A Guide for Real Estate Investors

This file begins with some concerns for investors in Texas, then it goes on to deal with the articles on how to inspect a property.

Short term rentals prohibited by some communities

Around the nation, cities or neighborhoods have been prohibiting landlords from having short term rentals in their properties. Recently in Florida (as well as some other states), this rule has been overturned in a Federal court by arguing these prohibitions are against the Fifth Ammendment.

New regulations about residential inspections

Starting in September 2008, all rural property will be required to be inspected by a licensed inspector during a sale. Many people forget that Texas does have a set of building codes which do apply to areas that do not have their own codes. Real estate inspectors will still be performing the inspections according to the standards of practice. I am currently researching this law, since I was told that it will apply to all new construction too.

An Industry under a Microscope

Recent news from New York shows that some appraisers buckle under pressure from a lender caused higher market values. State and the Federal governments are looking into industry practices, with a focus on types of fraud. Foreclosures are starting to rise dramatically in parts of the country, although the Federal Reserve is looking into preventing a mass flood of foreclosures.

Foreclosures double

News reports are misleading to investors. Recently the number of foreclosures were reported as having doubled, but this is not exactly the story. For further details go to my post on my blog titled: Looking into the News. I would suggest that as an investor, you may want to read the press release from Realty Trac each month. You can find it

on their website via a link at the bottom of the home page. If you are concerned about the number of foreclosures coming onto the market in your state, this press release is a vital tool.

Into the Future

The State Energy Conservation Office has been charged with looking into how information on a home's energy efficiencycan be presented to buyers. This will eventually lead to energy efficient mortgages. The office will report its findings to the legislature next year in October.

Some Investors Beware

Texas HB2207 will go into effect in January 2008. The law allows purchasers to terminate the contract for a sale after seven days of receiving a notice of liens on the house. Sellers have to inform the buyer of these liens at least by seven days after the sale. This bill is meant to prevent investors who go to a homeowner who is about to go into foreclosure, have the deed transferred to the investor, and then sell the property to a buyer who is unaware of the foreclosure. Some buyers have been surprised to find out about these liens. An investor who operates with good values will not have an issue.

Property Prices Decrease

The values of homes in Houston were not greatly overvalued like homes in California or Florida, but prices have dropped enough to be noticed by the media. If you are purchasing a property to keep, you will be in good shape, but if you are planning to quickly sell,you may find that you cannot make the profit that you might have once expected.

Water Heaters

Of the recent legislation to come about in Texas, investors who rent their property need to be concerned with a rule involving water heaters. Landlords are now required to have well functioning water heaters for their tenants.

New Seller Disclosure Form

As of Spetember 1, 2007, Realtors have to use a new form for disclosing issues with the property. What will effect sellers most is the requirement to have smoke detectors which can be used for the hearing impaired. A buyer must indicate that they are hearing impaired to have the seller install such equipment.

Consumers hurt by new legislation in Texas

As of last September (2007), it is now the requirement that all new inspectors and inspectors renewing their license will have to carry E&O insurance. It is difficult to say where inspection prices will be heading, but the costs will rise. Currently Texas has maintained one of the lowest rates for home inspections in the country, so we will not know until 2009 how this will effect the ability for some to obtain this service.

For Real Estate Investors

The documents below will you help you evaluate and make decisions about a house that you are planning to purchase.

A few of the documents are from articles which I have written for e-zines and this website, and they are meant for anyone considering the condition of their home, and what steps they may take to remedy their concerns.

I believe that real estate investors may find them helpful, since they provide a description of how to evaluate a property without the use of much equipment. As an investor you are looking into lowering costs while increasing profits, so you will want to make determinations on your own. However, I would like to defend my services at this point. Inspectors have seen more, and they are trained to spot areas of concern. A good inspector is always a significant resource for you. Plus, inspectors generally have the appropriate tools for a home evaluation, but this does not mean you need us at all times (eventhough that would be nice for my profits).

To the side, I am including news articles which concern real estate investors.

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Foundation

This is the most common question asked of an inspector. The second being about the roof. Probably because these two parts of our home can give us the most grief. In the state of Texas, an inspector is required to render his opinion on the performance of the foundation. Note that the inspector is not required to inform you of what actually is happening with the foundation, but his opinion. The reason for this is the fact that no one can determine what is going on underneath your home without extensive testing, which does not happen during an inspection. Inspectors look for clues to the foundation's performance. Here are some things to look out for when considering if you need some one to look at your foundation: 1.Trees- a trees roots will extend to where ever the canopy of leaves reaches. That is where water is available. If the canopy is over your roof, then the roots are under your house, having fun with your foundation. Generally, a tree should be as far away as it is tall, but this poses the problem of your lot size. Most lots are not large enough for forty foot high trees. Trees typically take six years to recover after extensive pruning. 2.Soil- the type of soil around your home effects how water travels around your property. Much of Houston, for example, has a heavy clay soil referred to as gumbo by locals. This soil retains water, so it expands. During drier conditions it contracts. This causes the foundation to move around, which in turn can lead to a failure of the foundation. If you see cracks in the soil during dry conditions, and a solid mass during wet conditions, you should be concerned about foundation movement. 3.Plumbing- if the water is taking some time to drain from the sink or tub, you may have a problem underneath the home. If water from the plumbing is leaking there, it could lead an issue with your foundation. If you have this symptom, consider having a hydrostatic test done to determine if a repair is needed. Foundation companies will do this kind of test. However, make sure your drains are clean first. You do not want to pay for a test, for the hair down the drain. Tests can cost in the are of $250 for the first system, and around $200 for the second system. An indicator that you would need a hydrostatic test is if you have a cast iron or black plastic ABS clean-out; they will decay under the house. Cast iron was used in the 60s, and ABS was used in the 70s. 4.Design- look to see if water can flow away from the base of your home. Standing water is always an issue. Just look to see if the foundation looks right. If something is nagging at you, there may be a reason to be concerned, so call some one for advice. Many foundation firms will do a free inspection for you. 5.Age- if you have an older home, your foundation will not have the better technologies to ensure a lasting foundation. Look for cracks through bricks, on tile floors, or on walls around windows and doors. Not all cracks mean that you should be concerned, since some result from a natural settling process. To determine if there is a problem, an inspector looks for signs around the base of your home, on the walls (inside and out), on the floors, and in the attic. Offset cracks on the floor, cracks larger than 1/8” on walls, rafters moving apart in the attic are other signs to look for, but some problems are not about the foundation. Some cracks are related to shrinkage or settling. Most cracks on the second floor are of this nature. If the driveway or sidewalk have become slabs moving up and down, rarely have

anything to do with foundation movement, since they are made differently. The one time that they may be linked to a concern is when you have a fault line running through your property. In this case, you will see the ground at two different levels throughout the property. Believe it or not, we do have fault lines in Houston, so do not assume that because earthquakes are not an issue, you do not have to worry about a fault. One other thing to look out for is on a post tension cable slab. These are foundations which have high tension cables running through them. You can determine if you have this type of foundation by looking at your base. When you see small dabs of cement protruding from the slab, you are looking at the ends of the cables. If the cable end is exposed, you can have problems with the foundation when these ends rust through. If the end is exposed, patch with some cement before it rusts. If it did rust, you will need to use some type of rust remover/transformer before patching it. Compu-level measurements do not tell you if you have a foundation problem. No slab is perfectly at the same height. Two sets of Compu-level measurements over the year can give you an idea of movement, but if a contractor tells you that you have a problem, and he is basing this on one set of Compu-level measurements alone, you have a problem with that contractor. These measurements in combination with other data will give a person a clue to foundation performance. If you notice some of these conditions, you may want to know who to call. If the house is under warranty, and the company providing the warranty is giving you a hard time, call an inspector to produce a report, so you will have a document to back up your concerns. When your home has no warranty situation, call a foundation company which offers you a free quote, so then you know what needs to be done. If your concerns are about the foundation and other problems that you have observed, call in a structural engineer to make a plan of how to have everything fixed. A typical home repair for a foundation is done with pylons placed under the home to lift it back into position. An average house requires around thirty-two pylons for the entire home, but a normal job should only be around 14 to 18 pylons. If the foundation company is quoting a job for 32 pylons, you should obtain a second quote without delay. One pylon is the pressed pile, which has cylinders driven into the ground until the house pushes up. This happens at depth around 8 to 10 feet. Each cylinder handles up to six to eight thousand psi. The other type of pylon is the drilled pier, which is a box under the beam of the foundation to a depth around twelve feet, then it bells out at the bottom. The concrete takes ten days to cure. It is always wise to have at least three quotes for a major job like this one.

Roof

An inspector should never make a determination on how long a roof will last, since there really is no way to tell. I am aware of one roof which was meant to last for twenty years, that is still going strong after almost fifty years. I also know of a roof that is five years old, which now needs to be replaced. Why is there a difference? Both roofs were made of similar materials, but the material behaved differently and was treated differently once they were installed. In Houston heat and humidity cause a good deal of damage to our exteriors, but storms during hurricane season leave their toll as well. Roofs with steeper pitches have a tendency to do better here because of their ability to shed water faster. To help control the effects of the heat and humidity, you will want to have a system of ventilation in place for your attic. The most common type of ventilation is having vents in the soffits with a vent in the ridge. This allows air to flow through the underside of the roof (attic), cooling it while moving the humidity out. The magic formula is one square foot of ventilation for every one hundred and

fifty square feet of attic space. However, you will want the vents to be spread around the building, instead of located in one area. For example, my son's room had no soffit vents to the attic around it. The builder thought that they would look bad on the front of the house. The roof above his room received a good deal of afternoon sun, so his room was quite hot at this time of day. By adding the vents, I helped reduce the temperature in his room. Powered attic vents can be efficient, but the trade off is the cost in electricity. Slate shingles and clay tiles experience the same problems in Houston. Slate and clay tiles are brittle, so you will see broken pieces, which leads to water getting into the house. These tiles break easily during hail storms or hurricanes, and when someone is walking on them to work on the roof. These broken pieces can be replaced, but new pieces will not have weathered like existing ones, so repairs are obvious. Some breaks may not be bad, but eventually any break can lead to more serious damage. Metal roofs are making a comeback, and they can be long lasting. With new installation methods, they can be a great option. The concern will be the movement in the roof. Metal expands and contracts more in the heat and cooler temperatures than other roofing materials. This movement can cause problems to the seam and the fasteners holding the roof in place. Some new fastening technology prevents this from occurring. If the roof feels like it is moving when you walk on it, you have a problem with the roof. Look for moisture stains in the attic and the ceiling to see if there is a leak. Checking for moisture stains in these areas applies to all roof types though. The most common type of roof is the asphalt shingle. The granules on this shingle are meant to protect the roof from the sun's rays, which causes the asphalt to break down. You will be able to see this if the shingles look worn down (no granules), or if you are seeing the granules in the gutter. Blistering of the shingles happens when there is too much moisture. These blisters eventually cause the shingle to break. When you are able to see fasteners going through the shingle, you will have problems. Installing nails and screws through the main surface of the shingle is an issue for any type of roofing material, but it seems to happen more frequently with asphalt shingles. A temporary remedy for these fasteners is to place an appropriate roof caulk over the head of the fastener. If the shingle feel loose, a failure is starting to occur. Built-up roofs are used on flat roofs or roofs with low slopes. They are made from layers of asphalt and roofing felt with pebbles on top. It experiences much of the same problems that you will see with asphalt shingles: blistering and the wearing down of the asphalt from the sun. These roofs last for less time than the others. Wood shakes and shingles are not as common any more, but many people do like the look. Cracks and broken shingles represent a problem. Also loose shingles can occur. For all roofs you will want to look for branches of trees or large shrubs hitting the roof. This causes a path for insects into the roof system. Branches moving during a storm can break the roofing material. Shade from the leaves allows moisture to stay on the roof, promoting algae growth and material breakdown. I have seen one limb which removed the roofing material down to the rafters. You will also want to look for debris on the roof for these same reasons. Currently innovative materials are coming into the roofing industry, which hold the promise of longer life. There are now composite materials imitating the look of slate and clay tiles, but they do not have the same issues with brittleness. Improvements are being made to the asphalt shingle and to flat roofing systems. I have even recently read of a plastic roof sheets on a vacation cottage. However, the same rules apply when examining them: look for breaks, cracks, loose pieces, blistering, fasteners showing through, debris, and excessive shade leading to moisture. Then make sure that trees or large shrubs have their branches clear from the building.

Kitchen

When I come into a home for an inspection, I like to start with the kitchen. To check out the appliances here can take a while. Remodeled kitchens can add value to your home, but first you may want to see what needs to be done. An inspector will look at appliances which are considered built-in: oven; range; dishwasher; trash compactor, range hood; or any piece of equipment attached to the cabinet. This means that refrigerators are not covered by an inspection. To inspect any appliance, you operate it under normal conditions to see if it works as expected. If the appliance has knobs or some type of labelling which is needed for operation, the labels need to be easy to read. No parts should be broken or ready to fall off. So lets go over some specifics: Ranges/ovens/cook tops: labels indicating what the knob does wear down with cleanings; most people never use all their burners, so they will leave broken burners un-repaired, which means you should check all of them; ovens vary greatly in performance, so use an oven thermometer to check the temperature when the oven is set to 350F (let it be on for at least fifteen minutes, and it should be within 25 degrees of the set temperature); check that the oven light works; there should be some type of plate on the wall behind a range to prevent it from tipping over; look for rust, broken parts, or worn seals Dishwasher: run it in normal cycle to see if water is leaking (an unused dishwasher's seals will weaken); set the arm in an identifiable position before starting, then check to see if it moved when done; close the flap door for additional detergent to see if it opens; look for rust, broken parts, or worn seals Note: some dishwashers will have a switch (think light switch) on the backsplash, which needs to be on before it can work Range hood: check filters; operate it at all speed levels, checking for excessive noise and vibrations; check the light; see if the vent tubes (if any) are installed well (I frequently find duct tape here to fit mismatched parts); look for rust and broken parts Microwave: heat a cup of water to see if it works; check the light; look for rust, broken parts, or worn seals Disposer: run it with the water running; pay attention for excessive noise and vibration; look under the sink to see if water is leaking from the unit Refrigerator: check the seals to for their condition; look at the back to see the state of the coils; see if the unit is cooling sufficiently (it is hard to tell what temperature is meant on some units by “cold 1-2-3-4-5”, so refrigerators are around 45F and freezers are at or below 40F) Sink: run the hot water to see if it comes through (also check the cold water handle); let each basin fill up, then drain to check for leaks below; look to see that there is a trap before the water goes to the waste pipe Note: when you see buckets under the trap, and sponges set aside for clean-up, there is a good chance of a leak problem, but look for water stains in the cabinet) Cabinets (not done by inspectors): hardware should function and be in good shape; doors and drawers should open and close easily; materials for the cabinet compartment should join together well and have no dings and dents; cabinets should be secure to the wall Lights and outlets: outlets on the counter should be GFCI(ground fault circuits), but outlets for the appliances (mainly the refrigerator) should not be; lights should work and have a cover (if the bulb breaks, you do not want glass in the food) Trash Compactor: no broken parts; no excessive noise or vibration; you should place a bundled newspaper in it to check compaction when operating If you are finding problems, solutions may be simple. Excessive noise and vibrations in most equipment is due to the unit not being properly mounted. Seals and filters can be replaced. Most main brand appliances have easily obtainable parts to make repairs. If you work with a good contractor, they would be able to tell you if the repair is not difficult to accomplish. Before ripping out the

cabinets, consider the following: 1.Refinishing the surface (painting or staining) can make cabinets look new. 2.Replace the hardware (hinges and handles). This can give an entirely new look to the kitchen quickly. 3.Consider having the doors replaced. If they are in bad shape, but the cabinet frame is good, this can be a quick, cost effective solution. 4.New counter top. Most home centers can have these made and shipped to you. Along with the hardware, this can really update the look of the kitchen. 5.New appliances. Since many sizes are standard, you would be able to find units that could fit into your existing space, and you may not need new appliances for everything. 6.New fixtures. Faucets can be a little difficult to replace, but generally the process for installing a new fixture for the faucet or the lights is simple enough. Even GFCI outlets can be easily installed. Just take the proper precautions when working on a fixture- turn off power and water for example. This is where good how-to manuals are helpful. You may find that only doing a few steps or a few items is all you need. This will cost you less money and time, and the less that you replace helps the environment (less items in a landfill). One thing to consider is what brand to use when replacing items. Fancy fixtures and appliances can be costly to purchase and fix. Parts will be hard to find. Moreover, I read a report recently that some fashionable high quality appliances break down more often, and do not work as well. If you believe that adding one of these items into the kitchen in hopes of driving up the value of the home, you may find that the unit has not helped you to achieve your goal. If you are fixing a house for sale or for your own use, a complete remodel may not be practical. Take your time to see if there are ways to improve what is already there. This is better for the environment and your budget.

Bathrooms

Outside of kitchen improvements, you have bathroom remodels as the best way to improve home value. Here are the steps to check out your fixtures, and fast ways to improve the look of this area. There are similarities to the kitchen. Let us start with the plumbing. The sink and tub should have some means for stopping the water. Set it to hold water in the basin, then when the water is draining, watch the waste pipes for signs of leaks. The tub should have an access panel, but sometimes this will be located in the room opposite of the wall where the tub fixtures are located. In cabinets under the sink and spaces under the tub, look for signs of water leaks. Sometimes this may be obvious. In one home that I was inspecting, I found a bucket and sponge under the drain pipes. More often you will see water stains on the pipes or on the cabinet base. All plumbing fixtures (tubs, toilets, and sinks) should have a caulk around their base. You will also want to check that these fixtures are secure, so try moving them. This is a common occurrence for toilets. Fixtures should be secure to prevent additional problems like leaks. Check the hot water. The handles should be marked correctly, and it may take a moment, but you should have hot water. If the shower is in the tub, look at the walls around the tub. A waterproof covering (like tile) needs to be at least six feet high. This type of shower causes mildew and moisture problems on walls around the tub. For separate showers, check that the handles are properly marked, and that they function. Check the enclosure for signs of moisture penetration points (holes or broken tiles). There has to be a way for moist air to vent from this room. An operable window is one method. These windows should be able to open up half of its area. Another method is the bathroom exhaust vent. The motor should sound good when running, and it should pull air out of the room. I have seen these fans placed in air conditioning ducts, which makes them useless. I have also

seen them reversed to blow air into the room, which is also not the point. As in the kitchen, you should see GFCI circuits here. Look for the test button to see that it is functioning. Without a tester, try plugging in a radio. Turn it on, and then test the outlet. The standard is to have the outlets for all the bathrooms on one GFCI circuit. If the circuit trips, the reset should be in the master bedroom area, but this is not always the case. Check that the lights function. Unlike the kitchen, they do not need to be covered. The reason is not to have glass from a breaking bulb going into prepared food in the kitchen, but this poses no issue here. For all electric outlets, check for secure mounting. Cabinets should be securely mounted. Doors and drawers should function well. Look at the base for water damage. Cabinets can undergo the same overhaul described in the kitchen section, but a popular change is to remove the cabinet to install a pedestal sink. This can become a larger job once you discover what is behind the cabinet, so be prepared. If you are installing a wall hung sink, use chrome pipes under the sink for a clean look. Some simple touches in the bathroom involve adding a new shower curtain and pole, or an arrangement of dry materials (wheat flowers, or vine stems). A nice soap dish with a fancy soap leaves a nice impression. Decorator items like this can go to the next house with you. If you place a rug in this room, I would use double stick tape to hold it in place.

Air Conditioning System

This is actually called the HVAC (heating, ventilation, and air conditioning) system. With Houston's climate dictating a heavy use for this equipment (Houston is one of the most air conditioned cities in the world), a big concern here is how long will a HVAC system last? My answer is a resounding who knows? All joking aside, this system is composed of several pieces of equipment, which could last a good twenty years if it is maintained well. By this point, the unit will not be as efficient as you would want it. An HVAC system needs special equipment to really examine it correctly, but I will give you a means of testing this for yourself. Lets start with how an inspector examines a typical system. In Houston, I have never come across a swamp cooler. I think these are common in Arizona, and on my old Beetle. Mainly we have gas or electric powered furnaces with a condenser (also called a compressor) units. Some homes use heat pumps. More experimental systems are not common here. The components of a typical HVAC system include: furnace, condenser, plenums, ducts, fan, and evaporator coil. Following the air movement through the system, we first come to the return air duct. For best results a home should have a return air duct in every room, but generally you will find one return duct on each floor of the home. These ducts have a filter in them. For energy efficiency's sake, you will want to change these filters out once a month. This is why I suggest the cleanable filters to clients. If the filter is dirty, the unit has to work harder to draw air through it. If there is no filter, all of that dust is going into your equipment ruining it. Moving along, the air is going through a duct to the return air plenum. In older homes, builders would place wiring and gas tubing through these ducts, since it was a convenient space. This habit is a great fire hazard, since a fire caused by the wiring or gas line would be fed by the air passing through this duct. This is a hard problem to fix in most cases. Two solutions could be: 1) placing sheetrock all the way up the duct to the return plenum, thus covering the wiring and tubing; and 2) running a large duct tube through this duct from opening to return plenum. The return plenum is just a box which accepts the return air ducts. It will be in the attic before the fan. This box should have no holes in it. You would be able to feel air being sucked into the box if it did have a perforation. The next part of

the system is the fan. The fan is called a squirrel cage. It is round, and looks like a big hair dryer blower (sorry, but I am trying to come up with a description everyone could picture). The common issue will be the motor is not functioning, the bearing allowing the fan to turn freely is worn, or the fan is bent or damaged. You will be able to tell by the sound. Noisy and vibrating is not good. You should hear the smooth hum of an electric motor, and the spinning of the fan. The fan will have a removable panel on it, so you can look at it. Pliers would be able to remove the machine screws on the unit. (On some systems the fan can be the last item before the supply plenum; however, I generally see it first.) Next we come to the furnace. The furnace should also have a removable panel. Half the units have a panel that will slide out, and the other units have a panel that has machine screws holding it in. Machine screws cannot be undone with a screwdriver. You either need a nut driver, or a pair of pliers. Wether gas or electric, there will be a tube coming into the unit. Where it enters, there should be a grommet (think gasket) preventing this tube from being damaged by the housing. For gas units, there should be a shut off valve nearby, and for electric units, there should be a switch (breaker or light switch) close. Check to see that the wiring looks to be in good condition. Here is the hard part, you will want to look at this compartment where the burner or electric coils are, but you will not always be able to. A complete inspection means pulling this equipment out, and a HVAC technician should be the only person to do this task. While the heater is running, look to see the flame or heated elements. The flame should be a nice blue flame. The burner compartment should be rust free. If you have the equipment, you could check the elements for an electric system to see if they have power. Going forward, the air now passes through a transition plenum to the evaporator coils. This is the box with a pan under it. The pan is for the secondary drain line from water condensing on the coils. It should be clear of debris, and have no water in it. This is the cooling part of the system. The coils have a refrigerant in them, which cools the air down. This refrigerant is pumped to the outside condenser. A condenser and a compressor are the same thing. The outside unit has both pieces of equipment in them, so both terms are used. This unit is basically a big box with a motor, a fan, and tubes with fins running around it. The refrigerant exchanges heat with the air passing over the coils in the evaporator, and then passes that heat to the exterior. A heat pump is a device that can operate this system in two directions. Instead of a furnace, the pump takes heat from the outside air to the evaporator coils in winter, and then it reverses this process in summer. (There is always heat in the air; go back to your Middle School Science lessons). On the condenser listen for loud noises and vibrations. Look at the fins to see if they are damaged. Check to see that the wiring looks good, and that the refrigerant tube is covered with an insulator. The condenser should be three inches above ground level. The unit should have good clear space around it. If there are two condensers, they should be separated by eighteen inches. There should also be a way to turn off the power close to this unit. Either a dedicated switch in a box, or the service panel should be close by in sight. Going back up to the coils in the attic, we will follow the air to its last stop before going to a room: the supply plenum. This is the box with multiple ducts coming out of it leading to the different rooms. If you are a lucky, there will be dampers to zone the air to the various rooms. The air is being pushed out at the same rate to all rooms, but rooms further away from this plenum will not receive the same air movement that air closer to the plenum gets. The way to check this without opening up this box is to feel how strongly the air is coming out of the return air vent (register) in all of the rooms of the house. In the attic, you have a problem when you feel cool air- your plenum has a perforation. Air conditioning the attic is nice for those

of us who have to be up there, but it will cost you in your utility bills. The air now goes through ducts to the individual rooms. The ducts should not be crimped (tight angles). They should also be supported from the rafters. The ducts will have insulation covering them, and joints will have a reflective tape (not duct tape). Check for leaks in the ducts by feeling for air. Finally the air is in the room. If you have the tools, you will want to check the temperature differential. The temperature differential (delta T) is the temperature of the air into the system subtracted by the air out of the system. If you are measuring by the coils, the difference is acceptable when it is within 20F. If you are measuring at the supply register and the air return register, the difference is acceptable when within 10F. For the register method, you need the average of all return and supply registers. Over the coils will tell you if the coils are good, but from the registers tells you if the system is fine. Without temperature meters, I would not suggest trusting your sense of feel. We do not sense temperature as well as we sense comfort. You feel comfortable with air movement, which makes us feel cool, but does not tell us if the temperature is good. If these parts are maintained or repaired, a system could last quite a while. Most systems are replaced by newer units for energy efficiency reasons. SEER is a rating system to determine how well the system operates. Currently units are trying to out do each other in this regard. A Seer above ten is good, but the standard is quickly moving up. Probably a better measurement for you to check if the unit is right for your house is the tonnage of a unit. The usual number is you need for every 500 square feet of your house you need one ton capacity. Take the square footage of your house and divide it by 500. Compare this number to the "tons" number on your condenser. Hopefully, your condenser will have the same number. For example, a 2000 square foot house will need 4 tons (2000/500=4). Actually, you will not want to oversize this unit (have a larger number), since this will prevent the unit from dehumidifying the air, so slightly undersizing the unit is better. Lastly, run the unit for fifteen minutes before you start to check the HVAC system. You will not want to run the air conditioner when the temperature is 60F, since this can damage the evaporator coils. One more thing to check is the circuit breaker for the unit. The condenser has a maximum amperage on it tag. This should be the number (size) on the circuit breaker. It is the amount needed for when the unit starts. When you start seeing problems with any part of this system, you should check to see if a repair is possible or if a new unit is needed. If the furnace or the evaporator coil needs to be replaced, the other part will have to be replaced, since the components are matched to work together. So how long will an HVAC system last? OK, hate me, it depends.

The Electrical System

On our tour of the electrical system, we start with the wires bringing the power to the house. These wires can be underground or overhead, and up to the point that they enter the meter (or a splice before the meter), they are the responsibility of the utility provider. Visually there is not much to see with the underground cables, so we will look at overhead wires. The wires are called the service drop when overhead (and the service lateral when underground). The wires should appear in good condition, and they should not be in an area where they can be damaged by a tree or touched by you. There are codes regulating where these cables can go, but without being to precise, you want to see that the wires are free and clear of all obstructions (like doors or tree branches) and not too close to where some one can reach out to touch them (like close to the ground or near a window). Fraying wires are a hazard, so they

will need to be taken care of. Next look at how the cables are secured to the home. The cables should have a drip loop (a place where water will drip down, instead of flowing along the wire to the house). The masthead is the tube coming off of the roof to and service panel bring the wires down to the meter. This tube should be secured to the house, and it should be in good condition. Now we come to the service panel box. This can be in the house or outside. In some homes, builders would place these panels in a closet which is a bad idea. There is a possibility of fires being caused by this spot. Let me say this once, so I will not keep repeating this fact: any piece of equipment (be it an outlet, panel, light fixture, or whatever) or wiring for the electrical system needs to be firmly secured to the structure of the house to prevent damage to the wiring, which could cause a fire. I did not want to be repeating the "secured" phrase each time, so be on the look out for this situation on each piece of equipment. Most securing issues may be tightening a screw for an outlet or redoing a screw with a clamp. The service panel box should not be rusted. Open the cover, and check for labels telling you what the breakers (switch like items) control. Before we go further, I have a warning: do a visual inspection only, because it will be real easy to electrocute yourself when investigating the electrical system, so do not pull on wires or poke your fingers about thinking it will be safe. There should be one breaker to turn off all the power to the house, or you should be able to shut off all the breakers with six swipes of your open hand, so if you see a long row of breakers and a subpanel with no main breaker, you have a problem. There should be no empty slots. You will either have a circuit breaker or a cover plate for each location. Check to see if a breaker has tripped- it will feel loose, as if it is between being on and off. A tripped breaker could mean a bad breaker or not enough amperage to serve that circuit. To remove the panel covering the wiring, place the back of your hand on the cover. If it is hot or has a current, your natural reaction will be to pull your hand away (when you use the back of your hand; using your palm will cause the reaction of grabbing the panel). A hot panel indicates a problem inside, so now you would need to proceed at your own risk. If you feel comfortable, remove this panel. You will now be looking at a mess of wires. The wires should look in good shape. Melted or frayed wires mean issues. Each circuit breaker will have only one wire coming into it (these wires will be black). The interior should be free of debris. Nothing should be loose in here. Black wires are hot, white are neutral, and grounds are usually bare copper. About ground wires, Americans use green to indicate ground, while Europeans use brown. I mention this, because I have seen do-it-yourself projects with brown wires used for grounds, so obviously it was wired by someone familiar with that standard. Ground wires were not installed in homes till the late 1950s, so an old home may not have a grounding system. For a proper check, you will need an electrician beyond this point, so replace the cover. You may want to make note of the amperages, particularly for the HVAC system. On the condenser (compressor) unit, look for the maximum amperage on the tag. This will be the amperage needed for start-up, and there should be a breaker with that amperage. Sometimes an older HVAC system is replaced by a newer one during a home sale, but the installer did not happen to upgrade the breaker, so the system will not work. This only happens with a company that does not do a good job. Lastly for the panel, look to see that it has a clear space all round it for a worker. If there is a subpanel, go through the same procedure. If any panel has FPE or Federal Pacific marked on it, run away screaming with your hands flailing in the air. Seriously, these are dangerous panel boxes, so do not inspect them, unless you really know what you are doing. These were installed on homes in the sixties and early seventies by builders, since they were inexpensive. Last stop before going inside, you will be looking for a

grounding electrode. Up to the 1980s, water pipes could be used to ground the system, but then every one had to use a rod of either ½ or 5/8 inch diameter. This rod is the grounding electrode. Generally a 6AWG bare wire from the panel would attach to this rod. The rod itself goes into the ground for eight feet. I frequently see people run lawn mowers over this rod, damaging the wire or the connection, or I see rods rusted so that the top is detached from the rest of the rod. Moving into the interior, you will have one problem checking out the branch circuits- equipment. My assumption is that you are walking through a house to judge how much work it will need, so I am writing this with the idea that you have no tools, except maybe a tape measure and a screw driver. An inspector has a circuit tester as his main tool for checking outlets, among other tools for checking the current. Most other tools may be a higher cost, and if you are going to use an inspector, let them handle a more detailed investigation. A circuit tester may not be a bad investment, and it is not expensive. When plugged into an outlet, this device can check the current and GFCI. Sticking to the visual side of the inspection, turn on any item operated by electricity to see if it works, but note that some lights may be a burned out bulb, and not a fixture problem. If an owner or tenant is around, I might ask them. Tenants have always been forthcoming with information. Remember to check for secure fixtures and outlets. You may come across a switch that does not seem to belong, so here are some ideas. If the switch is along the kitchen counter, it may operate the dishwasher. This was done by some builders as a safety measure for working on those units. If it is in a bedroom or den, and there is no ceiling fan at the light fixture, the builder may have run wires for the fan, which he thought you might want to install. In those places, the switch may be for controlling an outlet, so a lamp can be placed there for light. This is usually done in rooms without overhead lights. Generally, the builder will let you know which outlet is being controlled by turning it upside down, but this is not always the case. If you do have the proper screwdriver, remove an outlet cover to check the wiring. The wiring type can be seen by looking at the ends where it will connect to the receptacle. More than likely, your service wires at the panel will be aluminum, and the wires for the branches will be copper. If this is the case the wires at the outlet will be copper as well. If the branch circuits have copper and aluminum wires, look for a marking that says CO/AR (pronounced like “co-lar”) on the receptacle. When checking outlets and switches, ensure they have complete covers. Wire connections should always be in covered junction boxes, and the connections should not be tape. You need to see a wire nut or some other connection means. Copper and aluminum wires can only be connected with a wire nut which is purple in color. The color is a code to indicate that it is a special connector that can handle this type of union. Extension cords used as cabling for outlets or fixtures is not allowed. Lastly, we end our tour with GFCI (Ground Fault Circuit Interrupters) outlets. These are outlets with a test button on them (some circuit breakers have these too), but every outlet on this circuit has to be marked with a label stating “GFCI”. Usually one outlet will control several down the line. These outlets are needed in any area that can become wet: kitchen; garage; bathroom; exterior; or wet bar. The exception to this rule is the refrigerator outlet in the kitchen and outlets in the soffit on the exterior. You do not want the refrigerator going off when the circuit trips, and someone fails to reset it. The soffit is high enough up that now water will get into the outlet.

Evaluating a Room

You start by walking through the door. Wait a moment; back up. Most doors in homes

you will be inspecting are left in the open position. On several occasions, my clients have been surprised to find that a door will not close. Opening and closing doors seems like kicking the tires on a car. You have heard of it, but who does it? Sticking doors are a constant problem, and the cause could be any number of things from the house settling to a foundation issue to new floors or floor covering. Look at the foundation section above to determine if you have a problem with the foundation or house settling. Look at the space around the door and its frame. If hung properly, the space should be even. In some instances, you may find that the door was hung wrong, or that the supports (hinges with the screws) have failed. To readjust the door, you can use shims between the hinges and the jamb. One manufacturer makes a plastic ez-shim for this purpose. The plastic is said to hold up better than a wood shim. Also check the hardware on the door. Door handles and their locking mechanisms are often overlooked. Now you can move into the room. As an investor you will be concerned with wall covering, as an inspector you will be concerned with the condition. Look for unevenness or bowing walls and ceilings. Walk around the floor to see if it feels like you could bounce on it. Here is a trade secret: take your shoes off. You will notice more in your bare or stocking feet than with that hard covering of a shoe. No wall or ceiling should have a hole in it. A common place for holes in cabinets, particularly ones with a sink. Floors that have a bounce need to be stiffened. This can be achieved with sistering a board to an existing joist and using plywood sheets over the floor. Unevenness or bowing could be do to framing or settling. The lumber used for building a wall is frequently bowed. If a builder is not cautious, he could place a bowed side out, leaving an imperfect wall. Structurally this is not a problem, but cabinet installers will have a tough time. If you see round heads for nails popping out, this can explain some bowing in walls and ceilings. Sheetrock should be installed with screws, but to save time many installers use nails, which will come out. An inspector will look for lighting in all habitable areas and bathrooms of your home. Hallways and stairs need proper light with switches at both ends, and an attached garage is to be lighted. If you have a detached garage, it only requires a light when the building has power provided to it. All exterior doors which provides a grade level access need a light, but not a garage door for your car. Some builders have outlets controlled by a wall switch, but they cannot use this arrangement in a kitchen or bathroom. When they do have a switch for an outlet, many builders will turn the receptacle upside down to inform you that this outlet is the controlled unit. These outlets cannot use a dimmer. Some safety concerns for the physical fixture are involving the unit's placement. Bathrooms are fun to light considering the restrictions on where the light can go. You will want a pendant light to be more than eight feet above and three feet away from your shower or tub. For this reason, I like to see fixtures that hug the ceiling instead of dangling down. Closets should not have open incandescent bulbs. A recessed light (or a fluorescent) can be within six inches of a shelf. Fixtures that are ceiling mounted should be twelve inches away from the shelf. This is due to the fact that incandescents heat to a higher temperature than fluorescents. The only location in a closet where mounting a fixture on the wall is allowed would be above the door, as long as there is no shelf there. This may seem strange, but an inspector has to ensure that track lighting is a minimum of five feet above the floor. Can that fixture hit your head then? Yes. The idea applies to a track light over your seating areas and tables. Pendant (chandelier) fixtures can move by swinging when hit, but track lighting cannot. Recessed lighting will be attached above your ceiling. There is a rating for the housing saying the unit is IC rated. This rating is for situations where insulation can come into contact with the unit, like in an attic. A non-IC rated unit is meant for

drop down ceilings where there is no insulation. Obviously, non-IC rated is cheaper, so people like to save money by using them. They can be placed in the attic when you adhere to the following: 1) the housing is a ½ inch away from an object that can burn; 2) the housing is three inches away from insulation. The problem that I find is that insulation eventually finds its way to the housing. A solution could be to create a barrier to prevent insulation from moving closer to the unit. For all electrical fixtures, including lighting units, the fixtures need to be firmly attached to the wall. If they shake or move, stress is placed on the wiring, which could cause the wiring's protective sheathing to fail. All receptacles and switches need a proper cover. There are actually quite a few rules governing the placement of receptacles and switches, but a rule of thumb would be the twelve feet apart and six feet from any opening. A hallway should have a receptacle every ten feet. Most inspectors will not check for this last one, but I was once a certified food service manager, so I like to see if the fixtures in the kitchen have one extra safety feature. Health codes require that for commercial kitchens lights in a food preparation area should be covered, so if the bulb bursts, the pieces will not fall in to your food. Fluorescents are coated with a poisonous material on their interior, and glass shards are never good in food. Lights over your cooktop in the range hood may have a cover missing. I see this a lot. Think about your family's well being, and consider what would happen if the bulb in different kitchen fixtures breaks. Open and close the window. Ensure that the hardware on the window is functioning. Since many people do not use windows often, they can stick. Determine if it is sticking due to paint, build-up, or a hardware problem. The screen in the window should sit in the frame well, and it should have no tears or holes. Screens seem to be a major issue during my inspections. Repair kits are sold at home centers. The post "Look through any Window" has some tips on this subject.

Walking around the exterior

Before you approach a house, look at it form a distance. Does the house line up with the others? Do the walls bulge or lean? Does the building look lop-sided? These are all indicators of issues. They could mean the foundation should be examined or that there is work needed on the structure, but you should make a note of these facts. I went over signs of foundation concerns above, so I want to focus on other parts of the home. Walking around the property, I look for standing water or dips in the grading. I also look to see if the grading will allow the water to flow freely to the street. Water causes damage to the foundation and siding of a home, so I look for the ways it could leave the area. Thinking about water, I look towards the roof for gutters. It is not a cause for alarm if a building does not have them, but gutters do effectively transport water away from the house, when installed correctly. The gutters should be well attached, and there should be no debris in them. The downspouts should not be damaged (gardening efforts seem to cause problems). There should be a splash guard or tube to direct the water further away from the building, once it has left the downspout. A pet peeve of mine, but not technically a problem, are downspouts placed on the path leading to the front door. Builders point out that this is a perfect path to have water move away from the house. I think about the fact that some one will be walking through that water during a good rain. Since we are looking at grading, we will move into the bushes. (Yes, neighbors do look at me curiously when inspecting a home, but if I see them, I try to talk to them, so that they know I am not a threat, and I may obtain some information on the house). Mulch is great for plants, but we seldom judge the effect it has on our siding. When the house is clad in a wood

material, there should be six inches between the siding and the ground. For a material like brick or concrete block or plank, six inches between the ground and siding is acceptable. Moving up from the grading, we can look at the plants in the yard. Roots, branches, and leaves can all be combatants against a home. A typical American home does not posses enough yard space for a large tree, but I would not do without my trees. The basic rule of thumb is that the tree should be spaced away from the home by a measurement equal to its height at full growth. A good average number is forty feet for large trees; twenty to fifteen feet for smaller trees; and five to six feet for good sized bushes. These numbers are never accomplished on the majority of homes. Next best thing is to prevent contact of all branches with the roof and siding. The movement of branches in a strong window will cause serious damage over time. Do not let leaves pile up on the roof or against the building. Leaves retain moisture, and they make a great home for insects. Both facts will do damage to the home. Roots grow were they get water, so if you prune the branches to be clear of the building, the water from the leaves will drip down there, and the roots will stay in that area. The section on the roof above goes into what to look for on top, so let us go just below the roof to the trim there. For all trim, you will want to look that it is not rotting or damaged. Keeping your tools simple, I suggest carrying at least a flat head screwdriver. Most items that you need to open will probably have a screw that can be undone with this screwdriver, and the tool can be used for two other functions: a minor crowbar; and a probe. Pushing the screwdriver gently into the trim, you should feel resistance. If the screwdriver can move into the wood, the trim should be replaced. Now look where the trim meets the siding. This fact applies for where two walls join too. There should be no access point for water to get behind the siding. Joints like this should be caulked. Rain can travel sideways (hurricanes and good gusts of wind ensure this), so take a considerate look at these areas. Moisture and water will get behind your siding though, so the next place to look is at how the water will exit. For brick siding, there will be small holes in the mortar around every three feet. For stucco and EIFS (architectural foam, which looks like stucco), there should be a mesh screen at the bottom. Wood and aluminum siding are designed in such a way that there is a space for water to drain. Stucco and EIFS will be your big worries. These materials can trap water behind them, and installers have not always been aware of how to properly install a means for letting that water drain out. The situation with this siding is getting better, but these materials are meant for dry climates. I mentioned attic ventilation in a section above, so now is the time for you to check for these vents in the soffit. Homes built from around 1960 to 2000 will have vents mainly towards the back and sides, and it is not always sufficient. Before 1960, homes may not have had any type of ventilation. Apply lessons from the “Electrical” portion above for examining outside service panels, fixtures and cabling. The “Window” section applies at this time too. Hose bibs (the exterior faucets) should have an anti-siphon device on them. This looks like a metal sleeve over your normal hose connection. It prevents water from the exterior moving up the hose into the drinking water. If you read the sections above, you should have a good idea what to look for on exterior components, so now you can go ring the doorbell. No one home? That is alright. Checking for a functioning doorbell was the last step in the exterior evaluation.