the "City" side of the meter it is not as critical but it is still recommended to provide grounding to all metal water pipes.



CLEARANCE AROUND PANEL

Clearance access should always be maintained around electric panel for emergencies.



FUSE TYPES

While fuses are generally safer than breakers it is the fact that different size fuses can be installed in the same opening. This is what concerns most insurance companies about fuse systems.

It is recommended that all fuse systems have the fuses changed to "S" type or safety fuses.



REVERSED POLARITY

Reversed polarity is when the neutral and hot wires have been switched causing electricity to flow through receptacles and fixtures backwards. This can be a safety issue.



GROUND FAULT CIRCUIT INTERUPTERS

GFCI outlets or breakers are safety devices that are now required in bathrooms, kitchens, basements, garages, outdoors, etc.



CABLE CLAMPS / PASS-THRU CONNECTORS

Cable clamps, or pass-thru connectors are required where wiring enters into the main distribution panel. Cable clamps serve to protect the wiring from the metal edges of the panel openings.



RECESSED CEILING LIGHT FIXTURES

Care should be taken to always install the proper type of light bulb in recessed fixtures. Additionally if you have the old style recessed lights you must keep insulation in the attic away from them so they can release their heat. Insulating over them can cause a fire hazard.



WHEN TO UPGRADE AN ELECTRICAL SERVICE

The size of the electrical service supplied to the home may not be sufficient, depending on the lifestyle of the occupants. A marginally sized electrical service is not a safety concern, but may represent an inconvenience if the main fuses (or breakers) blow, shutting down the power in all or part of the home. If it is found that the main fuses (or breakers) blow regularly, a larger electrical service may be desirable. If care is taken not to run major electrical appliances simultaneously, it is unlikely that the service will overload. The use of gas fired kitchen appliances, clothes dryer, and water heater will also reduce the load on the electrical service.

HEATING SYSTEM-FORCED AIR FURNACES

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FURNACE - CRACKED HEAT EXCHANGER

This condition is a carbon monoxide safety risk. A qualified HVAC technician should be engaged immediately. In most cases, unless a warranty applies, the furnace is replaced rather then repaired.



STANDARD AIR FILTER

Dirty air filters should always be replaced.



ELECTRONIC AIR CLEANER

Regular maintenance is necessary for electronic air cleaners to continue to operate effectively.



FORCED AIR DISTRIBUTION SYSTEM



CENTRAL RETURN AIR SYSTEMS



HIGH AND LOW RETURNS: IN SAME ROOM



RESTRICTIONS TO AIR FLOW



BACKDRAFTING OF NATURAL DRAFT FURNACES



COMBUSTION AIR IS NEEDED FOR ALL GAS FIRED APPLIANCES



HIGH EFFICIENCY FURNACES - VENT TERMINATIONS



UNDERGROUND OIL TANK

Buried tanks, which have not been previously properly abandoned or leaked can be opened, cleaned, and filled in-place or they can be removed entirely. Before purchasing the property you should have the tank or soil tested to assure that it has been properly abandoned and/or that no leaks have occurred. If the tank is to continue in use it may be possible to purchase tank leak cleanup insurance, possibly through your oil company. Tank replacement with a newer (fiberglass) leak-resistant type tank or



relocation indoors will also involve a significant expense.



OIL FIRED BURNER - FORCED AIR OR BOILER HEAT

HEATING SYSTEMS – HOT WATER BOILERS

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RADIATOR COVERS RESTRICT HEAT FLOW



PRESSURE REDUCING VALVE



ZONING OF BOILERS





MOST COMMON TYPES OF RADIATORS





ONE PIPE STEAM

Heat is distributed by "one pipe" steam system. In this early design a single pipe both delivers steam to the radiators and returns condensate to the boiler. Heating pipe routing and placement is important and should not be modified without consulting a steam expert. If you are not satisfied with heat distribution in the building, a one-pipe system cannot be converted to forced hot-water without complete re-plumbing of the piping, a significant cost.



TWO PIPE STEAM

Heat is distributed by a "two pipe" steam system. In this design, one pipe delivers heat (steam) to each radiator and a separate pipe carries condensate from the radiator back to the boiler. Finicky steam vents at radiators or other improper system adjustments can be corrected by a service technician who is trained on steam equipment. Often these systems are converted to circulated hot water, resulting in easier distribution of heat to each area. (see diagrams-next page)



ASBESTOS COVERING

Insulation on the boiler and/or distribution piping may contain asbestos. The Environmental Protection Agency (E.P.A.) reports that asbestos represents a health hazard if "friable" (damaged, crumbling, or in any state that allows the release of fibers.) If replacement of the boiler necessitates the removal of the asbestos containing insulation, an asbestos removal specialist should be engaged. If any sections of this insulation are indeed friable, or become friable over time, a specialist should be engaged. Further guidance is available from the Environmental Protection Agency (E.P.A.).

HOT WATER CIRCULATING BOILER SYSTEMS



LOSS OF EFFICIENCY

Old boilers tend to be less efficient than newer units. While replacement of the boiler would result in lower heating costs, replacement is often not justified if the present unit is reliable. Regular cleaning and adjustment is recommended. Consult with a specialist to determine the cost of replacement and length of time for payback prior to considering replacement.

CHIMNEYS, SINGLE WALL AND B-VENT CLEANANCES

Both single wall and B-vent metal chimneys must be sufficiently clear from combustible materials.



ELECTRIC BASEBOARD HEAT (SIZE & LOCATION)

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ELECTRIC BASEBOARD HEATERS – SAFETY





ROOM SPACE HEATERS

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Space heaters can provide heat in rooms not serviced by the central system but caution should be taken. Some space heaters are the non-vented type and are considered unsafe in sleeping areas. There is also question about the safety of vented heaters in the sleeping space unless the combustion chamber of the heater is sealed; with combustion intake and exhaust both coming from the outdoors. You do not want to compete with the heater for oxygen. If not properly operated and maintained these heaters can be a significant source for Carbon Monoxide.





VENTED WALL FURNACES







NON-VENTED WALL FURNACES

Non-vented wall furnaces are a safety concern since the combustion products are discharged into the living space. These units will compete with the occupants for oxygen and unless properly maintained and operated can be a significant source of Carbon Monoxide.



AIR CONDITIONING

OLDER OR AGED SYSTEM

It is not uncommon for older homes to have relatively old mechanical systems. It will require a higher level of maintenance, and may be more prone to major component breakdown. Predicting the frequency or time frame for repairs on any mechanical device is virtually impossible. If the compressor fails, or if breakdowns become chronic, replacing the entire system may be more cost-effective than continuing to undertake repairs.

UNDERSIZED SYSTEM

The capacity of the air conditioning system may prove to be marginal during the warmer days of the summer. Without performing detailed heat gain calculations, or living in the home during warm summer days, actual conditions are difficult to predict.





Diagrams and Descriptions of Common Building Conditions









FLOW OF COOLED AIR IN OLDER VS. MODERN CONSTRUCTION



TEMPERATURE DROP EXCESSIVE

The temperature drop measured across the evaporator coil of the air conditioning system is greater than normal. This indicates that air flow across the evaporator coil is too low. Low air flow could be the result of a dirty filter, dirty or obstructed evaporator coil fins, or insufficient blower and/or ductwork sizing. This condition can lead to ice build-up on the coil. A qualified heating and cooling technician should be consulted to further evaluate this condition and the remedies available.



OUTDOOR UNIT OUT OF LEVEL

Outdoor air conditioning units can become settled out of level. This should be improved.

Condensing unit out of level



OUTDOOR UNIT LOCATION RELATIVE TO OTHER APPLIANCE DISCHARGE

Discharge from other appliances can affect operation of A/C system.



FILTER / DRYER IN LINE AT OUTDOOR UNIT



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CONDENSER – OUTDOOR UNIT

During winter or off season months if your home is in a wooded area that has a lot of leaves and other debris falling it is advisable to place a lid on top of the outdoor unit to keep debris out of it but wrapping it completely is not advised due to the risk of trapping moisture inside and accelerating the weathering and/or rusting of the unit's components.



A/C COMPRESSOR LIFE EXPECTANCY



HEAT PUMP IS DISCONNECTED IN HEATING MODE

The heating mode of the heat pump can be abandoned. This situation is not uncommon, as heat pumps tend to be problematic in the heating mode. In essence, the heat pump has become an air conditioning system only.

RETURN AIR GRILLS / PLACEMENT



INSULATION / VENTILATION

IMPROVE VENTILATION

It is generally recommended that one (1) square foot of vent area be provided for every 150 square feet of attic floor area (this is generally the same as one square foot of "free" vent area for each 300 sq. ft. of attic floor). Proper ventilation will help to keep the house cooler during warm weather and extend the life of roofing materials. In cold climates, it will help reduce the potential for ice dams on the roof and condensation within the attic.

Recommended amount of attic ventilation



VENTILATION MEANS COOLER ATTICS, LESS CHANCE OF ICE DAMS



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SOFFIT VENTS CONGESTED

The passage of air between the soffit vents and the roof cavity is essential. "Baffles" should be provided to hold back insulation and allow for free movement of air within the roof space.



SLOPED OR CATHEDRAL CEILINGS

Proper ventilation of cathedral ceilings / roofs is often neglected or misunderstood. As a result, these areas tend to be prone to difficulty, particularly in cold climates. Ice damming on the roof and condensation within the roof space are common problems.



CONDENSATION / MOLD

This condition is usually the result of insufficient ventilation and is sometimes caused by the lack of vapor barrier on the crawl space floor. Improvements should be made. If ignored, this situation could worsen and cause substantial rot to the roof structure.



HOW HEAT MOVES



How moisture moves Image: Construction of the provided state of the

AIR PRESSURES / INFILTRATION & EXFILTRATION





ALL HOUSES NEED AIR CHANGES



HOUSES THAT SUCK

With all the ventilation pulling air out of the house the exterior envelope of the building sucks air inward. This can induce soil gases such as Radon as well as moisture into the building.



INSULATING ATTIC ACCESSES



ADDING ADDITIONAL ATTIC INSULATION





WET INSULATION BELOW ROOF VENTS

When the wind blows against the side of the roof that has the roof vents installed on it snow and rain can be blown into the vent and drop down into the attic. This is generally a very infrequent occurrence. If it persists then baffles can generally be installed to deflect the wind and water.



AFFECTS OF COLD SURFACES (WALLS OR WINDOWS) ON PEOPLE

The body heat of the occupant radiates toward the cold wall. The person feels cold because heat that is in their body is being drawn out towards the cold wall.



This is why heat supplies in rooms are Generally installed at exterior walls and under windows where the coldest surfaces are likely to be located.



Convective loop will occur against cold surfaces making occupants feel a draft, as cold air, which is heavier than warm air, washes down the wall or window. Warm air replaces the cold air at the top of the wall or window only to be cooled as it comes in contact with the cold surface. It cools and gets heavy dropping along the cold surface continuing the draft



Again, installing heating supply under window helps to counteract this natural occurrence. In a situation where there is a bank of windows and this draft is being felt in the winter a temporary or portable electric baseboard heater can be installed along the baseboard under the windows to counteract this draft caused by air falling along the cold surface as it is cooled.



RECESSED LIGHTS (POT LIGHTS)

Recessed lights can pose a fire hazard if they are insulated against or over top and not specifically designed for contact with insulation. It is recommended that a licensed electrician be contacted to further evaluate these light fixtures.



INSULATE OVER WHOLE HOUSE FAN IN WINTER MONTHS



CRAWL SPACE – Insulation and Conditioning

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PLUMBING PIPES NEED INSULATION

Plumbing pipes within the crawl space should be insulated to protect them from freezing unless the crawlspace is conditioned, in which case you want to insulate the cold water pipes to keep them from condensing moisture and dripping onto the vapor barrier.

CONDITIONING RECOMMENDED

Conditioning of the crawl space is recommended. In addition to a good vapor barrier on the ground and un-faced insulation on the perimeter walls, providing air movement in the crawl space from HVAC supply ducts will help to control humidity and reduce the potential for rot. It is not recommended to open vents to the exterior; the only time of the year that it is dryer outside than it is inside the crawlspace is in the winter months when freezing is a hazard.

MOISTURE OR VAPOR BARRIER

A moisture (vapor) barrier should be installed on the crawl space floor and should cover all areas of exposed soil. Ballasting with gravel is done to protect the plastic sheeting and is not necessary as long as the crawlspace is not to be entered on a regular (daily or weekly) basis.



MOLD / MILDEW DUE TO MOISTURE

Generally this is related to improper moisture control measures such as incomplete vapor barrier (see above diagram) and poor exterior surface water controls (see diagrams below). Controlling moisture levels in the crawl space air will help reduce the potential for rot.



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PLUMBING SYSTEM

WATER SUPPLY PIPING





pressure

pressure

height

WATER HEATER PIPING



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HEIGHT OF HOME AFFECTS WATER PRESSURE

DIFFERENT TYPES OF WATER SHUT OFF VALVES

Most, older shut off valves are gate valves. It is generally recommended that ball valves be installed in place of gate valves when replacement becomes necessary.



DISSIMILAR METALS



CROSS CONNECTIONS AT FIXTURES

A "cross connection" exists whenever there is potential for potable water to contact a source of contamination.



DRAIN LINE / VENT LINE PIPING

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MORE DRAIN LINE / VENT LINE PIPING





PROPER CONNECTION FOR VERTICAL TO HORIZONTAL DRAIN PIPES



DRAIN INSTALLATIONS FOR KITCHEN ISLAND SINKS


S-TRAPS

"S" Traps should be replaced during any new plumbing work as they are subject to siphoning problems. Replacement is sometimes difficult and thus the "S" traps are usually tolerated. They are not allowed in new work and when permits are taken out to perform plumbing upgrades most code inspectors will require that they be replaced. Care should be taken to keep the trap "primed" if it is to be left in service. Fixtures should be monitored for sewer odor.



STACK HEIGHT AND SIZE

The vent stack that penetrates the roof should extend at least 6 inches but not more than 12 inches above the roof. It should also be at least 2 inches in diameter. Vent stacks closer than 6 inches to the roof surface are at risk of being closed off in the winter by snow build-up on the roof. Stacks less than 2 inches in diameter are at risk of being closed off by frost from the moist sewer gases freezing and building up at the top of the stack.



WATER HEATERS



REVERSED HOT AND COLD

As shown in the "dip tube" diagram above, the cold water should enter the tank at the bottom and the hot water should be drawn off the top of the tank.



CORROSIOIN AT SUPPLY CONNECTIONS

It is fairly common for supply piping to show corrosion where it meets the water heater. The condition should be monitored and repaired if it steadily worsens.

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SHUT OFFS / GAS DRIP LEG

There should be a shut off valve on the cold water supply to the water heater and a shut off on the gas line for the water heater. The water heater can then be isolated should it be necessary to drain it or replace it. Additionally there should be a drip leg on the gas line to collect dirt that may pass through the gas line so it does not go into the burner.



TEMPERATURE AND PRESSURE RELIEF VALVE

For safety reasons, it is necessary that a Temperature and Pressure Relief (TPR) valve be installed for the water heater. The lack of such a valve is a safety concern.



TPR DISCHARGE TUBE (EXTENSION PIPE)

The discharge piping serving the Temperature and Pressure Relief valve for the water heater should terminate not less than 6 inches or more than 12 inches above the floor.

MISSING COVER / SCORCHING

A missing cover can allow back drafting or flame rollout and should be replaced if missing from the water heater. A collapsed diverter or baffle inside the water heater can also be the cause of scorching or flame rollout. Have this unit inspected and repaired by a qualified plumber or HVAC technician right away if scorching or flame rollout has been observed.



VENT PIPE CLEARANCE

Water heater vent pipe must have safe clearance from combustible materials.



GARAGE CLEARANCES

Water heaters in garages should be on a raised platform so that the pilots, burner or heating elements are not closer than 18 inches from the floor.



PIPE HAMMER

Over time, water hammering can influence the integrity of pipe connections. Closing valves and faucets slowly is one approach to avoiding water hammer. Better securing pipes (where possible) and installing air chambers (shock absorbers) at the risers to fixtures would be another solution.



FIXTURES

ROT / LEAKAGE AROUND TOILET BASE

Seepage where the toilet attaches to the waste line can go unnoticed since water leaks under the finished floor and is absorbed into the sub-floor where it can cause rot.



SHOWER STALL TILE DAMAGE

Loose or damaged tile, grout, and caulk should be repaired or replaced as necessary. Any damage to the wall behind the tile should also be repaired. Further investigation may reveal the need to rebuild a portion of the shower stall.



SHOWER STALL – REBUILD TILE BASE

Wall or floor damage beneath a shower enclosure should be repaired. See diagram above.

BATHTUB TILE DAMAGE

Loose or damaged tile, grout and caulk should be repaired or replaced as necessary. Any damage to the wall behind the tile should also be repaired if necessary.



BATHTUB: FLOOR SPILL DAMAGE

The extent of damage is difficult to predict without removing floor coverings. Repairs are not high priority unless the floor is weakened. At the least, corner guards that will help prevent water from draining out onto the floor should be installed.

BATHTUB WINDOW ENCLOSURE

The window and sill of the bathtub enclosure should be protected from moisture. A waterproof curtain is usually sufficient. Windows in bathtub enclosures have a reputation for allowing leakage behind the enclosure, causing damage to the wall.



SEWAGE EJECTOR & SUMP PUMPS

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SUMP PUMP FLOAT ADJUSTMENT

If the water level is allowed to build up under the concrete floor, it can affect the basement as shown in the following diagram.



SUMP PUMP TOO HIGH

When the sump pump is set too high in the crock, it does not activate in time to keep the water level below the bottom of the footer tiles. It therefore allows water to backup in the tiles and sit just under the concrete floor. The results can be the same as shown in the following diagram, which shows the effects that high water tables can have on basements.

INOPERATIVE SEWAGE EJECTOR PUMP

The sewage ejector pump would not operate at the time of our inspection and should be repaired or replaced as necessary.



ATTACHED GARAGES

GARAGE MAN DOOR (SERVICE DOOR) RATING

The door between the garage and the interior of the house should be rated to resist fire as per local codes. Since there is no code enforcement on existing dwellings, replacement of this door would be a good upgrade.



GARAGE MAN DOOR SEAL

The door between the garage and the interior of the house should be well sealed to inhibit automobile fumes from entering the house.

GARAGE MAN DOOR ADJUSTMENT

The door between the garage and the interior of the house should be adjusted to operate freely yet fit tightly.

GARAGE FLOOR SLAB SETTLEMENT

It is not uncommon for garage slabs to show some settlement due to backfill that is placed when the home is built. The slab is not a structural member of the home; it just floats on the backfill that was placed in the garage around the foundation. Mud jacking is a viable repair method and generally is quite a bit less than tear out and replacement of the concrete floor.



Product Safety and Recalls

The US Consumer Product Safety Commission, CPSC, an independent federal regulatory agency that was created in 1972 by Congress, passed the Consumer Product Safety Act. In that law, Congress directed the Commission to "protect the public against unreasonable risks of injuries and death associated with consumer products".

The CPSC has jurisdiction over about 15,000 types of consumer products, from automatic drip coffee makers to toys to lawn mowers. Some types of products, however, are covered by other federal agencies. For example cars, trucks and motorcycles are covered by the Department of Transportation; foods, drugs and cosmetics are covered by the Food and Drug Administration; and alcohol, tobacco and firearms are under the jurisdiction of the Department of the Treasury.

The CPSC works to reduce the risk of injuries and deaths from consumer products by:

- Developing voluntary standards with industry
- Issuing and enforcing mandatory standards; banning consumer products if no feasible standard would adequately protect the public
- Obtaining the recall of products or arranging for their repair
- Conducting research on potential product hazards
- Informing and educating consumers throughout the media, state and local governments, private organizations, and by responding to consumer inquiries

Visit the CPSC website to obtain information about recalled products or to report an unsafe product or a product related inquiry.

Consumer Product Safety Commission website - www.cpsc.gov

Carbon Monoxide

Alarming CO Poisoning Statistics

Each year, more than 10,000 Americans are temporarily or permanently disabled by accidental exposure to carbon monoxide (CO). The CO poisoning deaths attributed to motor vehicle exhaust accounted for about 60% of all accidental non-fire CO poisoning deaths. The remaining 40% of deaths were associated with consumer products. Most of the non-fire consumer product-related CO poisoning deaths were associated with the use of heating systems.¹

Other consumer products associated with these poisoning deaths included charcoal grills, gas water heaters, camping equipment, gas ranges and ovens. On average, between1994 and 1998, approximately 10,600 people were treated each year in hospital emergency rooms for non-fire CO poisoning injuries associated with consumer products, excluding incidents involving auto exhaust.

Of the estimated incidents of CO poisoning attributed to consumer products from 1992 to 1996:

- 74 percent were attributed to heating systems
- 10 percent to charcoal grills
- 3 percent to gas water heater
- 4 percent to gas ranges/ovens
- 5 percent to camp stoves/lanterns
- 3 percent to other appliances.²

Of the estimated non-fire CO poisoning deaths from 1992 to 1996:

- 4 percent of the victims were under 5 years old
- 5 percent were between 5 14 years old
- 19 percent were between 15 24 years old
- 27 percent were between 25 44 years old
- 23 percent were between 45 64 years old
- 22 percent were 65 and over.³

Carbon Monoxide Poisoning and its Effects

CO is a clear, odorless gas that is a by-product of combustion of fuels like natural gas, liquid propane (LP), coal, oil and wood. It is poisonous to humans and pets.

There are no perceptible symptoms if an individual's CO levels are less than 10 percent. At 10 percent levels, an individual may experience symptoms that mimic the flu or a cold such as headache, fatigue, difficulty in thinking straight, irregular breathing and heartbeat, nausea or coughing. The victim may appear pale, but develop cherry red color on the lips and ear tips. Take note especially if everyone in the home is experiencing at lease some of the symptoms, and pay particular attention if pets exhibit symptoms since animals cannot get the flu. At levels greater than 20 percent, a person can lose consciousness, go into a coma, or die.

If CO poisoning is suspected, call 911 from a neighbor's house and get everyone into the fresh air immediately. Report it to the fire department even if everyone is feeling better.

Continued.....

What can cause carbon monoxide poisoning?

Defective furnaces, fireplace flues, and oil heaters have long been the primary cause of accidental CO poisoning. During winter months, the average furnace will turn on and off nearly 9,000 times. When equipment works this hard, annual maintenance by a qualified contractor is the best way to keep heating and venting systems running safely and efficiently. In addition to annual service, follow these tips to check for safety:

- Check the furnace flame. Flames should be mostly blue and steady.
- Look for buildup. Discoloration or soot buildup around the burner access door and vents could signal a problem.
- Check the venting system. Soft, rusted or broken vent piping can release combustion products indoors.
- Examine the furnace or boiler. See that it's free of dust, rust and any other signs of corrosion.
- Check air filters regularly. Clean or replace them as needed.
- Make sure furnace panels and grill are in place and the fan compartment door is closed when the furnace is on. Leaving these doors open could cause CO to build up in living areas.

These checks do not replace the need for an annual checkup of the heating system before the start of the heating months. To protect your family against accidental CO poisoning, make sure the furnace and appliances receive annual checks by a qualified gas appliance or heating contractor. In addition, gas appliances, including stoves, clothes dryers, water heaters, and gas furnaces, are sources of CO. For gas appliances, CO is vented out of the house. However, sometimes the vent system is not installed correctly or does not work properly, forcing CO back into the house.

Installation of Carbon Monoxide Detectors

It is a good idea to have CO detectors/alarms in your house. CO weighs about the same as air, so detectors can be mounted at any height. Install a CO detector on each level of your home, and in or near each sleeping area. Try to keep the detectors at least 20 feet from any fuel burning appliances and at least 10 feet from high humidity locations like bathrooms and kitchens. If an alarm sounds, call a professional to check your gas burning appliances.

Testing your Carbon Monoxide Detector/Alarm

One can determine if a CO detector/alarm is working by using special CO alarm testing devices. These devices simulate CO using a small pellet in a package. When the pellet is moistened, it releases a non-toxic gas. After a few minutes, the alarm will sound if it is properly working. These devices are available at better hardware stores.

¹ "Estimates of non-fire CO poisoning deaths and injuries" Executive Summary; US Consumer Product Safety Commission, June 1999

² "Estimates of non-fire CO poisoning deaths and injuries" Table 1; US Consumer Product Safety Commission, June 1999

³ "Estimates of non-fire CO poisoning deaths and injuries" Table 2; US Consumer Product Safety Commission, June 1999

Fire Safety

Fire Prevention: Smoke Alarms Save Lives

The National Fire Protection Association (NFPA) estimates more than 94 percent of North American homes have at least one smoke alarm. But consider this fact: There are more homes with smoke alarms that don't work, than homes without any alarms. Those poorly maintained units create a false sense of security for residents.

WORKING Smoke Alarms Save Lives

By properly selecting, placing, testing, and maintaining your smoke alarm, you will greatly increase your chances of surviving a home fire.

Alarm Selection

When you go to the store, you'll find there are many different types of alarms on the market. There are standard battery-operated alarms, 10-year battery-operated alarms, and others that operate on the home's electrical system.

Building codes and local requirements often dictate the type of power that will be required to operate smoke alarms.

There are also special alarms for people with hearing impairments. These have both an audible alarm and intense flashing lights.

No matter what type of alarm you purchase, make sure it is listed or approved by an independent testing laboratory, such as Underwriters Laboratories (UL).

How many is enough?

The National Fire Protection Association (NFPA) Life Safety Code 101 should be followed. Most codes require a minimum of one smoke alarm on every level, including basements, and within 15 feet of each sleeping area. If the door to the sleeping area is kept closed, it is also recommended that a smoke alarm detector be placed inside the bedroom.

In new construction, the code requires hard-wired smoke alarms to be interconnected. This means that if one smoke alarm is activated, all alarms will sound.

Installation

Always follow the manufacturer's installation instruction.

Wall-mounted alarms should be installed so the top is 6 to 12 inches from the ceiling

Ceiling-mounted units should be installed at least 6 inches from any wall.

If a room has a vaulted ceiling, mount the alarm at or near the ceiling's highest point.

In stairways with no doors at the top or bottom, position alarms in the path smoke would follow up the stairwell.

Mount alarms at the bottom of closed stairways, such as those leading to a basement. Dead air trapped near the door at the top of a stairway could prevent smoke from reaching an alarm located at the top.

Don't install an alarm too close to windows, doors, forced-air registers, or ceiling fans where drafts could interfere with the detector's operation.

If you have questions about the best places to install alarms, contact your local fire department for advise.

Plan an Escape

Plan and review escape routes. Have at least two ways to get out of every room. Agree on a meeting place outside where everyone can gather after they escape. Practice your escape.

Lead In Homes

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Why is Lead Dangerous?

If not detected early, children with high levels of lead in their bodies can suffer from:

- 1. Damage to the brain and nervous system
- 2. Behavior and learning problems
- 3. Slowed growth
- 4. Hearing problems
- 5. Headaches

How Does Lead Get Into the Body?

- 1. Hands or other objects covered with lead dust are easily put into children's mouths
- 2. Children eat paint chips or soil containing lead
- 3. Lead dust, especially during renovations that disturb painted surfaces, is easily breathed in

Do I need a Lead-Based Paint Inspection / Risk Assessment?

There are two primary reasons for considering a lead inspection or risk assessment:

- Children under the age of 6 are considered to be at the greatest risk of lead poisoning. Ingesting even small amounts of lead-based paint or dust can cause serious health effects.
- 2. The market value and marketability of your home may be adversely affected by the presence of lead-based paint. Testing prior to purchase will enable you to invest wisely and take the steps necessary to enhance the resale value of your property.

If you think your home has high levels of lead:

- 1. Get your young children tested for lead, even if they seem healthy
- 2. Wash children's hands, bottles, pacifiers, and toys often
- 3. Regularly clean floors, window sills, and other surfaces
- 4. Take precautions to avoid exposure to lead dust when remodeling or renovating (call 1-800-424-LEAD for guidelines)
- 5. Don't use a belt-sander, propane torch, dry scraper, or dry sandpaper on painted surfaces that may contain lead
- 6. Don't try to remove lead-based paint

Common Sources of Lead-based Paint

Sources of lead poisoning dangers include house paint, decorated china, water pipes, fishing tackle, fine crystal, and old comic books to name just a few. Homes built prior to 1978 are likely to have been painted with lead-based paint. It is important to remove old car batteries from your property; store old comic books away from children and heat sources; and check crystal and china for the presence of lead. If lead is present, don't use them for serving.

Radon

Radon is a Cancer-Causing, Radioactive Gas

You cannot see, smell, or taste radon but it still may be a problem in your home. Radon is a naturally occurring soil gas that is the result of the breakdown of uranium in rock and soil. As this gas makes its way out of the ground, it finds its way into homes. When you breathe air containing radon, you increase your risk of getting lung cancer. In fact, the Surgeon General of the United States has warned that radon is the second leading cause of lung cancer in the US today. If you smoke and your home has high radon levels your risk of lung cancer is especially high.

You should test for Radon

The EPA recommends that you know what the indoor radon level is in any home you consider buying. Ask the seller for their radon test results. If the home has a radon-reduction system, ask the seller for any information they have about the system.

If the home has not yet been tested, you should have the house tested. Any home can have a radon problem. This means new and old homes, well-sealed and drafty homes, and homes with or without basements.

Myths and Facts

The following list of Radon Myths and Facts is taken from the EPA publication *Home Buyer's and Seller's Guide to Radon*

MYTH #1: Scientists are not sure that radon really is a problem.

FACT: Although some scientists dispute the precise number of deaths due to radon, all major health organizations (such as the Centers for Disease Control, The American Lung Association, and The American Medical Association) agree with estimates that radon causes thousands of preventable lung cancer deaths every year. This is especially true among smokers, since the risk to smokers is much greater than to non-smokers.

MYTH #2: Radon testing devices are not reliable and are difficult to find.

FACT: Reliable radon tests are available from qualified radon testers and companies. Active radon devices can continuously gather and periodically record radon levels to reveal any unusual swings in the radon level during the test.

MYTH #3: Homes with radon problems cannot be fixed.

FACT: There are solutions to radon problems in homes. Thousands of home owners have already lowered their radon levels. Radon levels can be easily lowered by a qualified mitigation contractor.

MYTH #4: Radon only affects certain types of homes.

FACT: Radon can be a problem in all types of homes, including old homes, new homes, drafty homes, insulated homes, homes with or without basements. Local geology, construction materials, and how the home was built are among the factors that can affect radon levels in homes.

MYTH #5: A neighbor's test result is a good indication of whether your home has a radon problem. **FACT:** It is not. Radon levels vary from home to home. The only way to know if your home has a radon problem is to test it.

Myth #6: It is difficult to sell a home where radon problems have been discovered. **FACT:** There is not a negative impact on the sale of a home where radon has been fixed. The added protection is often a good selling point.

> More information about radon is available at http://www.epa.gov/iag/radon/

Home Improvement Costs

The following costs are intended as ballpark estimates for repairs and/or improvements to a typical three bedroom home. Our experience has shown that actual contractor quotations can very by as much as 300%. Naturally, the quality of workmanship and materials will influence costs. The complexity of the job, accessibility and even economic conditions can also alter actual costs.

ROOFING / FLASHINGS/ CHIMNEYS

Install conventional asphalt shingles over existing shingles Strip and reshingle on medium sloped roof Strip and reshingle on steep, high or complex roof Strip and re-roof with cedar shingles Strip and replace built-up tar & gravel roof Strip and replace single-ply membrane Reflash typical skylight or chimney Rebuild typical chimney above roof line Repoint typical chimney above roof line

EXTERIOR

Install galvanized or aluminum gutters and downspouts Install aluminum soffits and fascia Install aluminum or vinyl siding Repoint exterior wall (soffit mortar) Repoint exterior wall (hard mortar) Parge foundation walls Damp proof foundation walls and install weeping tile Install a deck Resurface existing asphalt driveway Install interlocking brick driveway Rebuild exterior basement stairwell Build detached garage (single) Build detached garage (double) Build retaining wall (wood) Build retaining wall (concrete) Painting (trim and wall surfaces)

STRUCTURE

Underpin one corner of house Underpin or add foundations Lower basement floor by underpinning and/or bench footings Replace deteriorating sill beam with concrete Install basement support post with proper foundation Perform chemical treatment for termites Repair minor crack in poured concrete foundation

ELECTRICAL

Upgrade electrical service to 100 amps (incl. new panel) 1000 - 1300Upgrade electrical service to 100 amps (suitably sized panel already exists) \$500 - 800 Upgrade electrical service to 200 amps \$1800 - 2200 Install new circuit breaker panel \$500 - 800 Replace circuit breaker (20 amp or less) \$50 - 100 Add 120 volt circuit \$150 - 300 Add 240 volt circuit \$250 - 400 Add conventional receptacle \$150 - 300Replace conventional receptacle with ground fault circuit receptacle 60 - 90Rewire electrical outlet with reversed polarity (assuming electrician is already there)

\$1.50 - 2.50 per sq.ft. \$2.50 - 3.50 per sq.ft. \$4.00 - 7.00 per sq.ft. \$7.00 - 10.00 per sq.ft. \$8.00 - 12.00 per sq.ft. (min. \$1000) \$6.00 - 10.00 per sq.ft. (min. \$750) \$300 - 500 \$150 - 300 per lin.ft. (min. \$400) \$6.00 - 8.00 per sq.ft. (min. \$250)

\$4.00 – 5.00 per lin.ft. (min \$500) \$8.00 – 12.00 per lin.ft. \$3.50 - 5.00 per sq.ft. \$3.00 - 4.00 per sq.ft. (min. \$200) \$6.00 - 8.00 per sq.ft. (min. \$200) \$3.00 - 4.00 per sq.ft. \$150 - 200 per lin.ft. (min. \$1000) \$25 - 40 per sq.ft. \$2.50 - 4.00 per sq.ft. \$6.00 - 800 per sq.ft. \$3500 - 5000 \$8000 and up \$12,000 and up \$20 - 25 per sq.ft. \$30 - 40 per sq.ft. \$3000 and up

\$3500 and up \$300 and up per lin.ft. \$200 – 300 per lin.ft. (min. \$5000) \$60 and up per lin.ft. (min. \$500) \$300 – 500 \$1800 and up \$400 – 800

HEATING

Install mid-efficiency forced-air furnace Install high-efficiency forced-air furnace Install humidifier Install electronic air filter Install electronic air filter Install mid-efficiency boiler Install high-efficiency boiler Install circulating pump Install chimney liner for gas appliance Install chimney liner for oil appliance Install programmable thermostat Remove oil tank from basement Remove indoor oil tank Remove abandoned underground oil tank Replace radiator valve Add electric baseboard heater Convert from hot water heating to forced-air (bungalow) Convert from hot water heating to forced-air (two story) Clean ductwork	2000 - 4000 3500 - 6000 200 - 400 500 - 800 500 - 9000 400 - 600 400 - 800 700 - 1800 200 - 300 400 and up 1200 - 2500 3000 and up 75 - 150 250 - 400 8000 - 10000 15000 - 20000 200 and up
COOLING / HEAT DUMDS	
Add central air conditioning on existing forced-air system Add heat pump to forced-air system Replace heat pump or air conditioning condenser Install ductless air conditioning system	\$2000 – 4000 \$4000 – 5000 \$1200 – 1500 \$3000 and up
INSULATION	
Insulate open attic to modern standards	\$0.70 - 1.80 per sq.ft.
Blow insulation into flat roof, cathedral ceiling or wall cavity	\$2.00 - 3.50 per sq.ft.
Improve attic ventilation	\$40 – 50 per vent
PLUMBING Replace galvanized piping with copper (2 story with one bathrood Replace water line to house Replace toilet Replace basin, including faucets Replace basthtub, including ceramic tile and faucets	m) \$2000 – 3000 \$2000 and up \$400 and up \$500 and up \$2500 and up
Install whirlpool bath, including faucets	\$3000 and up
Replace leaking shower stall pan	\$000 - 1200 \$1000 - 1600
Rebuild tile shower stall	\$1500 - 2500
Replace laundry tubs	•
	\$250 - 500
Remodel four-piece bathroom completely	\$250 – 500 \$6000 and up
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump	\$250 – 500 \$6000 and up \$3000 and up \$800 and up
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump	\$250 – 500 \$6000 and up \$3000 and up \$800 and up \$400 – 600
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom	\$250 – 500 \$6000 and up \$3000 and up \$800 and up \$400 – 600 \$4000 and up
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom	\$250 – 500 \$6000 and up \$3000 and up \$800 and up \$400 – 600 \$4000 and up
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drawall over plaster	\$250 – 500 \$6000 and up \$3000 and up \$800 and up \$400 – 600 \$4000 and up \$1.50 – 2.50 per sq.ft
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drywall over plaster Sand and refinish hardwood floors	\$250 – 500 \$6000 and up \$3000 and up \$800 and up \$400 – 600 \$4000 and up \$1.50 – 2.50 per sq.ft. \$1.50 – 3.00 per sq.ft.
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drywall over plaster Sand and refinish hardwood floors Install replacement windows	\$250 – 500 \$6000 and up \$3000 and up \$800 and up \$400 – 600 \$4000 and up \$1.50 – 2.50 per sq.ft. \$1.50 – 3.00 per sq.ft. \$50 – 100 per sq.ft.
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drywall over plaster Sand and refinish hardwood floors Install replacement windows Install storm window	\$250 - 500 \$6000 and up \$3000 and up \$400 - 600 \$4000 and up \$1.50 - 2.50 per sq.ft. \$1.50 - 3.00 per sq.ft. \$50 - 100 per sq.ft. \$100 - 300
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drywall over plaster Sand and refinish hardwood floors Install replacement windows Install storm window Install masonry fireplace (if flue already roughed-in) Install mare decrement fireplace (if shurding chimner)	\$250 - 500 \$6000 and up \$3000 and up \$800 and up \$400 - 600 \$4000 and up \$1.50 - 2.50 per sq.ft. \$1.50 - 3.00 per sq.ft. \$50 - 100 per sq.ft. \$100 - 300 \$2000 and up
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drywall over plaster Sand and refinish hardwood floors Install replacement windows Install storm window Install masonry fireplace (if flue already roughed-in) Install zero-clearance fireplace (including chimney) Install dass doors on fireplace	\$250 - 500 \$6000 and up \$3000 and up \$800 and up \$400 - 600 \$4000 and up \$1.50 - 2.50 per sq.ft. \$1.50 - 3.00 per sq.ft. \$50 - 100 per sq.ft. \$100 - 300 \$2000 and up \$3000 and up \$300 and up
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drywall over plaster Sand and refinish hardwood floors Install replacement windows Install storm window Install storm window Install zero-clearance fireplace (including chimney) Install glass doors on fireplace Install skylight	\$250 - 500 \$6000 and up \$3000 and up \$800 and up \$400 - 600 \$4000 and up \$1.50 - 2.50 per sq.ft. \$1.50 - 3.00 per sq.ft. \$50 - 100 per sq.ft. \$100 - 300 \$2000 and up \$3000 and up \$300 and up \$1500 - 3000
Remodel four-piece bathroom completely Connect waste plumbing system to municipal sewers Install submersible pump Install suction or jet pump Install modest basement bathroom INTERIOR Add drywall over plaster Sand and refinish hardwood floors Install replacement windows Install storm window Install masonry fireplace (if flue already roughed-in) Install zero-clearance fireplace (including chimney) Install glass doors on fireplace Install skylight Remodel kitchen completely	\$250 - 500 \$6000 and up \$3000 and up \$400 - 600 \$4000 and up \$1.50 - 2.50 per sq.ft. \$1.50 - 3.00 per sq.ft. \$50 - 100 per sq.ft. \$100 - 300 \$2000 and up \$3000 and up \$300 and up \$1500 - 3000 \$15000 and up

In Search Of The Perfect House

THE 1% RULE

Back to top

When you consider the life cycle of every component of a house, a reasonable annual estimate of the cost of normal maintenance is 1% of the value of the house. One year you may replace the furnace; a few years down the road you may re-surface the roof. Throw in the odd unexpected repair in between and you average 1% per year. It's incredible but this rule is not far off even for very expensive and very inexpensive houses.

NORMAL MAINTENANCE

If you strip away the cosmetics, a house is made up of the structure, roof, exterior envelope and the "systems" of the house. The "systems" are things like heating, plumbing, electrical and cooling.

All components and systems eventually wear out. Fortunately, they don't all wear out at the same time. Different components have different life cycles. Houses tend to settle into what you might call a "normal maintenance pattern".

WHAT'S THE MESSAGE HERE?

A homebuyer should arrive at the home inspection with realistic expectations. If you are buying a 12 - 15 year old home, let's face it, you may need a new roof covering. If you are buying a 60 year old home, you may have to update some plumbing. Don't let this scare you away from a perfectly good home.

HOW LONG DOES IT LAST?

On the following page is a short list of typical life cycles of the most common components of the home. Please keep in mind that there will be exceptions in every category.

<u>ROOF</u>

Conventional asphalt shingles	12 - 15 years
Top quality asphalt shingles	25 - 30 years
Low slope shingles	10 - 15 years
Slate	40 - 200 years
Tar & gravel roof (built up roof)	15 - 20 years
Single ply roof membrane	15 - 20 years
Roll roofing	5 - 10 years

EXTERIOR

Gutters & downspouts	20 - 30 years
Copper gutters and downspouts	50 - 100 years
Aluminum siding	50 plus years
Wood siding	Maintenance dependent
Stucco	Maintenance dependent
Exterior paint	4 - 6 years
Deck	10 - 20 years
Asphalt driveway surface	10 - 20 years
Driveway sealer	1 - 3 years
Concrete driveway	30 - 40 years
Garage door opener	8 - 12 years

STRUCTURE

Termite treatment	10 - 20 years

HEAT

Mid efficiency furnace.20 - 25 yearsHigh efficiency furnace.Unknown, suspect <20 yearElectric baseboard.12 - 15 yearsHeat pump compressor.10 - 15 yearsCast iron boiler35 - 50 years
High efficiency furnaceUnknown, suspect <20 yearElectric baseboard12 - 15 yearsHeat pump compressor10 - 15 yearsCast iron boiler35 - 50 years
Electric baseboard12 - 15 yearsHeat pump compressor10 - 15 yearsCast iron boiler35 - 50 years
Heat pump compressor
Cast iron boiler 35 - 50 years
Copper tube boiler 10 - 20 years
Humidifier 5 - 10 years
Electronic air filter 10 - 20 years

COOLING

Air conditioning	ı condenser	10 - 15 years
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PLUMBING

Galvanized steel supply pipe	40 - 50 years
Copper pipe	Indefinite
Toilet	30 - 40 years
Sink	12 - 20 years
Faucet	10 - 15 years
Whirlpool bath	15 - 20 years
Shower pan	Unpredictable
Submersible pump for well	10 - 15 years
Suction or jet pump	10 - 15 years
Water softener	5 – 15 years
Sump pump	2 - 7 years
Water heater	8 - 12 years
Tile bathtub enclosure	10 - 30 years

INTERIOR

Paint	5 - 10 years
Windows	maintenance dependent