



# Golden Rule Property Inspections, LLC

*A Locally Owned Professional Inspection Company*

**Jerry B Yost**

*Professional Inspector*

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**123 Main Street, Great Town, Texas**



# PROPERTY INSPECTION REPORT

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**Prepared For:** Mr. and Mrs. Satisfied Customer

(Name of Client)

**Concerning:** 123 Main Street, Great Town, Texas

(Address or Other Identification of Inspected Property)

**By:**

**ICC Certified Combination Inspector R-5  
ICC Certified Residential Building  
Inspector B-1; ICC Residential Mechanical  
Inspector M-1; ICC Residential Plumbing  
Inspector P-1; ICC Residential Electrical E-1  
NSPF: Certified Pool and Spa Inspector and Operator  
NACHI Certified Inspector 6060660  
T.R.E.C. Professional Inspector #09097  
Certainteed® Master Shingle Applicator™  
Infrared Certified Thermographer Inspector # 0580018**

(Name and License Number of Inspector)

(Date)

(Name, License Number and Signature of Sponsoring Inspector, if required)

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This property inspection report may include an inspection agreement (contract), addenda, and other information related to property conditions. If any item or comment is unclear, you should ask the inspector to clarify the findings. It is important that you carefully read ALL of this information.

This inspection is subject to the rules ("Rules") of the Texas Real Estate Commission ("TREC"), which can be found at [www.trec.state.tx.us](http://www.trec.state.tx.us).

The TREC Standards of Practice (Sections 535.227-535.233 of the Rules) are the minimum standards for inspections by TREC-licensed inspectors. An inspection addresses only those components and conditions that are present, visible, and accessible at the time of the inspection. While there may be other parts, components or systems present, only those items specifically noted as being inspected were inspected. The inspector is not required to move furnishings or stored items. The inspection report may address issues that are code-based or may refer to a particular code; however, this is NOT a code compliance inspection and does NOT verify compliance with manufacturer's installation instructions. The inspection does NOT imply insurability or warrantability of the structure or its components. Although some safety issues may be addressed in this report, this inspection is NOT a safety/code inspection, and the inspector is NOT required to identify all potential hazards.

In this report, the inspector will note which systems and components were Inspected (I), Not Inspected (NI), Not Present (NP), and/or Deficient (D). General deficiencies include inoperability, material distress, water penetration, damage, deterioration, missing parts, and unsuitable installation. Comments may be provided by the inspector whether or not an item is deemed deficient. The inspector is not required to prioritize or emphasize the importance of one deficiency over another.

Some items reported as Deficient may be considered life-safety upgrades to the property. For more information, refer to Texas Real Estate Consumer Notice Concerning Recognized Hazards, form OP-I.

This property inspection is not an exhaustive inspection of the structure, systems, or components. The inspection may not reveal all deficiencies. A real estate inspection helps to reduce some of the risk involved in purchasing a home, but it cannot eliminate these risks, nor can the inspection anticipate future events or changes in performance due to changes in use or occupancy. It is recommended that you obtain as much information as is available about this property, including any seller's disclosures, previous inspection reports, engineering reports, building/remodeling permits, and reports performed for or by relocation companies, municipal inspection departments, lenders, insurers, and appraisers. You should also attempt to determine whether repairs, renovation, remodeling, additions, or other such activities have taken

place at this property. It is not the inspector's responsibility to confirm that information obtained from these sources is complete or accurate or that this inspection is consistent with the opinions expressed in previous or future reports.

Items identified in the report do not obligate any party to make repairs or take other action, nor is the purchaser required to request that the seller take any action. When a deficiency is reported, it is the client's responsibility to obtain further evaluations and/or cost estimates from qualified service professionals. Any such follow-up should take place prior to the expiration of any time limitations such as option periods. Evaluations by qualified tradesmen may lead to the discovery of additional deficiencies which may involve additional repair costs. Failure to address deficiencies or comments noted in this report may lead to further damage of the structure or systems and add to the original repair costs. The inspector is not required to provide follow-up services to verify that proper repairs have been made.

Property conditions change with time and use. For example, mechanical devices can fail at any time, plumbing gaskets and seals may crack if the appliance or plumbing fixture is not used often, roof leaks can occur at any time regardless of the apparent condition of the roof, and the performance of the structure and the systems may change due to changes in use or occupancy, effects of weather, etc. These changes or repairs made to the structure after the inspection may render information contained herein obsolete or invalid. This report is provided for the specific benefit of the client named above and is based on observations at the time of the inspection. If you did not hire the inspector yourself, reliance on this report may provide incomplete or outdated information. Repairs, professional opinions or additional inspection reports may affect the meaning of the information in this report. It is recommended that you hire a licensed inspector to perform an inspection to meet your specific needs and to provide you with current information concerning this property.

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### ADDITIONAL INFORMATION PROVIDED BY INSPECTOR

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The following were present during at least part of the inspection: Buyer, Seller, Inspector & WDI inspector, a neighbor. The property was: The home is occupied. Occupied homes can never be fully observed due to the personal property of the occupant blocking vision. Moving personal items is beyond the responsibility of a home inspector.

Utilities: All utilities were on.

Approximate Time and Weather: 8 am to 11 am about 50°-70°F & Partly Sunny and Cloudy .

**All directions in this report are as if you are standing in the front yard facing the house.**

#### INACCESSIBLE OR OBSTRUCTED AREAS

- |   |   |
|---|---|
| <input type="checkbox"/> Sub Flooring                                   | <input checked="" type="checkbox"/> Attic Space is Limited - Viewed from Accessible Areas |
| <input checked="" type="checkbox"/> Floors Covered                      | <input checked="" type="checkbox"/> Plumbing Areas - Only Visible Plumbing Inspected      |
| <input type="checkbox"/> Walls/Ceilings Covered or Freshly Painted      | <input type="checkbox"/> Siding Over Older Existing Siding                                |
| <input checked="" type="checkbox"/> Behind/Under Furniture and/or Items | <input type="checkbox"/> Crawl Space Is Limited - Viewed From Accessible Areas            |
- Mold/Mildew investigations are NOT included with this report it is beyond the scope of this inspection at the present time. Any reference of water intrusion is recommended that a professional investigation be obtained.
- NOTE: In homes with gas-fired appliances and /or wood burning fireplaces, we recommend the installation of Carbon Monoxide Detectors.
- The digital pictures in this report are a random sampling of the conditions or damages in a representative number of areas chosen and should not be considered to show all of the conditions, damages or deficiencies observed. There will be some conditions, damages or deficiencies not represented with digital imaging.
- The use of "special equipment" is at the discretion of the inspector in order to form opinions as he sees fit in certain instances.

**1) The entire report and the inspector named are incapable of identifying and revealing hidden or concealed conditions and latent defects. The Property Inspection Report is the Inspector's opinion as to whether or not the components of this home are presently functioning or are in need of repair.**

2) You are my sole employer at this inspection. You cannot sell this report without my written permission; the comments in this report are the intellectual property of Golden Rule Property Inspections, Llc and are not to be used for any other purpose by any other person. This report only reports on the items listed and only the present condition of those items. It reflects only if the items inspected are observed to be "operative" during the inspection or deficient.

3) CLIENT understands that I do not move any personal items or other obstructions. Most of a home's structure is buried underground or hidden behind walls and I do not have super human powers and cannot see underground or inside walls.

(4) Investigating, Identification, sampling, and testing for Asbestos, Carbon Monoxide, Indoor Air Quality, Lead Based Paint, Mold, Potable Water Quality, Radon, Toxic Waste or Spills, and all other Environmental Issues are not included in this Inspection. Contact any of these Agencies for your specific needs and further information. [www.cdc.gov](http://www.cdc.gov) Center for Disease Control 1-888-311-3435, [www.epa.gov](http://www.epa.gov) Environmental Protection Agency 1-800-887-6063, [www.hud.gov](http://www.hud.gov) Housing and Urban Development 214-767-8300, [www.tdh.state.tx.us](http://www.tdh.state.tx.us) Texas Department of Health 1-888-963-7111.

5) Outside the Scope of the Inspection:

Any area which is not exposed to view, is concealed, or is inaccessible because of soil, walls, floors, carpets, furnishings, or anything not included in this inspection. The inspection does not include any destructive testing, or dismantling. Client agrees to assume all the risk for all conditions which are concealed from view at the time of the inspection.

Whether concealed or not, the following are outside the scope of the inspection:

- Building code or zoning ordinances (The codes are safety codes, this inspector is not performing a code inspection but is performing a safety inspection).
- Geological stability or soil condition
- Structural stability or engineering analysis
- Termites, pests or other wood destroying organism
- Asbestos, radon, formaldehyde, lead, water or air quality
- Electromagnetic radiation or any environmental hazards
- Building value appraisal or cost estimates
- Condition of detached buildings
- Pool or spa bodies and underground piping
- Private water or private sewage systems
- Saunas, steam baths, or fixtures and equipment
- Radio-controlled devices, automatic gates, elevators, lifts, dumbwaiters and thermostatic or time clock controls
- Water softener/purifier systems or solar heating system
- Furnace heat exchangers, freestanding appliances, security alarms and personal property
- Adequacy or efficiency of any system or component
- Prediction of life expectancy of any item
- (Some of the items above may be included in this inspection for additional fees, check with your inspector)

This is not a home warranty, guarantee, insurance policy, or substitute for real estate transfer disclosures which may be required by law.

NOTE: Your inspector is a home inspection generalist and is not acting as a licensed engineer, code references are for informational purposes only, and this is not a code compliance inspection. If your inspector recommends consulting other specialized experts, client must do so at client's expense.

NOTE: Any suggestions and recommendations we may provide within our report regarding hazardous and or unsatisfactory condition should immediately be brought to the attention of a qualified licensed contractor or specialist to provide you with a full in-depth evaluation to determine if additional areas of concern exist within the building's components, or systems, and furnish a written cost estimate for corrective work or replacement that may be suggested within our report. It is recommended that a State (Texas) or City Licensed Contractor perform all corrective work.

NOTE: This form is promulgated by the Texas Real Estate Commission (TREC) for use by their licensees during the inspection of existing homes and homes in the resale market. If the house being inspected in new construction, or is being inspected for the 1-year Builders warranty, the TREC form is being used only as a convenience, due to its wide use and acceptance, as TREC does not have jurisdiction over these inspection.

NOTE: The International Residential Code (IRC) is a comprehensive, stand-alone residential code that establishes minimum regulations for the construction of one- and two-family dwellings and townhouses up to three stories in height, including provisions for fire and life safety, structural design, energy conservation, and mechanical, fuel-gas, plumbing, and electrical systems. The inspector can and will reference code, manufacturers installation instructions, industry recommendations, etc. during the inspection. The reference of codes is for safety reasons, and to inform you of the minimum regulation for buildings, and should in no way be construed as a code check inspection.

NOTE: This inspection report is made for the sole purpose of assisting the purchaser to determine his and/or her own opinion of feasibility of purchasing the inspected property. This report is not intended to be used for determining insurability of the structure and may not conform to the Texas Department of Insurance guidelines for property insurability. This report is not to be used by or for any property and/or home warranty company.

**All directions in this report are as if you are standing in the front yard facing the house.**

Additional pages may be attached to this report. Read them very carefully. This report may not be complete without the attachments. If an item is present in the property but is not inspected, the "NI" column will be checked and an explanation is necessary. Comments may be provided by the inspector whether or not an item is deemed deficient.

**I=Inspected**

**NI=Not Inspected**

**NP=Not Present**

**D=Deficiency**

I	NI	NP	D	Inspection Item
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## I. STRUCTURAL SYSTEMS

### A. Foundations

*Type of Foundation(s):* This structure is supported by a concrete slab-on grade type foundation. The type of concrete reinforcement was not determined.

*Comments:*

#### Foundation Performance Opinion:

In my opinion, the foundation appears to be providing adequate support for the structure based on a limited visible observation today. At this time, I did not observe any evidence that would indicate the presence of significant deflection in the foundation. There were no notable functional problems resulting from foundation movement. The interior and exterior stress indicators showed little affects of movement and I perceived the foundation to contain no significant unlevelness after walking the 1<sup>st</sup> level floors. *Opinions are based on observations made without sophisticated testing procedures or equipment. Therefore, the opinions expressed are one of apparent conditions and not absolute fact and are only good for the date and time of this inspection.*



**One or more of the concrete corners of the slab are sheared off somewhat (corner pop), right front corner. This is a common condition in slab on grade foundations. This condition does not adversely affect the performance of the foundation. However, in some cases, some cosmetic improvements may be necessary.**

I	NI	NP	R	Inspection Item
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**Post tension cable ends were observed on the exterior of the foundation along the left side of the house. This should be repaired to prevent corrosion. Patching with a Non Shrink grout found at most home improvement stores is normally a very simple fix.**

*FYI- It usually is not possible within the time frame of a single observation to determine the future stability of a foundation, and the inspector was not provided with any historical information pertaining to the structural integrity of the inspected real property. Foundation movements are common in North Texas, therefore, as time passes some movements may occur. These movements could be indicated by small cracks or sticking doors. If however, you notice large cracks or unusual movements you should consult with your builder or a structural engineer as soon as possible. To reduce the risk of future movement a consistent watering maintenance / foliage control program should be maintained. It is important to maintain good drainage around the home while keeping the soils consistently moist. Rainy seasons and droughts are particularly risky periods. Failure to maintain expansive soils at a consistent moisture level can result in foundation movements. This inspection is a cursory and visual observation only of the conditions and circumstances present at the time of this inspection. Opinions are based on observations made without sophisticated testing procedures or historical documentation. Therefore, the opinions expressed are one of apparent conditions and not absolute fact and are only good for the date and time of this inspection.*

**B. Grading & Drainage Comments:**

**The soil level is too high in relation to the foundation elevation at the front of the house, and the back side of the garage where the pool equipment is. Code and common industry practice requires at least 4" from grade to the bottom row of bricks or rock, and about 8" from grade to the bottom of any other exterior cladding (wood siding, etc). High soil level near siding promotes water penetration/damage, and easier access for wood destroying insects.**



**The downspouts at the rear of the house have separated and should be re-secured.**

I	NI	NP	R	Inspection Item
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**C. Roof Covering Materials**

Type(s) of Roof Covering: Fiberglass/Asphalt composition shingle over decking.

Viewed From: Walked on roof.

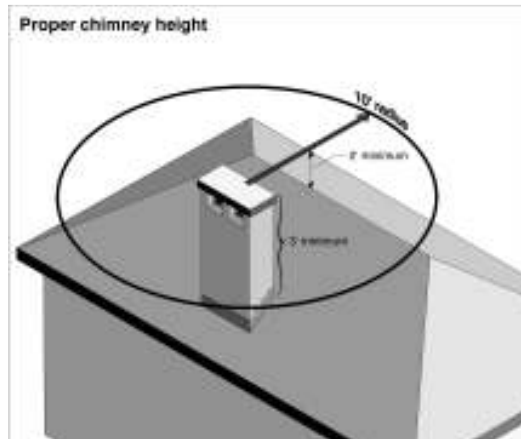
Comments:



Loose shingle tab noted over the master bedroom area, recommend this tab be re-secured. The flashing over the front porch should be re-secured.



As seen at the rear slope on the roof, the siding is too close to the shingles and has caused a damming effect. Recommend the siding be raised up to 2" and the debris be removed. You will need to monitor this area and clean out any debris that accumulates and slows the water runoff.



Chimney height does not appear adequate per current industry standards (Code) to ensure proper draft of fireplace. The chimney should extend at least three (3) feet above the point passing

I	NI	NP	R	Inspection Item
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through the roof and at least two (2) feet higher than any part of the building within ten feet, unless allowed per manufacturers instructions. Recommend further evaluation and repairs by a qualified contractor.



The internet connection on the top of the roof, the cable is nailed to the roof, and the cable runs into the house through a hole drilled in the flashing. This is contrary to good construction practices. I recommend removing the cable as it will tend to decrease the life of the shingles, covering all the holes with roofing caulk.

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**D. Roof Structure & Attic**

*Viewed From:* Entered attic and performed a visual inspection.

*Viewed attic from access hatch in the master closet.*

*Approximate Average Depth of Insulation:* appears to be about 10-13 inches.

*Approximate Average Thickness of Vertical Insulation:* appears to be 4-6 inches of insulation

*Comments:* **Radiant Barrier very nice item to have on a house.**



Attic access ladder legs hyper flex when in the open position, this decreases the weight holding capacity and should be repaired for reasons of safety. Also there are many missing nuts and bolts on this ladder, this unit should be repaired for safety reasons.

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**E. Walls (Interior & Exterior) Comments:**

**Interior Walls:** Sheetrock,

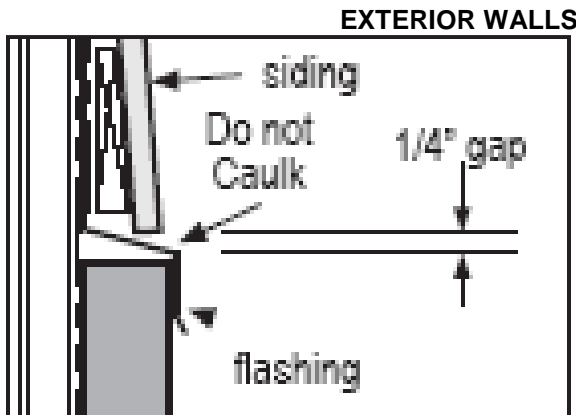
**Exterior Walls:** Brick and Hardie Board siding.

**INTERIOR WALLS**



I	NI	NP	R	Inspection Item
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Water stain or damage was noted on the wall behind the upstairs rear commode. Inspector verified the presence of water with a GE Protimeter Surveymaster dual mode pin and non invasive moisture meter, this inspector suspects that the commode has leaked and caused this area to be wet . Any moisture reading over 16% relative humidity makes the area conducive to decay, mildew, mold, and wood destroying insects. Recommend investigation and correction as necessary to stop the water penetration.



All horizontal surfaces over doors and windows, and horizontal trim boards, and all horizontal joints in the siding panels where water running down the inside of the siding above the horizontal wood surfaces should be repaired to provide the correct protection from water damage with the installation of a “Z” type flashing.

**F. Ceilings & Floors** *Comments:*



Large crack in the ceiling of the front left bedroom on the pan ceiling is probably caused by the technician that installed the house sound system standing on a vulnerable spot in the roof. Recommend this cosmetic damage be repaired.

**G. Doors (Interior & Exterior)** *Comments:*

All rear doors to the exterior drag on either the frames or the floors, also the utility closet door upstairs. Some adjustment may help them operate easier but they by their design tend to drag on the flooring.

The door catch hits the striker plate at the front door when the door is being closed and does not allow the door to close easily, this should be adjusted as necessary.

I	NI	NP	R	Inspection Item
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The door between the garage and the interior of the house observed to be a hollow core door. Under current building standards, the entry door between the garage and the residence should be a solid wood door, solid steel or honeycomb-core steel door not less than 1-3/8" (35 mm) thick, or 20 minute fire rated door.

H. Windows *Comments:*

Inspector could not verify that the glass is safety glass over the master bathtub. Recommend verification and correction if necessary for reasons of safety.



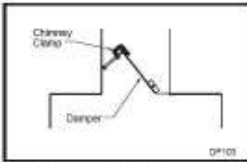
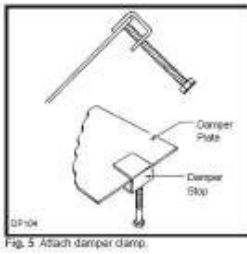
**Bedroom window egress:**

The second exit required in a bedroom is usually a window. The dimensions of the openings are to ensure the residents an escape route, but equally important, they are designed to allow a firefighter with a backpack to enter. The opening must be at least 24" high and at least 20" wide, with a net area at least 5.7 sq.ft. The window sill must not be higher than 44" from the floor. This is in regards to the upstairs left rear bedroom, this sill height is 47". This item may have met building standards at the time the home was built. The building standards have changed and per TREC standards of practice I am required to note this item as in need of repair. For reasons of safety you should contact your local fire fighter station for assistance in remedying this situation.

I. Stairways (Interior & Exterior) *Comments:*

J. Fireplace/Chimney *Comments:*  
Two Gas Log Fireplaces.

I	NI	NP	R	Inspection Item
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**Where artificial gas logs are installed in a fireplace, with a damper; the damper should be permanently blocked open with a damper clamp to prevent spillage of combustion product (Carbon Monoxide) in the living area. Recommend a device be installed in the fireplace to permanently block it open prior to use.**

*NOTE: In homes with gas-fired appliances and /or wood burning fireplaces, we recommend the installation of Carbon Monoxide Detectors.*

**K. Porches, Balconies, Decks, and Carports** *Comments:*

## II. ELECTRICAL SYSTEMS

**A. Service Entrance and Panels** *Comments:*



**Main Power/Cable Entrance Underground. 200 Amp Main Panel Breaker box with main disconnect is located in the garage interior.**

**The Texas Real Estate Commission (TREC) requires that all Inspectors note as deficient the lack of Arc Fault Circuit Interrupters (AFCI) devices serving family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, or similar rooms or areas, this became effective February 1<sup>st</sup> 2009.**

I	NI	NP	R	Inspection Item
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**Neutral wires in the electrical panel(s) are not permitted to be doubled up (double lugged). Each grounded conductor shall terminate within the panelboard on an individual terminal that is not also used for another conductor, except grounded conductors where applicable. Ref 2003 IRC E3606.4 and 1999 NEC 408.41. Recommend a licensed electrician correct as required.**

**B. Branch Circuits, Connected Devices, and Fixtures**

*Type of Wiring:* Copper.

*Comments:*

Random inspection of outlets / switches performed

Branch circuit wiring is  Grounded 3 wire  Ungrounded 2 wire

Inspection of outlets, switches and accessory connections was limited due to concealment.

**Smoke Detectors: ARE NOT present in the bedrooms. Current building standards require one smoke detector in a hallway leading to sleeping areas, one smoke detector per bedroom, and one smoke detector per floor of the building. Smoke detectors are required to be interconnected. All batteries should be replaced before taking possession of the house. The presence of smoke detection devices is inspected however each individual unit is not tested.**

**Missing GFCI protection at the Laundry sink and the exterior GFCI outlet near the aerobic pump did not trip, also the outlet on the right front did not trip when tested, I suspect this is hooked to the GFCI outlet that did not trip that is near the aerobic pump. Replacement of one GFCI outlet will protect all outlets that are “downstream” of the installed GFCI outlet. So instead of installing several GFCI outlets installing one in the correct location will protect the “downstream” outlets.**

**An outlet has reversed polarity in the formal dining room under the large window (i.e. it is wired backwards). This outlet and the circuit should be investigated and improved as necessary.**

**No receptacles in the upstairs hallway between the bedrooms. Hallways of 10' or more shall have at least one receptacle (outlet). The length of an L-shaped hallway is also measured along the centerline and includes the total L- shaped length. Ref 2003 IRC E3801.10. This item may have met building standards at the time the home was built. The building standards have changed and per TREC standards of practice I am required to note this item as deficient.**

**A receptacle in the living room near the switch for the ceiling fan has an open neutral, this is because there is a “break in the path” or simply a loose connection on the white wire at this receptacle, recommend repairs.**

I	NI	NP	R	Inspection Item
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**A ceiling fan in the sun room is inoperative and should be repaired.**

### III. HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS

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#### A. Heating Equipment

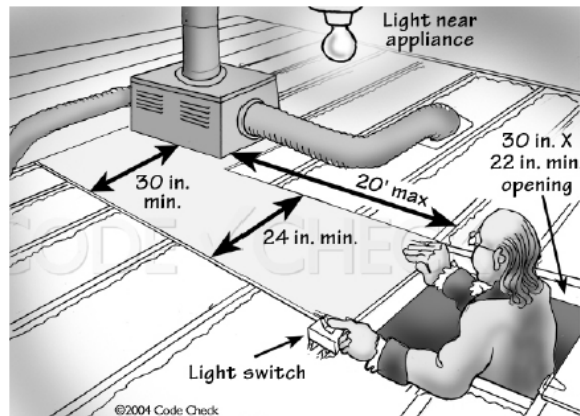
*Type of System:* Gas Central Forced Air Furnace. Air handler(s) located in the hall closet and in the attic. The furnace(s) are partially accessible. The gas shut off valve(s) are Present. The branch line is flex.

*Energy Source:*

*Comments:* The heating uit(s) ARE operating correctly.



**Flexible gas line is not allowed by current industry standards and most installation instructions to pass into metal cabinet of gas heating units due to the normal vibration from the unit can rub holes in the flexible gas line, rigid metal pipe should extend outside cabinet.**



**There is no decked service passage to the attic mounted equipment. Under current IRC standards, all appliances (Air Handlers, Water Heaters, etc) mounted in an attic should be accessible with a passageway of continuous solid flooring not less than 24-inches wide. Reference 2003 IRC 1305.1.3. If the attic mounted appliances require maintenance or replacement the service technician should have a proper working surface to and in the front of the attic mounted appliances.**

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#### B. Cooling Equipment

*Type of System:* Two Electric Central Forced Air Systems located in the garage and upstairs hall closet.

I	NI	NP	R	Inspection Item
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*Comments:* The cooling system(s) ARE NOT operating correctly.

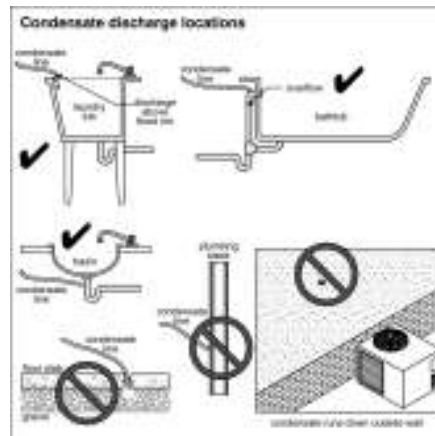
Condensers:

One-2 ½-ton Condenser

One-3-ton Condenser

The temperature differential for the downstairs unit is 18° (OK). Temperature differential readings are a fundamental standard for testing the proper operation of the cooling system. The normal acceptable range is considered approximately between 16°-22° total difference between the return air and supply air. Temperature differential is within the normally accepted standards of temperature.

**The temperature differential for the upstairs attic mounted air conditioner is 10° (Too Low). The normal temperature differential is 16°-22°. The temperature drop measured across the evaporator coil of the air conditioning system is lower than considered typical. This usually indicates that servicing is needed. A qualified heating and cooling technician should be consulted to further evaluate this condition and the remedies available for correction.**



**The primary drain line from the HVAC unit in the attic is not correctly terminated and is not in compliance with building codes and common building practices. This line should terminate into a plumbing drain line typically at a sink, not as it is currently connected directly into a plumbing vent stack pipe. Repairs should be undertaken as the fumes from the vent pipe are caustic and can cause premature corrosion to the HVAC system.**

**C. Duct System, Chases, and Vents** *Comments:*

Note: Specific Limitations. Not all ducts were accessible or visible during this inspection. Ducts in inaccessible areas of the attic, those concealed by insulation or stored items, and those enclosed in chases, walls, et al were not inspected.

**Inspector noted low to no air flow at the return air vents serving the upstairs HVAC unit, could be a kinked vent or an extremely dirty air filter. Recommend investigation and correction as necessary by a qualified HVAC technician.**

I	NI	NP	R	Inspection Item
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The HVAC ducting in attic is a product known as “first generation gray duct” a recalled product that is well beyond recall statute of limitations. The product is known for high maintenance due to the covering that splits with UV-Ray contact (direct or indirect sunlight through roof vents or penetrations) allowing the insulation to fall off leaving no energy efficiency protection for the conditioned air being distributed to supply registers. Repair is possible (duct tape covering back on after re-attaching the insulation) but ideally, replacement is more highly recommended.

**IV. PLUMBING SYSTEM**

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**A. Water Supply System and Fixtures**

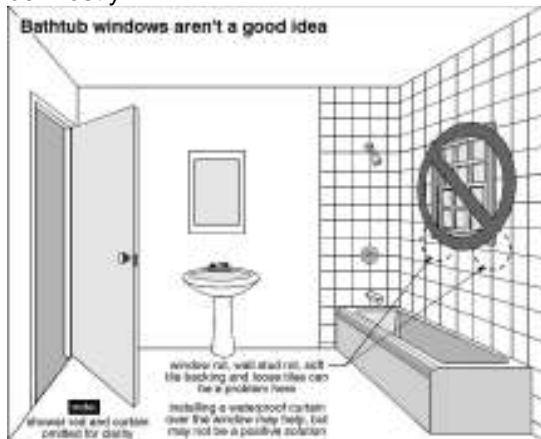
*Location of water meter:* Unknown could not locate it.

*Location of main water supply valve:* In the front right yard near the sidewalk.

*Static water pressure reading:* The water pressure reading was taken at the front outside water faucet at approximately 10am. The water pressure was 40 to 80 psi. Normal water pressure is considered to be between 40 to 80 psi.

*Comments:*

Supply system visible piping appears to be mostly: PEX



**NOTE: Windows in showers will allow water to penetrate behind the wall. Monitor and repair if it happens. Recommend at a minimum that you install a shower type of curtain over the window to keep the water away from the window.**

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**B. Drains, Wastes, and Vents**

*Comments:* Type of visible DWV piping material appears to be mostly: ABS or PVC plastic

I	NI	NP	R	Inspection Item
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**C. Water Heating Equipment**

*Energy Source:* 40 gallon gas water heater Located in the garage closet and one in the upstairs hall closet. (2003)

*Capacity:*

*Comments:*



Normal water temperature is 120° - 140°. Water temperature is as measured at the kitchen sink.  
Water temperature is as measured at the sink in the upstairs bathroom.

The TPR valve was not operated as the inspector could not observe the termination point at the time of discharge. The gas shut off valve was present. The type of gas branch line was flexible. The type of observable vent pipe is single & double wall.



**The pan installed below the water heater located in the upstairs hall is not hooked up to allow any water flowing into it to be discharged to a safe location. Recommend correction.**

**D. Hydro-Massage Therapy Equipment** *Comments:*

**V. APPLIANCES**

**A. Dishwasher** *Comments:* Inspected and operated correctly on the day of the inspection.

**B. Food Waste Disposer** *Comments:*

**C. Range Exhaust Vent** *Comments:* Inspected and operated correctly on the day of the inspection.



I	NI	NP	R	Inspection Item
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Ducted to the exterior of the house.

**D. Ranges, Cooktops, and Ovens** *Comments:*

Gas cooktop and double electric oven.

The oven temperatures were 350° when the oven was set at 350°. +/- 25° is within the TREC accepted range.

**E. Microwave Oven** *Comments:* Operated correctly on the day of the inspection.

**F. Trash Compactor** *Comments:*

**G. Mechanical Exhaust Vents and Bathroom Heaters** *Comments:* Operated as intended on the day of the inspection.



**The laundry exhaust fan(s) should be repaired so as to discharge to the building exterior currently they vent into the attic.**

**H. Garage Door Operator(s)** *Comments:* Operated correctly on the day of the inspection.

**The garage door opener did not automatically reverse under reasonable resistance to closing. There is a serious risk of injury, particularly to children, under this condition. Improvement may be as simple as adjusting the sensitivity control on the opener. This should be corrected for reasons of safety.**

**I. Doorbell and Chimes** *Comments:* Operated correctly today.

**J. Dryer Vents** *Comments:* This Company does not inspect the interior of dryer vents.

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**The clothes dryer vent improperly terminates in the attic / garage, clothes dryer vent shall convey the moisture to the outdoors and shall terminate on the outside of the building Ref IRC 1501.1. Repairs should be undertaken. Lint present in the attic will find it's way into the house, air being drawn into the HVAC system will pull this lint into the HVAC system effectively reducing the HVAC efficiency and furthermore increasing your families coughing and sneezing because of the lint.**

## VI. OPTIONAL SYSTEMS

- 

### A. Lawn and Garden Sprinkler Systems *Comments:*

The inspector will not inspect the automatic function of the timer or control box, the rain sensor or the effectiveness and sizing of anti-siphon valves or backflow preventers.  
Shut Off Valve(s) Present Location of Shutoff Valve Street  
Number of Zones **9**

**Landscape sprinkler system:** Systems are manually cycled through various zones. Unless specified the following is not determined or inspected: code or construction standard compliance; programmable features or clock operation; rain delays; quality of coverage; underground leakage or freeze damage. Long term spray coverage limitations. Almost all sprinklers will spray onto the home at some point. We recommend you maintain the system to reduce over spray to a minimum so as to reduce the likelihood of wood rot and water penetration. Lawn sprinklers are conducive to attracting termites and insects due to increased moisture availability.

The following sprinkler zones and heads need adjustment / repairs:

**Zone 1 (front right and right side flowerbed) would not come on. Recommend repairs.**

- 

### B. Swimming Pools, Spas, Hot Tubs, and Equipment

*Type of Construction: In ground fiberglass pool*

*Comments:* It rained the night before the inspection the area around the pool equipment is wet from the rain.

NOTE: This inspector will comment on the "codes" that are in force currently. This pool may predate some of these codes. However codes were adopted for safety reasons, so this inspector will comment on codes for purely safety reasons, this is not a code inspection.

*TREC LIMITATIONS: The inspector is not required to the following: Dismantle or otherwise open any components or lines; Uncover or excavate any lines or otherwise concealed components of the system or determine the presence of sub-surface leaks; Fill the pool, spa or hot tub with water; Determine the presence of sub-surface water tables; or Inspect ancillary equipment such as computer controls, covers, chlorinators or other chemical dispensers, or water ionization devices or conditioners other than required by this section. Note: Specific Limitations. Although this inspection may identify some safety concerns, it*

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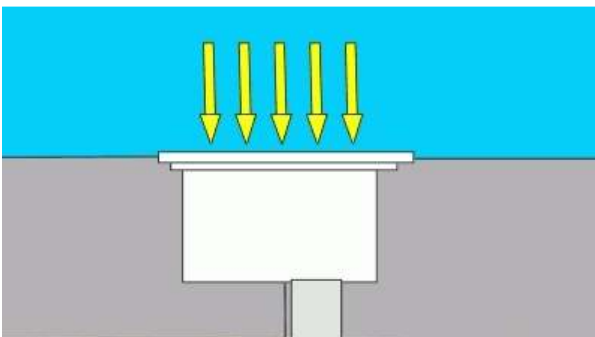
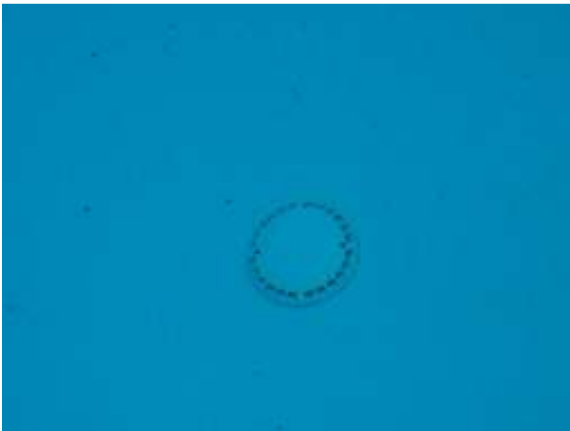
*is important to know that all safety issues are not inspected for. Pools and spas are inherently unsafe, especially for children. For more information about pool safety see the Consumer Product Safety Commission Internet site at [www.cpsc.gov](http://www.cpsc.gov). Specialty safety inspections are available from pool specialists.*

**No visible signs of cracks on the interior of the pool seen on the day of the inspection.**

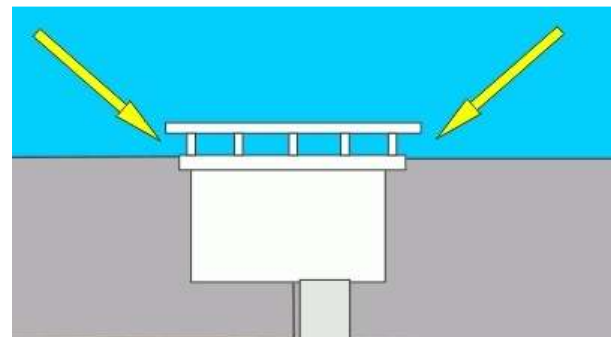
**The swimming pool and equipment should be further evaluated and/or serviced by a Qualified Pool Technician. The observations made to support the rendering of this opinion are listed but not limited to the following.**



**Cracks noted in the decking of the pool near the ladder, ladder is loose and should be secured. Small cracks with no visual evidence of movement.**



**Simplified drawing of this pool's drain cover**



**Simplified version of an Anti-Vortex cover**

**Single pool drain noted. Pools being built new today have separated drain covers, this does not allow the suction of the pump to hold someone against the cover. Anti-vortex covers allow water to enter the drain cover from the top and the sides. For reasons of safety I recommend an anti-vortex cover be installed. For sample pictures of anti-vortex covers visit:**

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[http://www.mytexasinspector.com/pdf/Anti\\_Vortex\\_ASME\\_ANSI\\_A112.19.8.pdf](http://www.mytexasinspector.com/pdf/Anti_Vortex_ASME_ANSI_A112.19.8.pdf). I did further investigation on this cover, without visually inspecting the cover I cannot be sure of this but it looks like the drain cover in the bottom of the pool is on the acceptable list, if you follow the link above and check out the cover on the bottom of page 4 it looks OK, HOWEVER look at the cover on the bottom of page 3, this is the confusing part. I cannot be sure that this is an acceptable cover. Recommend further investigation.

The pool light is missing the GFCI protection as required. Recommend repairs.



Polaris pump has a water leak where the return line connects on the top of the pump. Recommend a pool technician repair.

The pool equipment, including the pump and electrical control housing boxes are not bonded. Recommend repairs.

All doors (and screens to the doors) with direct access to the pool require an alarm audible for 30 seconds throughout the house. Alarm control minimum 54 inches high, and automatically resetting. One alternative (which has to be approved by the governing body where the pool is) to this alarm noted in the 2003 IRC AG105.2.9.3 (read below) Commentary section states that a self closing and self latching door device can be used in lieu of the audible alarm system as long as the protection is not less than the audible alarm. Commentary: "Item 9.3 permits doors to pool areas to be protected by devices that render the door self-closing and self-latching. Any other requirements would be performance based, as the code only requires equivalency with Items 9.1 or 9.2. One possible criterion could require the release mechanism for the latching device to be located a minimum of 54 inches (1372 mm) above the floor, which is presumed to be beyond the reach of small children. In addition, doors protected by the method specified in Item 9.3 should probably open away from the pool area. This is so that if the door failed to latch, a child outside the pool area pushing against the door would cause it to close and not swing to an open position".

The conduit has pulled away from the main pool pump exposing the electrical wires inside, recommend repairs.

There is no fence located around the pool. While it is not always required, I recommend one be installed. I talked to my client about the proper installation of the fence gates.

No visible ground fault circuit interrupter (GFCI) outlet or breaker found for the pool / spa light. The lack of this GFCI circuit is a recognized hazard.

All receptacles within 20ft. of the pool are required to be GFCI protected, except outlets inside the house.

The pool light is inoperative and should be repaired.

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**The pool equipment, including the pump and electrical control housing boxes are not bonded. Recommend repairs.**

**Gate to pool does not open away from the pool as is required. The idea here is that if a child were to push on the gate to open it, and if it opens away from the pool the child could latch it, or the child would not gain immediate access to the pool. Recommend repairs.**

**Fence gate around pool/spa is not self closing / self latching type as required by most building codes, Local ordinance and possibly home owner`s insurance.**

**Fences should not have over 4" of clearance between them and the ground, and if they are on a hard surface the clearance should not be over 2". Ref IRC AG105.2**

**Consumer Product Safety Alert**

**FROM THE U.S. CONSUMER PRODUCT SAFETY COMMISSION, WASHINGTON, D.C. 20207**

**Swimming Pool Safety Alert**

Each year, about 280 children under 5 drown in swimming pools. In addition, the suction from drains in swimming pools and spas, under certain conditions, can entrap swimmers underwater. To help protect your family, be sure to take the following steps.

**Use Layers of Protection**

To prevent swimming pool drownings, layers of protection are essential. Place barriers completely around the pool, closely supervise young children, and be prepared in case of emergency.

**In addition:**

- If a child is missing, always look first in the pool. Seconds count!
- Knowing how to swim doesn't make a child drown-proof. Never use flotation devices as a substitute for supervision.
- Keep rescue equipment and a phone next to the pool.
- Learn cardiopulmonary resuscitation (CPR).
- Install physical barriers around the pool to limit access.
  - Fences and walls should be at least 4-feet high and installed completely around the pool.
  - Gates should be self-closing and self-latching. The latch should be out of reach of small children.
- If your house forms one side of the barrier for the pool, doors leading from the house to the pool should be protected with alarms that sound when the doors are unexpectedly opened. Or, use a power safety cover, a motor-powered barrier placed over the water area, to prevent access by young children.
- For above-ground pools, steps and ladders to the pool should be secured or removed when the pool is not in use.

**Pool and Spa Entrapment Dangers**

- Never use a pool or spa with a missing or broken drain cover. Be sure a newer, safer drain cover is in place. The new drain covers are usually domed-shaped – instead of the old flat drain covers.
- Consider installing a Safety Vacuum Release System (SVRS) , a device that will automatically shut off a pump if a blockage is detected.
- Have a professional regularly inspect your pool or spa for entrapment or entanglement hazards.
- Plainly mark the location of the electrical cut-off switch for the pool or spa pump.
- If someone is entrapped against a drain, cut off the pump immediately. Instead of trying to pull the person away from the powerful suction, pry a hand between the drain and the person's body to break the seal.

For more information, please visit CPSC's Web site at [www.cpsc.gov](http://www.cpsc.gov), or call the CPSC Hotline at (800) 638-2772.

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**End of Pool Comments**

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**C. Gas Supply Systems** *Comments:*

Gas Leak  Test Performed  Not Performed

Location of the gas shutoff valve at the back of house. Propane tank located in the rear yard.

- 

**D. Private Water Wells** (A coliform analysis is recommended.)

*Type of Pump:*

*Type of Storage Equipment:*

*Comments:*

- 

**E. Private Sewage Disposal (Septic) Systems**

*Type of System:* Aerobic

*Location of Drain Field:* **Sprayer heads are in the rear yard.**

*Comments:*

**Per Denton County you are required to provide proof of maintenance on your aerobic septic system. Follow this link to find authorized aerobic system companies. You can also take a class to be able to maintain your own septic system.**

**<http://dentoncounty.com/dept/envhealth/SepticpermitApp.pdf>.**

**Recommend you get all inspections and maintenance records of pumping or repairs to the septic system from the sellers prior to closing.**

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**This is part of the inspection report, please take time to read it.**

**General statement:**

**Thank you** for using Golden Rule Property Inspections to conduct your warranty inspection. The purpose of the inspection is to provide an overall understanding of the general property condition. Unless departed from this inspection is performed to the Standards of Practice of the Texas Real Estate Commission. Some safety concerns may be reported by the inspector however it is important to understand that this is not a comprehensive safety inspection and all unsafe potentials are not inspected Identification of items that do not meet modern construction standards or codes are not a part of this service and are departed from and any comment regarding such is partial.

**Occupied Home**-The home is occupied and personal belongings and furniture may limit some areas to inspect.

**Appliances:** Appliances are operated via normal controls only. Unless specified the following is not determined or inspected: temperature regulator devices on water heating systems or plumbing fixtures; water temperatures; burn or scald risks of appliances; electrical shock or fire risks; explosion risks of water heaters; remaining lifespan; the risk an appliance might pose to an user (for example, we do not determine if reaching over a range top to activate a control is unsafe). Obtaining an optional home warranty from a TREC approved provider may reduce the monetary risks of appliance failure.

It is beyond the scope of the inspection for the inspector to make comments regarding: improvement options, maintenance recommendations; prioritizing discoveries, the safety of the property, the cost of repair potential; life span statements; predicting future performance. There are times however where an inspector may make a comment relative to the aforementioned items solely as an added benefit. Please keep in mind that any additional comments are partial in content, subject to validation by you via a specialist and do not apply or extend to all areas of the inspection.

**What is GFCI:** When you look at a normal 120-volt outlet in the United States, there are two vertical slots and then a round hole centered below them. The left slot is slightly larger than the right. The left slot is called "neutral," the right slot is called "hot" and the hole below them is called "ground." If an appliance is working properly, all electricity that the appliance uses will flow from hot to neutral. A GFCI monitors the amount of current flowing from hot to neutral. If there is any imbalance, it trips the circuit. It is able to sense a mismatch as small as 4 or 5 milliamps, and it can react as quickly as one-thirtieth of a second.

So let's say you are outside with your power drill and it is raining. You are standing on the ground, and since the drill is wet there is a path from the hot wire inside the drill through you to ground. If electricity flows from hot to ground through you, it could be fatal. The GFCI can sense the current flowing through you because not all of the current is flowing from hot to neutral as it expects -- some of it is flowing through you to ground. As soon as the GFCI senses that, it trips the circuit and cuts off the electricity.

**THE SCOPE OF THE INSPECTION**

All components designated for inspection in accordance with the rules of the TEXAS REAL ESTATE COMMISSION (TREC) are inspected, except as may be noted by the "Not Inspected" or "Not Present" check boxes. Explanations for items not inspected may be in the "TREC Limitations" sections within this report.

This inspection is visual only. A representative sample of building components are viewed in areas that are accessible at the time of the inspection. No destructive testing or dismantling of building components is performed.

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**NOTICE: THIS REPORT IS PAID FOR BY AND PREPARED FOR THE CLIENT NAMED ABOVE.  
THIS REPORT IS NOT VALID WITHOUT THE SIGNED SERVICE AGREEMENT AND IS NOT TRANSFERABLE.**

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## ADDENDUM: MAINTENANCE ADVICE

### Upon Taking Ownership

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

- Complete all of the improvements recommended in this inspection report.**
- Change the locks on all exterior entrances, for improved security (if this is a new home for you).
- Check that all windows and doors are secure. Improve window hardware as necessary. Security rods can be added to sliding windows and doors. Consideration could also be given to a security system (if not installed already).
- Install smoke detectors on each level of the home (if not present). Ensure that there is a smoke detector outside all sleeping areas. Replace batteries on any existing smoke detectors and test them. Make a note to replace batteries again in one year.
- Create a plan of action in the event of a fire in your home. Ensure that there is an operable window or door in every room of the house. Consult with your local fire department regarding fire safety issues and what to do in the event of fire.
- Examine driveways and walkways for trip hazards. Undertake repairs where necessary.
- Examine the interior of the home for trip hazards. Loose or torn carpeting and flooring should be repaired.
- Undertake improvements to all stairways, decks, porches and landings where there is a risk of falling or stumbling.
- Review your home inspection report for any items that require immediate improvement or further investigation. Address these areas as required.
- Install rain caps and vermin screens on all chimney flues, as necessary.
- Investigate the location of the main shut-offs for the plumbing, heating and electrical systems.

### Regular Maintenance

#### EVERY MONTH

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

#### SPRING AND FALL

- Examine the roof for evidence of damage to roof coverings, flashings and chimneys.
- Look in the attic (if accessible) to ensure that roof vents are not obstructed. Check for evidence of leakage, condensation or vermin activity. Level out insulation if needed.
- Trim back tree branches and shrubs to ensure that they are not in contact with the house.
- Inspect the exterior walls and foundation for evidence of damage, cracking or movement. Watch for bird nests or other vermin or insect activity.
- Survey the basement and/or crawl space walls for evidence of moisture seepage, if applicable.
- Look at overhead wires coming to the house. They should be secure and clear of trees or other obstructions, if not call your local electric provider for correction.



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- Ensure that the grade of the land around the house encourages water to flow away from the foundation.
- Inspect all driveways, walkways, decks, porches, and landscape components for evidence of deterioration, movement or safety hazards.
- Clean windows and test their operation. Improve caulking and weather-stripping as necessary. Watch for evidence of rot in wood window frames. Paint and repair window sills and frames as necessary.
- Test all ground fault circuit interrupter (GFCI) devices, as identified in the inspection report.
- Shut off isolating valves for exterior hose bibs in the fall, if below freezing temperatures are anticipated.
- Inspect for evidence of wood boring insect activity. Eliminate any wood/soil contact around the perimeter of the home.
- Test the overhead garage door opener, to ensure that the auto-reverse mechanisms are responding properly. Clean and lubricate hinges, rollers and tracks on overhead doors.
- Replace or clean exhaust hood filters.
- Clean, inspect and/or service all appliances as per the manufacturer's recommendations.

**ANNUALLY**

- Replace smoke detector batteries.
- Have the heating, cooling and water heater systems cleaned and serviced.
- Have chimneys inspected and cleaned. Ensure that rain caps and vermin screens are secure.
- Examine the electrical panels, wiring and electrical components for evidence of overheating. Ensure that all components are secure. Flip the breakers on and off to ensure that they are not sticky.
- If the house utilizes a well, check and service the pump and holding tank. Have the water quality tested. If the property has a septic system, have the tank inspected (and pumped as needed).
- If your home is in an area prone to wood destroying insects (termites, carpenter ants, etc.), have the home inspected by a licensed specialist. Preventative treatments may be recommended in some cases.

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**Prevention Is The Best Approach**

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

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

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APPROVED BY THE TEXAS REAL ESTATE COMMISSION (TREC)  
P.O. BOX 12188, AUSTIN, TX 78711-2188

10-27-08

## TEXAS REAL ESTATE CONSUMER NOTICE CONCERNING HAZARDS OR DEFICIENCIES

Each year, Texans sustain property damage and are injured by accidents in the home. While some accidents may not be avoidable, many other accidents, injuries, and deaths may be avoided through the identification and repair of certain hazardous conditions. Examples of such hazards include:

- improperly installed or missing ground fault circuit protection (GFCI) devices for electrical receptacles in garages, bathrooms, kitchens, and exterior areas;
- improperly installed or missing arc fault protection (AFCI) devices for electrical receptacles in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas;
- ordinary glass in locations where modern construction techniques call for safety glass;
- the lack of fire safety features such as smoke alarms, fire-rated doors in certain locations, and functional emergency escape and rescue openings in bedrooms;
- excessive spacing between balusters on stairways and porches;
- improperly installed appliances;
- improperly installed or defective safety devices; and
- lack of electrical bonding and grounding.

To ensure that consumers are informed of hazards such as these, the Texas Real Estate Commission (TREC) has adopted Standards of Practice requiring licensed inspectors to report these conditions as "Deficient" when performing an inspection for a buyer or seller, if they can be reasonably determined.

These conditions may not have violated building codes or common practices at the time of the construction of the home, or they may have been "grandfathered" because they were present prior to the adoption of codes prohibiting such conditions. While the TREC Standards of Practice do not require inspectors to perform a code compliance inspection, TREC considers the potential for injury or property loss from the hazards addressed in the Standards of Practice to be significant enough to warrant this notice.

Contract forms developed by TREC for use by its real estate licensees also inform the buyer of the right to have the home inspected and can provide an option clause permitting the buyer to terminate the contract within a specified time. Neither the Standards of Practice nor the TREC contract forms requires a seller to remedy conditions revealed by an inspection. The decision to correct a hazard or any deficiency identified in an inspection report is left to the parties to the contract for the sale or purchase of the home.

This form has been approved by the Texas Real Estate Commission for voluntary use by its licensees. Copies of TREC rules governing real estate brokers, salesperson and real estate inspectors are available at nominal cost from TREC. Texas Real Estate Commission, P.O. Box 12188, Austin, TX 78711-2188, 1-800-250-8732 or (512) 459-6544 (<http://www.trec.state.tx.us>)

TREC Form No. OP-I

This form is available on the TREC website at [www.trec.state.tx.us](http://www.trec.state.tx.us)

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## ADDENDUM: BUILDING CODE COMPLIANCE

In dealing with your builder and the municipal building inspection department there are a few things you'll want to know. As of January 2002 ALL municipalities in the State of Texas with a population of over 5000 were required to adopt the 2000 International Residential Code (2000 IRC). With the advent of the Texas Residential Construction Commission (TRCC) in 2003, Texas House Bill 730, Section 430.001 requires that all residential construction in the State of Texas adhere to the IRC and the National Electrical Code (NEC), as well as all materials and systems manufacturers' installation instructions, regardless of incorporation or population. Since building codes are the province of government, the referenced standards have the force of law and must be adhered to.

Municipalities may opt to adopt newer versions of the IRC, such as the 2003 or 2006 versions, or newer versions of the NEC, such as the 2002 or 2005 versions, but the 2000 IRC version and the 1999 NEC versions are entry level requirements. Manufacturers' installation instructions are not allowed to be altered.

Amendments or exceptions to the 2000 International Residential Code (IRC) may not be made by the Chief Building Official of the municipality, and certainly not by your builder. The legislation set forth in Texas Statute 214.212, reads as follows:

### § 214.212 International Residential Code

- (a) To protect the public health, safety and welfare, the International Residential Code, as it existed on May 1, 2001, is adopted as a municipal residential **building code** in this state.
- (b) The International Residential Code applies to all construction, alteration, remodeling, enlargement, and repair of residential structures in municipality.
- (c) A municipality may establish procedures:
  - (1) to adopt local amendments to the International Residential Code; and
  - (2) for the administration and enforcement of the International Residential Code
- (d) A municipality may review and consider amendments made by the International Residential Code Council to the International Residential Code after May 1, 2001.

Added by Acts 2001, 77<sup>th</sup> Leg., ch 120, § 1, eff. Jan 1, 2002.

Each municipality is required to include in their city ordinances or land development documents all exceptions or changes to the International Residential Code and National Electrical Code that the members of the City Council have agreed upon and officially adopted. **If an exception, deletion or any other alteration of the code has not been formally passed into ordinance, in this Inspector's reading of the law, it is not valid.**

Any city ordinance is the matter of public record and is available for examination either on the city's web site or in the office of the Chief Building Official. Most cities websites and ordinances can be located at [www.ci.yourcity.tx.us](http://www.ci.yourcity.tx.us). Some municipalities' ordinances are available online at [www.ordinance.com](http://www.ordinance.com) or [www.municode.com](http://www.municode.com). If your builder or municipal inspector cannot produce a copy of the city ordinance specifically excluding any portion of the IRC or NEC, it must be adhered to.

Additionally, according to the International Residential Code R102.4, National Electrical Code 110-3(b), and the TRCC Performance Standard 304.2(a)(5), neither the municipality nor the Chief Building Official may ever override a manufacturer's installation instructions. We do not build our houses of found materials. Thus, all materials in the home are manufactured. The manufacturer of any given material, equipment, appliance or system is the sold arbiter of the manner in which his product is to be installed. Failure to comply with manufacturer's installation instructions both voids the manufacturer's warranty and constitutes flagrant violation of the building codes.

An individual who wishes to file a complaint against a registered municipal code enforcement officer or a code enforcement officer in training may write to:

Complaints Management and Investigative Section  
P. O. Box 141369  
Austin, TX 78714-1369

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Or call 1-800-942-5540 to request the appropriate form or obtain information.

Having said all that, we should add this: **We are not the Building Police.** Home inspectors in the State of Texas have no authority to compel full compliance with the prevailing building codes. They have no legal basis on which to enforce their opinions. Only a building official for a municipality has that enforcement authority and may direct code compliance. Because we always find discrepancies between what the municipal inspectors allow and the code requires, we feel that juxtaposing these two allows our clients to make a fully informed decision regarding the condition of the home they are buying or have bought.

The International Residential Code Council's "Legal Aspects of Code Administration", 2002 Edition, states in part, "The Latin term **caveat emptor**, means "let the buyer beware". Thus, it is up to the purchaser to determine the soundness of the building prior to the finalization of the purchase or to hire a professional inspector.

You are strongly urged to insure that all items noted as in need of repair in this report are repaired and brought into full compliance with the letter of the code as quoted prior to closing escrow. Once escrow is closed, you will be at the mercy of the newly formed Texas Residential Construction Commission. This is a commission founded by the builders to protect the builders from you and your attorney.

NOTE: If your builder refers to the "city code" he is referring to the municipality's adopted versions of the International Residential Code and the National Electrical Code plus those amendments adopted by the city council. If your builder refers to the "subdivision code" he is referring to the rules set forth by the city in your subdivision for lot setback distances, fence requirements, landscaping requirements, percentage of exterior brick vs. siding requirements, etc. "City code" and/or "subdivision code" do not override the State mandated compliance with the International Residential Code, the National Electrical Code and the materials manufacturers' installation instructions.

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## ADDENDUM: RADON INFORMATION



### EPA RADON RISK INFORMATION

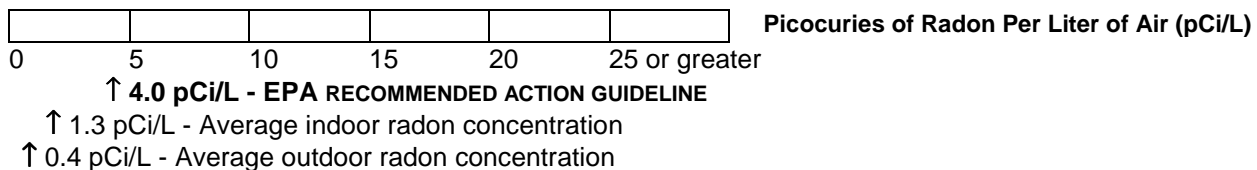
Fifty-five percent of our exposure to natural sources of radiation usually comes from radon. Radon is a colorless, tasteless, and odorless gas that comes from the decay of uranium found in nearly all soils. Levels of radon vary throughout the country. Radon is found all over the United States and scientists estimate that nearly one out of every 15 homes in this country has radon levels above recommended action levels.

Radon usually moves from the ground up and migrates into homes and other buildings through cracks and other holes in their foundations. The buildings trap radon inside, where it accumulates and may become a health hazard if the building is not properly ventilated.

When you breathe air containing a large amount of radon, the radiation can damage your lungs and eventually cause lung cancer. Scientists believe that radon is the second leading cause of lung cancer in the United States. It is estimated that 7,000 to 30,000 Americans die each year from radon-induced lung cancer. Only smoking causes more lung cancer deaths and smokers exposed to radon are at higher risk than nonsmokers. Testing your home is the only way to know if you and your family are at risk from radon.

### Testing for Radon

Should you have your home tested, use the chart below to compare your radon test results with the EPA guideline. The higher a home's radon level, the greater the health risk to you and your family.



**The U.S. Environmental Protection Agency (EPA) and the Surgeon General Strongly recommend taking further action when the home's radon test results are 4.0 pCi/L or greater.** The concentration of radon in the home is measured in picocuries per liter of air (pCi/L). Radon levels less than 4.0 pCi/L still pose some risk and in many cases may be reduced. If the radon level in your home is between 2.0 and 4.0 pCi/L, EPA recommends that you **consider** fixing your home. The national average indoor radon level is about 1.3 pCi/L. The higher a home's radon level, the greater the health risk to you and your family. Smokers and former smokers are at especially high risk. There are straightforward ways to fix a home's radon problem that are not too costly. Even homes with very high levels can be reduced to below 4.0 pCi/L. EPA recommends that you use an EPA or State-approved contractor trained to fix radon problems.

### What do radon test results mean?

If your radon level is **below 4 pCi/L**, you do not need to take action.

If your radon level is **4 pCi/L or greater**, use the following charts to determine what your test results mean. Depending upon the type of test(s) you took, you will have to either test again or fix the home.

NOTE: All tests should meet EPA technical protocols.

### Chart 1: Radon Test Conducted Outside Real Estate Transaction

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Type of Test(s)	If Radon Level Is 4.0 pCi/L or Greater
Single Short-Term Test	<b>Test Again*</b>
Average of Short-Term Tests	<b>Fix The Home</b>
One Long-Term Test	<b>Fix The Home</b>

\* If your first short term test is several times greater than 4.0 pCi/L - for example, about 10.0 pCi/L or higher - you should take a second short-term test immediately.

**Chart 1: Radon Test Conducted During a Real Estate Transaction (Buying or Selling a Home)**

Type of Test(s)	If Radon Level Is 4.0 pCi/L or Greater
Single Active Short-Term Test (this test requires a machine)	<b>Fix The Home</b>
Average of 2 Passive Short-Term Tests* (these tests do not require machines)	<b>Fix The Home</b>
One Long-Term Test	<b>Fix The Home</b>

\* Use two passive short-term tests and average the results.

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**What should I do after testing?**

If your radon level is 4.0 pCi/L or greater, you can call your State radon office to obtain more information, including a list of EPA or State-approved radon contractors who can fix or can help you develop a plan for fixing the radon problem. Reduction methods can be as simple as sealing cracks in floors and walls or as complex as installing systems that use pipes and fans to draw radon out of the building.

EPA has a National Radon Program to inform the public about radon risks, train radon mitigation contractors, provide grants for state radon programs, and develop standards for radon-resistant buildings. EPA works with health organizations, state radon programs, and other federal agencies to make the program as effective as possible.

**For more information about radon, its risks and what you can do to protect yourself, call 1-800-SOS-RADON and request a free copy of EPA's *A Citizen's Guide to Radon*. You may also call the Radon Fix-It Line at 1-800-644-6999 between noon and 8pm Monday through Friday, EST/EDT, for information and assistance. This toll-free line is operated by Consumer Federation of America, a nonprofit consumer organization.**

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## ADDENDUM: CARBON MONOXIDE INFORMATION

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### What is carbon monoxide (CO) and how is it produced in the home?

CO is a colorless, odorless, toxic gas. It is produced by the incomplete combustion of solid, liquid and gaseous fuels. Appliances fueled with gas, oil, kerosene, or wood may produce CO. If such appliances are not installed, maintained, and used properly, CO may accumulate to dangerous levels.

### What are the symptoms of CO poisoning and why are these symptoms particularly dangerous?

Breathing CO causes symptoms such as headaches, dizziness, and weakness in healthy people. CO also causes sleepiness, nausea, vomiting, confusion and disorientation. At very high levels, it causes loss of consciousness and death.

This is particularly dangerous because CO effects often are not recognized. CO is odorless and some of the symptoms of CO poisoning are similar to the flu or other common illnesses.

### Are some people more affected by exposure to CO than others?

CO exposures especially affect unborn babies, infants, and people with anemia or a history of heart disease. Breathing low levels of the chemical can cause fatigue and increase chest pain in people with chronic heart disease.

### How many people die from CO poisoning each year?

In 1989, the most recent year for which statistics are available, there were about 220 deaths from CO poisoning associated with gas-fired appliances, about 30 CO deaths associated with solid-fueled appliances (including charcoal grills), and about 45 CO deaths associated with liquid-fueled heaters.

### How many people are poisoned from CO each year?

Nearly 5,000 people in the United States are treated in hospital emergency rooms for CO poisoning; this number is believed to be an underestimate because many people with CO symptoms mistake the symptoms for the flu or are misdiagnosed and never get treated.

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### How can production of dangerous levels of CO be prevented?

Dangerous levels of CO can be prevented by proper appliance maintenance, installation, and use:

#### Maintenance:

- A qualified service technician should check your home's central and room heating appliances (including water heaters and gas dryers) annually. The technician should look at the electrical and mechanical components of appliances, such as thermostat controls and automatic safety devices.
- Chimneys and flues should be checked for blockages, corrosion, and loose connections.
- Individual appliances should be serviced regularly. Kerosene and gas space heaters (vented and unvented) should be cleaned and inspected to insure proper operation.
- CPSC recommends finding a reputable service company in the phone book or asking your utility company to suggest a qualified service technician.

#### Installation:

- Proper installation is critical to the safe operation of combustion appliances. All new appliances have installation instructions that should be followed exactly. Local building codes should be followed as well.
- Vented appliances should be vented properly, according to manufacturer's instructions.
- Adequate combustion air should be provided to assure complete combustion.
- All combustion appliances should be installed by professionals.

#### Appliance Use:

- Follow manufacturer's directions for safe operation.
- Make sure the room where an unvented gas or kerosene space heater is used is well ventilated; doors leading to another room should be open to insure proper ventilation.

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- Never use an unvented combustion heater overnight or in a room where you are sleeping.

**Are there signs that might indicate improper appliance operation?**

Yes, these are:

- Decreasing hot water supply
- Furnace unable to heat house or runs constantly
- Sooting, especially on appliances
- Unfamiliar or burning odor
- Increased condensation inside windows

**Are there visible signs that might indicate a CO problem?**

Yes, these are:

- Improper connections on vents and chimneys
- Visible rust or stains on vents and chimneys
- An appliance that makes unusual sounds or emits an unusual smell
- An appliance that keeps shutting off (Many new appliances have safety components attached that prevent operation if an unsafe condition exists. If an appliance stops operating, it may be because a safety device is preventing a dangerous condition. Therefore, don't try to operate an appliance that keeps shutting off; call a service person instead.)

**Are there other ways to prevent CO poisoning?**

Yes, these are:

- Never use a range or oven to heat the living areas of the home
- Never use a charcoal grill or hibachi in the home
- Never keep a car running in an attached garage

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**Can Carbon Monoxide be detected?**

Yes, carbon monoxide can be detected with CO detectors that meet the requirements of Underwriters Laboratories (UL) standard 2034.

Since the toxic effect of CO is dependent upon both CO concentration and length of exposure, long-term exposure to a low concentration can produce effects similar to short term exposure to a high concentration.

Detectors should measure both high CO concentrations over short periods of time and low CO concentrations over long periods of time - the effects of CO can be cumulative over time. The detectors also sound an alarm before the level of CO in a person's blood would become crippling. CO detectors that meet the UL 2034 standard currently cost between \$35 and \$80.

**Where should the detector be installed?**

CO gases distribute evenly and fairly quickly throughout the house; therefore, a CO detector should be installed on the wall or ceiling in sleeping area/s but outside individual bedrooms to alert occupants who are sleeping.

**Aren't there safety devices already on some appliances? And if so, why is a CO detector needed?**

Vent safety shutoff systems have been required on furnaces and vented heaters since the late 1980s. They protect against blocked or disconnected vents or chimneys. Oxygen depletion sensors (ODS) have also been installed on unvented gas space heaters since the 1980s. ODS protect against the production of CO caused by insufficient oxygen for proper combustion. These devices (ODS and vent safety shutoff systems) are not a substitute for regular professional servicing, and many older, potentially CO-producing appliances may not have such devices. Therefore, a CO detector is still important in any home as another line of defense.

**Are there other CO detectors that are less expensive?**

There are inexpensive cardboard or plastic detectors that change color and do not sound an alarm and have a limited useful life. They require the occupant to look at the device to determine if CO is present. CO concentrations can build up rapidly while occupants are asleep, and these devices would not sound an alarm to wake them.



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For additional information, write to the U.S. Consumer Product Safety Commission, Washington, D.C., 20207, call the toll-free hotline at 1-800-638-2772, or visit the website <http://www.cpsc.gov>

As of January 2002 ALL municipalities in the State of Texas with a population of over 5000 were required to adopt the 2000 International Residential Code (2000 IRC). With the advent of the Texas Residential Construction Commission (TRCC) in 2003, Texas House Bill 730, Section 430.001 requires that all residential construction in the State of Texas adhere to the IRC and the National Electrical Code (NEC), as well as all materials and systems manufacturers' installation instructions, regardless of incorporation or population. Since building codes are the province of government, the referenced standards have the force of law and must be adhered to.

Municipalities may opt to adopt newer versions of the IRC, such as the 2003 or 2006 versions, or newer versions of the NEC, such as the 2002 or 2005 versions, but the 2000 IRC version and the 1999 NEC versions are entry level requirements. Manufacturers' installation instructions are not allowed to be altered.

Amendments or exceptions to the 2000 International Residential Code (IRC) may not be made by the Chief Building Official of the municipality, and certainly not by your builder. The legislation set forth in Texas Statute 214.212, reads as follows:

§ 214.212 International Residential **Code**

(a) To protect the public health, safety and welfare, the International Residential **Code**, as it existed on May 1, 2001, is adopted as a municipal residential **building code** in this state.

(b) The International Residential **Code** applies to all construction, alteration, remodeling, enlargement, and repair of residential structures in municipality.

(c) A municipality may establish procedures:

- (1) to adopt local amendments to the International Residential **Code**; and
- (2) for the administration and enforcement of the International Residential **Code**

(d) A municipality may review and consider amendments made by the International Residential **Code** Council to the International Residential **Code** after May 1, 2001.

Added by Acts 2001, 77<sup>th</sup> Leg., ch 120, § 1, eff. Jan 1, 2002.

Each municipality is required to include in their city ordinances or land development documents all exceptions or changes to the International Residential Code and National Electrical Code that the members of the City Council have agreed upon and officially adopted. **If an exception, deletion or any other alteration of the code has not been formally passed into ordinance, in this Inspector's reading of the law, it is not valid.**

Additionally, according to the International Residential Code R102.4, National Electrical Code 110-3(b), and the TRCC Performance Standard 304.2(a)(5), neither the municipality nor the Chief Building Official may ever override a manufacturer's installation instructions. We do not build our houses of found materials. Thus, all materials in the home are manufactured. The manufacturer of any given material, equipment, appliance or system is the sole arbiter of the manner in which his product is to be installed. Failure to comply with manufacturer's installation instructions both voids the manufacturer's warranty and constitutes flagrant violation of the building codes.

Having said all that, we should add this: **We are not the Building Police.** Home inspectors in the State of Texas have no authority to compel full compliance with the prevailing building codes. They have no legal basis on which to enforce their opinions. Only a building official for a municipality has that enforcement authority and may direct code compliance. Because we always find discrepancies between what the municipal inspectors allow and the code requires, we feel that juxtaposing these two allows our clients to make a fully informed decision regarding the condition of the home they are buying or have bought.

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The International Residential Code Council's "Legal Aspects of Code Administration", 2002 Edition, states in part, "The Latin term ***caveat emptor***, means "let the buyer beware". Thus, it is up to the purchaser to determine the soundness of the building prior to the finalization of the purchase or to hire a professional inspector.

You are strongly urged to insure that all items noted as in need of repair in this report are repaired and brought into full compliance with the letter of the code as quoted prior to closing escrow. Once escrow is closed, you will be at the mercy of the newly formed Texas Residential Construction Commission. This is a commission founded by the builders to protect the builders from you and your attorney.

NOTE: Rural county properties are only required to file and live up to a septic code (they are checked by county personnel) all other codes are not checked by a City or County Code Enforcement Official.

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## ADDENDUM: SEPTIC SYSTEM

### ASK ABOUT THE SYSTEM What to Ask the Property Owners About the Septic System

**Basic Questions:** (An essential step) Ask the seller the following questions. Don't worry if the seller says they don't know the answers. "Not knowing" is also important information. These questions are deliberately a bit vague in order to allow people to tell you whatever they know rather than cutting off or suggesting answers. Convey the answers to these questions to your septic test consultant.

- How old is the property?
- Is the property occupied or vacant?
- If occupied, for how long and by how many occupants?
- If vacant, for how long?
- How long has the seller owned the property?
- Where is the septic system? *[Tip: if the owner has been at the property for years and does not know where the septic tank is located, they have never pumped it - which looks bad for the leach field. On the other hand, if they know exactly where it is and if it has an easily-opened access cover, you might wonder if it's being pumped unusually often - which could also be a telltale.]*
- What is installed? *[Tip: this means: is it a conventional tank and drain field?*
- *Is the tank concrete or steel?*
- *How big is the tank?*
- *Are there separate drywells or seepage pits? If so the owner may have had a concern with the capacity of the leach field.]*
- What is the service or repair history of the septic system? *[Tip: if the system has received regular pumping that's good. If it has never been pumped, you should be pessimistic about the remaining life of the leach field. If a new tank has been installed but connected to old fields you should be pessimistic about the leach fields. If everything was installed new last year, you may be a lucky buyer.]*
- When was the tank last pumped? *[Warning: if the seller offers to "have the tank pumped for you" ask them not to do so before your inspection. Pumping the tank prevents testing the drain field.]*

Other useful but less reliable sources of information about your septic system include:

- Ask for any drawings regarding the actual location (an "as-built drawing") of the existing septic system. However while you should ask for drawings and records, you should never completely trust them. For example, a septic system may not have all of its components installed just as they were placed on a drawing. The excavator could have hit bedrock or other obstructions and moved things a bit.
- Ask for the records regarding maintenance of the system; Has the septic tank been pumped at a frequency of at least 3 to 5 years?;
- What pumping contractor was used?; If the system contains a pump. how often has it been maintained?;
- If major repairs have been made, when and to what extent?
- Ask about the past performance of the system. Have any of the symptoms described earlier manifested during the life of the system?

## ADDENDUM: PROPERTY OWNER POST-TENSION SITE CONSIDERATION FOR FOUNDATION PERFORMANCE

### Construction and Maintenance

The performance of residential structures built on ground supported concrete foundations depends not only on proper design and construction, but also on proper foundation environment maintenance performed by the occupant or owner of the property. Many residential foundations have experienced problems as a result of improper installation, maintenance or alterations of the drainage system and landscaping.

A properly designed and constructed foundation may still experience distress from soils which undergo volume changes caused by non-climatic moisture sources such as leaking pipes or irrigation.

Initial site grading shall provide positive drainage away from the foundation perimeter. The site drainage plan developed by the civil engineer should be maintained during the design life of the structure. Positive drainage, to prevent water from ponding next to foundations, is imperative in minimizing soil related foundation problems. Drainage or other discharge channels should be kept clear at all times of all debris in order to allow water discharge away from the building footprint. The most commonly used technique for positive drainage is grading away from the foundation to promote rapid runoff and to avoid ponding water near the foundation. Poor drainage or ponding water can cause a change in soil moisture content, resulting in swelling of the supporting soils, causing foundation movements. Recommendation for positive drainage is 3% to 5% slope for a minimum distance of 10 feet from the edge of the foundation. Berming of landscape beds, while visually appealing, can create a damming effect between the berm and the foundation that may prevent water from draining away. Special attention must be paid to these areas by providing additional precautions, such as area drains. Area drains must be checked periodically to ensure that they are functional.

Should the site drainage be inadequate, properly compacted select fill material can be provided to reestablish positive drainage. The builder can be contacted to obtain information from the geotechnical engineer's report regarding the type of select fill material and the degree of compaction necessary to provide adequate drainage. Proper compaction is required to minimize subgrade settlements near the foundations and to prevent subsequent ponding of surface water.

Improper fill materials and/or compaction may result in the appearance of positive drainage; however, the drainage may not be effective as in the case of permeable sands placed on top of an expansive clay layer that is not sloped away from the foundation. If the reestablishment of positive drainage is not possible, an alternate area drain system may be provided.

Foundation design for sites with greater than 9% slope should insure that ground water is not trapped on the cut (uphill) side of the foundation and that the drainage provided to remove this water from around the structure is far enough away, (minimum 5 feet from the edge of the structure) as to prevent the undermining of the foundation by the water flow. This drainage can also minimize the seepage through backfills into adjacent basement walls.

Subsurface drains may be used to control a rising water table, groundwater, underground streams, and surface water penetrating through pervious, fissured or highly permeable soil; however, drains cannot stop the migration of moisture into the soil beneath the foundation. Moisture barriers, while expensive, can be effective if placed near the edge of the foundation to minimize moisture migration. The geotechnical engineer can recommend the proper depth for a moisture barrier system depending upon the type of soil and the climatic conditions prevalent in the area where the foundation is constructed.

Roof drains should be tied into the area drainage system (where present) or direct water away from the foundations. Property owners should also be aware of the potential hazard of leaky swimming pools, irrigation systems, or plumbing. A noticeable increase in monthly water bills can indicate a problem that should be corrected immediately.

**It is important to note that consistent moisture content of the supporting soils is the key to proper foundation performance.** In areas where silt or sandy material is present, excessive water can cause the soil to lose bearing capacity. In areas where expansive clays are present, excessive water can increase swelling and insufficient moisture will cause the shrinkage of the supporting soils.

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The following is a list of items to be considered when planning proper foundation maintenance:

- (1) Maintain positive drainage away from the foundation and install drainpipes (if applicable). Never allow water to pond near or against the foundation.
- (2) Replace and compact any loose fill adjacent to the foundation with native soil; do not use sand or a granular material.
- (3) Check gutters and downspouts to be sure that they are clear and that the water is discharged away from the foundation area.
- (4) Avoid seasonal drying around the perimeter of the foundation.
- (5) Existing vegetation near the foundation typically draws added water from the adjacent soil towards the foundation, thus causing added soil movement.

**The objective of a proper maintenance program is to maintain as near constant moisture content as possible for the soil around the perimeter and under the foundation.**

It is recommended that all property owners conduct a yearly survey of their foundation and perform any maintenance necessary to improve drainage and prevent ponding of water adjacent to these structures. This is especially important during the first ten (10) years after construction because this is usually the time when the most severe adjustment between the new foundation and its support soil occurs.

Property owners should also be made aware of the precautions that are to be taken when modifying or cutting holes in foundation slabs reinforced with unbonded post-tensioning tendons. An expert should only ever accomplish this.

## Landscaping

Ground supported slabs constructed using proper foundation design, construction techniques and adequate drainage systems can still experience distress if the site slope, type of vegetation, surrounding landscape and irrigation water supply is not properly selected and maintained. One of the most critical aspects of landscaping is the continuous maintenance of properly designed slopes. Installing flowerbeds or shrubs next to the foundation and keeping the area flooded will result in localized swelling. This expansion may result in added edge lift of the foundation system.

It is recommended that initial landscaping or hardscape be done on all sides and that drainage away from the foundation be provided and maintained. Partial landscaping on one side of the foundation may result in swelling on the landscaped side due to added non-climatic irrigation water. This can cause differential movements resulting in non-serviceable slabs or foundations.

Landscaping is often overlooked by property owners as an area that may contribute to possible foundation problems. When planning flowerbeds or locations of trees and shrubs, consideration must be given to the effect that vegetation may have on existing drainage patterns. Landscaping should be installed so as to avoid water ponding or standing at any location around the perimeter of the foundation. Positive drainage away from all foundations and off the property is critical to the performance of any slab foundation supported on the ground. Landscaping and ground cover can help prevent erosion and, if properly maintained, protect the ground from loss of moisture.

Caution must also be taken when new patios and fences are installed. Water must at all times drain away from such structures and follow the drainage pattern previously established. **Remember that any changes in the exterior layout of the property, flowerbeds, decks, patios, fences, trees and shrubs, must be planned such that positive drainage away from any foundation structure and off the property is provided at all times.**

Sprinkler systems are beneficial in maintaining uniform moisture content in the soils that surround the foundation slab; however, they should be placed around the entire perimeter of the foundation. Precautions, such as the proper backfilling of excavations from the sprinkler lines, location of valve boxes a minimum of five feet (5') away from the foundation edge,

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monitoring for leaks and setting controls so that a uniform amount of water is achieved for all areas are important factors to consider if a sprinkler system is to be beneficial.

Trees located near a foundation can be a potential contributing factor to foundation distress. Experience has shown that the presence of or the removal of large trees that are in close proximity to residential foundations can cause long-term problems. Depending on the type of tree, proximity to the edge of the foundation and its size, vertical movements in the foundation by as much as 3 – 5 inches are not uncommon.

This problem can be aggravated in most areas by cyclic wet and dry seasons; however, the condition will be most severe during extreme droughts. Trees that require large amounts of water or that have large surface root systems such as willow, elm or oak are the most detrimental to foundation performance. It is recommended that trees not be planted closer than half of the anticipated canopy diameter of the mature tree or 20 feet from the edge of the foundation, whichever is the larger distance. Existing trees that are closer than this should be thoroughly soaked at least twice each week during dry periods and once each week during periods of moderate rainfall. Close monitoring of the surface root system may indicate that more frequent watering is required. Root barriers are effective in protecting foundation while preserving the beauty of mature trees. The system should be placed adjacent to the foundation, be constructed of monolithic concrete or other impermeable solid material, be a minimum of 36 inches deep and extend the full length of the tree canopy. Whether the barrier will be truly permanent is questionable because the roots may be able to grow around or under the trench; however, it should at least increase the time it takes for the roots to grow back. In all cases you should check first with a certified arborists before installing root barriers.

In areas with expansive soil conditions, the root systems of trees and large bushes tend to dry up the soil. When they are removed, soil swelling or heaving of the soil may occur. Studies have shown that this swelling can last as long as 20 years depending on the size and extent of the root system. Foundations that are built in heavily wooded areas on expansive clay soil should be designed with this anticipated vertical expansion considered. Alternatively, the site can be left alone for several years after removal of the trees and/or large bushes to allow the moisture of the desiccated area to stabilize; however, this option is not generally considered practical. Tree removal can be safely accomplished provided that the tree is no older than any part of the house since the subsequent heave can only return the foundation to its original level. There is no advantage to staged reduction in the size of the tree; therefore, if a tree is to be removed, it should be removed completely at the earliest possible opportunity. When a tree is older than the foundation, it is not considered advisable to remove the tree because of the danger of inducing damaging heave, unless the foundation was designed for the total computed vertical movement. This process does not occur for foundations built on non-expansive sandy soil conditions.

If the anticipated heave caused by the removal of a tree is too large, some kind of pruning, such as crown thinning or crown reduction can be considered. Pollarding, where most of the branches are removed and the height of the main trunk is reduced, though often mistakenly specified, is not a viable option. Most published advise links the height of the tree to the likelihood of damage when in fact it is the leaf area that is most important; therefore, crown thinning or reduction in which some branches are shortened or removed is the preferred method. Pruning should be done in such a way as to minimize future growth while maintaining shape and without leaving the tree vulnerable to disease. In all cases this should be done by a qualified arborists (preferable), or a tree surgeon or landscaping contractor under the supervision of an arborist. In some cases there may be some opposition to the removal or reduction of size of an offending tree. The property owner, a neighbor, local authorities or a Tree Preservation Order may require that alternate methods, such as root barriers, be utilized. In this case, the property owner needs to be made aware of the risk of property damage that can result from leaving the tree.

Every property owner should conduct a yearly survey of the foundation and perform any preventative maintenance necessary to improve drainage and minimize the effects of landscaping and existing vegetation on the foundation. Special attention is important during the first 10 years after the foundation is constructed as this is the time of the most severe adjustment between the new construction and the environment; however, this condition can change yearly for the life of the foundation.

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## **ADDENDUM: ARC FAULT CIRCUIT INTERRUPTER (AFCI) DEVICES**

### **THE AFCI**

The "AFCI" is an arc fault circuit interrupter. AFCIs are newly developed electrical devices designed to protect against fires caused by arcing faults in the home electrical wiring.

### **THE FIRE PROBLEM**

Annually, over 40,000 fires are attributed to home electrical wiring. These fires result in over 350 deaths and over 1,400 injuries each year<sup>1</sup>. Arcing faults are one of the major causes of these fires. When unwanted arcing occurs, it generates high temperatures that can ignite nearby combustibles such as wood, paper, and carpets. Arcing faults often occur in damaged or deteriorated wires and cords. Some causes of damaged and deteriorated wiring include puncturing of wire insulation from picture hanging or cable staples, poorly installed outlets or switches, cords caught in doors or under furniture, furniture pushed against plugs in an outlet, natural aging, and cord exposure to heat vents and sunlight.

### **HOW THE AFCI WORKS**

Conventional circuit breakers only respond to overloads and short circuits; so they do not protect against arcing conditions that produce erratic current flow. An AFCI is selective so that normal arcs do not cause it to trip.

The AFCI circuitry continuously monitors current flow through the AFCI. AFCIs use unique current sensing circuitry to discriminate between normal and unwanted arcing conditions. Once an unwanted arcing condition is detected, the control circuitry in the Ault, Singh, and Smith, "1996 Residential Fire Loss Estimates", October 1998, U.S. Consumer Product Safety Commission, Directorate for Epidemiology and Health Sciences.

AFCI trips the internal contacts, thus de-energizing the circuit and reducing the potential for a fire to occur. An AFCI should not trip during normal arcing conditions, which can occur when a switch is opened or a plug is pulled from a receptacle.

Presently, AFCIs are designed into conventional circuit breakers combining traditional overload and short-circuit protection with arc fault protection. AFCI circuit breakers (AFCIs) have a test button and look similar to ground fault circuit interrupter (GFCI) circuit breakers. Some designs combine GFCI and AFCI protection. Additional AFCI design configurations are anticipated in the near future.

It is important to note that AFCIs are designed to mitigate the effects of arcing faults but cannot eliminate them completely. In some cases, the initial arc may cause ignition prior to detection and circuit interruption by the AFCI. The AFCI circuit breaker serves a dual purpose – not only will it shut off electricity in the event of an "arcing fault", but it will also trip when a short circuit or an overload occurs. The AFCI circuit breaker provides protection for the branch circuit wiring and limited protection for power cords and extension cords. Single-pole, 15- and 20- ampere AFCI circuit breakers are presently available.

### **WHERE AFCIs SHOULD BE USED**

The 1999 edition of the National Electrical Code, the model code for electrical wiring adopted by many local jurisdictions, requires AFCIs for receptacle outlets in bedrooms, effective January 1, 2002. Although the requirement is limited to only certain circuits in new residential construction, AFCIs should be considered for added protection in other circuits and for existing homes as well. Older homes with aging and deteriorating wiring systems can especially benefit from the added protection of AFCIs. AFCIs should also be considered whenever adding or upgrading a panel box while using existing branch circuit conductors.

### **INSTALLING AFCIs**

AFCI circuit breakers should be installed by a qualified electrician. The installer should follow the instructions accompanying the device and the panel box. In homes equipped with conventional circuit breakers rather than fuses, an AFCI circuit breaker may be installed in the panel box in place of the conventional circuit breaker to add arc protection to a branch circuit. Homes with fuses are limited to receptacle or portable-type AFCIs, which are expected to be available in the near future, or AFCI circuit breakers can be added in separate panel boxes next to the fuse panel box.

### **TESTING AN AFCI**

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AFCIs should be tested after installation to make sure they are working properly and protecting the circuit. Subsequently, AFCIs should be tested once a month to make sure they are working properly and providing protection from fires initiated by arcing faults. A test button is located on the front of the device. The user should follow the instructions accompanying the device. If the device does not trip when tested, the AFCI is defective and should be replaced.

### **AFCIs vs. GFCIs**

The AFCI should not be confused with the GFCI or ground fault circuit interrupter. The GFCI is designed to protect people from severe or fatal electric shocks while the AFCI protects against fires caused by arcing faults. The GFCI also can protect against some electrical fires by detecting arcing and other faults to ground but cannot detect hazardous across the line arcing faults that can cause fires.

A ground fault is an unintentional electric path diverting current to ground. Ground faults occur when current leaks from a circuit. How the current leaks is very important. If a person's body provides a path to ground for this leakage, the person could be injured, burned, severely shocked, or electrocuted.

The National Electrical Code requires GFCI protection for receptacles located outdoors; in bathrooms, garages, kitchens, crawl spaces and unfinished basements; and at certain locations such as near swimming pools. A combination AFCI and GFCI can be used to satisfy the NEC requirement for GFCI protection only if specifically marked as a combination device.