

INSPECTION REPORT FOR CLIENT

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CLIENT

CLIENT
TELEPHONE

CLIENT'S AGENT

AGENT
TELEPHONE

PARTIES PRESENT AT THE INSPECTION

BUYER AND THE SELLERS

RESIDENTIAL INSPECTION ADDRESS

1234 YOUR STREET
YOUR CITY, TEXAS 77---

INTRODUCTION

In accordance with our inspection agreement, I conducted a limited visual inspection of the above referenced residence on ----- . At the time of the inspection, this residence was occupied and furnished. The swimming pool and related equipment are not included within the scope of this inspection. I suggest that you obtain as much historical information about this property as is available. This includes the Seller's Disclosure Notice, any previous inspection reports, appraisals, improvement inspections, building plans, etc.

CONDITIONS AND LIMITATIONS

PURPOSE

The purpose of the inspection is to inform the Client of visually observable major deficiencies in the condition of the inspected systems and items in the subject property at the time of the inspection. This inspection is not intended to be technically exhaustive nor is it intended to reveal all existing or potential defects. Rather, it is a careful but limited visual inspection, intended to assist you in making a more informed decision concerning the purchase of this residence. The information in this report can help to **reduce, but not eliminate the risks associated with the purchase of this structure.** Other engineers/inspectors may have contrasting opinions to those recited in this report.

SCOPE

The inspection to be performed for the Client is a non-invasive visual examination of the systems and items of the subject property and does not include the disassembly of any property or the removal of any object including, but not limited to, furniture, siding or panels that may be obscuring this engineer's visual observations. This inspection does not cover items or conditions that may only be discovered by invasive/destructive methods. Although parts of this inspection are based on certain codes, **this is not a code compliance inspection.**

Since all materials and equipment are subject to deterioration and wear over time, no prediction of future conditions can be made. Major visible defects as they exist on the date of the inspection will be noted in the report, which will be prepared by Jay Fischman after the inspection. **The inspection services to be provided are based on the "Standards of Practice" as found in the Texas Civil Statutes and Policy Advisory 09-98-A published by the Texas Board of Professional Engineers, for Level A residential foundation performance evaluation.** Due to Client's particular needs and the condition of the property, some variation in scope, order of reporting and extent of investigation may be deemed necessary by Jay Fischman. The inspection and report thereon is not a warranty, guarantee, insurance policy, or substitute for real estate transfer disclosures, warranties, or a Seller's Disclosure

Notice, which may be required by law. Verbal discussions and statements made at the inspection site are not necessarily part of this report. **The following are not included within the scope of this inspection:**

- ▶ Past or present violations of codes, ordinances, deed restrictions or manufacturer installation instructions.
- ▶ Geological stability, soil tests, ground conditions, subsidence, the location of any geological fault relative to the location of this site, or the determination if site is in any designated flood hazard area.
- ▶ Determination of the presence of termites, other wood destroying insects, wood rot and/or hidden structural parasitic damage and the extent of any such damage, can only be made by a Texas Structural Pest Control Licensee. This engineer is not so licensed.
- ▶ Determination of the presence of asbestos materials or air-borne fibers, radon gas, lead in water/paint, mercury, formaldehyde, bacteria, viruses, mold, fungi, dander, spores, pollen, insect parts, insect feces, electromagnetic fields/radiation, contaminated water or interior gypsum board (Chinese Drywall) or surface/subsurface soils, or other potential contaminants and environmental hazards. No Indoor Air Quality (IAQ) tests will be performed.
- ▶ Determination of the operational capacity, efficiency, quality, durability, expected life, value, insurability, future performance and/or suitability for a particular use of any part, component, material or system inspected.
- ▶ Determination that all safety hazards have been identified.
- ▶ Determination of absolute structural integrity. This is not possible without an invasive/destructive evaluation.
- ▶ Product Safety Recalls by various manufacturers of appliances and other residential equipment. You can contact the Consumer Product Safety Commission and other government agencies for recalls and safety information at a single web site, www.recalls.gov
- ▶ Estimates of repair on this property. I do not provide repair services and the opinions expressed in this report are independent of the repair process. Only **Licensed Qualified Repair Service Personnel** should be contacted for firm bids to perform the desired prioritized repairs. **Handyman services are not recommended.** You may find that the costs of repair may vary significantly with various repair companies. Sometimes the lowest bid may provide quality results and other times the highest bid may provide inferior results. This engineer shall not be responsible for the means, methods, techniques, procedures or safety precautions followed or neglected by any contractor or worker in connection with any recommended corrective action.

PRIORITIZING CORRECTIVE ACTION

This report may contain recommendations for corrective action and other comments about specific systems, components and/or equipment in this residence. Since some buyers have different feelings about what constitutes a major or minor problem, you should prioritize those items in need of corrective action according to your standards. The recommendations in this report have been made without regard to any purchase contract repair allowance.

CONSULTING SERVICES FEE

The fee paid to me by Client is for consulting services only and is unrelated to the value of any item, component or system inspected. Since all materials and equipment are subject to deterioration and wear over time, no prediction of future conditions can be made. **This engineer is not an insurer and this report should not be considered as, nor is it, a warranty/guarantee of the adequacy, performance, or useful life of any item, component or system. This report is not intended for home warranty or insurance underwriting purposes. Home warranty companies should provide their own inspections that meet their underwriting standards, prior to issuing any warranty policy. Additionally, please note that I do not provide reinspection services to determine if any or all deficiencies were corrected.**

REPORT & THIRD PARTY RELIANCE

This report expresses the personal opinions of this engineer, based on previously stated inspection standards, for this particular Client. You are not authorized to cut, paste or otherwise manipulate the text and any graphics in this report. This report represents the exclusive work product of this author and any changes made by other persons **shall render the entire report null and void.**

This property may have many desirable qualities, but this report generally provides information and comments about discrepancies. The use of or reliance on the observations and opinions provided in this report by anyone other than

this Client, particularly those who were not present at the time of this inspection, is not recommended as a substitute for a current inspection. This report is the property of this engineer was prepared for the above named Client only. The report is **not transferable** to any other person or entity in any form. **You are not authorized to sell copies of this report.**

Any subsequent buyer of this property should engage another engineer/inspector to conduct a current inspection. This engineer shall not be responsible or liable for any such "third party" reliance or for the unauthorized use of copies of this report, including those that may have been altered or have had pages removed. **Permission is granted to discuss report findings with real estate agents, specialists, counselors, repair persons, or other parties intimate to this transaction for the sake of clarification.**

DEFINITION OF TERMS

CODE: The legal requirements of local and/or other governing bodies concerning the construction and occupancy of a residential structure. The enactment and enforcement of codes is intended to safeguard the public's health, safety and welfare.

CONDENSING UNIT: The exterior component of the a/c system containing the compressor, that converts refrigerant gas to liquid refrigerant, which is then supplied to the evaporator (cooling coils).

CORRECTIVE ACTION: Items listed under "CORRECTIVE ACTION" did not appear to function or perform adequately and are in need of immediate attention or further evaluation. Delay in repair, adjustment or further evaluation, may have a negative effect on other related systems.

DAMAGE/DISTRESS: Mortar fractures, gypsum board fractures, splits in framing members, wall/wall and wall/ceiling separations, trim/molding separations, buckling siding, etc.

DEFICIENCY: A condition that, in this engineer's reasonable opinion, adversely and materially affects the performance of a system or component or constitutes a hazard to life, limb, or property as specified by the standards referenced above. General deficiencies include, but are not limited to; inoperability, material distress, water penetration, damage, deterioration, missing parts and unsuitable installation.

EVAPORATOR: The cooling coil component of the a/c system in which vaporization of the refrigerant occurs, absorbing heat from the surrounding environment and producing cool air.

FAILURE COSMETIC: Distress that includes cracks in gypsum board and brick veneer, wall paper that has been stretched or rippled at wall/wall corners, walls that are no longer as plumb as they should be, floors that are no longer as level as they should be, doors that no longer fit properly, etc. Any concrete fracture is normally cosmetic if no faulting or slippage has occurred along the fracture.

FAILURE-PERFORMANCE: This type of failure is denoted by some reduction in the operation or functioning of various components. The binding, sticking or inoperative conditions of various components such as windows and doors, as a result of structural and/or foundation movement within a residence. Unlevel floors make furniture placement difficult. This determination of reduced performance made by the examining engineer is extremely subjective.

FAILURE-STRUCTURAL: A deficiency of a structural element that makes it unable to continue the load-bearing function for which it was originally designed. An example of this is commonly found in attics where rafters have separated from the ridge board and therefore no longer bear properly on the ridge board.

FIRE RATED DOOR: A fire resistant door that is usually provided with a door closer mechanism in attached garages.

GFCI: An electrical safety device called a Ground Fault Circuit Interrupter.

GROUNDING: Descriptive of an object that is electrically connected to the earth via a conductor.

HEARTH: The floor of a fireplace and any adjacent floor area of fireproof material.

LINTEL: A horizontal supporting metal member installed above a window, door or fireplace opening that serves to carry the weight of the wall above it.

N/A: Used to indicate that the item did not exist at the property at the time of the inspection.

NO COMMENT: Items marked or referred to as "NO COMMENT" are not covered in this inspection report. "NO COMMENT" does not necessarily indicate that the item does not exist, but that this engineer did not or was unable to conduct an inspection of the item during the inspection.

PLENUM: A closed chamber used to return or supply conditioned air in a forced air heating/cooling system.

POST-TENSIONED CONCRETE: A concrete slab having reinforcing cables/tendons, which have been tensioned after the concrete has set.

PURLIN: A horizontal structural member used to support roof rafters via struts.

REVERSED POLARITY: An electrical condition where the hot and neutral conductors are reversed in a polarized receptacle.

SATISFACTORY: Items marked or referred to as "SATISFACTORY" appear to be in functional condition. An item or system with cosmetic and/or minor damage not affecting the use of the item or system may be classified as satisfactory. No representation is made as to any item's or system's overall condition or future performance.

STRUT: A support for framing, usually in the attic.

PROPERTY DESCRIPTION

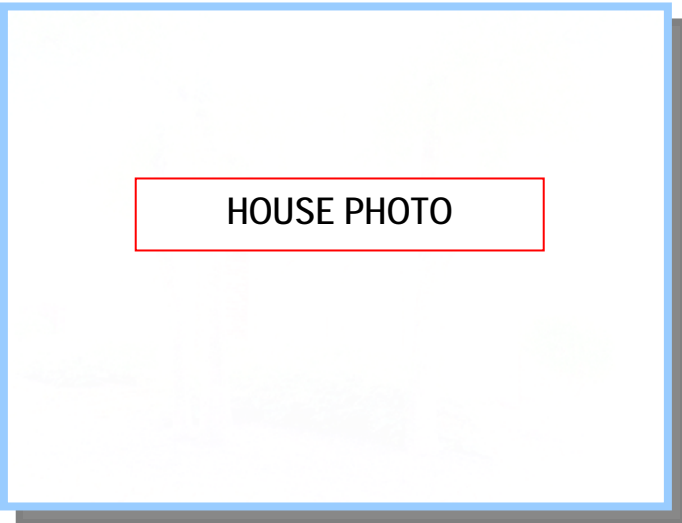
The structure inspected is a 2 story single family residence with a 2 car detached garage. The structure is approximately 24 years old and the front faces a southerly direction. At the beginning of the inspection, the weather conditions were partly sunny, very warm and humid. The pool and related equipment are not part of this inspection.

EXTERIOR

BRICK VENEER

Brick veneer and siding formed the exterior walls. Brick veneer walls provide protection from the elements, provide an intended aesthetic appearance, **but do not support any vertical loads other than the veneered wall itself. The stud wall framing carries the structural loads.**

Most brick masonry units are made from clay or shale, formed while plastic and fired in a kiln. Some are more resistant than others to water absorption. Nearly all of the Texas manufactured extruded bricks are machine made and do not absorb a significant amount of water. The bricks forming these walls appear to be extruded, kiln fired and were in satisfactory condition today.

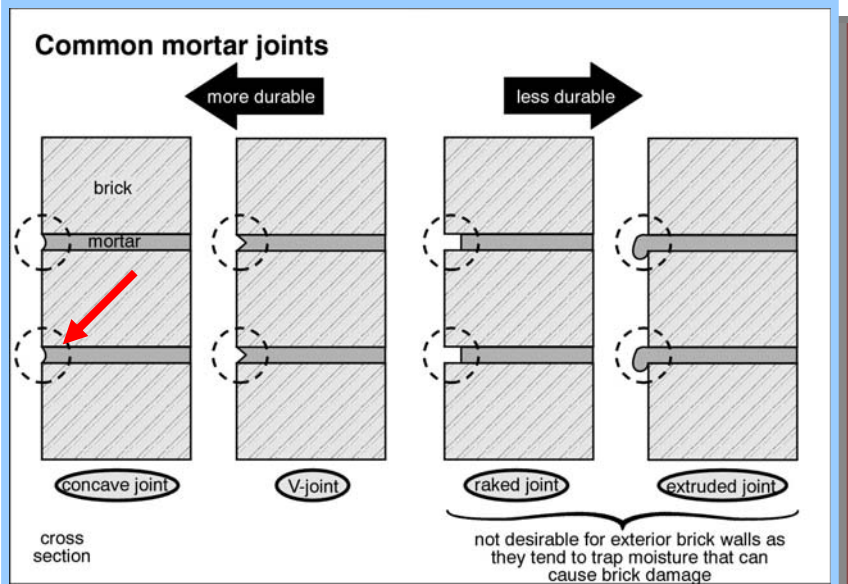


It is possible for water to penetrate through mortar joints, especially during periods of prolonged wind driven rain. Two story brick walls are more likely to experience water penetration, especially when proper bricklaying techniques are not followed. **Generally, the following acceptable techniques are violated to some extent in this area.**

- o Following mortar proportions and mixing instructions.
- o Using full head joints and full unfurrowed bed joints.

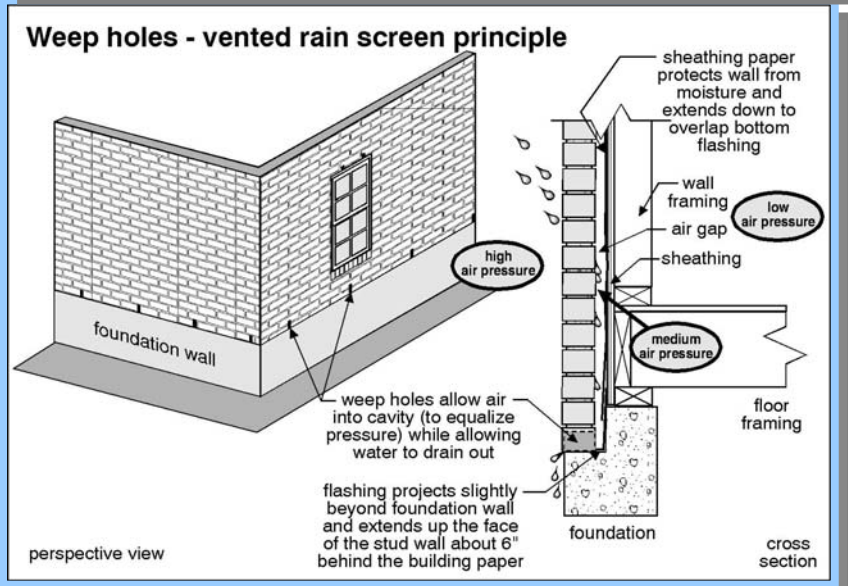
- o Maintaining clean cavities, otherwise weep holes will be blocked.
- o Laying bricks on mortar spread only several feet at a time during summer heat.
- o Using approved flashings under and behind windowsills and the first course of bricks.
- o Proper type, spacing and positioning of brick veneer ties. Brick veneer and other masonry assemblies must be securely anchored to the vertical support elements. These include stud walls in the case of brick veneer construction. These brick ties or anchors are made in various shapes from several types of metals including galvanized steel. An invasive/destructive evaluation would be necessary to comment on the presence and condition of any brick ties.

Other than commenting on the type of mortar joint used, it is not possible with this type of inspection, to determine if the preceding criteria have been met. **The concave type mortar joint used on this house is one of the most water tight.**



BRICK VENEER-WITH SOME EXPANSION JOINTS

Expansion joints are used to separate brick masonry into segments to prevent cracking due to changes in wall temperature, moisture expansion, elastic deformation, creep and other foundation or structural movement. The joints are formed of highly elastic materials placed in a continuous, unobstructed opening through the single thickness brick wall or section. Although the primary purpose of expansion joints is to accommodate movement, the joint must also resist water penetration and air infiltration. Mortar should not bridge the expansion joint and thereby restrict movement of the joint. **The joints located at the side walls appeared to be in satisfactory condition.**

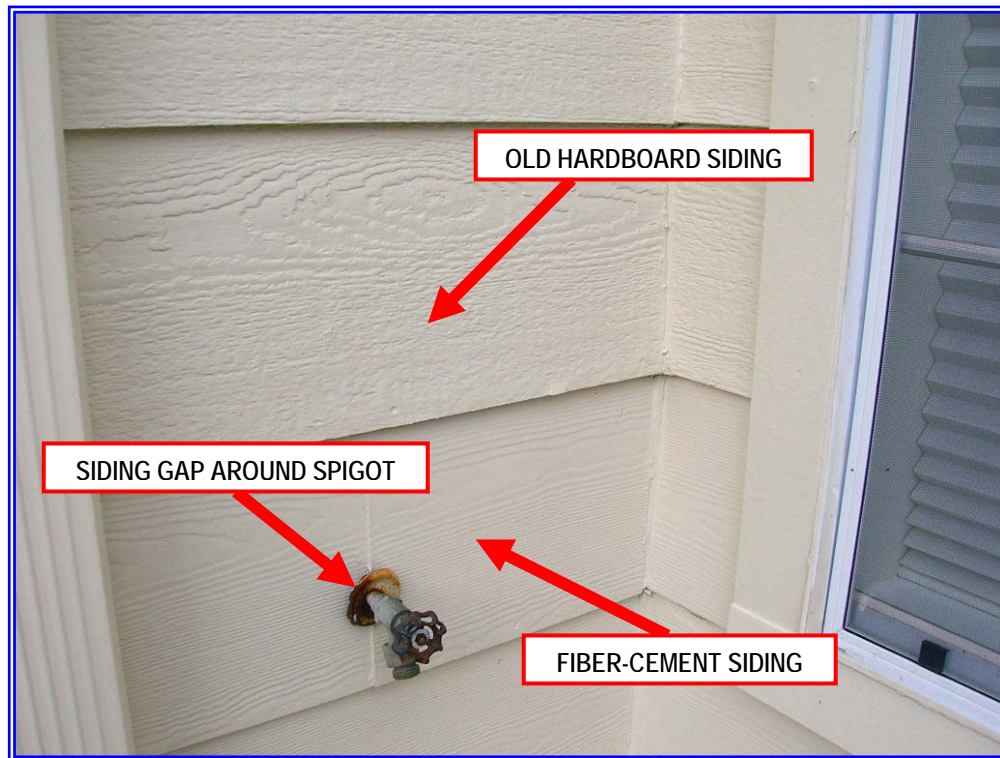


WEEP HOLES

Weep holes are openings placed in mortar joints at the level of any flashing such as window lintels and at the 1st course of bricks in order to permit the escape of moisture. The lack of weep holes above metal window lintels may contribute to lintel corrosion and the lack of weep holes at the 1st course of bricks over the slab brick ledge may contribute to interior water penetration at floor level and wall stains. Mortar droppings behind the veneer wall may restrict air flow and water drainage. Any water penetration within the brick veneer wall becomes a conducive condition for wood destroying insects and interior damage. **Lower level exterior veneer wall weep holes were provided. The presence or condition of any flashing behind the weep holes is unknown to me.**

HARDBOARD SIDING – Original Material

Hardboard siding is made of compressed wood fibers that are bonded together with special resins. It can experience severe deterioration and mold/mildew growth when water collects behind the siding. Water penetrates behind the siding during wind driven rain, as a result of capillary action and/or condensation due to changing temperature and humidity conditions. Repeated wet/dry cycles cause the fibers to separate and in time the siding crumbles. I have no knowledge if the siding has been primed on the back side or at the end cuts with an approved sealer to prevent moisture absorption. This is one of the most neglected procedures in the building industry. Sidings made from fiber-cement materials do not suffer from these problems. Most of the siding is the original hardboard type.



HARDBOARD SIDING AT UPPER LEVELS – FIBER-CEMENT SIDING AT LOWER LEVELS

FIBER-CEMENT SIDING

The siding installed appears to be a fiber-cement type and was in satisfactory condition. This material is generally composed of Portland cement, ground sand, cellulose fiber, selected additives and water. Depending on the manufacturer, this material generally will not rot, is immune to permanent water damage, salt spray, can withstand termite intrusion and hurricane force winds up to 130 mph, provided it is attached to the walls according to the manufacturer's installation methods. It demonstrates no flame support or loss of integrity when tested according to certain national standards. Available in many surface textures, it holds paint extremely well. The material has been installed at some lower level areas and at the south wall.

EXTERIOR WOOD SURFACE MAINTENANCE

Periodic caulking, painting, and occasional repair will be necessary to help prevent extensive damage to the structure from the elements. Painting problems are usually caused by moisture problems. Most paint fails when moisture causes it to lose adhesion resulting in peeling, flaking, blistering and disintegration of the paint to bare wood. Moisture can usually be traced to poor surface preparation that allows unfilled gaps, cracks and seams, leaky gutters, faulty flashing, or defective roof shingles to permit moisture intrusion. The moisture works its way behind the paint film and the resulting pressure forces the paint from the substrate. The only lasting solution to correct moisture problems is to eliminate the source of the moisture. **Note that the exterior was repainted last April.**

MISCELLANEOUS EXTERIOR STRUCTURE	COMMENTS
WINDOWS & TRIM	SATISFACTORY
INSTALLED WINDOW SCREENS	SATISFACTORY
BRICKS	SATISFACTORY
HARDBOARD SIDING – Some lower laps of the older siding were puffy	AGING
FIBER-CEMENT SIDING	SATISFACTORY
EXTERIOR DOORS & TRIM	SATISFACTORY
GARAGE OVERHEAD DOOR	SATISFACTORY
DRIVEWAY – 2 new sections installed December 2009	SATISFACTORY



WOOD POST MAKING CONTACT WITH PATIO CONCRETE

SOIL LINE/DRAINAGE

Inspection of the perimeter did not reveal any visible contact of soil to siding or bricks. The soil should always be kept an adequate distance below the top of the foundation ensuring ample drainage away from the structure. Periodically, monitor the exterior of the structure during heavy rainfall. If water does not drain after a reasonable period of time after the rainfall, measures to provide adequate drainage away from the structure should be employed. The overall effectiveness of any underground drains was not determined. Observation of the actual drainage conditions during heavy rainfall would be necessary to determine if the existing conditions are satisfactory. There was very heavy rainfall yesterday, but there was not standing water around the house today.

▶ EXTERIOR DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION

1. The rear patio exterior wood post was in direct contact with exterior concrete. To minimize lower level deterioration from the elements, wooden posts should be separated from the concrete by approved spacers or mounting devices.
2. Seal gap along the vertical siding trim at the rear north corner.
3. Seal hose spigots where they pass through the exterior walls.

ROOF

DESCRIPTION

The roof is a gable/hip design covered with laminated composition shingles that are nailed over oriented-strand board roof decking. The wind rating of these shingles is unknown to me. Hip roofs designs generally resist damage from high winds better than gable designs. The general condition of the visible roof shingles was observed from the ground level. **If you desire an inspection of the roof materials from roof level, please contact a roofing service company.**

SERVICE LIFE/SHINGLE FASTENERS

No attempt will be made to determine the remaining service life of the shingles, which are approximately 16 years old. Installation techniques, adherence to approved installation standards and house orientation can considerably affect the useful life of any particular roof covering material. Note that shingles begin to deteriorate at the time of installation due to exposure to the elements. Shingles stored for extended periods prior to installation have a reduced life expectancy.

Special nails and/or staples are commonly used to fasten the shingles to the roof decking. Nails are preferred over staples and hand nailing is preferred over pneumatic nailing for maximum shingle life. Pneumatic nailing or stapling can overdrive the fasteners into the shingles and result in an increased likelihood of inadequately secured shingles. Both nails and staples must penetrate the roof decking in order to properly secure the shingles. No comment is made regarding method of driving the fasteners through the shingles, whether all manufacturer installation procedures and standards were followed and the number of nails per shingle. The determination of the number of nails per shingle would require lifting several shingles, which would break the seal between shingles and crack older shingles. This would be a destructive evaluation and destructive evaluations are not included in this inspection. **Visible penetration of the nails through the roof decking was confirmed.**



DARK STAINS ON THE AGING SHINGLES

ROOF LEAKAGE PROBLEMS

Most roof leaks are not from holes in shingles or other types of roof coverings, but from flashing problems. Since many portions of the various metal flashings in any structure are not visible, no comment can be made as to the condition of these hidden flashing areas.

Water or moisture penetration may occur at any time. It is not possible for any human being to state that any roof is water tight or leak free, particularly if significant rainfall did not occur during or just prior to the inspection. Under severe weather conditions with wind driven rain or extended periods of rainfall, any roof may develop leaks. Any significant amount of rainfall accompanied by gusts, high winds and/or flying debris may damage the roof covering. Additionally, nearly all window/door frames will not prevent horizontal wind driven rain from entering the structure.

ROOF COVERING CONDITION

Manufacturers advertise/describe "25 year" or "30 year" or "40 year" shingles. These numbers refer to a warranty provision and not to the anticipated service life of the shingles, which is approximately 15-18 years in this area. Overall, the roof covering (top layer) was considered to be serviceable, but it appeared to be generally in the later stages of its useful service life. Metal drip edge molding was installed. The fiberglass matt was visible around the edges of many shingles. When this occurs, it is time to consider shingle replacement. **Because of advancing age, long term shingle life should not be anticipated.**

ROOF STAINS

I observed stains and dark discoloration on various shingles. Various algal, fungal, lichenous and cyanobacterial biological growths generally cause these conditions. The result is an unsightly appearance that may be mistaken as soot, dirt, moss, or tree drippings. The species of algae usually observed in this area is *Gloeocapsa*, which is transferred through the air and deposited on the roof covering where it continues to grow. The "stain resistant" shingles available from some manufacturers offer 5+ years of resistance and then capitulate to this growth. Under unusually excessive growth conditions, the UV radiation absorbed by this dark growth can have a negative effect on the shingles and thereby reduce life expectancy.



EXPOSED FIBERGLASS MATT AROUND THE EDGE OF THE SHINGLES

MAINTENANCE & FUTURE REPLACEMENT

- o Roof materials have a limited service life and may have to be spot repaired as leak sites develop prior to total replacement. Roof maintenance is a continuing need and should include, but is not limited to, keeping the roof clear of debris (leaves, pine needles, etc.), replacing any loose, damaged, or missing flat or ridgerow shingles, and sealing any gaps at the various flashings, including roof protrusions. Avoid using non-laminated shingles.
- o When it becomes necessary to reroof, remove the existing roof layer or layers in order to minimize additional loading to the roof structure and to provide a smooth level surface for the new shingles. **Do not reuse roof protrusion flashings such as plumbing vent pipe roof jacks (lead or neoprene type) and add continuous ridge vents where possible for improved ventilation.**
- o Install self adhesive flashing membrane at the most vulnerable leak areas on the roof planes, such as around vent pipes and along hips, valleys, ridges, rakes and eaves. This material was formerly used for ice dam protection in cold climates, but is very effective for additional leak protection in warm weather applications also.
- o Exceeding minimum installation standards is recommended for roofing replacement.

▶ ROOF DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION

1. The shingles have exposed fiberglass matt around some edges. This denotes the end of useful service life. The roof shingles should be replaced. Any new installation should follow current approved industry standards for materials and installation techniques. Consult with your insurance agent to determine structure insurability with current roof covering condition.

ROOF STRUCTURE/ATTIC**ATTIC ACCESS**

I entered the attic from the 2nd floor ceiling access stairway. Due to reduced head clearance, structural obstructions, and safety considerations, I made my attic observations with a high intensity light from the access, furnace, and decked passageway areas only. No attempt was made to crawl or walk over undecked floor areas. The condition of hidden wood structural members under attic insulation or in areas not readily observable is unknown. Except for very obvious conditions, evaluation of the sizing and spacing of the various framing members and adherence to current approved span tables are not part of this inspection.

Most attic spaces are not designed and constructed for storage. Adding decking to the attic floor to permit storage compresses the existing insulation and results in a significantly reduced "R" rating. The "R" rating is the resistance to heat energy flow between the house ceiling and the attic floor. The higher the number, the higher is the resistance to the flow of heat energy. If you choose to add more floor decking to any attic space and store items of significant weight, you may cause ceiling fractures and increase your heating and cooling energy consumption.



OSB ROOF DECKING WITH RADIANT BARRIER PAINT

ORIENTED-STRAND BOARD SHEATHING

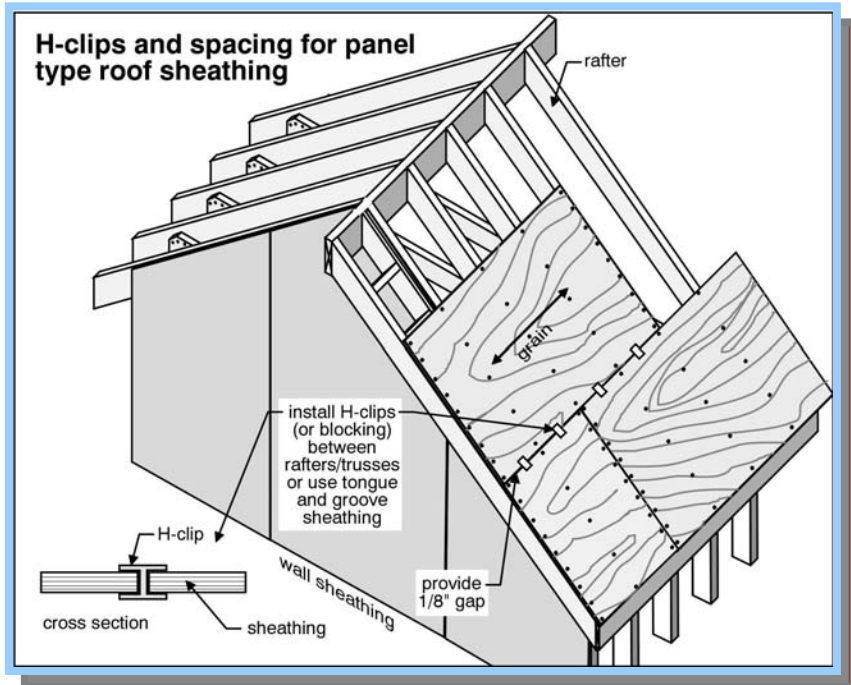
OSB, oriented-strand board sheathing, was installed as roof decking. This type of roof sheathing is made of specifically sized wood pieces, coated with a special resin binder, arranged into layers for maximum strength and stability and then bonded under extreme heat and pressure. OSB generally costs less than comparable size and grade of plywood roof sheathing, but is an acceptable material for roof decking. The effectiveness of the radiant barrier paint is unknown to me.

NO "H" CLIPS

Visual observation of the roof sheathing/decking panels revealed that sheathing or spacer clips, commonly referred to as "H" clips, were not installed between the panels of sheathing. These clips, which are recommended by manufacturers of plywood and oriented-strand compressed board panels, help to maintain uniform spacing between the panels and thus provide space for expansion of the panels during hot and humid weather. Uplifting at the edges of each panel is also minimized. I cannot state if the proper panel spacing was used in lieu of the spacer clips at the time of installation. **This condition did not appear to adversely affect the structure at this time.**

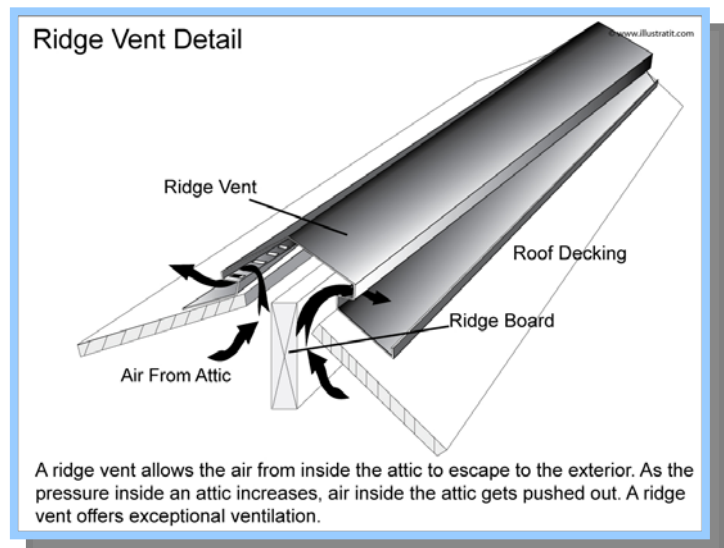
ROOF AND ATTIC FRAMING

The roof framing is a "cut type" or more commonly known as a "stick built type." These terms describe houses and roof structures that are assembled piece-by-piece from lumber at the construction site. Visual observation of the roof planes inside the attic and front the exterior revealed no significant sagging. Where visible, the rafters and the roof sheathing did not reveal any significant damage and there were no excessive separations between the rafters and ridgeboard. Some collar ties were installed. It is best to have collar ties at every other rafter/ridgeboard connection, but that condition is seldom found. The purlins appeared to be adequately sized and in satisfactory condition. Purlins are not always needed for additional roof plane support.



FRAMING VARIATIONS

Most roof and attic structures exhibit framing that does not follow industry standards exactly. I do not recommend corrective action unless there are severe deflections, splits or visibly damaged wood members, or other safety and structural concerns. Since these structures are constructed with a number of redundant wood members, minor variations in assembly and spacing can be tolerated. This is not a code or design specification inspection and except for unusual or visibly severe problems, no comment is made with respect to the adherence to span, material grades, nailing, bracing or other miscellaneous specification schedules.

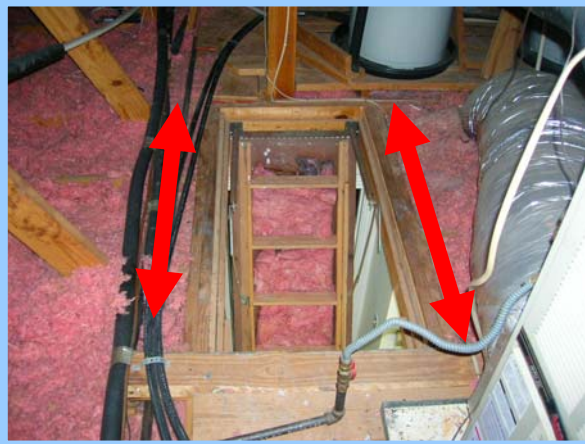


VENTILATION

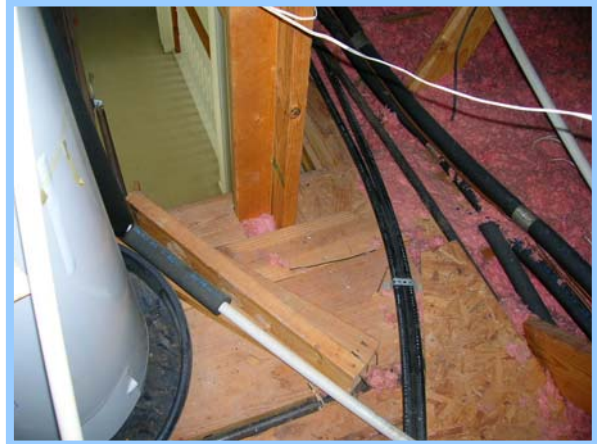
It is important to maintain adequate attic ventilation in order to prevent condensation problems and to reduce the attic heat load. Ventilation of this attic was provided by soffit vents, turbine vents and 1 solar power vent. This configuration appeared to be adequate. **Continuous ridge vents in conjunction with an adequate number of soffit vents provide the most effective attic ventilation.**

ATTIC FLOOR INSULATION

The visible attic floor insulation was a loose-type and roll type material and the thickness varied from 6 to approximately 10 inches. This depth of coverage appeared to be marginal to adequate. The radiant barrier paint may reduce the attic heat load to some extent and offset the need for additional attic floor insulation.



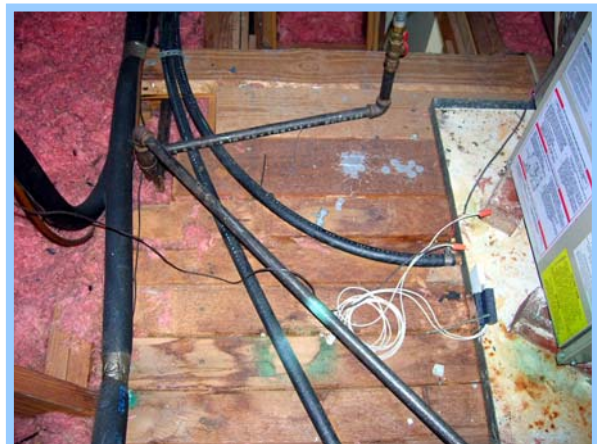
INADEQUATE DECKING ALONG SIDES OF STAIRWAY



FLOOR PIPING RESTRICTS ACCESS TO WATER HEATER



PIPING ON ATTIC FLOOR RESTRICTS ACCESS TO VARIOUS MECHANICAL EQUIPMENT



REMOVE INSULATION BATTS ON STAIRWAY



LOOSE FILL FIBERGLASS INSULATION

▶ ATTIC DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION

1. Inadequate attic floor decking along the sides of the stairway opening to safely enter and leave the attic space. Unfortunately, there are too many pipes on the attic floor along the foot traffic areas. The traffic areas should be unobstructed.
2. Missing fasteners at the attic stairway spring and corner brackets. Use 16d nails. Gypsum board screws are not to be used on the attic stairway.
3. Remove the insulation batts on the attic stairway. Trip hazard.

FIREPLACE

A direct vent fireplace can be vented horizontally out a sidewall or vertically through the roof. The installed direct vent fireplace was vented through the side wall. Having a completely enclosed burner compartment, the vent draws outside air for combustion and expels combustion gases to the outside. The front glass enclosure allows radiant heat to pass into the room without depleting the living space of oxygen or the provided heated air and keeps the room free of fumes and combustion materials such as embers or ash.

The burner was operable using the remote control. Note that delayed ignition can cause an explosion in units with fixed front glass panels. Newer units have explosion doors at the top of the manufactured metal firebox that will open during an such explosion. If you experience delayed ignition, stop using the firebox and call an experienced service technician.



DO NOT COVER THE EXTERIOR VENT

INTERIOR WALLS/CEILINGS/FLOORS

I visually examined the interior surfaces of the walls, ceilings and floors, as related to structural performance and water penetration. The condition of hidden wood structural members in the wall and ceiling cavities, under the attic insulation or in areas not readily observable, is unknown to me. Except as otherwise stated in this report, no opinion as to the condition of these structural members or of the floor coverings is either intended or implied. Any mechanically or glued floor carpeting was not disturbed, nor were any area rugs moved to reveal the floors.

The determination of structural damage to load bearing walls and other hidden areas as a result of wood destroying insects and/or organisms, or excessive moisture, can not necessarily be determined within the scope of this inspection. Hidden damage may be present even though the visible wall and ceiling surfaces appear satisfactory. **Removal of wall coverings or drilling of holes in the walls would be necessary to access, evaluate and determine the extent of any damage to these parts of the structure.**

WATER PENETRATION

Generally, residential structures are designed and constructed so that typical rainfall and surface water will not significantly penetrate to the interior. The roof sheds rainfall, the exterior walls provide a face seal or barrier to repel rainwater and positive soil slope provides drainage away from the structure. Absolute water penetration resistance is not possible, particularly with horizontal wind driven rain that occurs yearly in this geographical area. How leakage through the building envelope is managed via design criteria and construction techniques, is the key to minimum damage and maximum durability.

The inspection for indications of water damage and/or penetration is not intended to verify a leak free condition. Rather, it is intended to identify any water penetration, stains, or damage to the visible walls, ceilings, and readily accessible attic areas. The main categories responsible for water penetration are:

- o Insufficient design detailing
- o Lack of quality workmanship.
- o Lack of proper homeowner maintenance.
- o A combination of or all of the above

Most water penetration occurs at window/door and wall intersections, flashings at wall/wall and wall/roof transitions at roof level, at improperly installed roof penetration flashings and at unsealed roof fasteners. The affected areas may exhibit decaying wood, mold, mildew or other fungus stains. Most houses experience some minor water penetration that does not necessarily affect the visible interior wall and trim surfaces. Evidence of water penetration/leakage, framing damage or fungus growth within wall cavities or hidden areas generally requires an invasive evaluation or the use of testing methods and equipment that are not included in this inspection. It had rained heavily prior to this inspection. No evidence of water damage and/or penetration was visible today.

REPAINTED WALLS/CEILINGS

Recently, some rooms have been partially or completely repainted. I am unable to determine if there were prior stains from plumbing, A/C drain lines or roofing leaks and/or the extent of any patched gypsum board fractures on these wall/ceiling surfaces.

TILE FLOORING

Some floors were tiled in this structure. Ceramic or stone floor tiles are bonded to a variety of materials including concrete slabs using any one of a number of mortar mixtures. Mortars are a wide range of materials made primarily, but not exclusively, of Portland cement, lime, retarders, accelerators, polymers, etc. The thickness of the mortar bed can have a direct effect on the performance of the tiles. Some mixtures are designed for very thin mortar layers and others for thicker layers. Improper mortar selection and/or applied thickness along with tiles fitting flush against wall trim can cause hollow sounds under the tiles, buckling/heaving tiles and/or cracked tiles. I have no knowledge if the proper type or thickness of mortar was used. I have observed failures in just a few months of installation or very sudden failures after many years. The future performance of any tiled floors cannot be determined during this inspection. **Except for a minor hairline tile fracture near the kitchen sink, the existing tiled floors appeared to be in satisfactory condition today.**

PERIODIC INTERIOR EXAMINATION

Most windows, doors, chimneys, roof/vertical wall intersections and roof flashing protrusions **are not impervious** to water penetration, particularly during periods of heavy wind driven rain. Exterior maintenance must be performed on a regular basis for maximum protection from the elements. During heavy rainfall, monitor the interior of the structure, including any accessible attic space, for water intrusion.

WINDOWS

I attempted to operate some of the windows to determine if they could be opened and closed easily. Due to the location of furniture and sometimes stored items on the windowsills, some of the windows may not have been operated. I suggest you attempt to operate all of the windows before you move into the house to verify operation. Maintain at least 1 operable window in each bedroom for emergency egress. All of the selected windows were functional. Broken or cracked windowpanes were not found.

WINDOW SHUTTERS/WATER CONDENSATION

The formation of water condensate on interior surfaces and windows is dependent on a number of factors, particularly the outdoor temperature and the relative humidity inside the home. When condensate does form on the windows, if not wiped off the windows with a soft dry towel, the water condensate will drain downward onto the window sills and lower level trim. Over time, this water will damage any painted, stained or papered surfaces and promote the growth of mold and mildew. **Wood deterioration could result in time.**

Windows covered by drapes and shutters are more likely to have condensation problems and will therefore be more susceptible to damage. Shutters in particular, will exacerbate condensation by trapping the moisture between the windows and the window coverings and thus restricting normal evaporation of the condensate. **Any covered windows should be examined after cold nights for condensate, and if present, wiped dry.**

STAIRWAY

Steps, stairway, balcony, railing, and carpeting inspected for trip or visible safety hazards. A lateral load test was not performed on any guardrails.

WALLS AND/OR CEILING FRACTURES – MINOR MOVEMENT

Differential foundation and/or framing movement can affect the alignment of door frames and the operation of the doors. The readily accessible doorframes were reasonably plumb/square and the doors were operational. The interior walls and ceilings were covered primarily with gypsum board, which showed some indications of minor movement. Some patched areas and fractures were found at, but not limited to, the following locations.

- o Ceiling seam split or fracture repair on the 1st floor hall near the thermostat.
- o Ceiling seam split repaired on the 2nd floor balcony above the front railing area.
- o Ceiling seam split in the 2nd floor front north bedroom.

2ND LEVEL FLOORS

I did not detect any significant sponginess or noticeable deflections while walking on the second level floors. The 2nd level floors revealed many squeaks and grunts, which could be attributed to slightly loose floorboards. This condition is usually difficult to eliminate and did not appear to be a concerning factor with regard to the structure.

FLOOR SLAB

The floor slab inside the house was not visible as it was covered with various floor-covering materials. It is not uncommon for floor slabs to experience some cracking.

- o The residence floor slab did not reveal any excessive deflection or unlevelness.
- o The tiled floors did not reveal any visible cracks.
- o The painted garage floor did not reveal any visible cracks. Most of the garage floor was hidden by stored items and 2 trucks.

► WALL-FLR-CLG DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION

1. 1 of the double doors to the master bathroom did not latch at the top of the frame.
2. Peeling paint on the side wall area at the game room window sills.
3. The 2nd floor front north bedroom entry door was binding in the frame.
4. Returns were not installed at the ends of the stairway handrails. One of the handrails was slightly loose.
5. The balcony guardrail was slightly loose, but may not need any adjustment.

FOUNDATION

FOUNDATION FAILURE/PERFORMANCE

There are no generally accepted and purely objective standards for determining foundation failure. Many engineers prefer to comment on "foundation performance." The determination of foundation performance is a "subjective opinion" based on the knowledge and experience of the inspector coupled with some physical measurements, visual observations and the functional aspects of the structure.

In compliance with the published policy of the Texas Board Of Professional Engineers in Policy Advisory 09-98-A, this engineering foundation performance evaluation is a Level A Investigation. This Level A Investigation is detailed in the Guidelines for the Evaluation and Repair of Residential Foundations – Version 1 as set out by the Texas Section of the American Society of Civil Engineers.

This Level A Foundation Investigation typically includes, but is not restricted to the following:

- o Interviewing the home owner and/or client if possible, regarding a history of the property and the performance of the structure. A "Seller's Disclosure Notice" is one of the important documents used for historical information.
- o Request from client and review any provided documents, such as previous construction drawings, previous geotechnical reports, previous testing and inspection reports and any previous foundation repair information.
- o Make visual observations during a physical walk-through of the subject property.
- o Observe factors influencing the performance of the foundation.
- o Provide a written report describing the scope of services, observations made during the physical walk-through of the subject property and any other data deemed pertinent by the engineer. Discussion of major factors influencing foundation performance and rationale in reaching conclusions concerning the subject property, and recommendations for further investigation and remedial or preventative measures.

Please note that higher level evaluations/investigations that include new geotechnical tests/reports, new slab elevation drawings, new construction drawings, invasive/non-invasive plumbing tests, materials tests and other invasive techniques, are not included in this Level A Investigation.

Properly designed foundations can perform satisfactorily; however, in the real world there can be a great discrepancy between the foundation design and the execution of that design. Sometimes the soils have not been properly prepared before casting the slab or other important factors not considered. Since my presence at the inspection site occurs some time after construction, I am unable to comment on whether the foundation design has been faithfully executed or whether the soils have been properly evaluated and/or prepared.

Slab-on-ground foundations are the most common type of foundation in the Greater Houston Area for residential foundations. When supported by active or expansive soils, this type of foundation will frequently deflect enough to result in cosmetic damage (usually sheetrock, brick veneer cracking and floor tile cracking) and possibly some minor functional problems such as sticking doors. **Any owner of a building founded on a slab-on-grade foundation should be prepared to accept a degree of cosmetic distress and minor functional problems due to foundation movement.**

SOIL CONDITIONS

Generally, foundation movement frequently seen in our geographical area is usually the result of:

- o Soil movement and inadequate consideration to foundation design to cope with the volumetric changes in the soil supporting the foundation. This particularly applies to foundations cast on expansive clay soils in areas of widely variant soil moisture.
- o Poor workmanship in executing the foundation design.
- o Improper preparation of the site below the foundation prior to the placement of the concrete.
- o A combination or all of the above.

An increase or decrease of soil moisture content causes soil movement in clay soils. The best of foundations can show signs of distress with accompanying drywall and masonry damage after periods of severe dryness. Typically, the perimeter of the foundation will settle due to drying and shrinkage of the soil, while the center areas of the foundation will remain at a higher elevation due to retention of moisture. The result is a dome or crown shape of the slab foundation.

Similarly, an unusually wet period will result in damage to structures if the underlying soils have been dry for prolonged periods. The perimeter of the foundation will rise due to swelling of any clay content in the soils. If the soils become saturated, a loss of soil bearing is possible and settlement results.

The potential for swelling of the soil when moist, and shrinking when dry, is measured by a term called the Plasticity Index (PI). Cohesive or highly expansive soils have a high clay content, have a high PI or a high shrink-swell potential. Soils with a low clay content have a low PI or a low shrink-swell potential and are considered slightly to non-expansive.

Some of the soils in Harris County have montmorillonitic clay content. These soils swell when wet and shrink and crack when dry. The pressure can be so great that walls and foundations crack even when specially reinforced. The soils generally found in the area of this house, as described in the SOIL SURVEY OF HARRIS COUNTY, AUGUST 1976, appear to have a low to moderate shrink-swell potential that can vary depending on lot location and soil depth. Only by taking and analyzing core samples from any subject site, can the actual soil conditions be determined. The soils at any subject site may have been chemically or mechanically altered, or fill or landscaping soils brought to the site from other geographical areas, which could have altered the shrink-swell potential. **Some degree of foundation movement can be expected when expansive soils are present.**

Other factors that can contribute to moisture imbalance, detrimental accumulation of water under the foundation and subsequent foundation problems are:

- o Poor drainage of water away from the foundation.
- o Standing water at one or more points around the foundation.
- o Leaking plumbing lines and swimming pools.
- o Non-uniform watering of plants and lawns around the house.
- o Excessive vegetation, plants, and trees adjacent to foundation.
- o **Insufficient watering during dry weather conditions.**
- o Soil erosion

CONCRETE SHRINKAGE CRACKS

Shrinkage occurs due to volumetric changes during the "curing" process. Water content, water/cement ratio, slump or consistency, placement/finishing techniques, proper location of reinforcing steel or cables, ambient temperature during placement and curing additives/methods have an affect on shrinkage. Any one or a combination of these factors may result in the formation of shrinkage cracks. Testing the concrete is beyond the scope of this inspection.

POST TENSION CABLE FOUNDATION

The visible portions of this foundation and interior slab floor were examined for signs of differential movement. The visible condition of the interior/exterior walls and other accessible structural components were observed for evidence and consequences of foundation movement. No comment can be made on the presence or condition of any vapor barrier between the slab and the soil.

Circular grouting at uniform intervals along the perimeter beam suggests that this is a post tension cable foundation. Concrete has very limited tensile strength but has considerable compressive strength. The stress cables or tendons found in this type of foundation are intended to enhance the tensile strength of the slab through the compressive effects of the network of cable tension. Cracks and/or separations that are not open to view (i.e. under various floor coverings, hidden by furniture, concealed by vegetation, etc.) cannot be reported. Cracking is a normal property of concrete and no responsibility is assumed by this inspector/engineer whatsoever should any cracks be found after coverings are removed. I have no knowledge of any soil evaluations that may have dictated a specific foundation design. Differential movement can occur rapidly under certain conditions.

OTHER OBSERVATIONS

The foundation perimeter beam was hidden in areas by a soil line, vegetation and other concrete. These conditions prevented an inspection of these areas for fractures and irregularities. Where visible, the perimeter beam revealed no significant signs of distress.

- o A STANLEY COMPULEVEL INSTRUMENT was used to determine the "relative flatness" of the top of the concrete slab by measuring the elevation of the slab at 23 selected points on the interior 1st floor surfaces with respect to an arbitrary reference point. Most concrete slabs are not level at the time of concrete placement and typical unlevelness and localized high/low areas may have been present initially. Height adjustments were made for variations in the height or thickness of the various floor coverings. The greatest elevation change within the selected points or "relative flatness" was 1.6" which is considered acceptable. Since there is no data available to indicate the "relative flatness" when the foundation was cast, the actual change in elevation due to movement

cannot be determined. Note that these elevation data were collected as supplemental information and may not be adequate to generate a reference datum.

- o The readily accessible window/door frames were reasonably plumb and square.
- o The interior wall/ceiling surfaces revealed several partially repaired ceiling cracks as stated earlier in this report.
- o The brick veneer did not reveal any visible cracks.
- o No significant separation between window/door frames and adjoining brick veneer was visible.
- o The frieze boards were not separated from the brick veneer.
- o Visual sighting along the horizontal brick mortar bed joints revealed no significant deflection.

EMOTIONAL CONSIDERATIONS

Most of the houses in this area are frame structures and a majority of them exhibit signs of differential foundation movement. However, it is only a small number, whose problems are sufficiently significant to warrant remedial foundation work. Usually the functional problems are minor such as; binding doors, gypsum board cracks, brick and mortar cracks, and the like.

- o Some foundation movement can be expected as a result of seasonal soil moisture changes beneath foundation.
- o Gypsum board cracks may become more numerous and wider with aging of structure.
- o Periodic repair of cosmetic distress should be considered a normal maintenance item and does not necessarily indicate a serious structural problem. This includes ripples under wallpaper and small wood trim separations.
- o House additions can be expected to move independently of the main structure and exhibit separations or other fractures where the two structures meet.
- o Searching for a residence without any fractures, and expecting the structure to remain free of fractures as the years go by, is an unrealistic expectation.

MOISTURE CONTROL

Achieving and maintaining moisture equilibrium in the soils around the structure is the goal of a watering program in both new and existing structures. Generally, the history of landscaping and watering around an older home that has experienced foundation distress is usually not known to the inspector or homebuyer.

A recommended maintenance program for controlling the rate of differential movement includes maintaining proper drainage around the house in such a way that water runs away from the house and off the site using surface or underground drainage systems. A suggested degree of soil slope at the perimeter of the house would be 4 inches in the first 4 feet of distance. A properly installed gutter and downspout system, directing water away from the house, can be beneficial for controlling water runoff and minimizing soil erosion.

The above drainage measures, coupled with liberal watering of the soil at times of excessive dry periods, may aid in controlling the rate of movement. Water should never be poured directly into an open crack that might develop in dry soil adjacent to the face of the foundation perimeter. A better procedure when watering is to place a soaker hose 6 to 18 inches from the perimeter for more efficient water distribution. **Excessive watering can also be detrimental when fine sands or silts are present.** Any method that controls and extricates excess surface water is beneficial to foundation stability.

FOUNDATION OPINION

The foundation appeared to be providing adequate support for this structure based on a limited visual inspection today. There were only minor ceiling seam separations found today. The highest floor elevation was measured at the rear of the breakfast room and the lowest was at the utility room front window. The difference across these points was approximately 1.6 inches, which is satisfactory.

BARRIERS FOR SWIMMING POOLS - SPAS - HOT TUBS

An outdoor swimming pool, including an in-ground or on-ground pool, hot tub or spa, should be provided with a barrier. This barrier, along with other design controls, is intended to provide protection against potential drownings and near drownings by restricting access to swimming pools, spas, and hot tubs.

The requirements for the design of these barriers and related safety controls are lengthy, vary with the controlling municipality, and are beyond the scope of this inspection. Some of the design controls include, but are not limited to; height of barrier, clearance between barrier and grade, size of barrier openings, design of solid barriers, design of chain link barriers, access gates, self latching features, pool power safety covers, alarms for house doors which access pool area, self closing and self latching house doors, access ladders for above-ground pools, and location of permanent pool equipment which could be used to access the pool area. If you desire more specific information about the existing barrier configuration, contact an experienced pool service company.

AIR CONDITIONING & HEATING

EQUIPMENT CONFIGURATION

The cooling & gas forced air heating units are **vertical configurations** located in the attic and the cooling/heating modes were evaluated using the installed thermostats. The adequacy or efficiency of the cooling/heating systems, proper air distribution, refrigerant line sizing, refrigerant pressure or refrigerant leakage are not within the scope of this inspection. The system fans, cooling evaporator units and heat exchangers were not and could not be inspected, because disassembly of the systems/equipment would be required. Only licensed HVAC technicians can perform this higher level of evaluation. No comment will be made on the remaining life expectancy of the installed systems.



A/C CONDENSING UNITS

COOLING MODE

The current version of the "Standards Of Practice" requires that the inspector report as deficient, "inadequate cooling as demonstrated by its performance in the reasonable judgment of the inspector." There is no mention as to the

methodology and/or the equipment the inspector may need for making this reasonable judgment. Therefore, I will continue to evaluate cooling performance using a procedure I have used prior to this current version of the "Standards Of Practice."

The temperature differential between the various supply vent registers and return air vent was measured using an infrared temperature sensor. Generally, a temperature differential or temperature drop of at least 15 degrees has provided satisfactory cooling and dehumidification in past evaluations. Temperature drops across the evaporator unit should be higher, but do not reflect the effect that the duct system configuration may have on the temperature drop inside the house from the various registers. In other words, the evaporator unit may be cooling properly, but if the duct system cannot direct the cold conditioned air into the rooms at the proper temperature and with adequate air volume, the total cooling system is not performing adequately.

When the air ducts in the attic travel very long distances, lower temperature drops can be anticipated between the return air vent and the supply vent registers because of heat gain over the length of the air ducts. Sharp bends in the ducts can reduce air flow and result in warmer supply air temperatures. Also, I have found that some newer high efficiency systems do not necessarily achieve high temperature differentials. The temperature drop can vary with the type and size of the cooling equipment, outdoor air temperature and the blower speed. Equipment sizing, refrigerant pressure and blower speed are not part of this inspection. If temperature differentials are too low, an HVAC technician will be needed to further evaluate the system, including testing the system with pressure gauges and looking for kinked or improperly sized and/or routed ducts.

PRIMARY AND SECONDARY CONDENSATE DRAIN LINES

This report shall only state whether these drain lines are present or not. Since these lines are mostly concealed beneath attic insulation or hidden by framing members, the presence of any leaks at connections or the efficacy of these lines or the connected drain pans cannot be determined.

COOLING EQUIPMENT

EQUIPMENT/PERFORMANCE SUMMARY	1ST FLOOR	2ND FLOOR
CONDENSING UNIT MFGR	3/05	3/05
MODEL #	2A7B2060A1000AA	2A7B2036A1000AA
CONDENSING UNIT BTU RATING	60,000	36,000
CONDENSING UNIT - SERVICE SIDE CLEARANCE	SATISFACTORY	SATISFACTORY
EVAPORATOR BTU RATING	60,000	36,000
ON/OFF CHECK	SATISFACTORY	SATISFACTORY
EVAPORATOR DRAIN PAN	CORRECTIVE ACTION	CORRECTIVE ACTION
TEMP DROP FROM SUPPLY VENTS TO RETURN VENT	SATISFACTORY	SATISFACTORY
ACTUAL TEMPERATURE DROP	13-14 DEGREES	14-16 DEGREES
PRIMARY CONDENSATE DRAIN & INSULATION	PRESENT	PRESENT
SECONDARY CONDENSATE DRAIN	PRESENT	PRESENT
EXTERIOR SUCTION LINE INSULATION	AGING	AGING
CONDENSING UNIT SOUND LEVEL	SATISFACTORY	SATISFACTORY
CONDENSING UNIT ELEC. DISCONNECT	PRESENT	PRESENT

HEATING MODE

Each thermostat was operated to check burner operation for proper ignition and extinction. A complete visual examination of each heat exchanger was not and could not be made because disassembly of each furnace cabinet would have been necessary. This type of evaluation is beyond the scope of this inspection and may only be performed by a Licensed HVAC Service Company. The heat exchangers in newer furnaces have few fracture/leakage problems due to an improved design. In addition, the burners in these furnaces are not readily accessible to view; **therefore no comment will be made concerning visual evidence of forced air in the burner compartments.** Exhaust vent sizing for these newer high efficiency furnaces is beyond the scope of this inspection.

CARBON MONOXIDE GAS

The testing for the presence of unacceptable levels of carbon monoxide gas in the heated circulated airstream was not performed. This testing is beyond the scope of this inspection.

FLEXIBLE DUCTS

Flexible ducts were observed in the attic. This type of duct has a plastic film/covering formed over a wire structure to form a flexible pipeline configuration. The outer surface of the plastic covering is reflective to minimize radiant heat transfer to/from the ducts and also serves as a vapor barrier. Originally designed to make short, vibration dampened connections between branch ducts and room registers, flexible ducts are now being used commonly and sometimes inappropriately as an alternative to rigid ducts. Flexible ducts have higher resistance to airflow, particularly when insufficiently stretched. Unless properly oversized, the blower motor may not be able to deliver its rated volume of air, or a larger, more costly to operate motor, will be required. Round rigid metal ductwork is the best choice, but is seldom seen, except in the most costly installations. Flexible ducts should be supported off of the attic floor to the extent possible and not make contact with other ducts.



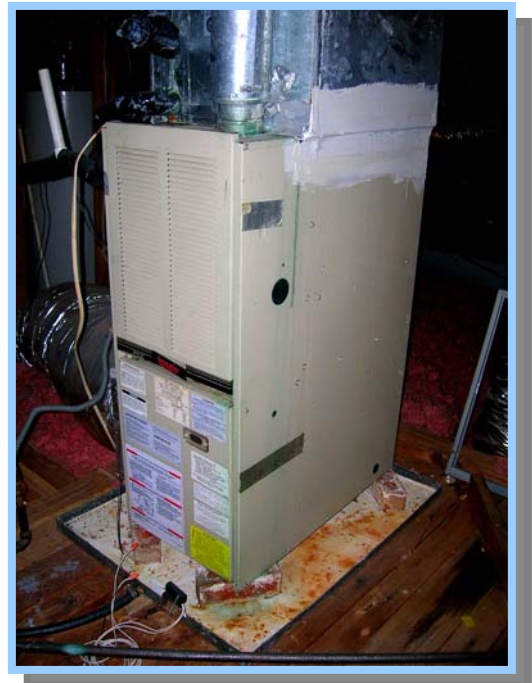
SHARP DUCT BENDS REDUCE AIR FLOW



DUCTS SHOULD NOT TOUCH OTHER DUCTS



1ST FLOOR GAS FURNACE



2ND FLOOR GAS FURNACE

AIR FILTERS

Air filters are intended to keep the evaporator (cooling coils) from becoming covered with dirt/debris and thereby reducing cooling. The secondary benefit is that the air in the house has reduced particulate matter. Fiberglass filters are the least effective filters available and they are not recommended, except when used as a pre-filter with electrostatic or media filter systems. The pre-filter also helps to keep the return air duct relatively clean. Washable filters generally restrict air flow, unless larger returns are provided. Only in rare cases are the returns large enough to use washable filters. The most recent entry into the air filter market is the pleated filter and is now the most recommended type of filter, except when an electrostatic or media filter system is installed.



DIRTY DRAIN PAN UNDER 1ST FLOOR UNIT



RUSTING DRAIN PAN UNDER 2ND FLOOR UNIT

GAS LINE DRIP LEGS

A drip leg or a sediment trap should be provided at any point in the line of gas pipe, where condensate or sediment could collect. This is usually at the gas line entry to the furnaces. No drip leg was installed at either furnace. This is a common condition, except for the most recently constructed homes. A drip leg can be installed at each furnace to provide a means to drain any accumulated condensate. This condition did not adversely affect furnace operation today. Update at the time of equipment replacement.

GAS HEATING EQUIPMENT

EQUIPMENT/PERFORMANCE SUMMARY	1ST FLOOR	2ND FLOOR
GAS FURNACE MANUFACTURER		
GAS FURNACE BTU RATING	100,000	60,000
FORCED AIR IN BURNER COMPARTMENT	NO COMMENT	NO COMMENT
BURNER COMPARTMENT CLEANLINESS	SATISFACTORY	SATISFACTORY
BLOWER OPERATION	SATISFACTORY	SATISFACTORY
FURNACE ON/OFF CYCLE	SATISFACTORY	SATISFACTORY
GAS SHUT-OFF VALVE & FLEX GAS LINE CONNECTION	PRESENT	PRESENT
VENT PIPE/ROOF JACK	SATISFACTORY	SATISFACTORY
FAN ASSISTED GAS FURNACE VENT	SATISFACTORY	SATISFACTORY
VISIBLE DUCTS	SATISFACTORY	SATISFACTORY
AIR FLOW (Accessible Registers Only)	SATISFACTORY	SATISFACTORY

HOME SERVICE WARRANTIES

These warranty services are very popular, but there are severe restrictions. The warranty companies have paid out many claims in recent years and have now restricted the conditions under which a claim will be paid. Minor deviations from the manufacturer's installation instructions, which are not normally revealed in a general inspection,

may be cause for denial of the claim. Do not expect these warranty services to cover all of your problems, particularly with aging systems. Refer to the respective warranty documents for coverage limitations.

As stated earlier, this inspection report is not intended for home warranty or insurance underwriting purposes. Home warranty companies should provide their own inspections that meet their underwriting standards, prior to issuing any warranty policy.

▶ A/C- HEAT DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION

1. The drain pan lines should be 3/4" PVC plastic pipe. The installed black plastic lines are typical for the age of the house, but are undersized. This repair is optional at this time.
2. Dirty and rusting drain pans under evaporator units. Clean or replace as needed.
3. Exterior suction line insulation at the condensing unit was deteriorating and should be replaced.
4. Sharp duct bends reduce air flow through ducts. Ducts touching other ducts. Reposition the affected ducts to the extent possible.
5. Although in common usage, the blue flex electrical sheathing at the a/c disconnect box wiring is not rated for exterior usage.

KITCHEN APPLIANCES

BUILT-IN APPLIANCES INSPECTED TO VERIFY FUNCTIONAL OPERATION

No comment is made on the remaining life expectancy of any installed appliance.

ELECTRIC DOUBLE OVEN

Any self-cleaning operation is not within scope of this inspection. The accuracy of the clock/timer, analog or digital was not determined.

Broil/Bake Elements	SATISFACTORY
Recorded Oven Temperature	SATISFACTORY
Light	SATISFACTORY
Door Seal/Springs/Hinges/Latch	SATISFACTORY
Control Knobs/Panel	SATISFACTORY

ELECTRIC COOKTOP WITH DOWNDRAFT EXHAUST

Elements	SATISFACTORY
Control Knobs/Panel	SATISFACTORY
Fan Operation	SATISFACTORY
Filter	SATISFACTORY
Exterior exhaust endpoint	SATISFACTORY

DISHWASHER

For units with electronic display panels, restarting after power failure may require reference to special display code. Kick plate not removed.

Operation (Normal Cycle)	CORRECTIVE ACTION
Visible Leaks	NONE
Discharge Drain Line	CORRECTIVE ACTION
Detergent Dispenser/Sprays	SATISFACTORY
Racks/Cabinet/Door & Gasket	SATISFACTORY

GARBAGE DISPOSAL

Most disposal grinding chambers are rusting/deteriorating after 4-5 years of use.

Operation	SATISFACTORY
Splash Guard	SATISFACTORY
Visible Leaks	NONE

MICROWAVE OVEN

The unit was not checked for radiation leaks. A cup of cold water was heated for one minute at high power. Time to heat and cook will vary considerably depending on the power rating of each particular unit.

Operation	SATISFACTORY
Door/Knobs/Glass Panel	SATISFACTORY

► **KITCHEN APPL. DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION**

DISHWASHER

1. The dishwasher drain line did not loop high above the garbage disposal drain connection. This is needed in order to help prevent back siphoning of used water from the disposal into the dishwasher. The requirement is that the drain line be secured to the bottom of the sink counter. IRC 2717.2 and 2717.3.
2. The dishwasher is very noisy during operation.

WATER HEATERS

EQUIPMENT

Both water heaters were connected in series. I visually examined the installed water heaters and plumbing connections. No comment is made regarding the remaining life expectancy, current temperature setting, adequacy, or efficiency of any installed water heater. The temperature/pressure relief valves were not operated since loosened valve and line deposits may make reseating difficult. The efficacy of any temperature/pressure relief valve under demand conditions cannot be determined. For most attic installations, the drain lines are generally concealed by attic insulation, brick, siding, gypsum board and/or framing members. Assurance that the drain lines are properly sized at all sections and the drain line connections are tight and leak free, is not possible.

The manufacturer of the temperature/pressure relief valves recommends that any valves over 3 years old, based on the dating codes, should be removed by a qualified and/or licensed specialist for inspection or replacement. Any valve with an excessive accumulation of mineral and corrosion deposits should be replaced. **No visible corrosion of the relief valves was observed. These valves were dated 1994.**

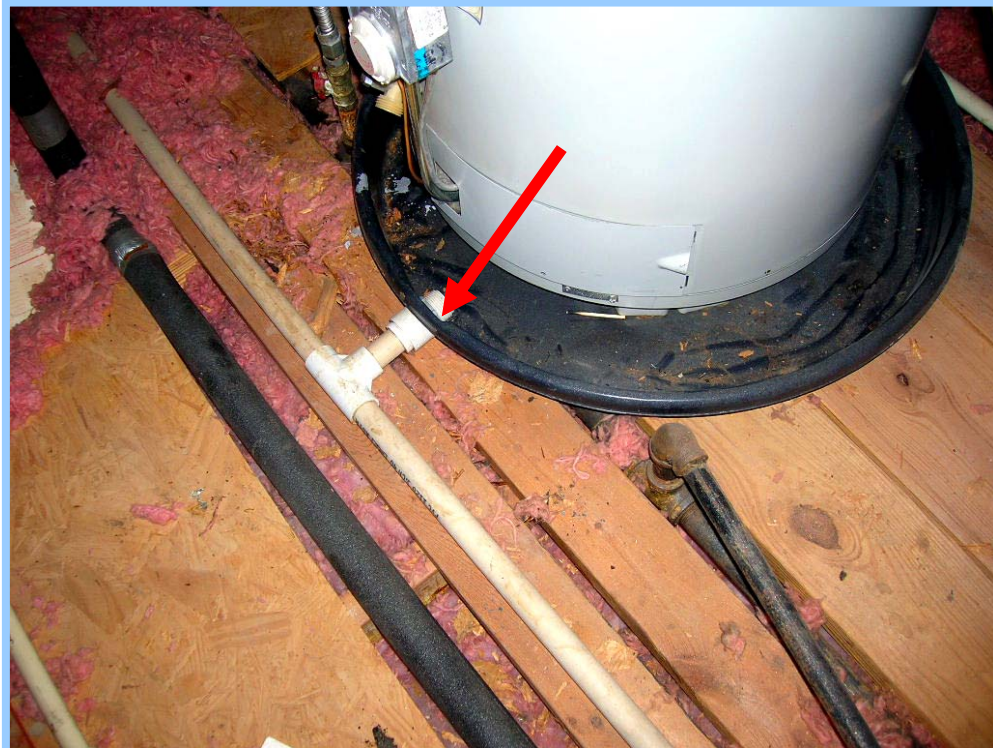


DRAIN PANS

I am unable to comment whether any installed drain pan is watertight. Filling a drain pan with water to test for leakage is beyond scope of inspection. Periodically inspect any installed pan for rust, cracks or accumulated debris.

WATER HEATER TEMPERATURE SETTING

Water heaters have a control or thermostat that allows water temperature adjustment from low to high. This range of temperature may be from 120 degrees to as high as 180 degrees. While a temperature setting of 160 degrees has been commonly used to provide ample hot water and allow the dishwasher to effectively sanitize dishes, recent accidents due to high water temperature, although infrequent, have resulted in the burning of unattended small children, or through confusion, the burning of older adults. **A lower setting of approximately 120 degrees is a good place to start. If this low temperature satisfies your needs, do not use higher temperatures. You must assume responsibility for accidents resulting in burns/injuries from the use of higher water temperature settings and/or the lack of supervision of children or the disabled in your household.** Contact a licensed plumber for further information or modifications to the heater thermostat including the installation of anti-scald valves. No water temperature measurement was made during this inspection and adjustment of the thermostat setting is not part of this inspection.



PLASTIC PANS UNDER THE HEATERS ARE CONNECTED TO A COMMON DRAIN LINE

FUTURE REPLACEMENT

Equipment replacement will be necessary over a period of time. Water heaters have a limited service life and may fail after a few years due to undesirable water conditions. Any new heater must be installed according to the standards in effect at the time of replacement. Due to these changing standards, additional costs may be incurred in addition to the heater replacement, in order to comply with the current standards. These costs may include changing vent pipes, roof jacks, gas lines, temperature relief valve drain lines and drain pan lines. Only experienced licensed plumbers should be retained to perform replacement work. General handyman services are not recommended and may be in violation of state and local licensing requirements.

GAS LINE DRIP LEGS

A drip leg or a sediment trap should be provided at any point in the line of gas pipe, where condensate or sediment could collect. This is usually at the gas line entry to each water heater. No drip leg was installed at either water heater. This is a common condition, except for the most recently constructed homes. A drip leg can be installed at

each heater to provide a means to drain any accumulated condensate. This condition did not adversely affect heater operation today. Update at the time of equipment replacement.

GAS WATER HEATERS

EQUIPMENT & PERFORMANCE SUMMARY	BOTH UNITS
MANUFACTURER	BRAND NAME
LOCATION	ATTIC
TANK CAPACITY	40 GALLONS EACH
BURNER COMPARTMENTS	SATISFACTORY
OPERATION	SATISFACTORY
VISIBLE LEAKS	NONE
WATER LINE CONNECTIONS	SATISFACTORY
GAS LINE FLEXIBLE CONNECTOR	SATISFACTORY
GAS SHUT-OFF VALVE	PRESENT
SAFETY RELIEF VALVES	CORRECTIVE ACTION
SAFETY RELIEF VALVE PIPING	PRESENT
RUMBLE NOISE	NONE
SAFETY PANS	CORRECTIVE ACTION
VENT PIPES/CAPS AND ROOF JACKS	SATISFACTORY

► WATER HEATER DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION

1. Debris in the safety/drain pans may clog drain lines. Clean as necessary.
2. Each temperature/pressure relief valve was over 3 years old and should be replaced, based on the manufacturer's recommendation.
3. The drain pans share a common drain line. It is best to have a dedicated drain line for each pan. It is difficult to correct this condition post construction. The plastic drain pans installed under the gas-fired water heaters are not permitted according to the International Residential Code IRC, P2801.5. The manufacturer of the pans also does not recommend this pan under any gas water heater, but only under electric water heaters. The reason is that the plastic is combustible material and is in close proximity to the gas burners. A galvanized steel pan is required under each heater.
4. The water heater copper water lines should be bonded together and to the gas line. This ensures electrical continuity to prevent differences of voltage potential between conductive components.
5. DUE TO THE AGE OF THESE ORIGINAL HEATERS, REPLACEMENT IN THE NEAR FUTURE MAY BE NECESSARY.

NATURAL GAS INFORMATION

NATURAL GAS FACTS AND SAFETY INFORMATION

- o Natural gas is lighter than air, non-toxic and contains no poisonous ingredients. Breathing natural gas is not harmful as long as there is an adequate supply of fresh air to breathe along with it.
- o Natural gas by itself will not burn. Combustion or explosion can occur only when there is a mixture of gas and air containing between 5%-15% natural gas.
- o Vapors from flammable liquids will explode and catch fire causing death or severe burns. Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the gas water heater.
- o Do not install a water heater where flammable products will be stored or used unless the main burner and pilot flames are at least 18" above the floor. This will reduce, but not eliminate, the risk of vapors being ignited by the main burner or pilot flame.
- o Read and follow heater warnings/instructions. If owner's manual is missing, contact retailer or manufacturer.

SAFETY SUGGESTIONS SHOULD YOU DETECT THE ODOR OF GAS IN YOUR HOME.

- o Go to a neighbor's home and call CENTERPOINT ENERGY at 713-659-2111. Do not call from within the house. If you are not in the CENTERPOINT ENERGY service area, call the company that supplies gas in your area.
- o If the odor is strong, leave the area immediately.
- o Do not smoke, light matches, or use any type of ignition device.
- o Be careful not to cause static electricity, such as walking on carpet and then touching metal.
- o Besides the Gas Company, you may call 911 and ask for the fire department, which is equipped to help locate the leak and take appropriate emergency measures.
- o For small leaks, if you can determine the leak is coming from a specific place, such as a stove or other appliance, try to shut the gas supply off to that device. Ranges usually have a gas valve behind the unit.
- o To locate a small leak, use soapy water to lightly coat suspicious area. Fine bubbling will pinpoint the leak.
- o If you are in doubt about your safety, even if the leak appears small, call for help.

PLUMBING**DESCRIPTION**

The sinks, faucets, tubs/showers, and visible piping were examined for functional drainage, leaks, and adequate water flow. Any measurement of water pressure is made at one of the exterior spigots. The commodes were examined for adequate flushing, evidence of damage, proper water level controls, and firm bolting to the floor. Main, branch, or icemaker water shut-off valves were not operated. No comment is made regarding buried sewer, drain, water or gas lines, or the condition or efficacy of any installed water filters or softeners.

SHOWER STALL WITH SITE-BUILT SHOWER PAN

Shower pan/liner evaluation is specifically excluded from this inspection. Plumbers can provide a 24 hour test, if desired. Every properly installed shower stall should have a flexible liner under the stall floor that also extends approximately 6-8 inches up the walls. I have no knowledge if this liner is present or in good condition. No damage to adjacent walls was observed.

No comment can be made about the following:

- o Whether the door in the shower stall has safety, tempered, or heat-strengthened glass.
- o Whether the shower pan/liner is properly installed including the height of the liner at the bottom of the walls.
- o Whether weep holes were provided under the shower tile floor around the shower pan/drain interface.
- o Whether approved cement backer board has been used behind the wall tiles, rather than gypsum board or between the gypsum board and the tiles. Gypsum board gradually absorbs water from the wall tile grout joints and deteriorates. Mold can grow between the tiles and the gypsum board. An invasive evaluation would be needed to determine what type of material has been used to cover the shower stall walls.

HIDDEN PLUMBING CONNECTIONS

It is beyond the scope of this inspection to determine if the improper use of various plumbing fittings and connections or if the use of improper venting techniques has occurred in the plumbing system. Most of these fittings and connections are **hidden** in wall and floor spaces. Also, homes constructed since 1989 should not contain any lead in the solder used to join copper tubing connections and in various plumbing fixtures such as faucets. The testing for lead in these areas is beyond the scope of this inspection.

EXTERIOR PIPES

Any exposed exterior pipes should be protected from freezing by insulating the exposed sections. The insulating materials do deteriorate over time and need to be replaced periodically. Under certain emergency or repair conditions the main water supply will need to be shut off. If a main shut-off valve is not present, or inoperative, the water can still be turned off at the meter location. Familiarize yourself with these locations.

GAS BRANCHES

Only the readily accessible gas branch lines were examined for leaks. The main gas line from the meter is generally buried in the ground or partially routed through any attic space. No comment can be or will be made on the condition of the main gas line. For a complete check of the gas supply system, you must contact the Gas Company or a plumber.

WASHING MACHINE HOSES AND DRAIN LINE

If you plan to reinstall an older washing machine, you should replace the water lines/hoses and drain line. These are notorious for bursting or leaking, particularly after being disconnected and then reconnected.

PLUMBING

EQUIPMENT AND FEATURES SUMMARY	COMMENTS
VISIBLE SUPPLY PIPE MATERIAL	COPPER
WATER PRESSURE AT HOSE SPIGOT	63 PSI
VISIBLE WASTE WATER & VENT LINE MAT'L	PLASTIC
MAIN SEWER CLEANOUT	NOT FOUND
MAIN WATER SHUT-OFF VALVE LOCATION	NORTH EXTERIOR
WATER METER LOCATION	FRONT YARD
VISIBLE PIPING CONDITION	SATISFACTORY
NUMBER OF BATHROOMS: 3-1/2	CORRECTIVE ACTION
HYDROMASSAGE BATHTUB	SATISFACTORY
HYDROMASSAGE GFCI PROTECTION	SATISFACTORY
HYDROMASSAGE ACCESS COVER	NONE
HYDROMASSAGE EVIDENCE OF LEAKAGE	NONE
TUB TRAP ACCESS AREAS	NONE
KITCHEN	SATISFACTORY
WASHER FAUCETS - Washer connected	SATISFACTORY
EXTERIOR FAUCETS	CORRECTIVE ACTION
GAS METER PIPE SLEEVE	NONE
VISIBLE GAS BRANCHES	SATISFACTORY

► PLUMBING DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION**MASTER BATHROOM**

1. Low water flow from the right sink faucet. Cold water faucet stem does not turn smoothly.
2. Prior grout repair on shower stall floor. Regrouting may be needed in the near future.
3. The hydromassage bathtub did not have an access panel provided for servicing or replacing the motor/pump.
4. Gurgling sounds were heard while the tub was draining. This usually indicates that drain is insufficiently vented. There is no easy repair for this condition. The tub otherwise drained normally.

HALF BATHROOM

1. The toilet bowl was not firmly attached to the floor.

2ND FLOOR NORTH BATHROOM

1. The right sink drain rod knob is separated from the rod.
2. The toilet bowl was not firmly attached to the floor. Reinstallation using a new wax ring seal and adjustment or repair to the floor mounting flange may be necessary.

EXTERIOR FAUCETS

1. The stem leaks at the driveway spigot.

EXTERIOR SEWER CLEANOUT

1. There was no visible sewer line cleanout within 3' of this house. It may be covered by soil, shrubs or other ground cover.

ELECTRICAL

Residential electrical system design and installation includes three basic considerations in the following order of importance, regardless of structure age.

1. Safety to persons and property.
2. Protection of the system and its components.
3. Convenience of usage.

Periodically, devices and installation designs may become available that will provide a higher level of safety to persons and property. You may have to retrofit your electrical system, as these technological improvements become available. Some local municipal standards may either supersede or waive certain national standards.

The interior of the breaker panel was visually examined and unobstructed wall receptacles were tested with a plug-in type tester. Light fixture and ceiling fan switches were operated. Internal wiring of any air conditioners, electric furnaces, dishwashers, electric ovens, etc. was not examined or tested. The wiring methods of ancillary systems such as swimming pool or spa equipment and lighting, intercom, landscape lighting, cable TV, telephone, etc., are not within the scope of this inspection. Evaluations of the service capacity, adequacy of wiring, voltage drop across circuits, routing or identification of circuits, operation of any photocell controlled light fixtures or any installed automatic lighting systems, or discussion of conflicts of code interpretation, are not included. **It is recommended that all breakers be tripped and reset once a year.**

BREAKER PANEL WIRING VARIATIONS

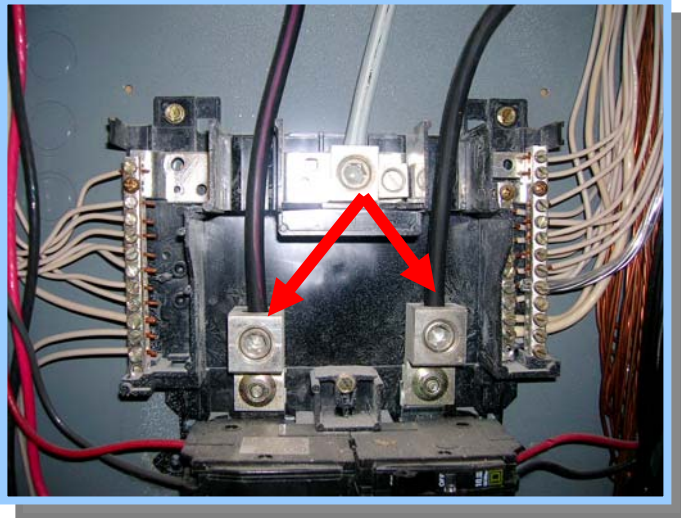
Most or all of the branch wiring circuits exit both panels via large openings at the top of the panels. The individual circuit wires (cables) should be routed through the various smaller "knock-out" holes at the top, bottom and/or sides of the panel boxes and secured with approved cable clamps, so that any smoke or fire inside the panel is confined or at least restricted from passing through the knockout openings. This is a common error in breaker panel wiring that is found in most older breaker panel installations. Most local municipal electrical inspectors seem to condone this arrangement, although it is not permitted in the NEC, National Electrical Code. Repair of this condition would require considerable work and is not necessarily recommended. These comments are presented as additional information.

ELECTRICAL

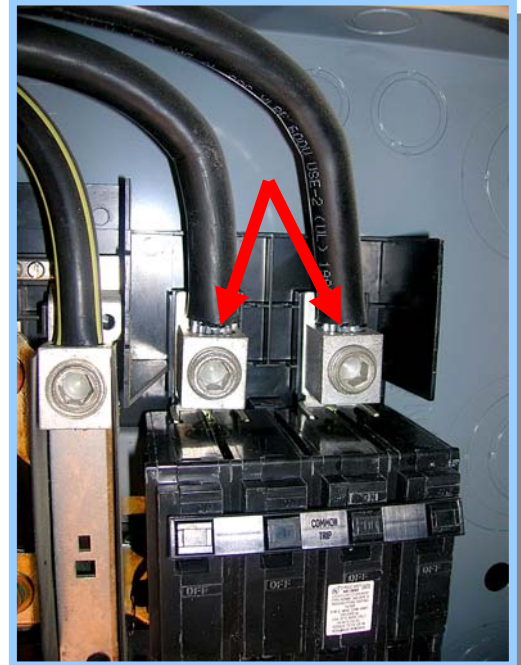
EQUIPMENT AND FEATURES SUMMARY	COMMENTS
VISIBLE UNDERGROUND SERVICE CONDUIT	SATISFACTORY
CIRCUIT BREAKER PANEL LOCATION	INSIDE THE GARAGE AND INSIDE THE UTILITY ROOM
SERVICE WIRE TO MAIN AND SUB BREAKER PANELS	ALUMINUM
BRANCH WIRE FROM BREAKER PANELS TO STRUCTURE	COPPER
MAIN BREAKER	200 AMPS
SUB PANEL BREAKER	100 AMPS
GROUNDING ELECTRODE CONDUCTOR & CLAMP <small>8' NEC CODE GROUND ROD DEPTH CANNOT BE VERIFIED WITHOUT WITHDRAWING ROD</small>	CORRECTIVE ACTION
PANELS, BREAKERS & WIRING – Sizing and connections	CORRECTIVE ACTION
RECEPTACLES	SATISFACTORY
SWITCHES	SATISFACTORY
FIXTURES	CORRECTIVE ACTION
ARC FAULT CIRCUIT INTERRUPTERS (AFCI)	NONE – NOT REQUIRED AT TIME OF CONSTRUCTION
GROUND FAULT CIRCUIT INTERRUPTERS (GFCI)	CORRECTIVE ACTION

CLOTHES DRYER RECEPTACLE IN OLDER HOUSE

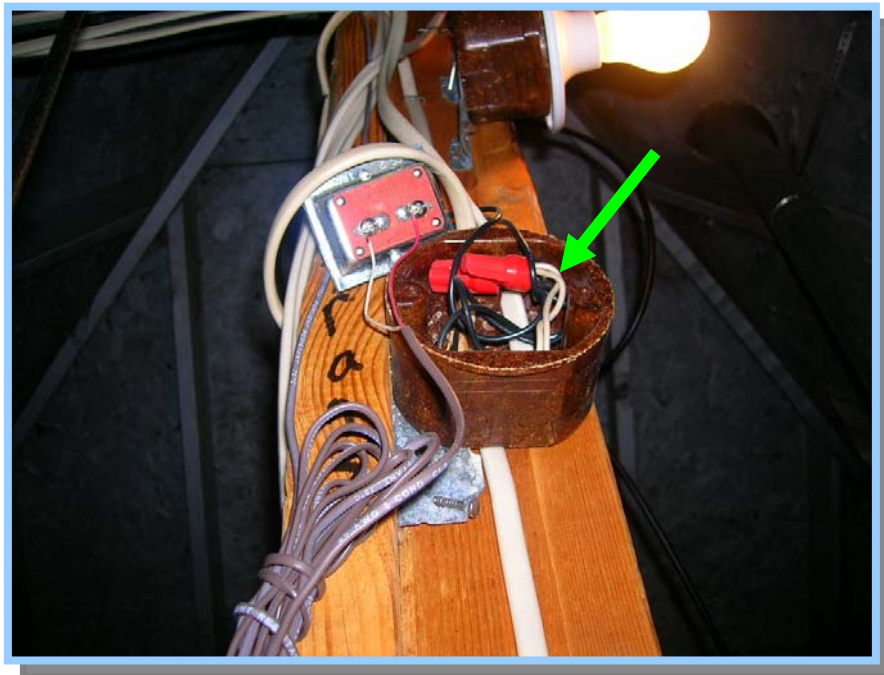
New electric dryers have a plug utilizing a 4-prong design that will not mate with the older wall 3-prong receptacle in this house. Installation of a new receptacle may be necessary if you install a new electric dryer that is already equipped with a 4-prong cord. If no cord is attached to the new dryer, you can install a 3-prong cord to the new dryer. Follow the manufacturer's installation instructions and have a licensed electrician perform any wiring modifications, if necessary.



NO ANTI-OXIDANT PASTE AT
SUBPANEL ALUMINUM CONNECTIONS



NO ANTI-OXIDANT PASTE AT
MAIN PANEL ALUMINUM CONNECTIONS



EXPOSED WIRE CONNECTIONS IN THE ATTIC SPACE

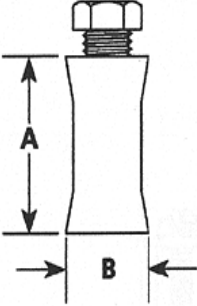
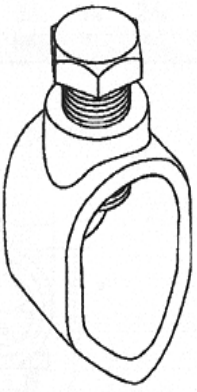
Type RC
Rod

Trade Size (inches)	Catalog Number	Dimensions in Inches	
		A	B
1/2	RC-500	1.22	0.75
5/8	RC-625	1.41	0.90
3/4	RC-750	1.47	1.00

Use:
 To terminate bare copper conductor directly to ground rod. Suitable for direct burial applications.

Material/Finish:
 Bronze clamp and screw

Applicable Third Party Standards:
 UL Standard: 467
 CSA Standard: C22.2 No. 18
 NEMA: FB-1
 Fed. Spec: W-F-406D,
 Type 5, Class 7, Style S

Type RC-500

ACORN TYPE GROUND ROD CLAMP – NFPA V70 NEC – 2005 EDITION



WRONG TYPE CLAMP AT EARTH GROUND ROD

GROUND FAULT CIRCUIT INTERRUPTERS (GFCI)

A ground-fault occurs when there is a break in the low-resistance **grounding** path from a tool or electrical system. The electrical current may then take an alternative path to the ground through the user, resulting in serious injuries or death. The ground-fault circuit interrupter, or GFCI, is a fast-acting circuit breaker designed to shut off electric power

in the event of a ground-fault within as little as 1/40 of a second. It works by comparing the amount of current **going to and returning from** equipment along the circuit conductors. When the amount **going** differs from the amount **returning** by approximately 5 milliamperes, the GFCI interrupts the current.

ARC FAULT CIRCUIT INTERRUPTERS (AFCI) – BRANCH/FEEDER TYPE

A Branch/Feeder AFCI has the ability to detect and neutralize a parallel arc fault, which is the unintentional flow of electricity between 2 separate wires. There are 3 types of parallel arc faults: line-to-line, line-to-ground and line-to-neutral. **The Branch/Feeder AFCI is permitted by the 1999-2005 NEC® and was required in houses built after September 2002.**

ARC FAULT CIRCUIT INTERRUPTERS (AFCI) – COMBINATION TYPE

The Combination Type AFCI can provide up to 5 kinds of protection.

- o Parallel protection: Just like its Branch/Feeder counterpart, Combination AFCI can detect and neutralize parallel arc faults.
- o Series protection: A series arc fault is the unintended flow of electricity over a gap within a single wire. These arc faults were not detectable until advanced technology allowed the development of the Combination AFCI breaker.
- o Ground protection: Arcing between a single conductor and a ground line.
- o Overload protection:
- o Short circuit protection:

The Combination AFCI represents advancement in technology and home protection. **The 2008 NEC® mandates that all dwelling areas in the house have Combination AFCI protection.**

► ELECTRICAL DEFICIENCIES RECOMMENDED FOR CORRECTIVE ACTION

1. Some circuits were not identified on the main breaker panel.
2. Anti-oxidant paste was not visible at the aluminum wire connections to the main and sub panel connection. This anti-oxidant paste is needed with stranded type aluminum wire.
3. Wood shavings at the bottom of the main panel. Remove them.
4. The ground rod conductor clamp is actually for a pipe not a rod. Clamps that are LISTED AND LABELED as approved for this purpose may be used, however, the brass acorn type clamp is the most commonly LISTED AND LABELED clamp used for this purpose.
5. Exposed wire connections existed in the attic at the doorbell transformer. All wire splices should be housed in a covered junction box.
6. The light fixture over the right sink in the 2nd floor north bathroom was ungrounded when tested with a voltage sensing device while the light fixture was on.
7. The ground fault circuit interrupter in the kitchen wall did not trip when a test device was plugged into it.
8. Additional ground fault circuit interrupters should be installed as supplemental protection for outlets in the kitchen center island and at some kitchen wall receptacles. An electrician should install the GFCI devices in the required locations as set forth in the current edition of the National Electrical Code.

SPRINKLER SYSTEM

EQUIPMENT CONFIGURATION

The control unit is located in the garage and the current configuration uses 4 zones. Each zone was operated in the manual mode to determine if there were any obvious pipe leaks, broken or non-functioning sprinkler heads, typical or substandard coverage, and excessive spray against the structure itself. Proper sizing of spray heads and piping is not part of this inspection. Operation of any installed rain sensor is not part of this inspection. All 4 zones were operable today.

IDENTIFIED BACKFLOW DEVICE

A FEBCO PVB backflow device was located at the front north corner. A certified tester should test all backflow devices once a year.

MODIFICATIONS

From time to time you may have to modify the sprinkler system, particularly due to growing shrubs that interfere with the original spray patterns. Periodic alteration of the size and orientation of planting beds may result in under or over watering. Replacing and readjusting spray nozzles for proper coverage and modification of the physical layout of the system may also be necessary to accommodate these changes. Most sprinkler equipment manufacturers provide free brochures detailing the various components and the approved installation methods.

► **SPRINKLER DEFICIENCY RECOMMENDED FOR CORRECTIVE ACTION**

1. Leaking rotary spray head at the front of the house next to the driveway on zone #1.

MISCELLANEOUS MECHANICAL SYSTEMS

MISCELLANEOUS MECHANICAL SUMMARY	COMMENTS
BATHROOM MECHANICAL EXHAUST FANS	CORRECTIVE ACTION
DOORBELL	SATISFACTORY
AUTOMATIC GARAGE DOOR OPENER	1 UNIT
<ul style="list-style-type: none"> • Auto reverse safety mechanism 	SATISFACTORY
<ul style="list-style-type: none"> • Track/hardware - Door opener arm not detached to test door manually 	SATISFACTORY
<ul style="list-style-type: none"> • Lower level optical or door edge sensors 	SATISFACTORY
<ul style="list-style-type: none"> • Remote controls 	NOT CHECKED
CLOTHES DRYER EXHAUST EXTENDS OUTSIDE	SATISFACTORY
CLOTHES WASHER/DRYER	NO COMMENT
REFRIGERATOR	NO COMMENT

CLOTHES DRYER SAFETY

Mechanical and/or electrical parts failure, improper materials placed into the dryer and poor airflow due to improper installation are responsible for many dryer fires. **Do not use vinyl flex ducting for your dryer, because in the event of a dryer fire it will burn. Aluminum foil ducting uses plastic film and some have adhesives. Both will burn away in the event of a fire, allowing the duct to fall apart and the fire to spread. Flexible all aluminum (not foil over wires) ducting is recommended by all dryer manufacturers.**

► **MISC. MECH. DEFICIENCY RECOMMENDED FOR CORRECTIVE ACTION**

1. There was no exhaust fan for the main part of the master bathroom. The shower stall will generate considerable water vapor that should be removed from the room.

ADDITIONAL COMMENTS

FIRE PROTECTION OR SENSING EQUIPMENT

Any installed fire protection equipment and/or sensors were not inspected. Many existing and aging units are typically not functional or impaired. For safety reasons, you should replace all existing units with new units that have the most current sensing technology. Also, replace all detector units after 10 years of service. For additional information regarding the placement and type of fire/smoke detection equipment, contact the National Fire Protection Association or your local municipal building inspection department. Always follow the equipment manufacturer's instructions.

Generally, the following conditions or standards are applied to the installation and operation of smoke detectors, depending on local municipal requirements. Requirements and standards are updated periodically with advancing technology. The equipment should be tested periodically and batteries replaced as needed.

- o Average house needs 6-7 detectors. Bedrooms, hallways, and living room.
- o Newer systems have all detectors wired together so alarm is sounded at all detector locations.
- o Most new construction over the past 15 years should have hard wire systems installed.
- o Older homes can utilize battery-operated systems & newer homes may use these for supplemental protection.

Using multiple units of photoelectric, ionization, and fusible link types gives the best protection.

- o Fusible link models are best for high temperature conditions like the kitchen, attic, and garage.
- o Photoelectric models are better for smoldering conditions.
- o Ionization and fusible link models are good for flaming conditions.

SECURITY EQUIPMENT

- o ALARMS - Security equipment can only be tested and evaluated by licensed security and alarm monitoring companies. The effectiveness of these systems is dependent on many variables, including but not limited to; type, number and placement of sensors, type of provider monitoring equipment, law enforcement response time, etc. Security systems can reduce, but not eliminate, the risk of unauthorized entry or property loss/damage.
- o LOCKS/WINDOWS/DOORS - This report does not address the type, quality or efficacy of any installed door or window lock. It may be prudent for you to investigate this area and to install new locks and related hardware or to modify the existing hardware.

CARBON MONOXIDE SENSING EQUIPMENT

Carbon monoxide, CO, is a colorless, odorless gas. Many of the symptoms of CO overexposure include; dizziness, nausea, vomiting, and fatigue. Carbon monoxide gas detectors can be effective in alerting occupants of dangerous levels of CO gas, which can originate in defective or improperly adjusted gas furnaces and/or gas water heaters. Every residence having a fuel-burning appliance or fireplace should have at least one CO detector.

EDITING ERRORS - REPORT INTERPRETATION

This report was prepared on a computer and infrequently a word or part of a sentence may be accidentally deleted or altered. Should you encounter such a condition, please contact me as soon as possible to make the necessary correction and provide you with a replacement page(s). If you do not understand certain comments or recommendations for corrective action, **call me as soon as possible for clarification.**

CERTIFICATION

I hereby certify that, I, Jay Fischman, personally conducted the inspection of this residence located at -----
-----, on the date of -----. The reporting of my findings is based upon my visual observations, experience,
specific client concerns and professional standards. No responsibility is assumed for events that occur subsequent
to the time of this inspection. Alteration of a sealed document without proper notification to the responsible engineer
is an offense under the Texas Engineering Practice Act.



Jay Fischman
Registered Professional Engineer #44735
Firm Registration Number F-767

Copy:

